International Knowledge Sharing between Government Organizations in Water Projects

The Case of the Province of Overijssel and Teleorman County

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Executive Summary

Knowledge sharing in projects is important. It helps to improve the project result and that of future projects. However, knowledge sharing and management in projects and cooperations often fails. Scientific understanding of the knowledge sharing process is still not thoroughly and tools for the evaluation of knowledge sharing are generally unsatisfactory. Especially knowledge lacks in the fields of international and inter-(governmental) organizational issues. In this report, the cooperation projects in the field of water management between the Province of Overijssel (and its partners) (Netherlands) and Teleorman County (and its partners) (Romania) are analyzed on knowledge sharing to get more insight in the evaluation of knowledge sharing and the knowledge sharing process in an international cooperation. In 2005, the Province of Overijssel and Teleorman County started to cooperate. The Province of Overijssel wants knowledge sharing in the projects to be evaluated in order to be able to improve it. In a review of the cooperation in 2009, it was preliminary concluded that communication, knowledge sharing and the application of each cooperating partner's expertise could be improved.

The objectives of this study are (1) to develop a knowledge sharing evaluation framework, (2) to assess the current knowledge sharing in the cooperation with the evaluation framework, (3) to determine the strengths and weaknesses of the developed evaluation framework, and (4) to give recommendations for improvement of knowledge sharing in the cooperation.

Knowledge sharing between the Province of Overijssel and Teleorman County is analyzed by using a qualitative (retrospective) embedded-case study approach. This makes it possible to take contextual factors into account, which are important, because the boundaries between knowledge sharing and the context are blurred. Five drinking water related projects are selected as case studies, embedded in the overall cooperation between the Province of Overijssel and Teleorman County, to evaluate knowledge sharing and test the evaluation framework. Further, data is gathered through semi-structured interviews and by project document reviews. Triangulation of data is used to enhance the internal validity of the study.

The knowledge sharing evaluation framework has been developed based on the well-known knowledge value chain model and a thorough narrative meta-analysis. Hence, the knowledge sharing framework is based on a strong theoretical basis. The knowledge sharing framework takes context, characteristics of individual key actors, knowledge sharing facilitation, knowledge sharing activities, knowledge sharing results and the project result into account. Based on the knowledge sharing framework, the evaluation framework is designed, which is used to evaluate the selected drinking water cases.

The main conclusions on knowledge sharing in the drinking water cases are as follows:

The cooperation was positively influenced by the following contextual factors: the need for improvement of sanitation and water infrastructure in Romania and the will of the Romanian partners to address these issues, interests of the Romanian partners in Western technology and approaches, and the obligatory harmonization of water management to European Union (EU) standards. The main context related barriers were: misunderstandings due to differences in way of working and language, the geographic distance, and the stricter Romanian hierarchy, which decreased the ability to share knowledge between the key actors.

In the overall cooperation, especially the Dutch partners differed about the cooperation's goals and how to direct it. The Province of Overijssel and the Romanian partners focused

especially on tangible project results, while the Dutch water boards and Vitens preferred capacity building and knowledge sharing projects better. At the Dutch side, these differences in view, resulted often in a decreased willingness of parties to cooperate with each other, made reaching of the cooperation's goals more difficult, and influenced, in combination with past experience, sometimes trust between the Dutch partners. As the cooperation was not a core task of the Dutch organizations, organizational priority was low compared to other projects within the Dutch organizations. At the side of the Romanian parties, the level of priority was higher, because they can gain more from the cooperation in funds and knowledge. Organizational rewards obtained from the cooperation projects were strategic, as organizations hoped to secure resources better through the cooperation or hoped to improve their relationship with strategic partners. But for the Dutch organizations it was not always possible to obtain them completely. In general, trust between the Dutch and Romanian partners and among the Romanian partners themselves was good, but occasionally influenced by misunderstandings.

In the analyzed drinking water projects, all partners wanted to complete the projects as good as possible and wanted to improve the drinking water situation in Teleorman County. The Dutch experts and Romanians involved in the drinking water projects were very motivated. Actors stated that the personnel rewards were satisfying and included salary, job diversification and intrinsic rewards. The motivation of the key actors and their shared view helped them to overcome the general differences in the overall cooperation.

In some projects management control was relatively strict. The Dutch and Romanian politicians and the manager of the Province of Overijssel were committed to deliver tangible project results. However, they focused mostly on the timely completion and project result and less on the project process and knowledge sharing, which reduced knowledge sharing options.The time for knowledge sharing by the experts was limited due to the tight project schedules. In general, resources as time and manpower were often limited available, what restrained possibilities for knowledge sharing and project execution.

In the cooperation projects analyzed, the Dutch experts were very skilled; so the selection of experts was adequate. The Romanian project members had less knowledge about drinking water issues than the Dutch experts. Knowledge was rather fragmented over the cooperating partners and sometimes difficult to locate. A shared database for storing documents and information was not used, which reduced options to locate available data and knowledge.

(Former employees) of Haskoning Romania facilitated knowledge sharing by helping to overcome misunderstandings due to language barriers and differences in way of working. Also they helped to match the needs of the different parties with the project proposals. The project coordinators functioned as knowledge brokers and gatekeepers, as they were responsible for the communication with and updating of the project members and partner organizations and coordinated the joined efforts of the key actors.

In the period 2005-2009, communication between the Dutch and Romanian parties was limited. It depended on the irregular contact between the Dutch project coordinator and the Romanian project coordinator. Further, minutes of meetings were not shared by the Dutch. In Romania, the Romanian partners did not meet with each other. For the period 2009-2011, communication within the organization of the Province of Overijssel and between the project partners about problems and project issues was often insufficient; partners were not aware of each other's view on the cooperation projects and were often not updated about project

progress, problems or changes. Also opportunities for discussion and evaluation were not taken or limited, which reduced options for knowledge sharing and (collective) learning.

In general, the knowledge sharing activities fitted with the type of knowledge shared. Meetings, presentations and advice reports were used to share the tacit and explicit knowledge.

During the field visits, the Dutch experts often did not explain changes in their preliminary conclusions, as new data came available. This gave often misunderstandings at the side of the Romanian partners. These misunderstandings could occur, as uncertainties were mainly discussed among the Dutch partners themselves and among the Romanian partners and not collectively In general, opportunities for discussion were often not taken and time for discussion and reflection in the projects was often limited, so that there were fewer possibilities for creation of a shared project view, shared expectations and learning.

In the projects, the partners often lacked data on certain project issues, which decreased the effectiveness of knowledge sharing. In one case, the order of project steps was wrong: Dutch and Romanian politicians had already made a decision on the solution before experts were able to give their advice, which limited the possibilities for knowledge sharing.

In four out of five of the analyzed cases, knowledge sharing helped to improve the project results. In one case the project result was not improved, as the Romanian partners did not share their ideas and problems with the Dutch partners. Learning of technical knowledge about drinking water issues by both the Dutch and Romanian partners was rather limited. The relationship established between the Dutch and Romanian partners was a kind of basic relationship, which will not continue when the cooperation ends at the end of 2011. The Romanian partners were especially trying to build relationships among themselves, as they expected that the Province of Overijssel was not willing to extend the cooperation beyond 2011.

So, overall it can be concluded that several factors influence knowledge sharing positively and several negatively. Taken the context of the cooperation into account, knowledge sharing in the project activities is done moderately well and helped to improve the project results in most of the analyzed cases. In the overall cooperation, knowledge sharing could be improved if the main knowledge barriers are improved.

Based on the cases analyzed, it is concluded that the knowledge sharing framework and related evaluation framework assist in giving a thorough understanding and evaluation of knowledge sharing. Especially, the analysis of the organizational and project contexts and the individual characteristics of key actors appeared to be helpful for evaluating the knowledge sharing. The analysis of the (inter)national context was less important for understanding the actions of the key actors and the knowledge sharing process, but gave interesting background information. Practically, the knowledge sharing evaluation framework pinpoints bottlenecks and strong points regarding knowledge sharing in the cooperation between Province of Overijssel and Teleorman County well. But further testing of the framework is required, as it is rather elaborative to asses the operationalized items. Also more research into adequate objective evaluation measures is recommended.

The main recommendations for improving knowledge sharing in the cooperation are:

- to create a shared view. Based on a shared view, realistic and attainable goals should be set that are supported by all project partners. Further, agreement should exist on the duration of the cooperation, the inputs each party delivers, guidelines for

cooperating, communicating and about what is expected from each partner. If the partners can not reach an agreement on the cooperation, they should rethink setting-up a cooperation, as cooperations lacking a shared vision often fail.

- not to share preliminary conclusions too soon and to explain the reasons for changes in the preliminary conclusions very well. Especially experts who give advice have to take care of this. Group discussions about uncertainties in data could help to create understanding between all partners and it could improve (collective) learning.
- to continue the selection of very skilled and motivated experts, as they are often better capable of knowledge sharing.
- to make sure that the Dutch and Romanian partners have enough time to work on a project activity together, so that they can exchange ideas, methods, approaches and knowledge, as knowledge was mainly shared during the field visits and meetings. However, the time experts have available for knowledge sharing and cooperating with the Romanian partners is limited.
- to improve the communication in the cooperation by having regular communication between the project partners and stimulate feedback and collective reflection sessions, so that more knowledge is shared, people are better up to date about the progress of the cooperation and projects and learning opportunities increase.
- to take care of the right order of project steps so that politicians do not take decisions before they received the advice of the experts.

It is recommended to test the evaluation framework and knowledge sharing framework further, so that a scientific and practical satisfactory evaluation framework can be developed. It especially recommended to do more research into the objective measures for evaluating knowledge sharing.

The knowledge sharing framework forms a basis for doing further research into relationships between knowledge sharing factors that are less well understood, like the effect of power, individual's capabilities, politics, or organizational culture on knowledge sharing.

During this research, it became apparent that the influence of politicians on the cooperation between the Province of Overijssel and Teleorman County was large. It is wondered if there is a differences in knowledge sharing for commercial organizations and public institutions. An interesting topic to research would be analyzing the differences in international knowledge sharing between commercial organizations and international knowledge sharing between governmental organizations.

Preface

This report has been made for my Master's Thesis assignment of the study Business Administration, track International Management at the University of Twente. This report is a part of my second Master's Thesis. My first thesis was made for the Master Civil Engineering (& Management), track Water Engineering and Management. Both theses are related to water management issues, but the researches required totally different skills and knowledge. Therefore, working on both studies and theses helped me to improve both my technical and my management skills. Both types of skills proved to be a useful combination already several times. I am glad that I had the opportunity to do both studies in order to prepare myself on working life.

This thesis could not have been written without the help of others. The author would like to thank dr. ir. S.J. de Boer of the University of Twente for supervising the first part of the report and giving helpful insights and recommendations that improved the report. Thanks goes to J. Vinke-de Kruijf MSc. of the University of Twente for commenting, giving helpful insights on my work and critically reviewing this manuscript. Also I would like to thank her for offering the opportunity to graduate on the interesting topic of knowledge sharing in water projects. I would like to thank Dr. K. Zalewska-Kurek of the University of Twente for supervising the second and final part of this Master's Thesis and giving positive inputs to my work. I would like to thank both Dr. K. Zalewska-Kurek and J. Vinke-de Kruijf MSc. for supporting my research and making it possible to finish it.

The Province of Overijssel gave me the opportunity to do research on knowledge sharing in the cooperation between the Province of Overijssel (Netherlands) and Teleorman County (Romania). I would like to thank H. Klomp and J.F.W. Clasie of the Province of Overijssel for making this study possible.

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Table of Contents

Executive Summary *p. i*
Preface *p. v*

1. Introduction *p. 1*
1.1 Background 1
1.1.1 Knowledge Sharing through Partnerships based on Project Work 1
1.1.2 Knowledge Sharing in Water Projects 2
1.1.3 Problems related to Knowledge Sharing in Project Work 3
1.2 Problem Statement 3
1.3 Objectives and Research Questions 4
1.4 Research Strategy 4
1.5 Outline of the Report 5

2. Theoretical Framework *p. 6*
2.1 What is Knowledge? 6
2.1.1 Views on Knowledge 6
2.1.2 Synthesis 8
2.2 The Knowledge Sharing Process and Outcomes 9
2.2.1 The Knowledge Sharing Process: a Part of the Knowledge Value Chain 9
2.2.2 Developing Knowledge 9
2.2.3 Knowledge Sharing 10
2.2.4 Outcomes of Knowledge Sharing: Learning, Application and Evaluation of Knowledge 11
2.2.5 Conclusion 13
2.3 Factors Influencing Knowledge Sharing 14
2.3.1 Narrative Meta-Analysis of Knowledge Sharing Literature 14
2.3.2 Context 14
2.3.3 Characteristics of Individual Key Actors in Project 16
2.3.4 Facilitation of Knowledge Sharing 18
2.3.5 Knowledge Sharing Activities 19
2.3.6 The Knowledge Sharing Framework 20
2.4 How to Evaluate Knowledge Sharing: the Evaluation Framework 21

3. Methodology of the Case Study Evaluation *p. 24*
3.1 Case Study Method 24
3.2 Selection of the Case Study Projects 25
3.3 Data Gathering 25
3.4 Limitations 27

4. Case Description: Cooperation Projects between Overijssel and Teleorman *p. 29*
4.1 Background and History of the Cooperation 29
4.1.1 Organizations and their Inputs 29
4.1.2 Organizational Set-up of the Cooperation 2005-2009 30
4.1.3 Organizational Set-up of the Cooperation 2009-2011 31
4.1.4 History of the Cooperation 31

4.2 General Objectives of Drinking Water Projects 35
4.3 General Project Context of Drinking Water Projects 35
4.4 Selected Cases 37

5. Results *p. 40*
5.1 Context Analysis 40
5.1.1 International Context Analysis 40
5.1.2 Country Context Analysis 40
5.1.2.1 Netherlands 41
5.1.2.2 Romania 43
5.1.2.3 Expected Influence International/Country Context on Knowledge Sharing 48
5.2 Key Characteristics of Actors 49
5.2.1 Perceptions and Views 49
5.2.2 Motivation and Trust 53
5.2.3 Individual's Capabilities 58
5.3 Facilitation of Knowledge Sharing 61
5.4 Knowledge Sharing Activities 65
5.5 Knowledge Sharing Results 68
5.5.1 Learning and Application of New Knowledge and Skills 68
5.5.2 Evaluation and Feedback on Knowledge 69
5.5.3 Relationship Building 69
5.5.4 Project Results 70

6. Discussion and Reflection *p. 72*
6.1 Reflection on Methodology and Data 72
6.2 Reflections on Results and Evaluation Framework 74
6.2.1 Reflection on Framework 74
6.2.2 Reflection on Knowledge Sharing in the Drinking Water Projects 75
6.3 Relevance to Practice 78

7. Conclusions *p.79*
7.1 Developed Knowledge Sharing Evaluation Framework 79
7.2 Knowledge Sharing in Drinking Water Projects 79
7.3 Quality of Knowledge Sharing Evaluation Framework 81

8. Recommendations *p.82*
8.1 Create a Shared Vision 82
8.2 Improving Knowledge Sharing 82
8.3 Further Research 83

References *p. 84*

Glossary *p. 91*

Appendices *p. 93*

1. Introduction

Nowadays, one of the main assets of organizations is knowledge (Uit Beijerse, 1999). Knowledge is important for organizations, because it improves decision making and organizational actions (Davenport et al., 1999). Organizations often try to improve the use of knowledge within the organization. Knowledge management projects are attempts to structure people, technology and knowledge content in order to improve the availability and interpretation of knowledge by persons, so that organizational objectives can be reached (Davenport et al., 1999; Uit Beijerse, 1999). Hence, in such projects, knowledge sharing between organization members is important.

However, knowledge is still hard to manage, share and evaluate, especially between organizations (in an international context) (Wang & Noe, 2010; Wen, 2009). Therefore, more research into knowledge sharing and evaluation is needed. More insight in knowledge sharing and evaluation, can be obtained through case studies. In this report, cooperation projects in the field of water management between the Province of Overijssel (Netherlands) and Teleorman County (Romania) are analyzed in terms of knowledge sharing. Scientifically, this case will give more insight in knowledge sharing. Practically, the Province of Overijssel wants an evaluation of knowledge sharing and recommendations for improvement of knowledge sharing in these cooperation projects.

Section 1.1 discusses the background of knowledge sharing in projects. Further, it addresses the problems related to knowledge sharing in project work. The importance of knowledge sharing in water projects is discussed as well. Also a short introduction of the cooperation of the Province of Overijssel and Dutch water boards with Teleorman County in Romania is given. Section 1.2 discusses the problem statement and section 1.3 the objectives and research questions. Section 1.4 gives an overview of the research strategy. Section 1.5 provides an overview of the rest of the report.

1.1 Background

1.1.1 Knowledge Sharing through Partnerships based on Project Work

"Partnerships between international technical assistance bodies and research and education institutions throughout the world have become a fashionable strategy for knowledge generation and dissemination" (Marra, 2004: p. 151). New is that government bodies, besides funding such programs and agencies, also actively engage in such partnerships in order to generate knowledge. The rationale behind these partnerships is to create and diffuse knowledge more effectively. Most of the partnerships are based on projects. Projects however face significant challenges in coordination of resources, organizational learning and knowledge sharing across projects (Boh, 2007). "The temporary and customized nature of each project makes it difficult for such organizations to learn and build up their knowledge capabilities from one project to another" (Boh, 2007: p. 28). Special effort and attention therefore has to be given to knowledge sharing across projects, because effective sharing of knowledge and learning is positively related to cost reduction, team performance, innovation, development of integrative solutions and project/organizational performance (Boh, 2007; Fugate et al., 2009; Renzl, 2008; Wang & Noe, 2010). Knowledge sharing avoids reinvention of the wheel, reduces redundant work, improves the retention of intellectual capital as employees turnover, and improves adaptation to changing contingencies (Boh, 2007; Green Shoots Consultants, 2010).

For these reasons, knowledge management got increased attention from managers, scientists and policy makers from the 1990s onwards. Knowledge management is used to identify, create,

represent, distribute and enable adoption of insights, experiences and expertise (Green Shoots Consultants, 2010). The insights, experiences and expertise comprise knowledge. Moreover, knowledge management (or sharing) is a social process (McAdam & McCreedy, 2000). In this research, focus is on knowledge sharing between employees, because "team and organizational level knowledge is influenced by the extent to which knowledge sharing occurs between employees" (Wang & Noe, 2010: p. 116).

1.1.2 Knowledge Sharing in Water Projects

Knowledge sharing is of crucial importance in water projects. Especially, as "water management issues arise in a complex social and natural system. Such problems are complex, unstructured problems that are characterized by complexity, uncertainty and disagreement" (Hommes et al., 2009: p. 1642). Water management projects therefore require intensive sharing of knowledge, cooperation and interaction between stakeholders in order to reduce the uncertainty of knowledge, to create consensus about the knowledge framework, problem and solution options (Hommes et al., 2009; Van Buuren, 2009).

The Dutch Ministry of Infrastructure and the Environment aims at improving and strengthening the Dutch water expertise and marketing internationally (Stump, 2009; Wolf, 2010). The Ministry aims at making the Netherlands a global leading country in the field of delta and water management and technology (Stump, 2009; Wolf, 2010). The Dutch government aims to improve the European knowledge structure and participation of governments and private firms in order to create new knowledge and innovations (Stump, 2009). Therefore Dutch public and semi-public institutions are encouraged to set-up relationships with (government) institutions and private firms (abroad) in the field of water management in order to share and create new water policy and management knowledge. The projects should assist new and future Eureopean Union (EU) members to meet the EU water (quality) standards and/or help to reach the Millennium Development Goals and if possible to create economic opportunities for the Dutch water sector (Stump, 2009).

Knowledge Sharing in Water Projects between the Province of Overijssel and Teleorman County

Encouraged by the Dutch government to set-up bilateral relationships with government institutions abroad in the field of water management, the Province of Overijssel[1] in the Netherlands, established a relationship with Teleorman County[2] in Romania. Both parties decided to focus on water related projects in the fields of sanitation, drinking water services, waste water treatment, flood prevention and the improvement of the administration of water management in Teleorman County, Romania (Hooijer et al., 2009). In 2005, the cooperation between the Province of Overijssel (the Netherlands) and the county of Teleorman (Romania) started in order to improve the water management in Romania over the period 2005-2011. Since then, several projects have been carried out in the fields of flood risk management, drinking water and sanitation (Hooijer et al., 2009). The goal of the projects is to improve water management, water quality management, flood protection and sanitation in Teleorman County.

[1] Wherever reference is made to the Province of Overijssel, depending on the context, also other organizations could be referred to as partners in the cooperation like the Province of Overijssel, the Dutch Water Boards in Overijssel, or for activity 1 (case A), the NGO Drinking Water for Romania and for the activities 1.1, 1.2, 3.1 and 5.2 (cases B, C, D and E), drinking water company Vitens.

[2] Wherever reference is made to Teleorman County, depending on the context, also other institutions like Teleorman County Council, EuroTeleorman, Apa Serv, municipalities, and the Water Management Centre are referred to as partners in the cooperation.

The Province of Overijssel wants to evaluate the projects carried out in order to improve the future cooperation, knowledge sharing and the projects results.

1.1.3 Problems related to Knowledge Sharing in Project Work

Despite the investments made in knowledge management, knowledge sharing and organizational learning, many projects have failed. According to Wang & Noe (2010: p.115) important reasons for the failure of knowledge management systems and knowledge sharing are "the lack of consideration of how the organizational and interpersonal context as well as individual characteristics influence knowledge sharing."

Assessing the effectiveness of knowledge management operations is thus an important issue (Wen, 2009). According to Wen (2009) the current measures available to evaluate the effectiveness of knowledge management and sharing are generally unsatisfactory. Based on a meta-analysis of academic literature on knowledge sharing (see chapter 2), it is concluded that scientific understanding of the knowledge sharing process between different organizations is limited and that academic research into knowledge sharing across borders is very limited. Furthermore, it is unclear how to encourage knowledge management and sharing well in general and how to evaluate the effectiveness of the knowledge sharing (Boh, 2007; Wen, 2009).

A difficulty in the research on knowledge sharing is that it is hard to give a precise, unambiguous definition of knowledge; many definitions of and views on knowledge exist. According to some authors, knowledge can even be synonymous with information or understanding, depending on the view taken (Blackmore, 2007). Koskinen et al. (2003) point out that it is difficult to express directly in words what knowledge and expertise are about. The only ways of presenting tacit knowledge, for example, are by using methods of expression not requiring a formal use of language or through metaphors.

1.2 Problem Statement

As already discussed, knowledge sharing is still hard to manage and to evaluate (Wang & Noe, 2010; Wen, 2009). As Wang & Noe (2010) make clear, knowledge sharing, however crucial in projects, is still a topic not totally unraveled. Especially insight lacks in the fields of international and inter-(governmental) organizational issues. The tools for knowledge sharing evaluation available are generally unsatisfactory (Wen, 2009). In order to be able to manage knowledge sharing and to give recommendations for the improvement of knowledge sharing, these issues need to be addressed. Hence, the lack in general scientific understanding of: (1) the knowledge sharing process; (2) how to evaluate knowledge sharing effectiveness in projects; (3) sharing of knowledge across borders (-hence between two different cultures-) and (4) sharing of knowledge between different governmental organizations. Boh (2007) argues that knowledge sharing in projects is crucial for the project result, especially when these projects are carried out in a complex social and natural system. Wang & Noe (2010) report that most knowledge sharing projects fail as the context, organizational and individual characteristics are not considered thoroughly. So, the theoretical problem is how to evaluate knowledge sharing in projects and how to manage or improve knowledge sharing effectively.

According to Hooijer et al. (2009), the cooperation between the Province of Overijssel and Teleorman County has not been optimal until now, as communication and using the each parties expertise could be improved. Vinke-de Kruijf (2009 b) adds that several aspects regarding knowledge sharing in water related projects could be improved, based on an analysis of the use of Dutch expertise in the 'Teleorman Flood Risk Management Pilot Project'. She concluded that

knowledge sharing especially took place when both parties, Romanian as well as the Dutch, contributed to a project part when it was not predefined yet. This means that the parties together, in cooperation could determine the problem formulation, criteria and direction in which to find the solution. In this way, both parties stimulated the creation of 'negotiated knowledge'. Also the project was not designed as a learning-oriented process, because ideas and lessons learnt during workshops, meetings and seminars could not be easily implemented, because options to adjust the project were limited due to time constraints and pressure to complete the project. Vinke-de Kruijf (2009 b: p. 41) states that "it is concluded that considering follow-ups, it is crucial that Dutch actors learn about the specific context and Romanian actors about what Dutch experts have to offer."

The Province of Overijssel is determined to stimulate knowledge sharing in the projects carried out in cooperation with Teleorman County, because it will improve: (1) the quality of future project results in Teleorman County (and potentially the Netherlands), (2) local ownership awareness and knowledge development, (3) the input and use of the water management expertise of the Dutch Water Boards, and (4) learning (Hooijer et al., 2009). Based on the statements by Hooijer et al. (2009) and Vinke-de Kruijf (2009 b), and the goals of the Province of Overijssel, it is concluded that the current knowledge sharing in the projects in the cooperation between the Province of Overijssel and Teleorman County need improvement.

1.3 Objectives and Research Questions

The main objective of this research is to develop and test an evaluation framework for assessing knowledge sharing in projects, because, as previously said, current evaluation measures are unsatisfactory (Wen, 2009). The focus of this framework is on knowledge sharing in a cross-cultural, international, cross-organizational setting. The framework is tested by applying it to cooperation projects in the field of water management, flood control and sanitation between the Province of Overijssel and the County of Teleorman in Romania. The main research question is:

1 *How can knowledge sharing be evaluated in international projects carried out in the field of water management?*
   - *1.1 What are the factors that influence knowledge sharing in international projects carried out in the field of water management?*
   - *1.2 How is knowledge sharing currently done in the cooperation between the Province of Overijssel and Teleorman County?*
   - *1.3 What are the strengths and weaknesses of the knowledge sharing evaluation framework, used to evaluate the water projects in Teleorman County?*
   - 1.4 *How could the Province of Overijssel and Teleorman County improve knowledge sharing within the context of their cooperation?*

1.4 Research Strategy

In order to answer the research questions, a pragmatic deductive case study research strategy is used (Saunders et al., 2009). The literature review section defines and explores the knowledge and the knowledge sharing process. A narrative meta-analysis of literature is used to identify the key factors influencing knowledge sharing. The articles included in this review are identified using Science Direct, Google (Scholar), and the reference lists of the read literature. Articles published in academically peer reviewed journals in the fields of human resource development, (operations/project) management, organization studies, organizational change, human behavior, (environmental science and) policy studies, water management studies, and

information systems/knowledge management were included in this review. Work published in books and conference papers has not structurally been investigated. Knowledge sharing, knowledge management, learning organization, way of knowing, and their variations are used as search terms. In total 22 papers are reviewed that were published between 1995 and 2010 (see appendix A1).

A knowledge sharing framework is set-up based on theory about knowledge, the process of knowledge sharing, which types of knowledge sharing mechanisms exist and which factors are most important for knowledge sharing. Based on the knowledge sharing framework, an evaluation framework is developed. The evaluation framework is used to assess the current knowledge sharing practice in projects between the Province of Overijssel and Teleorman County and to identify knowledge sharing bottlenecks and catalysts.

Furthermore, the research methodology is developed to collect primary data in order to obtain the knowledge for answering the research questions and meeting the research objectives (Saunders et al., 2009). Interviews with project members, observations and project documents are used to assess the current knowledge sharing practice. The interview questions, used to assess the current knowledge sharing in the case project, are linked to the evaluation framework. Based on the current knowledge sharing practice recommendations for improvement are given. The cases analyzed are chosen based on four criteria: academic value of a case regarding knowledge sharing, practical value of a case evaluation for the Province of Overijssel, feasibility to do interviews with participants of a case, and the case should be completed or in progress.

1.5 Outline of the Report

This report is structured as follows. The second chapter introduces the knowledge sharing framework and evaluation framework. The factors mentioned in academic papers that influence knowledge sharing are described in these frameworks. Chapter 3 describes the case study methodology that is used to analyze the projects carried out in the cooperation between the Province of Overijssel and Teleorman County on knowledge sharing. In chapter 4 the case study description is given; the organizations involved, their inputs, the cooperation set-up, the history of the cooperation and the cooperation objectives are described, just as the general objectives of the drinking water projects. In chapter 4, also the case project context and a short description of each case are given. Chapter 5 presents the results of this study based on the evaluation framework. In chapter 5, the (inter)national contexts of the case projects are analyzed. Further, the key characteristics of the actors, the facilitation of knowledge sharing, the knowledge sharing activities and the knowledge sharing results are analyzed for the selected cases. Chapter 6 discusses the methodology, data, results and developed evaluation framework. In chapter 7, the conclusions are presented. Chapter 8 presents the recommendations of this study.

Appendix A1 shows the data obtained from each reviewed paper in the meta-study, used to design the knowledge sharing framework. Appendix A2 gives the extended theoretical knowledge sharing framework, which is based on the framework of Wang & Noe (2010) and is extended with the literature reviewed in this report. Appendix A3 describes the case selection. In appendix A4 the interview questions, interviewees, meetings and field visits are described. To the interviewees, field visits and meetings is referred by using a number, as given in tables A3 and A4. To other data, like project documents, is referred by referring to the author and else to the organization that made it; the references of these documents are included in the reference list. Appendix A5 gives an overview of the organization structure of the cooperation. Appendix A6 shows an overview of the selected case activities regarding resources, planning and organizations involved.

2. Theoretical Framework

As argued in the introduction, there are many views on knowledge. This chapter presents an overview of these various views on knowledge and what kinds of knowledge exist. At the end of section 2.1, knowledge and the view on knowledge, as used in this report, are defined. Section 2.2 gives an overview of the larger process knowledge sharing is a part of: i.e. the knowledge value chain. Based on the knowledge value chain, the inputs and outcomes of knowledge sharing and the types of knowledge sharing are described in more detail. Moreover, factors influencing knowledge sharing are identified based on academic literature in section 2.3 and combined in a model. Finally, in section 2.4 the evaluation framework for knowledge sharing is presented.

2.1 What is Knowledge?

Knowledge is a much debated topic. The debate about what is knowledge is already going on from the 1960s and has intensified from the 1990s onwards (Blackler, 1995). Several views on knowledge exist. Many of these differences are based on differences in the epistemology used to look at knowledge. The epistemological differences in perceptions and views are therefore more important to consider, because epistemology deals with the views of interpreting knowledge (Koskinen et al., 2003). Epistemology enables us to construct a view on how and why organizations, project teams or individuals know. Being familiar with different epistemologies gives a better understanding of knowledge and also of the limitations of each approach (Koskinen et al., 2003). Moreover it is difficult to see knowledge apart from learning (Blackmore, 2007). Many views on knowledge are therefore based on theories of learning. As Blackmore (2007: p.513) puts it: “There are different ways of knowing with different degrees of rationality ranging from scientific and philosophical to more intuitive and innate. Knowledge might be learnt or directly perceived.”

2.1.1 Views on Knowledge

The first and main view on knowledge, shared by most academic authors, is that knowledge can be divided into explicit and tacit knowledge (e.g. Nonaka & Takeuchi, 1995; Koskinen et al., 2003; Boh, 2007; Blackler, 1995; Renzl, 2008). This distinction is based on the easiness to communicate the knowledge to others. Tacit knowledge is knowledge that is highly personal and difficult to communicate or share with others. It is based on experience, skills and competences. It is therefore difficult and sometimes impossible to codify in books, manuals or other written documentation. Explicit knowledge is knowledge that can be learnt from books, written documentation and at schools and universities. It is therefore also called codified knowledge. This type of knowledge is easier to communicate and share with others. Some link tacit knowledge, when it is shared, to personalization or informal contact (Koskinen et al., 2003; Boh, 2007). Codified knowledge is linked to more formal ways of interaction.

The second view on knowledge is coming from the organizational learning literature. Based on this view, Blackler (1995) distinguishes five images of knowledge: embrained, embodied, encultured, embedded, and encoded knowledge.

- Embrained knowledge is knowledge that depends on conceptual skills and cognitive abilities. Hence it is a type of tacit knowledge.
- Embodied knowledge is knowledge that is received by doing and it is therefore only possible to make it partly explicit. Such knowledge can only be obtained through face-to-face discussions, doing, being present, and by observations. This type of knowledge is therefore context dependent.

- Encultured knowledge is about the process of achieving shared understandings. “Cultural meaning systems are intimately related to the processes of socialization and acculturation” Blackler, 1995: p. 1024). Language used, social interaction and negotiation are very important for this type of knowledge. This type of knowledge can be both tacit and explicit.
- Embedded knowledge is knowledge existing in routines. Individual routines consist of skills or competences a person has based on his/her physical and mental facts. Organizational routines are “a complex mix of interpersonal, technological and socio-structural factors” (Blackler, 1995: p. 1025). Embedded knowledge in organizations is therefore also about the procedures and interactions between people within an organization. Organizational routines are often codified, but depend, just as individually embedded knowledge, heavily on tacit knowledge.
- Encoded knowledge is knowledge codified by symbols or signs like writing. Encoded knowledge comprises thus things such as books, manuals, codes of conduct and electronic data. Hence, encoded knowledge is explicit knowledge.

The third view on knowledge is that it is a social and political construct. According to Boogerd et al. (1997), in this view knowledge is created in a multi-stakeholder process, and is therefore politically and socially constructed. This view is thus based on encultured knowledge as distinguished by Blackler (1995), only further elaborated. This view sees knowledge as a fact of negotiation and thus is it very difficult to define “absolute knowledge”. Knowledge is not seen as an univocal asset, but has multiple manifestations. This view can be related to the way of knowing (WOK) literature as well, as described by Van Buuren (2009). Van Buuren (2009) and Hommes et al. (2009) argue that knowledge is not just a matter of consensus; also the process to reach consensus on knowledge is based on a shared understanding of both the problem and the solution. Thus, actors have different ways of knowing as a result of their diverging frames of references, i.e. their WOKs, which are based on values, beliefs, experiences, context, perception and ideology. These WOKs give them a different understanding of the world, the problem at hand and values to apply (Van Buuren, 2009; Hommes et al., 2009). “Various actors hold, produce and value knowledge that differs in both content and orientation; this contributes to their perception of a problem situation” (Hommes et al., 2009: p. 1645). The agreed upon knowledge out of the negotiation process of actors is called negotiated knowledge (Van Buuren, 2009; Hommes et al., 2009) or knowledge stocks (Boogerd et al., 1997). Boogerd et al. (1997) distinguish scientific knowledge, bureaucratic knowledge, local knowledge or everyday knowledge stocks.

The fourth view on knowledge, the autopoietic (meaning self-creation) epistemology, elaborates further on the way of knowing view in the sense that it sees knowledge as data. The autopoietic view says that knowledge is the interpretation of data put into a certain context by a person (Koskinen et al., 2003). So knowledge as input (communicated to a person) is just data and the interpretation effort of the input by a person creates his or her knowledge. The idea is that people interpret situations, data, and events differently due to their different set of perceptions. Knowledge can therefore only be produced; meaning that one can acquire new knowledge only through utilizing existing knowledge (Koskinen et al., 2003). Thus knowledge is context dependent and embodied in the individual. This view can be related to the WOK-theory as described by Van Buuren (2009) as well, because it recognizes also the importance of perceptions and views of individual people, hence their knowledge framework. Also this perspective is based on the idea of embodied knowledge as described by Blackler (1995).

In the fifth view, the cognitivist epistemology, knowledge is seen as a representation of the world. “Knowledge is therefore developed by formulating increasingly accurate representations of the pre-defined (real) world” (Koskinen et al., 2003: p. 283). The idea is that when the level of explicitness increases, the knowledge gives a closer representation of reality. The cognitivist

view sees explicit knowledge as the abstract, objective and only true knowledge. The world is thus seen as a given fact. Knowledge by individuals is created by relating facts and experiences stored in the brain with existing experiences in order to create a picture of the world. Learning is therefore the way to improve representations of the world in order to increase the explicitness of the knowledge (Koskinen et al., 2003).

The sixth view sees knowledge as dynamic and time dependent. According to these postmodernists "it is becoming clear that traditional conceptions of knowledge as abstract, disembodied, individual, and formal are unrealistic" (Blackler, 1995). Postmodernists argue that practical knowledge is not founded, partial, constructed and pragmatic (Blackler, 1995). It can not be seen separated from its context or shared as data. Also knowledge is not universally applicable.

The seventh view on knowledge is based on the activity theory of Vygotsky. He argues that social experiences shape the consciousness and therefore the social being and not the consciousness shapes the human (Blackler, 1995). The view of a person is therefore culture dependent. Activity theory argues that knowing and doing are unified and context and socially dependent. Knowledge is related to learning and both are a socially constructed understanding, emerging from collaboration. Knowing is thus based upon a socially-distributed activity system, because individual knowledge is shaped by the activities we do and these activities are influenced by others. Therefore individual perceptions of knowledge can differ and change due to the activities done in time. So knowledge is not static in time. "New ways of knowing and doing can emerge if communities begin to rethink everyday life" (Blackler, 1995).

View eight regards knowledge to be information (Wang & Noe, 2010). On this topic no consensus exists, because some authors as Nonaka (1994) see information just as a flow of messages, while knowledge is the interpretation of knowledge based on one's beliefs. Other researchers however argue that information itself needs to be considered to be knowledge. Some authors continue on this approach by saying that knowledge comprises more than only information; it also comprises know-how and valuable ideas for example (Wang & Noe, 2010).

For a broader and more elaborated overview of knowledge theories, see Blackler (1995) and Blackmore (1997).

2.1.2 Synthesis

Much debate is still going on about the definition of knowledge and the view on knowledge. Therefore Blackler (1995: p.1033) concludes that "knowledge is multi-faceted and complex, being both situated and abstract, implicit and explicit, distributed and individual, physical and mental, developing and static, verbal and encoded". For this research, the definition of Wang & Noe (2010: p. 117) is used, who define knowledge as "information processed by individuals including ideas, facts, expertise, and judgments relevant for individual, team, and organizational performance."

The view on knowledge that fits best with this research project is that knowledge is context and culture dependent and interpreted by individuals. Individuals have a knowledge framework based on their perceptions, experiences and views. In order to be able to cooperate, individuals need at least to understand each other and create consensus about the knowledge they need and use for which knowledge sharing and interaction are required. The knowledge needed and the view on knowledge can shift over time depending on place, activities or experiences. Further, the most important characteristic of knowledge is that it can be tacit or explicit.

2.2 The Knowledge Sharing Process and Outcomes

2.2.1 The Knowledge Sharing Process: a Part of the Knowledge Value Chain

Knowledge sharing is a process that is part of a larger process: the collective learning or knowledge management process (Uit Beijerse, 1999; Verbiest, 2006; Small & Sage, 2005/2006). Dixon (1994, in Verbiest, 2006) recognizes four phases of collective learning in a cyclical continuous process: generating knowledge, integrating knowledge, understanding knowledge, and applying knowledge. In order to successfully use knowledge collectively, it is important that knowledge is shared during the four stages and especially in the integration stage (Verbiest, 2006). Interaction between the team members is therefore very important; the team members need to share the knowledge timely, thoroughly and precisely (Verbiest, 2006). In order to be able to share and use the knowledge well, team members need to create shared views and goals. Also an open culture and organizational structure supporting collective learning, and hence knowledge sharing, needs to be existing; openness, accepting that persons make mistakes and meetings are crucial (Verbiest, 2006; Small & Sage, 2005/2006). In order to improve the collective learning and knowledge sharing, Verbiest (2006) emphasizes that collective evaluation of the project is important.

Weggeman (1997, in Uit Beijerse, 1999) distinguishes a similar kind of cyclical continuous process as Dixon (figure 1). He refers to the four phases as developing knowledge, sharing knowledge, applying knowledge, and evaluating knowledge. Before the developing phase, he adds an extra phase related to the analysis of which knowledge is needed and what kind of knowledge is already available, before starting a quest for new applicable knowledge. Uit Beijerse (1999), just as Verbiest (2006), states that it is important to give clear guidance to the process by having a shared mission, vision, targets and strategy. In order to create this shared view and to inventorise the knowledge gap, knowledge sharing is very important through dialogue and exchange of documents.

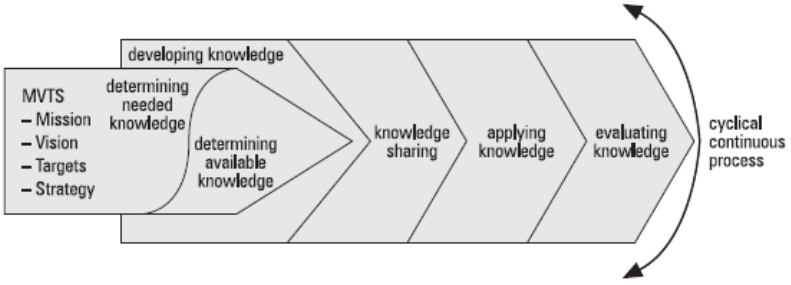

Figure 1. The knowledge value chain (Weggeman, 1997 in Uit Beijerse, 1999).

In the next sections, the steps in the knowledge value chain model are explained in more detail. The knowledge value chain is used as the basis for developing the knowledge sharing framework used in this report (figures 3 and 5). The knowledge sharing framework and academic literature are used as basis for the evaluation framework (table 1).

2.2.2 Developing Knowledge

Projects are set-up by organizations in order to address certain needs or problems and have therefore their own targets. At the beginning of and at later stages of a project, knowledge needs to be developed (generated) in order to be able to complete a project. The development of knowledge depends on the project goal which depends on the (organizational) mission, vision, targets and strategy, the available knowledge and the needed knowledge (Weggeman, 1997 in Uit Beijerse, 1999). Project members develop the knowledge (i.e. generate the

knowledge) needed to fill the knowledge gap. Therefore knowledge sharing is especially influenced by the characteristics of the project members. The project members' characteristics and handling is influenced by the context in which they operate. The developed knowledge by the project members needs to be shared among them in order to be able to apply knowledge in the project.

2.2.3 Knowledge Sharing

Nowadays, knowledge sharing in projects has become increasingly important, because the complexity of the environment and the level of knowledge required to complete a project has increased dramatically. On top of that, the knowledge needed in a (cooperation) project is often dispersed among different individuals within and across organizations (Boh, 2007). Knowledge sharing is a complex activity, because "knowledge is generated and stored within employees" (Chow & Chan, 2008: p. 458). Furthermore, several factors influence the sharing of knowledge by individuals (Chow & Chan, 2008).

Knowledge sharing is defined as "the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures" (Wang & Noe, 2010: p.117). Hence, effective knowledge sharing requires individuals to integrate the knowledge dispersed among the different individuals in order to get a shared view and results in the application of knowledge.

Knowledge sharing takes place through knowledge sharing mechanisms. Boh (2007: p. 28) defines knowledge sharing mechanisms as "the formal and informal mechanisms for sharing, integrating, interpreting and applying know-what, know-how, and know-why embedded in individuals and groups that will aid in the performance of project tasks." Knowledge sharing therefore can take place through written documents, both on paper and electronically, but also through face-to-face meetings, presentations and other types of interaction such as videoconferencing, trainings, and experiences.

Knowledge Sharing Mechanisms

Boh (2007) recognizes two mechanisms of knowledge sharing: codification versus personalization, and individualization versus institutionalization. These two mechanisms result in four types of knowledge sharing: individualized-personalization (personal networks, word of mouth, collaboration), individualized-codification (sharing documents informally, manuals written voluntarily), institutionalized-personalization (meetings, support centers, expertise center, coordinators, reviews), and institutionalized-codification (databases, templates, e-mail, fora, standard methods). Codification is about sharing explicit knowledge. Personalization is about sharing tacit knowledge. Individualization or institutionalization considers the level at which knowledge is shared: the individual level or the collective level.

Knowledge sharing through codification is done by storing knowledge in books, documents and databases that can be accessed and used easily by employees (Boh, 2007). Codification is especially useful for storing large amounts of knowledge that need to be shared with many people. Codification helps also to create an organizational memory, because knowledge can be stored and shared regardless of time or geographic location (Koskinen et al., 2003). But the media richness of codification is limited, because the amount of tacit knowledge that can be shared at a given moment in time and the degree to which information can be selected and customized to the individual needing knowledge are limited (see figure 2) (Boh, 2007). Codification is therefore especially useful for the sharing of explicit knowledge.

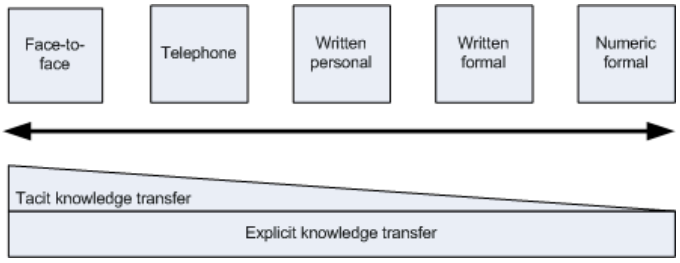

Figure 2. Theoretical media richness versus tacit and explicit knowledge transfer (Modified from Koskinen et al., 2003).

Personalization is a much richer medium for knowledge sharing, because it is based on interaction between people. Therefore knowledge can not only be shared through words, mimics, expressions, and drawings for example, but also the knowledge shared can be further explained, clarified, restructured, adjusted, discussed and reinterpreted (figure 2). Tacit knowledge can thus be explained easier through personalized forms of knowledge sharing than through codified forms. Some authors combine therefore tacit knowledge with informal ways of knowledge sharing (Koskinen et al., 2003; Boh, 2007). Research has proven that individuals are more likely to turn to friends and colleagues when they are searching for specific types of knowledge, than turn to other sources of information (Koskinen et al., 2003). Personalized knowledge sharing however is also more complex, because it depends on individuals and their relationships, willingness to share knowledge, behavior, shared goals and social networks as research from Chow & Chan (2008) points out. Trust has also (indirect) influence on knowledge sharing (Boogerd et al., 1997; Chow & Chan, 2008; Koskinen et al., 2003; Marra, 2004; Blackmore, 2007; Van Buuren, 2009; Hommes et al., 2009; Vinke-de Kruijf, 2009).

Individualized ways of knowledge sharing are especially functional for sharing tacit knowledge and for small organizations (Boh, 2007). In small organizations it is easy to locate a person with specific knowledge, because everybody knows one another and it is easy to encounter one another in hallways or cafeterias (Boh, 2007). It is also directly the richest way of communicating, so that less of the (tacit) knowledge gets lost. But, as organizations are larger or more geographically dispersed, it gets more difficult to meet one another and to know who has which type of information. In large organizations it is also more difficult to locate the person who obtains crucial information. Institutionalization of knowledge sharing is therefore very useful in geographically dispersed and large organizations (Boh, 2007). Institutionalized codification mechanisms make it possible to share knowledge independent of time or geographic distance. Institutionalized personalization mechanisms ensure that "organizational structures and routines are set-up such that individuals are no longer restricted to approach only their personal network, and they have access to the knowledge of experts whom they do not necessarily know personally" (Boh, 2007: p. 36).

2.2.4 Outcomes of Knowledge Sharing: Learning, Application and Evaluation of Knowledge

Knowledge sharing is an important part of the knowledge value chain, because it stimulates learning and helps in decision-making (Argyris, 1976; Georges et al., 1999). The type of knowledge shared differs during various project stages. In the beginning, discussions are mostly focused on defining the project goal, problem, needed solution and needed knowledge. Later on, discussions shift more towards the exchange of knowledge related to the design and implementation of the project solution.

Knowledge sharing enhances learning (Uit Beijerse, 1999; Verbiest, 2006). According to Miller & Morris "knowledge is gained when theory, information and experience are integrated" (Small

& Sage, 2005/2006: p. 153). Hence, learning requires an individual to integrate new knowledge with his/her existing knowledge base. In this research, learning by an individual is therefore defined as the integration of new knowledge and/or skills into the existing knowledge and/or skills an individual has. Based on the knowledge view used in this research (section 2.1), this means that knowledge sharing is not only the transmission of data between persons through knowledge sharing mechanisms, but it requires an individual also to interpret and integrate new knowledge based upon his/her own existing knowledge base. The integration of the new knowledge with the existing knowledge base depends thereby on the project context and cultural setting.

Collective learning means that people learn by social interaction and that the group evaluates collectively on what they know, which information they got extra through knowledge sharing and what kind of information they are still lacking in order to complete the project (Verbiest, 2006).

The knowledge sharing and related learning result in the application and evaluation (feedback) of the knowledge shared so that problems can be solved adequately and if needed, project plans can be adjusted (see figure 1). At group level, learning, as a result of effective knowledge sharing, helps to create a shared view and increases the level of expertise and/or the skills of project members. When project members have more expertise and skills, they have more capacities, so that they are better able to apply and evaluate knowledge in the project, which improves the project result. Effective knowledge sharing also improves the relationships between project members.

Within the learning process of groups, four learning stages can be distinguished: zero, single, double and triple loop learning (Argyris, 1976; Georges et al., 1999). Zero loop learning actually means no learning; a problem arises, yet the members do not to take corrective action in order to reach their goals (Georges et al., 1999). Single loop learning occurs when project members take corrective actions in order to reach their goals without changing the view on the system in place (Argyris, 1976; Georges et al., 1999). Double loop learning requires reframing of the system in order to be able to solve a problem (Georges et al., 1999). Double loop learning requires project members to have an ongoing dialogue based on facts and free and open inquiry (Argyris, 1976). Reframing requires a totally new perspective on how to order the problem context. Triple loop learning helps people to develop new processes or strategies for learning, and hence reframing (Georges et al., 1999).

Knowledge sharing enhances learning, the application of knowledge and the evaluation of knowledge (feedback), as can be seen also in the knowledge value chain (figure 1). Also knowledge sharing helps to increase the level of expertise and/or skills of project members (and hence learning). The knowledge sharing result influences the characteristics of the project members, because their knowledge base, motivation, level of trust, skills and expertise change (a cyclical process; figure 1). For example, if group members misbehave or are unwilling to cooperate, the level of trust and motivation of other group members could decrease and damage the relationship. Another example is the case that knowledge sharing is successful and project members learn new things; this will change their perceptions and views, level of expertise, skills, motivation, and trust and strengthens the relationships between group members. At group level, knowledge sharing results in zero, single, double or triple loop learning. Learning through knowledge sharing and the resulting increased capabilities of project members, help them to apply and evaluate knowledge better which improves the project result.

2.2.5 Conclusion

As this section makes clear, knowledge sharing is not only a formality that occurs when somebody explains a topic to another person or shares a document; it is also a part of a larger process, the knowledge value chain (figure 1). Knowledge sharing itself however is also a process depending on the type of knowledge shared and factors influencing knowledge sharing. It is a collective process, depending on interaction, that has individual and group outcomes (Renzl, 2008).

The input for the knowledge sharing process is knowledge developed by the project members, whose handling and characteristics are influenced by the context in which they operate and factors influencing knowledge sharing. The knowledge sharing activity takes place through knowledge sharing mechanisms, as defined by Boh (2007). The shared knowledge, during these knowledge sharing activities, needs to be interpreted by each project member, and, if the knowledge is relevant, integrated into the existing knowledge base a person has. So, knowledge sharing enhances learning by project members which enhances the creation of a shared view on the problem. It also helps to increase expertise and/or skills of project members and the project team. If groups learn, they can adapt a zero, single, double or triple loop learning approach. Knowledge sharing also influences relationships; for example effective knowledge sharing improves relationships between project members.

Furthermore, effective knowledge sharing results in the application of knowledge in the project and an evaluation (feedback) of knowledge applied. The learning taking place, as a result of effective knowledge sharing in the project, positively impacts the application and evaluation of knowledge and hence the project result. The knowledge sharing results influence also the characteristics of the key actors (feedback loop in figure 3).

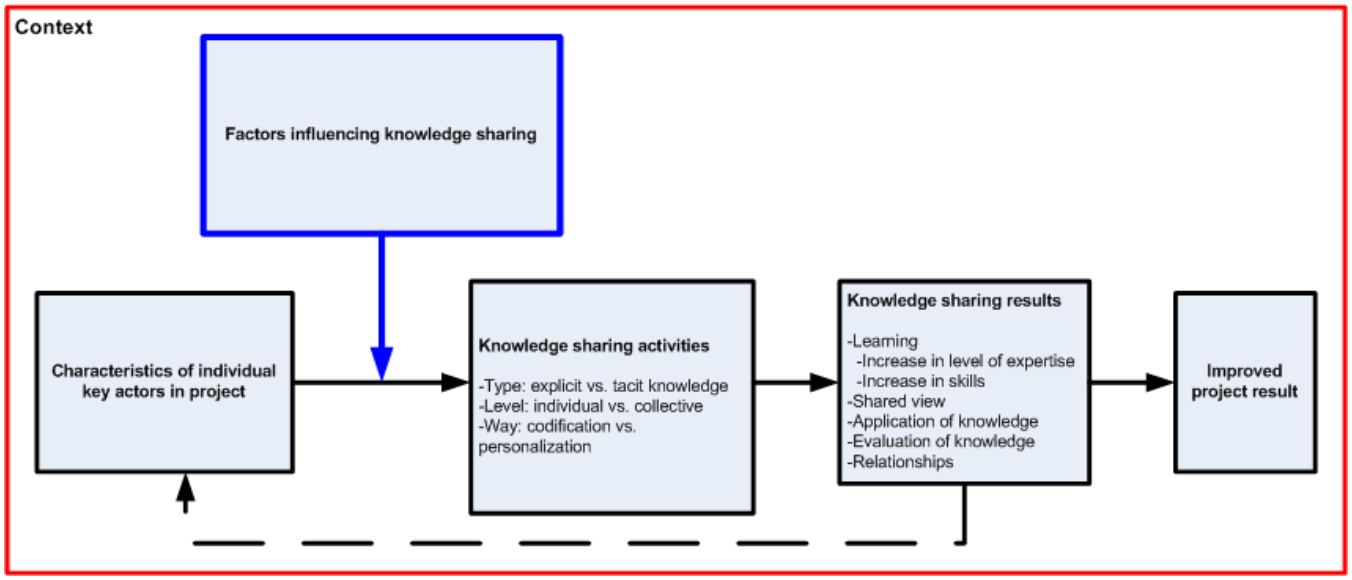

Figure 3. Basic knowledge sharing framework. This knowledge sharing framework is based on the knowledge value chain, presented in figure 2, and academic literature. The basic knowledge sharing framework specifies the inputs and outcomes of knowledge sharing. Knowledge sharing is done by key actors who influence the knowledge sharing going on in knowledge sharing activities due to their characteristics, factors influencing their acting and the context in which knowledge sharing takes place. The effectiveness of knowledge sharing depends on the combination of the type of knowledge shared, the level at which it is shared and the way of sharing. Knowledge sharing results, when done effectively, in learning, a shared view between key actors, application of knowledge, evaluation of knowledge (and thus feedback and if necessary changes in plans) and improved relationships between the actors. Effective knowledge sharing results through the knowledge sharing outcomes in an improved project result.

In figure 3, the basic knowledge sharing process is summarized. In the next section, the factors influencing the knowledge sharing process and the different parts of the knowledge sharing framework are elaborated in more detail based on an extended review of academic literature.

2.3 Factors Influencing Knowledge Sharing

2.3.1 Narrative Meta-Analysis of Knowledge Sharing Literature

The outcomes of knowledge sharing depend on the factors influencing the knowledge sharing process and the characteristics of the individual key actors in the project, because "the self-organizing nature of social emergence (of knowledge sharing and knowledge networks) suggests that leaders cannot directly control complex network dynamics, but rather can direct those dynamics toward learning by setting the proper conditions and fostering learning-oriented behaviors and activities of members" (Hannah & Lester, 2009: p. 40). Hence, better insight in key factors leads to better control over the knowledge sharing outcomes (Bohn, 1994). In order to get more insight in the key factors, academic literature has been reviewed.

The literature is evaluated using a narrative type of meta-analysis, because of the "wide variety of disciplines contributing to individual-level knowledge sharing research" (Wang & Noe, 2010: p. 117). A strict meta-analysis is difficult to carry out due to the differences in research focus, factors researched, qualitative versus quantitative approach used, the lack of common measures of knowledge sharing and differences in methods used in the studies analyzed. Up to now, only one review, by Wang & Noe (2010), on factors influencing knowledge sharing has been carried out. The review of Wang & Noe (2010), though rather complete, proved not to be totally comprehensive for analyzing case studies in an international setting. In this research therefore another knowledge framework is proposed based on 22 papers, published between 1995 and 2010. In tables A1a and A1b an overview is given of the literature used and which factors and key characteristics are reported as influencing knowledge sharing. The basic knowledge sharing model (figure 3) is further elaborated in this section based on the literature reviewed.

2.3.2 Context

The context in which a project is carried out influences the way in which knowledge sharing takes place (among others Blackler, 1995; Dolowitz & Marsh, 1996; Uit Beijerse, 1999; Bresnen et al., 2003; Small & Sage, 2005/2006). In international settings the project context has several levels: the international, country, organization, and project level. The international and country level contexts are influenced by the political, economical, social, technological, environmental and legal affairs (PESTEL-model) (Som, 2009). The history of a country shapes its culture and influences the way people think, handle and perceive problems. Past (government) and current policy constraints, values and rules determine the ability and willingness of individuals to share knowledge (Dolowitz & Marsh, 1996; Bresnen et al., 2003; Blackmore, 2007). Small & Sage (2005/2006) add to this that also competition, fashion, markets and technology influence knowledge sharing. So the international and country level contexts of a project influence through the organizational contexts the individual team members, making it necessary to analyze the PESTEL factors influencing the cooperation.

In organizations, according to Marra (2004), the hierarchical structure, degree of centralization and horizontal communication are important factors to consider for knowledge sharing. Strict hierarchy and centralization form barriers to knowledge generation and thus

knowledge sharing (McKinlay, 2002; Bresnen et al., 2003). More horizontal communication between departments and management support stimulate knowledge sharing. Brookes et al. (2006) and Boh (2007) add to this that the easiness to approach colleagues for information within organizations without the risk of loosing face or to be seen as stupid. At the organizational level especially a supportive climate towards knowledge sharing is important for effective knowledge sharing (Bresnen et al., 2003; Small & Sage, 2005/2006; Brookes et al., 2006; Wang & Noe, 2010). 'Champions' (i.e. people who support knowledge sharing efforts and are actively sharing knowledge themselves) that support knowledge sharing could help to build such a climate (Bresnen et al., 2003). Also the organizational hierarchy (and related power struggles (Verbiest, 2006) and organizational structure influence knowledge sharing within an organization. A barrier to knowledge sharing within organizations is the fragmentation of knowledge, which depends mainly on the size of organizations and geographic dispersion of the project members (Boh, 2007). However, knowledge fragmentation increases also the need for knowledge sharing mechanisms. But, the problem with knowledge fragmentation often is, that is it is difficult to locate the knowledge needed within an organization, which decreases the ability to share knowledge (Boh, 2007). Furthermore, actors have often a part of the knowledge available needed to complete a project successfully, making it difficult to define the common WOK and start the cooperation (Van Buuren, 2009; Hommes et al., 2009).

The project context influences which type of knowledge is needed and relevant, determines the project situation (e.g. local conditions) and defines the physical boundaries of the project (Blackler, 1995; Koskinen et al., 2003). In a project the organizations involved define also the goal of the project, the project team members, the project resources like money, time team members may invest, facilities available and the technologic equipment project members can use. Also contractual agreements between partners are made, which can put restrictions on knowledge sharing (Bresnen et al., 2003).

Projects in an international, cross organizational context face several additional barriers to knowledge sharing. Cultural differences, for example, national as well as organizational, can form barriers to knowledge sharing. Especially distrust against other cultures due to different rules, language, values and attitudes is seen as a threat to knowledge sharing (Boogerd et al., 1997). For example, research points out that culture gaps between government levels in the Netherlands can provide barriers to knowledge sharing and communication (Boogerd et al., 1997). Cultural barriers to knowledge sharing can be diminished by clearly defining the problem and issues, so that there is no room left for misunderstanding (Boogerd et al., 1997).

Geographic distance is a barrier to knowledge sharing due to the limited forms of communication available and difficulties to cooperation (Koskinen et al., 2003). Face-to-face contact will be limited and most knowledge sharing needs to take place through written documentation. In such conditions tacit knowledge sharing especially will be difficult.

It can be concluded that contextual factors at several levels influence knowledge sharing. The influence of the context reveals itself through the perceptions and behavior of the project actors. This is also the reason that emphasis is put on the characteristics of individual key actors in a project in figure 5. It should be noted that most contextual factors are static or (moderately) dynamic and hard to influence.

2.3.3 Characteristics of Individual Key Actors in Project

Several characteristics of individual key actors are important to knowledge sharing. The most important characteristics of the individuals involved in the project, as mentioned in the literature, are their perceptions and views, motivation, capabilities and level of trust. As literature points out, these characteristics influence each other as shown in figure 4.

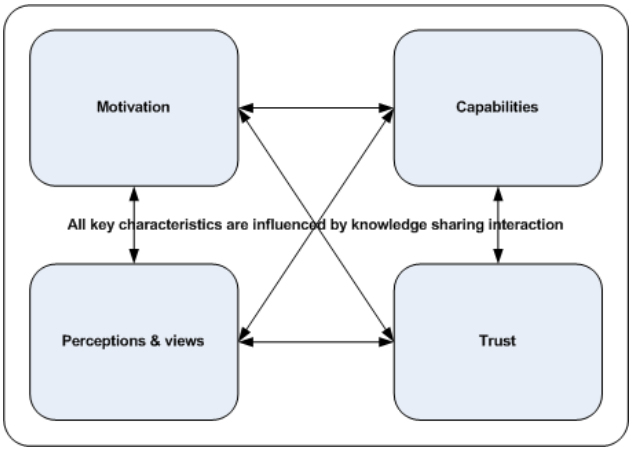

Figure 4. The key characteristics of actors in a project influence each other and are influenced by the interaction process related to knowledge sharing (based on Vinke-de Kruijf, 2009).

Perceptions and Views of Persons

Based on the literature reviewed, it is possible to conclude that knowledge sharing is especially influenced by the perceptions and views of persons, i.e. the knowledge they held to be true (Bressers, 2009; Vinke-de Kruijf, 2009). The way people perceive the world depends on their knowledge frameworks. These knowledge frameworks are created by values, beliefs, ideology and experiences (Dolowitz & Marsh, 1996; Koskinen et al., 2003; Marra, 2004; Blackmore, 2007; Van Buuren, 2009). The framework, way of knowing (WOK) or shared view a group uses depends on the interaction between project members and the consensus they reach about the knowledge to use and the goal of the project (Boogerd et al., 1997; Marra, 2004; Van Buuren, 2009; Hommes et al., 2009; Vinke-de Kruijf, 2009). The certainty of the knowledge available and the knowledge used influences the process of getting a shared framework of understanding. Learning by individuals and organizations can change their knowledge frameworks and increases their expertise and/or skills and thus their capacities. Learning by project members is also important to get a shared understanding (Koskinen et al., 2003; Marra, 2004; Hommes et al., 2009; Vinke-de Kruijf, 2009). Institutions influence and shape our ways of knowing by setting rules, guidelines and shaping culture and knowledge (Dolowitz & Marsh, 1996; Boh, 2007). Problems in the creation of a shared knowledge framework can be caused by ambiguity of the problem what could be caused by information overload, confusion or knowledge conflicts (Hommes et al., 2009). A common way of understanding and perceiving the world, that gets support of the different actors involved, is crucial before knowledge sharing can take place and trust can be build among organization members. A clear vision, goal and a shared mental model make people believe in the project and make them committed to the project; it works motivating (among others: Renzl, 2008; Fugate et al., 2009; Hannah & Lester, 2009; Vinke-de Kruijf, 2009). Disagreement decreases the motivation of project members to cooperate and to share knowledge.

Motivation

What motivates people are "the internal and external factors that stimulate desire and energy in people to be continually interested in and committed to a job, role, or subject and to exert persistent effort in attaining a goal" (Business Dictionary, 2010). The motivation of a person to share knowledge in projects depends on (1) his/her perceptions and views, (2) level of trust and (3) the rewards the project provide for him/her or his/her organization. These three factors are depending on an individual's internal factors and are influenced by external factors. Rewards comprise intrinsic and extrinsic motivating factors, because each person has his own preferences for types of rewards (Merchant & Van der Steede, 2007). Some rewards are intrinsic, like satisfaction, recognition, status, achievement of (personal) goals or feeling to belong to a group (Merchant & Van der Steede, 2007). Examples of extrinsic rewards are wage, wage raises, bonuses, a lease car, and threat of punishment (Merchant & Van der Steede, 2007).

The motivation of groups and commitment to successfully complete the project determine the willingness of project members to interact, share knowledge and create a shared way of knowing or so called negotiated knowledge (Boogerd et al., 1997; Marra, 2004; Vinke-de Kruijf, 2009). Highly motivated people are more likely to cooperate in projects and therefore depend more on other project members, because they are eager to reach the project goals. This requires them to trust the other project members more. In projects, project members overcome the trust related problem at first by trusting each other based on the role project members perform (Koskinen et al., 2003). Furthermore, members are motivated to cooperate in a project, when the project provides rewards, satisfaction, achievements and/or recognition for the person or organization a person represents (Lindner, 1998). So, highly motivated project members are more likely to share knowledge between them in order to complete a project and receive rewards.

Individual's Capabilities

An individual's capabilities, i.e. the skills, expertise and knowledge of an individual, determine the level of knowledge sharing possible for him. For example an individual's level of education, work experience and skills determine what a person can share with others and understand (directly). Also the power of an individual impacts the knowledge sharing process positively or negatively, depending on his/her motivation, perceptions to knowledge sharing and trust level (Bressers, 2009). Further, if project members rely on or have a monopoly on certain resources (knowledge, information, skills, money, manpower etc.), on which they depend for their position, they are often less willing to cooperate or interact and are often less motivated to share knowledge. However, for the project result, it is important that actors involved in a project provide adequate levels of manpower and resources for defining the common way of knowing and for knowledge sharing (Van Buuren, 2009).

Trust

An important issue in knowledge sharing is trust. In project teams especially due to the nature of project work; project members are often only cooperating with each other during the length of the project, have restricted time to get to know each other, have limited time for confidence building activities, and have no clue about each other's world views (Koskinen et al., 2003). People involved in project work depend therefore on other, unique ways of dealing with trust and risk minimization: the roles that persons fulfill in the project team. Roles provide an opportunity to work with each other based on depersonalized trust and does not (directly) depend on the perceptions an individual has (Koskinen et al., 2003). Trust itself depends on: (1) the sincerity of the project group and individual, (2) the expectations a person has based on the perception of the abilities and motives a person has of others, (3) individual behavior of a

person, (4) experiences of an individual in other projects, (5) earlier experiences with project team members, (6) the stakes of parties involved and (7) the duration of the relationship (Brookes et al., 2006; Koskinen et al., 2003; Small & Sage, 2005/2006).

A person's trust level influences his motivation and perception towards knowledge sharing. For example, does a person regard knowledge sharing as good and needed or does the individual see it as a threat to its own position (Marra, 2004; Renzl, 2008). Also trust in the project members and partner organization influences knowledge sharing (Koskinen et al., 2003; Small & Sage, 2005/2006; Wang & Noe, 2010). Further, the level of trust influences the way people use their capabilities. Low levels of trust result earlier in power abuse and decreased willingness to cooperate.

Renzl (2008) and Wang & Noe (2010) argue that trust is negatively impacted by free-ridership and fears for losing one's unique value. An example of fear for losing one's unique value are actors that depend on monopolies on certain types of knowledge, skills, technological abilities, resources or need to defend certain scarce resources that are claimed by the project. These actors are probably less willing to share knowledge (Dolowitz & Marsh, 1996). Actors however, who are desperately looking for certain types of resources, are probably more willing to cooperate and share knowledge. Marra (2004) adds to this that pride, need for freedom, level of loyalty, prestige and self-confidence influence trust levels. Cultural differences can undermine trust as already discussed (Boogerd et al., 1997). Furthermore, supportive management and organizational facilities stimulating knowledge sharing, help to increase the motivation and trust levels of employees and influence their attitudes towards knowledge sharing. These knowledge facilitating factors will be discussed in more detail in the next section.

2.3.4 Facilitation of Knowledge Sharing

Recent research shows that knowledge sharing needs to be facilitated by organizations, as it affects the acting of key actors in projects. Knowledge sharing facilitation is part of the organizational context and is influenced by it (Wang & Noe, 2010). To facilitate knowledge sharing, management can do many things to improve knowledge sharing such as designing work groups in such a way that they need to share knowledge in order to complete a project, implement knowledge sharing technology as databases, templates, manuals and support centers, establishing a culture of knowledge sharing, creating flat organizations, and by stimulating horizontal communication, having regular meetings and reviews, and senior staff playing a key role in brokering knowledge sharing between individuals and project teams (Boh, 2007). Management can increase pressure on employees to share knowledge by creating strong networks in the organization (Chow & Chan, 2008), use power, reward knowledge sharing or give priority to a project (Renzl, 2008; Small & Sage, 2008; Wang & Noe, 2010; Boogerd et al., 1997). Power struggles on the other hand and strict hierarchy are decreasing knowledge sharing just as people who only try to make career (Verbiest, 2006; McKinlay, 2002; Roberts et al., 1974). Management has a lot of influence on trust levels among employees; if management only wants to control knowledge and does not support knowledge sharing, people become skeptical about knowledge sharing (Bresnen et al., 2003). Hence, management functions as an important role model (Renzl, 2008). To support knowledge sharing, management should reward knowledge sharing (Small & Sage, 2005/2006).

Blackler (1995) argues therefore that high levels of managerial skills (like providing possibilities for self-development, motivating, challenging, supporting, and rewarding employees) are needed in order to preserve knowledge within organizations. Berkes (2009) and Hannah & Lester (2009) add to this that shared leadership is supportive to knowledge sharing. Feedback of

employees helps managers to foster the right knowledge sharing culture (Berkes, 2009; Hannah & Lester, 2009).

Organizational positions and structures can facilitate knowledge sharing as well. Boh (2007) for example recognizes the position of senior employees functioning as knowledge brokers in an organization. These seniors make sure knowledge sharing takes place by designing project teams in such a way that people have to share knowledge with each other before they can cooperate or by referring employees to experts. Hanna & Lester (2009) add to this organizational individuals that improve knowledge sharing, who they call knowledge catalysts. They describe them as persons who are better motivated and prepared to engage in learning experiences and are better capable of reflecting and learning from those experiences compared to colleagues and help to create and diffuse knowledge within an organization. Hanna & Lester (2009: p. 39) recognize: (1) the gatekeeper, a person who facilitates or, in some cases, hinders the communication between multiple parties; and (2) the boundary spanner, someone who establishes communication links beyond an organization's borders, and is often isolated from many sectors of the organization that are not within his purview. Knowledge catalysts improve knowledge sharing within organizations, as they are (1) better informed about the processes and projects going on, (2) have more knowledge about capabilities of every person within their group/organization, (3) are often informal leaders and have therefore access to more social networks, and (4) they can direct or hinder information flows (Hannah & Lester, 2009).

2.3.5 Knowledge Sharing Activities

Important in the process of knowledge sharing, but also in developing the way of knowing (WOK), are communication and interaction (Blackler, 1995; Boogerd et al., 1997; Koskinen et al., 2003; Marra, 2004; Blackmore, 2007; Boh, 2007; Van Buuren, 2007). Communication is needed in order to let people understand each others' points of view. Also communication enables the sharing of knowledge with each other. Effective communication depends on the richness of the medium used (figure 2), the type of knowledge shared, the language and the priority given to a project (Blackler, 1995; Boogerd et al., 1997; Koskinen et al., 2003, Boh, 2007).

The knowledge sharing mechanisms need to fit the type of knowledge shared as described by Boh (2007) (see section 2.2). Furthermore, Koskinen et al. (2003) argue that language in the autopoietic view has the role of: (1) perception control, (2) attributing meaning, (3) facilitating communication, and (4) providing a channel of social influence. When project members do not have the same native language, as often is the case in international projects, it can provide barriers to knowledge sharing. Further, research proves that communication barriers often disappear when priority is given to a project (by management), because there are more resources diverted to the project and there is more pressure to complete the project (Boogerd et al., 1997). Vinke-de Kruijf (2009) adds that communication and interaction processes need to have follow-up meetings in order to successfully share knowledge.

According to Blackler (1995), the type of knowledge sharing is also depending on the type of organization, because the type of knowledge an organization depends on influences the way knowledge sharing takes place. Blackler (1995) distinguishes four types of organizations: (1) expert-dependent organizations using mainly embodied knowledge in the competences of the experts, (2) knowledge-routinized organizations depending mainly on embedded knowledge in technologies, rules and procedures, (3) symbolic-analyst organizations, which mainly depend on embrained knowledge in the embrained skills of key members, and (4) communication-intensive organizations depending severely on encultured knowledge and collective understanding.

Hence, based on the type of organization, more tacit or more explicit knowledge needs to be shared. As already said the type of knowledge shared influences which sharing mechanism needs to be used. Tacit knowledge is easier shared by using individualized and personalized ways of knowledge sharing.

Further research points out that the timing of interaction and communication is important in order to increase and improve knowledge sharing (Blackmore, 2007). As Koskinen et al. (2003: p. 288) out: "frequent interactions among project team members tend to produce interpersonal attraction, while also creating the accessibility to other team members' tacit knowledge." Blackmore (2007) says that in the learning organization theory it is important to bring different roles together in a particular way at a particular time in order to improve learning and knowledge sharing.

In figure 5, the knowledge sharing activities are therefore based on the quality of knowledge sharing as defined by the knowledge sharing mechanisms of Boh (2007), as described in section 2.2. Further, knowledge sharing is influenced by the frequency of communication and the level of management support for knowledge sharing.

2.3.6 The Knowledge Sharing Framework

Based on the above description of reviewed literature on knowledge sharing, the model of Wang & Noe (2010) has been modified (see appendices A1 and A2 (figure A1)). This extended theoretical knowledge sharing model and the literature described in this section are used as input to improve the basic research framework (see figure 3).

As this section makes clear, knowledge is developed and shared by individuals, who have certain key characteristics. The most important key characteristics of individuals are their perceptions, capabilities, motivation and level of trust. These characteristics are the main determinants for their actions and are the inputs for their knowledge sharing actions.

The perceptions a persons has, his level of motivation and trust, and the acting of a person are influenced by the (inter)national, organizational and project contexts individuals operate in. In this research it is assumed that the influence of the contexts and knowledge facilitating factors influence the acting of project members. The knowledge sharing facilitation factors are part of the organization context.

The most important factors influencing knowledge sharing facilitating and the acting of individuals are management support and commitment to the project, the priority a project has in an organization, and power use. Further, the organization can facilitate knowledge sharing by establishing an open culture with low levels of hierarchy and centralization, encourage (horizontal) communication and interaction, through technology like shared databases, creation of knowledge gatekeeper and broker functions, who reduce also knowledge fragmentation, and by providing resources for the knowledge sharing process, which improves the ability of project members to share knowledge.

So, the inputs for the knowledge sharing activities are the actions of key actors in the project, which are influenced by the context and knowledge facilitation factors. The quality of the knowledge sharing activities depends on the fit between the knowledge sharing mechanism used and the type of knowledge shared. In order to complete a project successfully, it is also important that all the project members are timely and regularly updated.

Depending on the quality and quantity of the knowledge sharing activities, the project members could learn. Learning results in an increase of expertise and/or skills and enhances the creation of a shared project view. Effective knowledge sharing results in the application of

knowledge and evaluation of the knowledge applied. When project members increase their expertise and skills, as result of effective knowledge sharing activities, they are better capable of applying the right knowledge and evaluating the knowledge used, which results in an improved project result. Also effective knowledge sharing strengthens the relationships between project members. The knowledge sharing results influence the perceptions, motivation, skills and trust of individual key actors as a result of the quality and quantity of the knowledge sharing activities, experiences with the project members during the knowledge sharing activities, and possible new knowledge learnt. New insights, as a result of knowledge sharing, can also result in adjustments to the project plan. The knowledge sharing process, as described in this section, is presented in a knowledge sharing framework in figure 5.

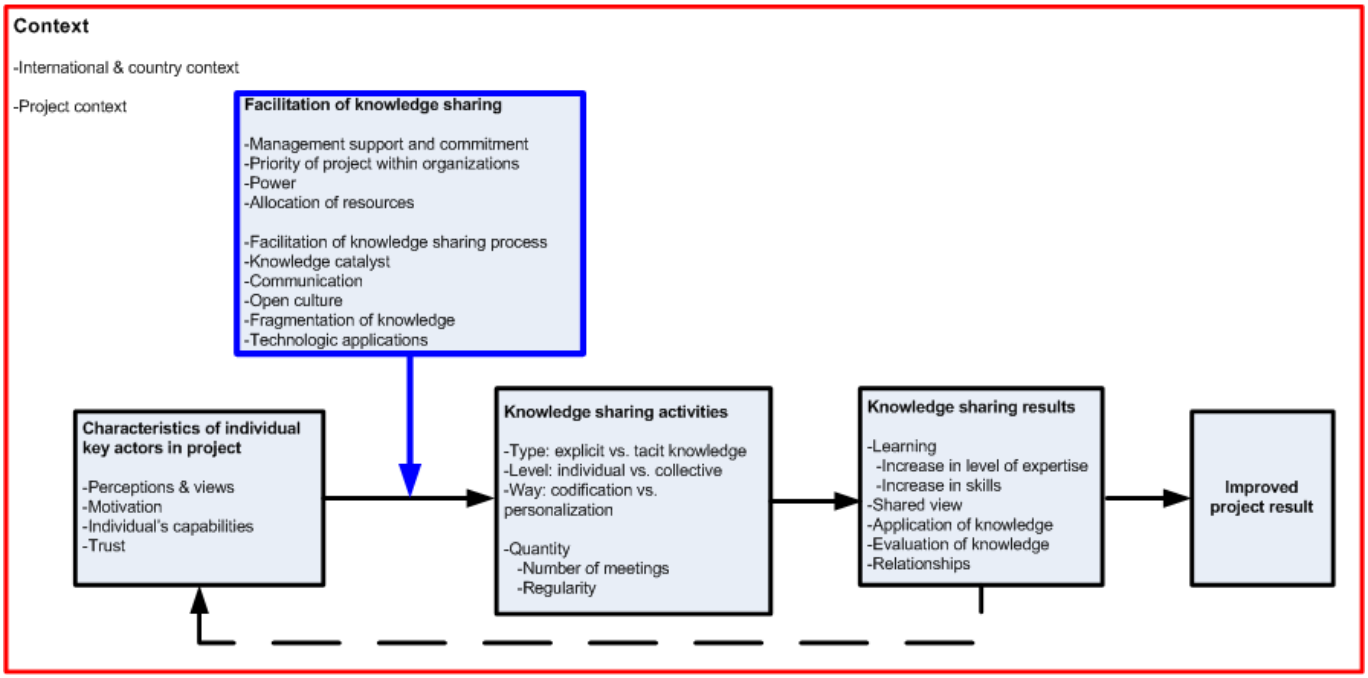

Figure 5. The knowledge sharing framework based on knowledge sharing literature reviewed and the knowledge value chain of Weggeman (1997, in Uit Beijerse, 1999). The organizational context expresses itself through the facilitation of knowledge sharing.

2.4 How to Evaluate Knowledge Sharing: the Evaluation Framework

The evaluation framework is based on the knowledge sharing framework given in figure 5. The evaluation framework is developed for evaluating the knowledge sharing process between the Province of Overijssel and Teleorman County. In the evaluation framework the different factors in the knowledge sharing framework are operationalized based on the literature described in sections 2.2 and 2.3. The interview questions are based on the evaluation framework. An overview of the interview questions is given in appendix A4.

In the interviews, the (inter)national context will not be thoroughly addressed, as many aspects of this context can not be influenced by the project members and organizations. Further, these aspects are well described in academic literature and project documents. The (inter)national context is evaluated with the PESTEL-model, which addresses the Political, Economic, Social, Technical, Environmental and Legal constraints to knowledge sharing and the cooperation projects. Examples of such issues are the historic legacy of a country, political conflicts between countries or government institutions, and differences in (government)

administration, law, culture, knowledge, technology, environmental awareness and morphological project settings between countries. The project context is analyzed based on project documents, interviews and observations (see chapter 4).

In this report, the organizational context is covered by the knowledge sharing facilitation factors, as the facilitation is part of the organizational context, and a description of the background and history of the cooperation. Not all the knowledge facilitation factors are addressed in the interviews, as these factors are also addressed in project documents.

The physical project result is not addressed in the interviews, because the relationship between effective knowledge sharing and an improved project result is already proved (Boh, 2007; Fugate et al., 2009; Renzl, 2008; Wang & Noe, 2010). The scope of this research is on the direct knowledge sharing results as presented in figure 5.

Table 1. Evaluation framework knowledge sharing.

Variable	**Operationalization item**	**Indicator** ***Interviewee(s) report(s):***
Perceptions & views	1-A shared view on project goal, problem and solution 2-Shared project expectations 3-Possibility and moments for discussions on goal, knowledge (needed) and solutions which helps for creating a shared knowledge view 4-Collective learning	1/2-Agreement on goals of cooperation -Agreement on goals -Agreement on project problem -Agreement on project solution 3 -Discussion(s) -Time available for discussion(s) 4 -Learning of (same) new technical, management or facilitation knowledge -Feedback session(s) -Collective evaluation of knowledge session(s)
Motivation	5-Believe in value of project; match between individual/organizational goals and project goal 6-Commitment to complete project 7-Level of trust in project actors 8-Rewards	5 -Match between individual goals and project goals -Match between organizational goals and project goals -Increase in enthusiasm during project execution -Value of project 6 -Projects have priority -Partner likes to complete project and continue cooperation -Projects are important 7 -Trusts in project partners -Problems with project partner -Interviewee/organization considered to stop cooperating 8 -Important strategic stakes at play for organization -Motivating rewards for employee
Individual's capabilities	9-Adequate level of education for project role 10-Years of relevant work experience 11-Relevant skills 12-Level of power	9 -Education fits function 10 -Work experience related to current role 11 -Expertise/skills used in project 12 -Influence on project problem/solution/goal
Trust	13-Development of trust in: • Project members' capabilities • Project members' sincerity • Project members' willingness to cooperate • Project members' willingness to continue relationship • Partner organization 14-Sustainable relationship and positive experiences with partner 15-No fear for loosing one's unique value or other important stakes	13 -Project member/partner can add knowledge/skills/expertise -Thinks partner shares all knowledge available -Thinks partner likes to continue relation -Trusts project partners 14 -Problems with partner -Interviewee/organization considered to stop cooperating -Likes to continue relationship 15 -Fear for own position

Table 1. (Continued). Evaluation framework knowledge sharing.		
Variable	**Operationalization item**	**Indicator** ***Interviewee(s) report(s):***
Knowledge sharing facilitation	16-Management supports and is committed to project 17-Management gives high priority to project 18-High mobilization of people and resources in organization in order to complete project 19-Power is not used to control the knowledge sharing process 20-Use of knowledge catalysts 21-Communication 22-Open culture to knowledge sharing 23-Fragmentation of knowledge 24-Technologic applications	16 -Manager supports employees -Manager supports project -Manager wants to complete project 17 -Manager is willing to continue relationship 18 -Resources (time, money, staff, expertise) always available 19 -Manager does not limit (decision) freedom employees -Low level of hierarchy 20 -Knowledge gatekeeper/broker/boundary spanner present 21 -Possibilities for discussion -Partners are timely updated about project issues -Partners receive feedback on inputs 22 -Partners can discuss project problems -Partners can bring in project proposals and knowledge -Partners are willing to share knowledge -Knowledge is made available by partners 23 -Easiness to locate expertise and data -Different expertise and knowledge inputs by organizations 24 -Shared database for data and information -Use of communication technology for knowledge sharing
Knowledge sharing activities	25-Fit between knowledge sharing activity and the kind of knowledge shared 26-Timing of knowledge sharing activities in order to keep everybody up to date 27-Regularity of knowledge sharing in order to keep everybody up to date	25 -Knowledge sharing activity fits with knowledge shared: -Tacit knowledge is shared in meetings or face-to-face -Explicit knowledge is shared at least written 26/27 -Meetings are planned on regular base -Partners contact each other when they need knowledge or have new knowledge available -Feedback and knowledge evaluation
Knowledge sharing results	28-The application of shared knowledge 29-Learning resulting in an increase in level of expertise and skills 30-Level of knowledge evaluation in order to improve knowledge sharing process 31-Relationship building 32-Project result	28 -Shared knowledge applied 29 -Learning of technical/management or facilitation knowledge or skills 30 -Evaluation session(s) on knowledge -Feedback on knowledge brought in 31 -Partners built relationship -Partners like to continue relationship 32 -Knowledge sharing improved project result

An investigation of the items, as described in table 1, gives insight in the effectiveness and bottlenecks in the knowledge sharing practice between the Province of Overijssel and Teleorman County. Based on the analysis of the knowledge sharing bottlenecks, recommendations can be given for improvement of the knowledge sharing practice in the cooperation. In chapter 3, the data collection and analysis are elaborated further.

3. Methodology of the Case Study Evaluation

The research method is based on a qualitative case study. As overall case is chosen the cooperation between the Province of Overijssel (Netherlands) and Teleorman County (Romania). The theoretical knowledge sharing framework (figure 5) is used to evaluate knowledge sharing in the selected cases. In section 3.1 the case study method is discussed and the unit of analysis is defined. In section 3.2 the case study method is elaborated in more detail; it is discussed which data collection and analysis methods are used. In section 3.3, the limitations of the case-study method are described. Finally, in section 3.4 the embedded case studies are selected.

3.1 Case Study Method

A qualitative (retrospective) embedded-case study approach is used to assess the effectiveness of the current level of knowledge sharing in the cooperation between the Province of Overijssel and Teleorman County based on the knowledge sharing evaluation framework (table 1). Based on the evaluation of knowledge sharing in the selected cases, recommendations for improvement are given.

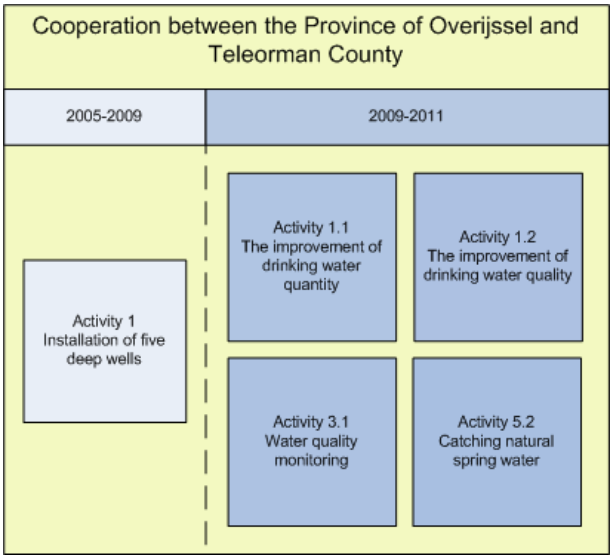

Figure 6. The selected cases (activities) are embedded cases in the overall case of the cooperation between the Province of Overijssel and Teleorman County (light yellow). The first period of the cooperation went from 2005 until 2009 (light blue). The second period of the cooperation goes from 2009 to 2011 (blue).

In this research the case study is embedded, because the multiple cases analyzed are part of one cooperation project that is the overall case (i.e. activities carried out in the cooperation between the Province of Overijssel and Teleorman County) (figure 6). The case study is partly retrospective, because one of the selected cases, case A, has been completed already. A qualitative approach is applied, because the number of interviewees is limited (so use of statistics is limited). Also the goal is to get an in-depth understanding of the knowledge sharing in the cases analyzed, which is obtained through observations, semi-structured interviews and project documents. The analysis of the cases in this report provides a basis for improving the understanding of knowledge sharing in general, but it does not provide a statistically tested knowledge sharing framework. For each case, the factors of the knowledge sharing framework (figure 5) are evaluated by formulating interview questions based on the evaluation framework (table 1). According to Yin (2003), the case study method needs to be used when “how” or “why” questions are researched over which the investigator has little or no control over the (behavioral) events and where the events need to be investigated in context, because the boundaries between the context and phenomenon are blurred. In this research, all these aspects play a role, justifying the qualitative case study method for this research.

The unit of analysis is taken at the project level, because in this way it is easier to analyze each party’s role and to understand the knowledge creation and sharing process going on. This study focuses on cases in the drinking water quality, quantity and monitoring areas (see section 3.4).

3.2 Selection of the Case Study Projects

The case study projects are selected based upon four criteria: (1) scientific relevance of project regarding knowledge sharing, (2) practical relevance of a project evaluation for the Province of Overijssel, (3) feasibility to interview participants, and (4) the project is in progress or has finished. The cases should have academic value, meaning that the cases should be worth researching due to a certain level of complexity so that the knowledge sharing factors of the evaluation framework can be tested. Further, the project evaluation needs to have meaning for the Province of Overijssel. Of several projects, for example, it is already known that knowledge sharing did not take place due to the nature of the project or poor performance/set-up of the project. The Province of Overijssel wants to have cases evaluated in which knowledge sharing should have an important role so that they can learn from it. Due to the limited time available (especially in Romania), the feasibility of doing interviews with participants is also an important criterion. In order to be able to evaluate knowledge sharing, a prerequisite is that the project is in progress or has finished.

In table A2 the list with all the projects carried out in the cooperation between the Province of Overijssel and Teleorman County are given. Each project criteria is scored on a minus (-), zero (0), and plus (+) scale. Based on this scoring, the most relevant projects are chosen. The cases selected are:

(1) case A (activity 1): the installation of five deep wells (period 2005-2009) (Province of Overijssel, non-governmental organization (NGO) Drinking Water for Romania (*Stichting Drinkwater voor Roemenië*), Teleorman County Council, local municipalities);
(2) case B (activity 1.1): the improvement of drinking water quantity (period 2010-2011) (Province of Overijssel, Vitens, EuroTeleorman/Teleorman County Council, WMC, local municipalities);
(3) case C (activity 1.2): the improvement of drinking water quality (period 2010-2011) (Province of Overijssel, Vitens, EuroTeleorman/Teleorman County Council, WMC, Apa Serv, local municipalities);
(4) case D (activity 3.1): water quality monitoring (period 2010-2011) (Province of Overijssel, Vitens, Apa Serv, WMC).
(5) case E (activity 5.2): the catchment of natural springs (period 2010-2011) (Province of Overijssel, Vitens, EuroTeleorman/Teleorman County Council, WMC).

For the cases B, C, D and E, observations are available from a field visit in September-October 2010.

3.3 Data Gathering

The knowledge sharing evaluation framework (table 1) is used to evaluate knowledge sharing in the case study projects. Because one of the embedded cases in this study is retrospective, direct observations in that case are not possible during the project process. In the other cases, observations are done. As Yin (2003) points out, observations are also not a requirement for case study research in order to have enough sources of evidence to support the case study analysis. To evaluate knowledge sharing in the projects, triangulation of sources of evidence are used to maintain a chain of evidence (Yin, 2003; Hommes et al., 2009; Saunders et al., 2009). For data analysis on knowledge sharing in the projects, triangulation of physical artifacts (physical project results), project documents, observations (when possible), and semi-structured interviews (data sources triangulation) and respondents triangulation are used to enhance the

internal validity of the study (Yin, 2003; Baarda et al., 2009). The data sources used for the analysis include:

- *Document analysis:* review of project documents, research reports, and manuals:
    - institutional analysis of the Romanian public water sector by Teodosiu (2007) and Dragoş & Neamtu (2007);
    - institutional analysis on flood prevention and management issues for Teleorman County by Dinica (2007).
    - Vinke-de Kruijf's (2009 b) evaluation of a flood control project; the "*Teleorman Flood Risk Management Pilot Project*";
    - Vinke-de Kruijf's (2009 a) theoretical framework with information about Romania;
    - analysis of the reorganization of the water and waste water management from local to regional level in Romania by Vinke-de Kruijf et al. (2009);
    - program of activities for 2008 (Van Dijk, 2007);
    - evaluation of the cooperation between 2005-2009 and overview of the activities planned until 2011 by Hooijer et al. (2009);
    - other internal project documents of the Province of Overijssel.
- *Interviews:* semi-structured interviews with several participating actors are carried out in order to evaluate knowledge sharing that took place during projects. The first interviewees are selected by purposive (or judgmental) sampling in order to get a start with the research and to get more in-depth knowledge of the projects (Saunders et al., 2009). For this purpose, the Dutch and Romanian project coordinators are chosen, because they know the most of all projects and operations going on. The other interviewees are found by using a combination of a Snowball approach and purposive sampling (Saunders et al., 2009). The Snowball approach means that after each interview is asked which persons are important to interview as well. The benefit of this approach is that project members or experts are identified who are not on the project member list. A risk of this approach is that the interviewee group gets homogenous, because people tend to refer to people with the same mindset. Therefore, also purposive sampling is used, when possible. At the Province of Overijssel, a list with names of project members is available, so that project members who are not referred to can be selected as well. Purposive sampling helps to obtain the research objective and to create a heterogenous response group (Saunders et al., 2009). Not all the people involved in the projects are on this list, so that a Snowball approach is useful.

  In total eight Dutch and five Romanian actors are interviewed. However, due to internal affairs at the Province of Overijssel, it was not possible to interview all Romanian key actors and only two of them could be interviewed with the semi-structured interview. In appendix A4 an overview of the interviewees and semi-structured interview questions is given. Responses of interviewees are tried to triangulate in order to support the chain of evidence.
- *Observations:* If the case is not retrospective and if there have been possibilities to join meetings and activities, observations are used for triangulation as well. Furthermore, physical artifacts as project results are observed in the field when possible, in order to see what the results of the projects are; if they are used and functioning. Observations are available of:
    - Meetings between:
        - water boards and Province of Overijssel about the cooperation with Teleorman County, Province Hall, Zwolle (May, 2010);

- Dutch and Romanian project partners in drinking water projects in Slobozia Mandra and Talpa (case B), Islaz (case C), Apa Serv (Alexandria), Teleorman County Hall (Alexandria) (Sept./Oct. 2010);
- water board Reest & Wieden and WMC in Turnu Magurele (Oct. 2010).

- Field visits to Botoroaga dam (period 2005-2009), Islaz and Saelele public well/Perfector-E sites (case C), boreholes and water tanks at Slobozia Mandra and Talpa (case B) and the natural spring source in Uda Clocociov (case E).

A case study database is created in order to structure the analysis of the data and make triangulation of interview, reports, observations and theoretical papers easier (Yin, 2003). Summaries of each interview are made, so that the key points of the interview emerge clearly and relationships between interviews can be identified easier (Saunders et al., 2009). Also comments about the interviewee, setting and abnormalities are noted. The data has been categorized by making a matrix with factors on knowledge sharing and who mentions them and in which way (Baarda et al., 2009).

Participant bias, which is bias related to saying what interviewees think the boss expects them to say, is minimized by using triangulation of responses of interviewees and if possible by triangulating responses with observations and project documents or theory. Observer errors related to asking unclear questions and probing questions are minimized by using semi-structured interviews (Saunders et al., 2009). Participant error, which is related to the emotions the interviewee is feeling, however is difficult to exclude due to the limited timeframe of the research and uncontrollability of this aspect.

The operational measures, as asked in the semi-structured interview, are based upon findings in the theory and the knowledge sharing framework (table 1) in order to improve the construct validity.

The internal validity is improved by using embedded cases, so that a broader picture of the knowledge sharing practice and of the effect of different institutions involved in the cooperation can be obtained. The external validity of the cooperation is harder to determine, because the projects analyzed are carried out in a very specific (flexible multi-actor) setting, -between government organizations of two different countries with the help of many external parties-, which makes it probably hard to generalize conclusions to other cooperations, especially to more rigid and structured company settings. For these cases, more insight is obtained by reflecting on the theory used in this research.

3.4 Limitations

Due to the complex nature of knowledge and knowledge sharing, the main important factors for knowledge sharing are taken into account based on a narrative meta-analysis of academic knowledge sharing literature. As a result aspects such as political, strategy and social theories are not directly taken into account in this research, because during the literature review such theories are not reported as major influencing factors for knowledge sharing. However, several of the political, strategic and social factors are taken into account in factors like power, social interaction, motivation, trust, and communication. However, especially in the case of (government) organizations, such theories (and resulting factors) may play a larger role regarding knowledge sharing than reported in the reviewed literature.

For the evaluation of the retrospective case, it is impossible to do observations during the execution of the projects, which reduces the ability to gather data and evaluate the knowledge shared. Also interviewees can have forgotten the exact conditions and way of performance during the project. On top of that, project events in another setting, but related to this project, can shape the mindset of the interviewees. Moreover, it could be difficult to speak to several

participants in the projects, because some are not involved with the projects anymore and are working for other organizations. Therefore, triangulation of evidence is crucial to minimize bias. A positive aspect of retrospective analysis is that the project process has ended and the project documents and project result are already available, reducing evaluation time and making an analysis of the total knowledge sharing process directly possible.

Also it is difficult for participants to remember every process step. This limitation is tried to encounter by using triangulation. Related to this limitation are the difficulties related to differences in language and culture, making it more difficult to make the question explicit and clear and to interpret interviewees' answers. For some interviews with Romanian interviewees, interpreters are needed, which causes a reduction in information that can be transferred. On top of that, interviewees are probably also not actively aware that they share knowledge during a project and probably each interviewee has a different mindset about what is knowledge. This makes interviewing therefore rather difficult.

Due to time constraints it is not possible to evaluate all the projects during the research period. Therefore a selection of projects has been made on which generalizations are made. Deviations of the cases analyzed in this study are therefore possible.

4. Case Description: Cooperation Projects between Overijssel and Teleorman

This chapter describes the cooperation between the Province of Overijssel (Netherlands) and Teleorman County (Romania). In section 4.1, background information about the organizations involved and the organizational set-up are given. In this section also the history of the cooperation and its goals are described. Section 4.2 elaborates the objectives of the selected cooperation drinking water projects in more detail. Section 4.3 describes aspects of the project context of the drinking water projects. Section 4.4 gives a more in-depth description of the selected cases, analyzed in this report.

4.1 Background and History of the Cooperation

4.1.1 Organizations and their Inputs

Several government institutions are included in the cooperation from both the Netherlands and Romania (see figure 7). The projects are mainly carried out in Teleorman County (Romania), however, some activities (e.g. delegations visiting the Netherlands to learn about Dutch water management) are also taking place in the Province of Overijssel in the Netherlands.

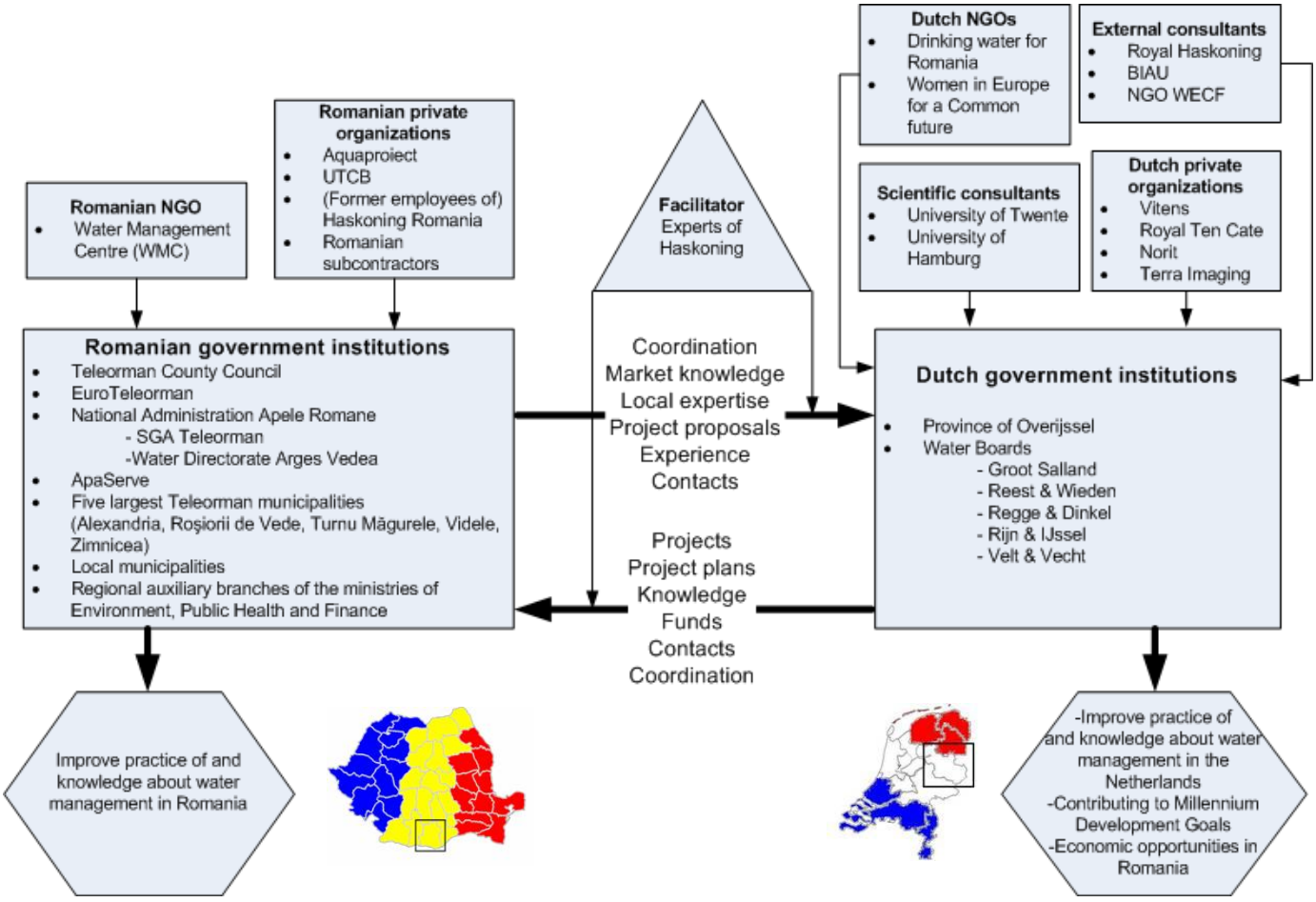

Figure 7. Schematization of the cooperation between the Province of Overijssel and Teleorman County. The Dutch and Romanian government organizations cooperate with each other in water projects and exchange in these project knowledge, funds, coordination, market knowledge, project plans and contacts. The projects are facilitated by experts of Royal Haskoning Netherlands and Haskoning Romania. Government institutions from both countries bring in other organizations. The main objectives of the cooperation for each country are presented in the hexagons. The country figures show the locations of Teleorman County in Romania and the Province of Overijssel in the Netherlands. (Schematization of the cooperation based on the description of stakeholders involved by Hooijer et al. (2009).)

The Province of Overijssel provides funding and coordinates the projects and input of expertise of Dutch organizations, such as Vitens and the water boards (Hooijer et al., 2009). The water boards carry out most of the project activities, bring in most of the expertise, manpower, and provide a part of the funds (Hooijer et al., 2009). For three cooperation projects in the period 2005-2009, funds were obtained from other Dutch organizations as well, i.e. Partners for Water (restoration of Botoroaga Dam), Vereniging Nederlandse Gemeenten (set-up of the Water Management Centre (WMC)), and (3) the Dutch Embassy in Romania (training on use of Ecosan toilets) (Vinke-de Kruijf, 2009 b; Hooijer et al., 2009).

The Romanian counterparts provide local expertise, input for project proposals, opportunities to get experiences and foreign expertise, contacts, market knowledge of the Romanian water management market, and they coordinate the projects in Romania. At the Romanian side, funding and execution are more fragmented between the parties involved. The main players are EuroTeleorman (association of communes and (inter)national office of Teleorman County), Teleorman County Council, Apa Serv (drinking water company for the cities in Teleorman) and the Water Management Centre (WMC). Compared with the funding from the Dutch side, relatively small budgets are made available by Teleorman County, EuroTeleorman, Apa Serv and the Local Councils of the communes where projects are executed (Hooijer et al., 2009).

In the period 2005-2009, project coordination at the Dutch side was done by an employee of the Province of Overijssel. From 2009 onwards, a project coordinator has been hired from water board Velt & Vecht. Later on, an extra project coordinator of Royal Haskoning Netherlands has been hired. In Romania, project coordination is done by a coordinator of EuroTeleorman.

Since 2009, the cooperation is facilitated by experts of Haskoning Netherlands and Romania (Hooijer et al. 2011). Haskoning provides technical and project management expertise, experts interpret between the Dutch and Romanian experts, helps to make contracts and studies, hires subcontractors for project execution, and helps to evaluate projects for the Province of Overijssel (observations Sept/Oct 2010 in meetings; interviewees RO9, RO12). Haskoning Romania experts try to bridge gaps between the Dutch and Romanian parties, by explaining the differences in way of working or by clearing misunderstandings (interviewees RO9, RO12).

At 31 December 2010, Royal Haskoning Netherlands closed their Romanian subsidiary Haskoning Romania (interviewees NL3, RO9, RO12). Since then, two former employees of Haskoning Romania, a communication expert and technical project manager, are hired by the Province of Overijssel through Royal Haskoning Netherlands on freelance basis, so that they can continue their tasks in the cooperation (interviewees NL3, RO9, RO12).

Several external parties, such as NGOs, firms and universities, support the Dutch and Romanian government institutions with (scientific) knowledge, expertise, process knowledge, practical skills and construction materials (Hooijer et al., 2009). In figure 7, these external parties are placed near the government institutions that bring in these parties.

4.1.2 Organizational Set-up of the Cooperation 2005-2009

The organizational set-up for the period 2005-2009 at the Dutch side existed of the *Central Working Group Teleorman* which consisted of representatives of the Province of Overijssel and two Dutch water boards (Hooijer et al., 2009). This group met once every two months to discuss progress of the collaboration. The meetings were chaired by the Province of Overijssel (Hooijer et al., 2009). The project coordinator of the Province of Overijssel coordinated the projects and cooperation with Romania (Hooijer et al., 2009).

For the *Teleorman Flood Risk Management Pilot Project*, the *High Water Working Group Teleorman* was established with representatives of the Province of Overijssel and Dutch water boards. This group gathered two times during the implementation of the project and was

chaired by the Province of Overijssel (Hooijer et al., 2009). For this project also a *Steering Committee* was set-up, consisting of high level delegates from the Netherlands and Romania, which met two times in 2007 (Hooijer et al., 2007). However, "in most cases the Romanian high level delegates did not come to the meeting or were replaced by their representatives" (Hooijer et al., 2009: p. 4).

In Romania, no other formal working group was established for the cooperation in general. EuroTeleorman, a NGO funded by Teleorman County Council which receives membership fees of a large number of communes in Teleorman County, took care of the logistics, organization, and coordination of projects at the Romanian side (Hooijer et al., 2009).

In the period 2005-2009, communication between the Dutch partners and the Romanian partners was going via the Dutch coordinator and the coordinator of EuroTeleorman. Once a year, on the Danube Days, both Dutch and Romanian partners had opportunities to discuss the cooperation.

4.1.3 Organizational Set-up of the Cooperation 2009-2011

Hooijer et al. (2009: p.5) concluded that the organizational set-up was not functioning well for the period 2005-2009, because (1) communication between the Dutch and Romanian partners was limited and irregular, (2) minutes of meetings by the Dutch were not shared with the Romanians, (3) not all activities were implemented with consent of all stakeholders due to a lack of communication, (4) expertise of all partners was not used, so that projects results could have been better.

Based on the evaluation of Hooijer et al. (2009), the set-up of the cooperation has changed for the period 2009-2011 (see appendix 5). At the Dutch side, a *Central Working Group* has been established, existing of representatives of the Province of Overijssel and Dutch water boards, who discuss the progress of the cooperation and is meeting at least twice a year. Besides this, the deputy of the Province of Overijssel and dike reeves discuss the cooperation also several times a year, in order to address problems, direct it, address political problems and give their support (Hooijer et al., 2009; interviewee NL3). At the Romanian side, the *Teleorman Working Group* has been established with a representative of Teleorman County Council, SGA Teleorman, Apa Serv, the Water Management Centre (WMC), and Water Directorale Arges Vedea (Hooijer et al., 2009).

Communication between the partners about general cooperation aspects goes through the Romanian project coordinator of EuroTeleorman and the project coordinator of the Province of Overijssel (interviewees NL3, NL4). Regarding the execution of project activities, communication between the Dutch and Romanian executing parties is directly, but they are required to keep the project coordinators updated as well (interviewees NL3, NL4). The Dutch project coordinators are also responsible for the contact with other partners such as Vitens, Norit, and NGO Drinking Water for Romania (*Stichting Drinkwater voor Roemenië*). When there are problems at the Dutch side, and the project coordinator is not able to solve them, a manager or the deputy of the Province of Overijssel steps in.

4.1.4 History of the Cooperation

Cooperation with Latvia

Before the international cooperation with Teleorman County, the Province and water boards of Overijssel cooperated with Latvia in the fields of drinking water and sanitation, as part of a Dutch national cooperation program (interviewees NL1, NL3; Province of Overijssel, 2004). As result of new rules on EU/national subsidies for environmental cooperation projects with new

EU member states, both partners were not eligible for EU/national funds for their cooperation with Latvia after 2004 (Lexius, n.d.; Province of Overijssel, 2007 a; interviewee NL1). The regional cooperation projects of the Province of Overijssel and water boards with Latvian partners were phased out (Province of Overijssel, 2007 a; Van Dijk, 2006; interviewee NL1).

In 2004, the Provinces of Overijssel and Gelderland, in the future possibly united in one region, decided to strengthen inter-regional cooperation, also in international projects (Van Dijk, 2006; interviewees NL1, NL3).

Cooperation with Teleorman County: period 2005-2009

In February 2004, the Provinces of Gelderland and Overijssel investigated the options of cooperating jointly with Teleorman County, because Romania was in the pre-accession phase of EU-membership and Gelderland had already contacts with the county (Van der Kamp, 2004; Van Dijk, 2006). In 2005, both Provinces and the County of Teleorman signed an intention agreement for cooperating in the field of water management (Van Dijk, 2005; Hooijer et al., 2009).

In 2005, Vitens, the waterboards Groot-Salland, Reest & Wieden, Regge & Dinkel and Rijn & IJssel from Overijssel and water board Rivierenland from Gelderland joined the cooperation (Van Dijk, 2006). According to interviewees NL1 and NL3, the input of water board Regge & Dinkel has been limited since the start of the cooperation. According to interviewee NL1, water board Regge & Dinkel preferred to continue the cooperation with Latvia.

In Romania, NGO EuroTeleorman (association of communes and international office of Teleorman County), predecessors of Apa Serv, several towns and communes and Arges Vedea got involved in the cooperation (Province of Overijssel, 2007 d). Contacts were established with the Romanian County of Giurgiu, but it got not actively involved in the cooperation (interviewees NL1, NL3).

The goals of the Province of Overijssel were (interviewees NL1, NL2; Van Dijk 2006; Janssen, 2011 (1 March 2006); Province of Overijssel, 2009 a): (1) strengthening the relationships with the Province of Gelderland, water boards and drinking water company Vitens, (2) improving the drinking water, sanitation and, after the floods in 2005, the flood protection in Teleorman County (corporate social responsibility), (3) economic benefits and showing of innovations through pilot projects so that companies in Overijssel may benefit of the cooperation, (4) creation of an international network for exchange of experiences and learning, and (5) awareness raising about water management issues among youth of Overijssel and Teleorman.

In 2008, the second goal was rephrased to contributing to the Millennium Development Goals; the eight anti-poverty goals for reducing global poverty by half in 2015 (Van Dijk, 2008; United Nations, 2010). Improvements in sanitation and water availability, proximity, quality and quantity and a reduction of the spread of (waterborne) diseases help to make a contribution to these goals (UNESCO, n.d). The Dutch partners want to contribute to these goals through sanitation and drinking water projects in Teleorman County (Van Dijk, 2008).

The water boards and Vitens liked to strengthen their relationships with the Provinces of Overijssel and Gelderland through the cooperation (interviewees NL1, NL2, NL3, NL6, NL7, NL8; meeting 1). Further, the water boards wanted to learn from the Province of Overijssel in order to improve the cooperation in other joined projects carried out in the Netherlands (interviewee NL3; meeting 1). Therefore, the water boards preferred to work together with Provincial employees in order to learn from each other and build relationships with Provincial employees (meeting 1). Furthermore, the water boards focused on capacity building, knowledge exchange, development of innovative concepts and sustainable solutions, and, later on, contributing to the Millennium Development Goals (interviewee NL3; Province of Overijssel, 2009 a).

For Vitens, the cooperation could be strategic, since the Province of Overijssel is their supervisor, procurer of permits and share holder (Instituut voor Publiek en Politiek, 2010; Vitens, 2011; interviewees NL6, NL7, NL8).

Teleorman County had explicitly asked the Provinces of Gelderland and Overijssel to cooperate in the field of water management (Van Dijk, 2006), as one of the County Council's main goals is improving the drinking water situation in the rural areas of the County (Van Dijk, 2007).

Between 2005-2006, 21 (partial) projects were carried out (Province of Overijssel, 2007 d; Van Dijk, 2007 d). One of these projects was the establishment of the WMC, a water expertise centre that should support the local and regional public institutions of Teleorman in water issues (interviewee NL1; Hooijer et al., 2009; Province of Overijssel, 2007 d).

The Romanian partners reported that they were very content about the cooperation between 2005 and 2006 (Province of Overijssel, 2007 d). Especially the integrated water management approach for identifying and solving water issues, innovative pilot projects and the awareness raising activities were appreciated by the Romanian partners (Province of Overijssel, 2007 d).

During this period, communication and cooperation between the Romanian partners was not always sufficient and the Romanian bureaucracy delayed some of the projects (Province of Overijssel, 2007 d). Van Dijk (2006) stated that in the beginning of the cooperation, political conflicts influenced some of the cooperation projects (Van Dijk, 2006). The Romanian partners stated that the cooperation projects were helping to improve the cooperation between the different Romanian public actors in the water domain (Province of Overijssel, 2007 d).

At the start of the cooperation, the Province of Overijssel had requested the help of Vitens in improving the drinking water situation in Teleorman County. In the period 2005-2007, Vitens made among others an inventory of drinking water quality in Teleorman and improved the chlorine added to drinking water in Turnu Magurele (De Jong et al., 2005; Province of Overijssel, 2007 d; Hooijer et al., 2009). In 2007, Vitens withdrew from the cooperation because of differences in view with the Province of Overijssel on the improvement of the rural drinking water situation in Teleorman County (interviewees NL1, NL3, NL6, NL7, NL8).

In 2007, the Province of Gelderland withdrew from the cooperation, because the Provincial Council did not support the cooperation with Teleorman County any longer (Province of Gelderland, 2006; Province of Overijssel, 2007 b; Province of Overijssel, 2007 c). Up to than, the Province of Gelderland had invested €100,000 into water management related projects (Province of Gelderland, 2006).

In the same year, Romania accessed the EU (CIA, 2010). Therefore, EU pre-accession funds for the cooperation projects in Romania were not available anymore and it became more difficult to obtain EU funds for the cooperation (interviewees NL1, NL3, RO13; meeting 9).

In July 2007, water board Velt & Vecht joined the cooperation (Van Dijk, 2007 d). Furthermore, several NGOs and universities supported the Romanian and Dutch cooperating partners (Van Dijk, 2007 d; figure7).

In 2008, the Dutch project coordinator left due to differences in opinion about the cooperation internally at the Province of Overijssel (interviewees NL1, NL3). According to interviewees NL1 and NL3, Groot-Salland reduced its inputs after this project coordinator left. In the same year, water board Rivierenland decided to withdraw from the cooperation (interviewee NL1).

At the end of 2008, the Province of Overijssel hired a new project coordinator of water board Velt & Vecht to replace the former (interviewees NL1, NL2, NL3, NL4). At that moment, most projects of the period 2005-2009 had finished or were in the final phase (for an overview of the activities performed, please see Van Dijk (2007) or Hooijer et al. (2009)) (interviewee NL3).

Period 2009-2011

In 2009, the partners discussed if the cooperation should continue or end (interviewees NL2, NL3). During meetings, the active water boards addressed the differences in efforts between the water boards involved (interviewee NL3; meeting 1). Also, according to interviewees NL1 and NL3, the water boards differed with the Province of Overijssel in opinion about the goals of the cooperation and how to direct it.

In June 2009, the dike reeves and deputy of the Province of Overijssel defined the goals of the cooperation and decided to extend the cooperation up to at least 2011 (Hooijer et al., 2009; Janssen, 2011 (30 June 2009); Province of Overijssel, 2009 a). The Dutch partners stated that the proposals of the Romanian partners for new projects indicated that the Romanians were looking for interesting projects for the Dutch, instead of addressing their most urgent needs (Province of Overijssel, 2009 a; interviewee RO12). In 2009, a project plan was developed for the period 2010-2011 (Hooijer et al., 2009; Province of Overijssel, 2009 a).

In 2009, a new project coordinator started at the Romanian side (interviewees NL1, NL3); according to interviewees NL1 and NL3, at least the third since the start of the cooperation. Also Haskoning Romania started to facilitate parts of the cooperation.

During a meeting in 2010, civil servants of the water boards stated that they preferred to cooperate with civil servants of the Province of Overijssel and discussed the goals of and political support for the cooperation (observations meeting 1). Support from the deputy of the Province of Overijssel and the dike reeves of the water boards, a consultation between officials of both the Province of Overijssel and the water boards, and the hiring of an extra project coordinator of Royal Haskoning Netherlands, made the cooperation progressing (interviewees NL2, NL3, NL4).

In 2010, Vitens rejoined the cooperation after requests of the Province of Overijssel to bring in their expertise on drinking water (interviewees NL3, NL6, NL7, NL8). In September/October 2010, three Vitens experts advised the Province of Overijssel and Romanian partners on the drinking water project cases B, C , D and E (observations; interviewees NL6, NL7, NL8).

In 2010, the Province of Overijssel and Vitens were negotiating about the water win rights for 9 water win locations in the Province of Overijssel (Janssen, 2011 (5 Nov 2010)). In November 2010, the Province of Overijssel granted permits for the 9 water win locations (Janssen, 2011 (5 Nov 2010)).

In June 2010, most projects for the period 2010-2011 had started and were going well (interviewees NL2, NL3, NL4). However, at the beginning of 2011, several cooperation projects experienced problems, such as case C with the delivery of a water purification unit (interviewees NL2, NL3).

In January 2011, officials of the Province of Overijssel decided to stop the cooperation at the end of 2011 (observation; interviewees NL2, NL3; Janssen, 2011 (21 Feb. 2011); Province of Overijssel, 2011). The remainder of 2011 is used to finish the different projects (interviewees NL2, NL3, NL4).

4.2 General Objectives of Drinking Water Projects

The selected projects are all drinking water related projects in the rural areas of Teleorman County, Romania (figure 8). These projects form an important part of the cooperation, as the modernization of the rural drinking water system is urgently needed in order to comply with EU regulations (see also 5.1).

The objective of these drinking water projects on the short and medium term (period 2007-2015) is to carry out pilot projects in villages with drinking water of hazardous quality; meaning villages with dangerously high levels of nitrate and/or pesticides in the drinking water wells or first groundwater layer receive assistance in order to improve the drinking water quality in the region (Van Dijk, 2007). In this way, technical innovations can be shown to the Romanian partners and a contribution is made to the Millennium Development Goals (Hooijer et al., 2009). The Province of Overijssel contributes to these goals through the drinking water projects carried out in Teleorman County (Van Dijk, 2008). The long-term goal (after 2015) is to improve the drinking water and waste water treatment up to EU standards (Van Dijk, 2007). The next sections describe the case activities. In table A5 an overview is given of the main characteristics of each activity.

Figure 8. Teleorman County in Romania, with the places Slobozia Mindra, Islaz, and Talpa indicated. Uda-Clocociov and Saelele are located just south-east of Slobozia Mandra.

4.3 General Project Context of Drinking Water Projects

Teleorman County, populated by 500,000 people, is part of one of the poorer regions of Romania (Romania Central, 2010 a). In Teleorman, the estimated income per capita is €6,500 versus circa €17,000 per capita in the Province of Overijssel (Van Dijk, 2007; CBS, 2007). The area of the county is twice as large and has circa two times less inhabitants as the Province of Overijssel (Van Dijk, 2006). Especially the rural areas, where about 300,000 people are living in circa 92 communes, are poor (Van Dijk, 2006; Van Dijk, 2007). In the rural areas, most people depend on subsistence farming (observation; interviewee RO9; see figure 16).

Figure 16. Left: Drinking water well in a village in Teleorman County (photo from Province of Overijssel). Center: Private pit latrine, Teleorman County (photo from Province of Overijssel). Right: Subsistence farmer in Teleorman County.

The villages often lack good sanitary facilities and drinking water distribution systems (see figure 16; observations; Van Dijk, 2006). In Teleorman County circa 22 of the circa 92 municipalities, consisting of approximately 246 villages, have a water distribution system in place (Van Dijk, 2007). In the other municipalities, people depend on private or public wells for their drinking water, which are often polluted by intensive agriculture, industry or nearby located (private) toilets (Van Dijk, 2007; observations 2010). The water quality of the wells is not well monitored; the public wells are only monitored on hazardous biota by the National Health Department once a month or once a year (meetings 2, 5, 6). Monitoring of other hazardous substances is often not done by the communes (meetings 2, 5, 6).

Currently, the drinking water facilities in the rural areas are operated by the local authorities of the communes and in the five towns by Apa Serv (Hooijer et al., 2009; discussions Sept/Oct 2010). Teleorman County and Apa Serv developed a master plan for the improvement of the drinking water situation in the urban areas of Teleorman County (meetings 2, 6,7). In phase one of this master plan, the focus is on improvement of the supply of drinking water and waste water treatment in the five towns of Teleorman County (Hooijer et al., 2009). In phase two (period after 2013 or 2015), Apa Serv is expected to take over the rural water operators and improve the rural drinking water situation (Hooijer et al., 2009; discussions Sept/Oct 2010).

Apa Serv and EuroTeleorman/Teleorman County Council cooperate with the Water Management Centre (WMC) in order to obtain data needed for the improvement of the drinking water situation in the rural areas (meetings 9, 10; interviewees RO10, RO13). Therefore, the WMC is developing a database for the rural areas with information about the drinking water systems in place, the existence or non-existence of a sewage system, and the occurrence of and impact of floods (meetings 9, 11; interviewee RO13). The set-up of the database by the WMC has also an information function: if the communes have a special request or need, the WMC informs the County Council about this (interviewees RO10, RO13; meeting 9).

The Teleorman region itself is rather flat; at the Danube, the altitude is 20 m and to the north it is maximal 300 m above mean sea level (Van Dijk, 2006). Teleorman is a part of the river catchments Arges and Vedea, who flow into the Danube (Van Dijk, 2006). Van Dijk (2006) states that the landscape and hydrology of Teleorman County have much resemblance with the east parts of the Netherlands, which makes it easier for the partners in Overijssel to bring in their know-how and experiences.

The context in Teleorman County differs from the Dutch context (see also section 5.1). As a result, the expectations and ideas of the Dutch, at first, often do not match with the project context in Teleorman (interviewee RO12; observations). In case C, the Dutch experts had to get familiar with to the Romanian setting (observations meeting 5). At first instance, the Dutch experts of Vitens did not consider drinking water pollution by latrines in the neighborhood as important, because this is almost never the case in the Netherlands (interviewee NL7; observations meeting 5). After a second check, they concluded that a public toilet, located near the public drinking water well, was most likely polluting the public well (observations field visit meeting 5; interviewee NL7). In the other cases analyzed in this report, it was observed, and also stated by interviewee RO12, that the Dutch experts were able to overcome the differences in context (observations meetings 2, 3, 5, 6, 7; interviewee RO12).

4.4 Selected Cases

Case A (2005-2009): *5 deep wells for drinking water.* The villages needing assistance were selected based on research by the regional branch of the National Health Department and SGA Teleorman (Van Dijk, 2007). These organizations discovered that in several villages in Teleorman County the levels of nitrate in the upper groundwater aquifer were too high. According to EU rules, the maximum nitrate concentration in drinking water is 50 mg/l, but in some villages concentrations over 160 mg/l were measured (De Jonge et al., 2005; De Bont & Van Larebeke, 2003; meeting 5). These high nitrate concentrations in drinking water are dangerous for humans and can cause several diseases such as methemoglobinemia (shortage of oxygen by babies and small children) and diabetes (De Bont & Van Larebeke, 2003). Furthermore, in several communes the levels of pesticides in the drinking water and first aquifer are too high (Van Dijk, 2007). These areas got priority and need deeper wells up to 70 and 100 m depth, depending on the geological conditions, in order to reach water of good quality as source for drinking water (Van Dijk, 2007; field visit Sept/Oct 2010).

Figure 9. Drilling of deep well by NGO Drinking Water for Romania (Stichting Drinkwater voor Roemenië, n.d.)

In October 2006, the Province of Overijssel in cooperation with the Dutch NGO Drinking Water for Romania (*Stichting Drinkwater voor Roemenië*) and Teleorman County Council, prepared the drilling of the wells (Van Dijk, 2007). Modul Proiekt, a Romanian contractor, has carried out geo-hydrologic research for locating the best spots for the wells (Van Dijk, 2007). The Romanian partners were responsible for arranging all the necessary permits. In August 2008, NGO Drinking Water for Romania drilled five deep wells in the five selected villages (interviewee NL5; see figure 9).

Case B (2010-2011): *Improve drinking water quantity.* One of the main priorities of Teleorman County Council is to improve the drinking water situation in the rural areas (Hooijer et al., 2009). Currently, the County Council, in collaboration with Apa Serv, develops a master plan for the drinking water situation in the rural areas from 2015 onwards; the year from which Apa Serv will become responsible for the drinking water situation in the rural areas (meetings 2, 7, 10). It is expected that it will take at least several years from know before funds are available to improve the rural drinking water situation (Hooijer et al., 2009; meetings 2, 5, 7). Therefore five new wells will be drilled in villages, selected by the WMC, in such a way that these wells "contribute best to the Millennium Development Goals" (Hooijer et al., 2009: p. 12). The drilling of the wells, the cover and the installation of the pumps will be done by a Romanian contractor (see figures 10a and 10b). The receiving commune needs to pay 10% of the costs. The WMC is main responsible for the activity and the project is carried out in collaboration with EuroTeleorman and the Province of Overijssel (Hooijer et al., 2009).

Figure 10a. Borehole with water storage tank and pipe network connected to Slobozia Mandra. (Observation Sept. 2010)

Figure 10b. Recently drilled borehole in Talpa. (Observation Sept. 2010)

The Province of Overijssel asked Vitens advice on the drilling method of the boreholes. In September/October 2010, the expert of Vitens checked if the proposed locations were suitable for drinking water winning. The places that were selected by the WMC are Slobozia Mandra

(installation of 2 wells) and Talpa (installation of 2 wells) (see figure 8). These places were selected as the lack of safe drinking water was most urgent here (meetings 2, 6).

Case C (2010-2011): *Improve drinking water quality.* According to Hooijer et al. (2009), the Romanian partners considered the installation of the first two Perfector-E installations (membrane water purification unit for surface water) (in Saelele and Zimnicea; see figures 8, 11, 14) a success. These Perfector-Es were installed as a pilot to show a technical innovative way of purifying water in a decentralized way (Van Dijk, 2007 a).

It has been proposed to install five more Perfector-Es over the period 2009-2011 (Hooijer et al., 2009). The receiving commune needs to pay a contribution for the installment (25% of the actual cost) (Hooijer et al., 2009). The locations are selected by the Romanians and need approval of the Dutch. The chosen location should contribute to the Millennium Development Goals. By Haskoning Romania it has been advised that a Dutch expert makes an inventory of the treatment systems, their prices and their merits.

Figure 11. Perfector-E in Saelele with broken equipment (Observations Sept. 2010).

Figure 12. Announcement of construction of Perfector-E in Islaz. (Observations Sept. 2010).

In Islaz, water of the public well is so heavily polluted that the National Health Department has forbidden the use of the water. The mayor of Islaz, in charge of the public well, wanted to solve the urgent drinking water crisis, which caused already at least 6 people severe health issues (meeting 5). In June 2010, Dutch and Romanian politicians decided to place a water purification unit (Perfector-E) in Islaz to solve the drinking water crisis (meeting 5). In September/October 2010, an expert of Vitens was asked to give his judgment on the placement of a Perfector-E, or its successor, the Water Miracle, for solving the drinking water crisis in Islaz (see figures 8, 11 and 12).

Case D (2010-2011): *Water quality monitoring.* Officially, the water operators and the County Health Authority are obliged by law to check the drinking water quality (Hooijer et al., 2009). The Local Councils of the communes, in their function as water operators, are therefore responsible for the monitoring of the water quality, but are not able to perform this task as they do not have the laboratories (Hooijer et al., 2009; meeting 7). The current practice is that an initial analysis of the water quality of a well is made by the drilling company or the commune pays a laboratory to do it (Hooijer et al., 2009; observations meeting 5). If the well water meets law requirements, the communes do not treat the water (Hooijer et al., 2009; meetings 5, 7). If there are some minor pollutions, some chlorine is added or the water is treated (Hooijer et al., 2009; meetings 5, 7). In general in the rural areas, the drinking water quality of a well is not monitored after it has been drilled, even though this is obligatory (Hooijer et al., 2009; meetings 5, 7).

Apa Serv, in collaboration with the WMC, proposed to set-up a mobile laboratory for monitoring the water quality in the rural areas (Hooijer et al., 2009; meetings 2, 7). In this way, the WMC can monitor the water quality, which benefits the rural civilians, and earn a fee for the analysis. Furthermore, the WMC can gather information on the water quality of the rural public wells, what is important information for Apa Serv in future (Hooijer et al., 2009; meetings 9, 10).

The Province of Overijssel paid for the equipment and the Romanian partners for the car (Hooijer et al., 2009). An expert of Vitens evaluated the mobile laboratory plan for monitoring drinking water quality in Sept/Oct 2010. In February 2011, the mobile laboratory has been taken into use (see figure 13).

Figure 13. *Left*: Mobile laboratory of the WMC at the opening in February, 2011. *Center*: Deputy of the Province of Overijssel takes the mobile laboratory in use. *Right*: Inside of the mobile laboratory (Photos of Province of Overijssel (2011 b)).

Case E (2010-2011): *Using spring water for human or animal consumption.* In this activity a natural spring source is captured near a small river north west of Turnu Magurele in the village of Uda Clocociov, so that the water of the source can be used for human or animal use (see figures 14 and 15). Before the plan is brought into execution, the source is studied on water quality and quantity measures. For this, experts of Vitens, the WMC and Apa Serv have been assigned. The expert of Vitens is also asked to give advice on catching of the spring water. The WMC provides logistic support and arranges the meetings in cooperation with EuroTeleorman (Hooijer et al., 2009; observations field visit 3).

Figure 15. Natural spring source in Uda Clocociov planned to be used for human or animal consumption.

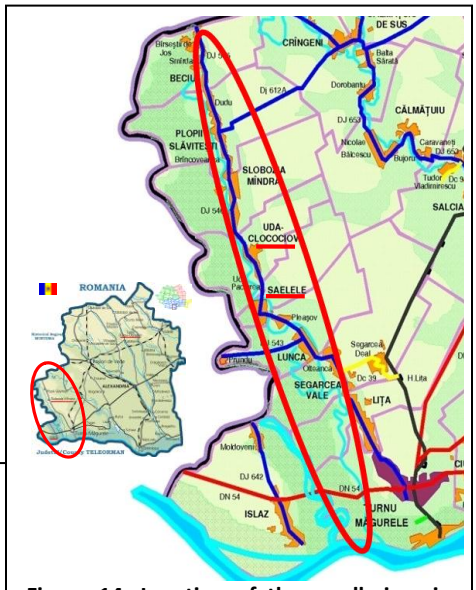

Figure 14. Location of the small river in Teleorman County. The source of the spring that is going to be captured lies in Uda Clocociov. Saelele, the place were a Perfector-E has been installed, can be seen on the map as well (Hooijer et al., 2009).

5. Results

In this chapter, the results of knowledge sharing between the Province of Overijssel and Teleorman County are described. The knowledge sharing evaluation framework from section 2.4 is used as guideline for describing the results. The set-up of this chapter is based upon the structure of the knowledge sharing framework (figure 5).

Section 5.1 discusses the international and national contexts. Section 5.2 describes the characteristics of key actors involved in the cooperation projects. Section 5.3 is about knowledge sharing facilitation in the cooperation. Knowledge sharing facilitation is influenced by aspects of the organizational context. This organizational context is further influenced by the cooperation history, as described in 4.1. In section 5.4, the knowledge sharing activities are described. Finally, section 5.5 discusses the knowledge sharing results.

5.1 Context Analysis

All projects analyzed are located in Teleorman County (see chapter 4 and figure 8). Therefore, it is essential to have a good understanding of the Romanian water management context (Vinke-de Kruijf, 2009 a). A short description of the most important contextual factors is given based on (academic) literature. The national contexts are analyzed on the political, economic, social, technological, environmental and legal (PESTEL-model) aspects (see section 2.3.2). This section gives a description of the international and national contexts of the cooperation.

5.1.1 International Context Analysis

Bilateral relationships between the Netherlands and Romania exist for over 130 years already. For years, the Netherlands is one of the largest foreign investors in Romania (Netherlands Embassy in Bucharest, 2010); in 2009 even the number one (Embassy of Romania in Washington, 2010). Cultural and social ties are also important to the relationship. “In the past 20 years, the Netherlands supported many initiatives to strengthen civil society” (Netherlands Embassy in Bucharest, 2010).

In the field of water management there are also strong relationships between Romania and the Netherlands. Since 2005, bilateral water cooperation projects are carried out between several Dutch public institutions and their Romanian counterparts. The cooperation between the Province of Overijssel and Teleorman County is such an example. In 2010, the bilateral cooperation between the Netherlands and Romania in the field of water management has been intensified by the founding of the Netherlands-Romania panel for water and coast management (Van Peppen, 2010).

5.1.2 Country Context Analysis

The country context analysis, as presented in this report, focuses especially on the water management field. This section focuses on the main issues that may influence the project context of projects carried out by the Province of Overijssel and Teleorman County.

5.1.2.1 Netherlands

Political Context of the Netherlands

The Netherlands is one of the first parliamentary democracies in the world and a founding member of the EU (Wikipedia, 2011; CIA (Central Intelligence Agency), 2011; ING, 2011 a). The public administration is set-up in a consociational way; meaning that no one party has the majority and is able to rule the country by itself, but parties need to seek for consensus (CIA, 2011; Wikipedia, 2011).

The Netherlands is a decentralized state in which the several administrative levels have decision power. The administrative set-up consists of three layers: (1) the National Government, (2) the 12 administrative subdivisions called the Provinces and (3) the municipalities. A fourth, separate body consists of the 27 water boards, responsible for the water management in a specific region of the Netherlands (Wikipedia, 2011; CIA, 2011).

The national government bodies draw up and implement the water policies for the national level, which are worked out in more detail by the Provinces and water boards (Kuks, 2002).

The Provinces are mainly responsible for spatial planning, public housing, public transport, infrastructure, water affairs, economy, youth care, society and culture, nature and the environment (Instituut voor Publiek en Politiek, 2010; Wikipedia, 2011). Further, the Provinces supervise the municipalities and the water boards. Also the Provinces are responsible for the availability of drinking water and provision of permits for ground water and drinking water extraction. The water supply companies are responsible for the delivering of drinking water (Kuks, 2001).

The municipalities are responsible for the economic and spatial development of the villages and cities, traffic management, education, healthcare, welfare, and social, recreational and cultural affairs of the municipalities (Wikipedia, 2011; CIA, 2011). In their function, the municipalities are responsible for urban drainage and sewage systems.

The water boards are responsible for the water management of surface waters in their region and the treatment of sewage waters from urban areas (Kuks, 2002). The water boards are an executive body with ability to make rules regarding water quantity, quality and flood defense within the limits of the national and provincial laws (Overheid, 2011). In this function the water boards are also responsible for tasks such as the construction and maintenance of water ways, dikes and pump stations, the management of surface and groundwater levels, and the treatment of waste water from villages and towns (Overheid, 2011; Kuks, 2001).

For water management, the national government takes the initiative and the Provinces and municipalities formulate and implement additional policies and depend on national funds for that. The water boards depend for funding solely on the taxation of their inhabitants, which is based on cost recovery. The cost recovery is based on the ‘polluter pays principle’ or the ‘one with the largest interest pays most taxes’ (Kuks, 2002).

Since 1989, the public administration in the Netherlands focuses on water management at the level of natural hydrological units; so integral water management and the water systems approach (e.g. at the level of river basins and sub-catchments) are used to define integral water plans at the national and provincial levels. The water boards are expected to take an integral approach in their work. This approach results in a linking of ground waters and surface waters, of quantitative and qualitative aspects, and of urban and rural planning and spatial requirements of water management. Water management tasks are still considerably fragmented despite of the integral manner of working. (Kuks, 2001)

Socio-economic Context of the Netherlands

The Netherlands is one of the twenty largest economies in the world (World Bank, 2010). According to the CIA (2010), Dutch GDP in 2009 was 794.8 billion US$ (circa €576 billion), GDP at purchasing power parity per capita was 39,500 US$ (circa €28600), employment was 80% in services, 18% in industry and 2% in agriculture, unemployment was moderate low with 4.9%, and 10.5% of the people were living below the poverty line.

The Dutch economy highly depends on trade and the country functions as an important European transportation and financial hub (CIA, 2011; Wikipedia, 2011). It is an industrialized country and has a highly mechanized and efficient agriculture and is "one of the leading European nations for attracting foreign direct investment" (CIA, 2011). The Netherlands is known for its skills in water management and engineering (Waterland, 2011). In 2004, the total turnover of this sector was almost €6.5 billion (1.4% of GDP) of which €4.4 billion (1.8% of total exports) came from export (Gibcus & Verhoeven, 2006).

In 2009, the economy contracted 3.9% and exports declined by 25% due to the global financial crisis and the high exposure of Dutch banks to poor U.S.A. mortgage securities. The national government started several economic stimulus programs by investing heavily in infrastructure, giving tax brakes and by bailing out 3 major banks. These programs however resulted in large government budget deficits of up to 5.6% of GDP in 2010 while the GDP grew only 0.7%. Therefore, the current government wants to cut expenditures severely. (CIA, 2011)

On the United Nations (UN) Human Development Index (HDI) the Netherlands is ranked 7th (UNDP, 2010). The high HDI of the Netherlands reflects also the high tolerance level in Dutch society towards minorities, people with different religious opinions, and the provision of chances for both women and men to develop themselves. Dutch education belongs to the top 10 of the world (OECD, 2008) and focuses mainly on the needs of the pupil and the knowledge and skills students need in general and in working life. The Dutch society is rather egalitarian and individualistic, especially when compared with Romania where power distance is much larger and collectivism is more appreciated (Vinke-de Kruijf, 2009 a). Hard working, ambition, education and ability are valued highly by the Dutch. Furthermore, the Dutch tend to be quite frank and straightforward (eDiplomat, 2011).

Environmental Context of the Netherlands

In the Netherlands, defense against flooding, water quality and water quantity and related environmental issues receive much attention already for several decennia. Defense against flooding by sea got increased attention from 1953 onwards after the severe floods in the Province of Zeeland which resulted in the start of the Deltaworks. The severe floods in 1995 and 1998 by rivers resulted in a Deltaworks program for rivers as well in combination with the program 'Room for the River'. (Waterland, 2011)

In the 1960s, almost all households were connected to the drinking water system and later on most people were connected to the sewage system as well (Vewin, 2009; Pidpa, 2009). Currently 99.6% of the households is connected to the sewage system (Van der Meijden, 2010) and almost 100% of the households are connected to the drinking water network, except for a few households that use private wells (Rijksinstituut voor Volksgezondheid en Milieu, 2010). From the 1970s onwards, it became obliged to collect waste water from households and industry in order to protect surface waters, making the Netherlands one of the first countries in the world treating waste water before it is returned into the natural water system. This resulted in much innovation in the waste and drinking water sectors (Waterland, 2011).

Legal Context of the Netherlands

In the Netherlands, the drinking water companies are responsible for the quality and supply of drinking water. The national government helps to create the conditions for the water works to supply high quality drinking water. For the water quality standards especially the Water Supply Act and the Decree on the Water Supply are important (Waterland, 2011). The Provincial authorities regulate and supervise the delivery, winning and supply of drinking water (Waterland, 2011; Wikipedia, 2011).

The municipalities are responsible for the collection and discharging of waste water from the urban areas. Waste water from urban areas is collected and treated by the water boards. Further, the water boards are responsible for the physical monitoring of the water levels in their region and protection against floods, maintenance of waterworks and water quality of surface waters and partially groundwaters. The Provinces are responsible for monitoring of groundwater quality. (Waterland, 2011; Instituut voor Publiek en Politiek, 2010)

The most important laws are EU laws, like the Water Framework Directive for water quality issues, and national laws as the Water Law, which arranges the management of surface and ground waters (Dutch Government, 2011).

5.1.2.2 Romania

Political Context of Romania

Romania is a comparatively young country, formed officially in 1859 and recognized as independent country in 1878. Before that period, parts of modern Romania belonged to various foreign and local rulers. After the short occupation by Russia after World War II, Romania was ruled by a communistic regime from 1948 until 1989. From the 1990s onwards Romania shifted to a market economy and democracy. Romania joined the NATO in 2004 and the EU in 2007. (CIA, 2010; Vinke-de Kruijf, 2009 a; Stowe, 2008)

The public administration of Romania is structured by a three-tier system: the national, county and local level. Romania has 41 counties (*judeti)*, existing of municipalities (which are communes or cities), and the district of Bucharest (Dragos & Neamtu, 2007). Each municipality has an elected mayor and Municipal Council. The County Council, elected by the county population, elects the County President. From the national level a representative, the County Prefect, is appointed to control the administrative activities of the county, municipalities, communes and towns. Romania's public administration is fragmented: "the average population of a commune is 3,466 inhabitants and of a village 756 inhabitants" (Dragoş & Neamtu, 2007: p. 632).

The Romanian water sector is structured as follows. At the national level the Ministry of Environment (and Forestry) is responsible for most water issues: it may design river basins, strategies, plans, and policies. The executive body of the Ministry of Environment responsible for water management is the National Administration Romanian Waters (NARW or 'Apele Romane'). NARW is responsible for the management of surface- and ground waters, flood protection, water pollution, hydro-technical installations and pumping stations. NARW is divided into 11 Regional Water Branches which are subdivided into operational Water Management Systems (usually corresponding to county territories) "responsible for issuing and controlling water management and environmental permits and for monitoring the state of the environment" (Vinke-de Kruijf, 2009 a: p.12). The County is responsible for making regional development plans. Water infrastructure is owned by various actors, including Apele Romane, the National Administration for Land Reclamation and Improvement, municipalities and private companies. According to research by Dinica (2007), investments in water infrastructure and maintenance have been insufficient since the fall of the communist regime, especially for flood

prevention. In Teleorman County, this came apparent during the severe floods in 2005. Reasons for the lack of investments and maintenance include, (1) the insufficient allocation of financial resources by the Ministry of Water and Environment, the counties and local communes, (2) insufficient culture of implementation, monitoring, inspection, and enforcement at all governance levels in Romania, (3) an inadequate complex legal framework for guiding the county and local level actions, which actually contributes to a lack of monitoring and law enforcement and gives opportunities for some public actors to escape implementation or enforcement of law requirements (Dinica, 2007).

At the commune level, the drinking water systems are operated by the mayor or private companies owned by the local authorities. The sewage and drinking water systems in (larger) towns are mainly operated by the county subsidiaries of Apele Romane. After 2015, the rural drinking water and sewage systems will be placed under the jurisdiction of the county subsidiaries of Apele Romane (interviewees NL 3, RO 10; meetings 2, 7, 10). The monitoring of drinking water quality on hazardous biotics and substances is carried out by the National Health Department, while the normal water quality monitoring is a part of the local authorities (meetings 2, 5, 6, 7; interviewee NL8).

The institutional analysis by Teodosiu (2007) shows that Romania's administration is currently not prepared to deal with water and environment issues in an integrated manner. Vadineanu & Preda (2008) argue that the water management administration is currently not ready to manage the water systems well, because it has been revised to get in line with EU standards and is "still in the phase of institutional and capacity building, and thus the volume of work which was done until now is well below of what is needed and quality of first achievements is rather poor" (Vadineanu & Preda, 2008; p. 118). The most important factors causing the institutional problems are (Teodosiu, 2007: p. 368-369; Dinica, 2007):

- the fragmentation of water issues over diverse governmental institutes at different institutional levels from local, county, water basin, and national levels which makes communication and decision lines too complex; for example, in Romania Apele Romane (and its regional subsidiaries called SGA) is responsible for water management issues, infrastructure and the implementation of the Water Framework Directive while the National Agency for Environmental Protection is responsible for environmental issues;
- the lack of allocation of funds for proper investments in and maintenance of water infrastructure and the lack of money for water law enforcing, monitoring and implementation at the national, county and local levels;
- the complex, incomplete, poor designed Romanian legal water framework;
- the lack of a true participatory approach of the stakeholders involved in water management; especially government institutions do not cooperate well with each other and there is overlap in the responsibilities of some institutions;
- the lack of national and regional programs focused at environmental awareness raising and cooperation between stakeholders;
- lack of understanding what Integrated Water Resources Management means.

The poor functioning of the water management institutes and the legacy of Communism has resulted in high levels of surface and groundwater pollution, a lack of or often deteriorated water infrastructure, e.g. lack of or malfunctioning sewage and drinking water systems (especially at the country side), poor flood defense and drought protection systems (Vinke-de Kruijf, 2009 a; Dinica, 2007; Government of Romania, 2007; observations Sept/Oct, 2010). This is

also expressed in the amount of funds available from the EU-level and for institutional strengthening, clean drinking water, sanitation and flood protection in Romania from the diverse EU-funds available:

- in the pre-accession phase between 2000 and 2007, €650 million up to €1150 million per year was available for institutional, infrastructural, environmental and rural improvement from the Phare, +ESC, +CBC, ISPA and SAPARD EU-funding programmes (Gergely, 2010);
- for the period 2007-2013 €5.4 billion is available for the extension and modernization of water and wastewater systems (Vinke-de Kruijf, 2009 a; Hooijer et al., 2009).

The needed investments to modernize the Romanian water sector are estimated on €12 billion between 2007-2013 (Hooijer et al., 2009).

Currently, Romania does not make full use of EU funds available. Reasons include: the fear of needing to pay back funds as a result of the rampant corruption, lack of knowledge of how to get and apply for EU-funding, and a lack of administrative capacity to meet the bureaucratic standards of the EU (especially at the local levels) (interviewees RO9, RO10; GIS, 2008). Also the EU froze a part of the funds available for Romania as a result of the abuse of EU money and the lack of a well functioning judicial system (GSI, 2008). EU-membership resulted in some reforms of the judicial system and public administration and increased pressure to fight corruption, however until now corruption is a massive problem and attempts to decrease corruption are not succeeding yet (Vinke-de Kruijf, 2009 a; Rankin & Soares, 2007).

The lack of administrative capacity, as a result of lack of expertise, technical capacities, staff, financing, management and the ability to function well, especially at the local level, is also a result of Communism and the following transition phase. After Communism the government structure was decentralized, however in an unstructured and uncoordinated manner resulting in a fragmented public administration with fragmented responsibilities. Local governments lack the expertise to do all the jobs required and it is difficult for them to hire specialists. Related problems are the low wages of civil servants and the resulting corruption, the training of public administrators and the lack of capacity at local level and the influence of politicians upon the public administration. (Vinke-de Kruijf et al, 2009; Vinke-de Kruijf, 2009 a)

Recent developments in the water management sector are: the restructuring of the governmental institutions responsible for the drinking and waste from the local to the regional level, the implementation of the Water Framework Directive and Integrated Water Management, and stakeholder participation processes (Vinke-de Kruijf et al., 2009; Teodesiu, 2007; meetings 9, 10). The general goal is to bring water management in line with EU standards.

Socio-economic Context

In 1989, Romania began the transformation from Communism to Capitalism with a largely obsolete industry and a pattern of output unsuited to customer's needs, and a poor functioning agricultural sector (CIA, 2010; Tempelman, 2007). The transition phase was though: GDP fell sharply, investment and foreign trade decreased and inflation and unemployment increased tremendously (Thomas, 1999). It took until 2000 before GDP levels were at the same level of 1989 (Romania Central, 2010 b).

Between 2000 and 2008, the GDP grew very strong reducing poverty and resulting in the creation of a middle class. Due to the global financial crisis, Romania's GDP fell more than 7% in 2009 to 161.5 billion US$ (circa €117 billion) per year (CIA, 2010). In 2009, average GDP at purchasing power parity per capita was 11,500 US$ (circa €8330) (CIA, 2010) and Romania was ranked the 48th largest economy of the world (World Bank, 2010). Employment of people is as follows: services 47.1%, agriculture 29.7% and industry 23.2% (CIA, 2010). The unemployment

rate is 7.8% and 25% of the population is living below the poverty line (CIA, 2010). On the UN Human Development Index Romania is ranked on place 50 (UNDP, 2010). Based on the economic and human development situation, it can be concluded that the Netherlands is a much more developed and wealthy country than Romania.

During Communism the focus was mainly on technical skills and industry (Bos, 2007; Tempelman, 2007). After Communism many people got unemployed. Many Romanians therefore left the country to find jobs abroad (Euromonitor International, 2007). Foreign companies hired mostly young people, because they were more flexible and could speak English. Also many younger persons had studied business administration or other studies which were denominated by the communists, which foreign companies however needed. Only some older, more flexible or former influential people (often ex-Securitate) were hired by foreign companies because of their influence and large networks (Tempelman, 2007). In general, the population of Romania is rather well educated, but there is still a lack of knowledge in certain areas such as environmental studies. In combination with the underdeveloped infrastructure the tendency is to rely on Western technology (Thomas, 1999). On the OECD (2008) ranking, Romania is ranked 47th on the quality of education of all countries in the world.

Communism and the transition towards capitalism had also huge effects on social values and behavior. In Romania, power distance is quite large, especially compared to the Netherlands (Vinke-de Kruijf, 2009 a). People accept authority in general without questioning (Stowe, 2008). Hierarchy is important, which decreases the ability for participation (Vinke-de Kruijf, 2009 a; observations Sept/Oct 2010). The person highest in rank decides and speaks in public. Hence, paternalism -and the often related corruption- is much more accepted in Romania than in the Netherlands (Stowe, 2008).

Due to years of oppression by the communistic regime and its Securitate, levels of trust are in general low. Romanians often trust foreigners more than their compatriots. Therefore nepotism is common in Romania; because Romanians prefer to do business with the persons they know. Also Romanians have low levels of trust in the judicial and government system; many politicians and civil servants are still former communists. (Stowe, 2008)

In Romania, many older people find it hard to adapt to capitalistic society. Many did not learn to be critical, to express their opinions, to take risks or to employ themselves outside the strict boundaries of the regime (Stowe, 2008). Formal social capital in Romania is therefore low; people rely mostly on family bonds (Vinke-de Kruijf, 2009). The ones who dared to take risks after the change in 1989 got often very rich. The new rich have no difficulties in showing off their wealth, which is a response to the egalitarian society during Communism and lack of luxury according to Tempelman (2007).

Poverty is highest in the rural areas, where many people depend on subsistence farming. Sanitation levels in the rural areas are poor; many get their drinking water from (polluted) wells and have no proper bathroom facilities like a shower and hygienic toilet with connection to a sewage system (observations Sept/Oct 2010; meetings 2, 6; Van Dijk, 2007). Recently, some villages in the rural areas are connected to drinking water distribution and sewage systems (meetings and observations 2, 6). The facilities in towns are in general better. In towns often a sewage system, waste water treatment and drinking water distribution are in place; however, often very old and not functioning well (Government of Romania, 2007). Flood protection systems are not up to the right level; “major investments are needed to protect 2050 localities

with more than 5000 inhabitants that are exposed to natural floods" (Government of Romania, 2007; p. 39).

Environmental Context

Currently, public environmental awareness is low in Romania (Thomas, 1999; Miranda & Blanco, 2009). Under Communism, the focus was on industry and technique, because these two things would bring the socialist hail state as it was believed (Bos, 2007; Tempelman, 2007). During Communism, recycling was widespread and not voluntary. After Communism, most Romanians do not see "waste management as important as people have more pressing priorities" (Thomas, 1999: p. 367). Due to the collapse of the Communistic regime and the resulting fall in GDP, there was lack of money for the necessary investments in a good functioning waste and drinking water treatment system. Currently, "only 52% of the Romanians are connected to both water and sewage services and more than 79% of the waste water is untreated or insufficiently treated" (Government of Romania, 2007). Most waste water treatment and sewage systems, mostly located in towns, are old, have lack of capacity, function not well and need to be renovated (Boer, n.d.; Government of Romania, 2007). For example, the sewage, drinking water distribution and waste water treatment in the towns of Teleorman will be renovated coming years (meeting 7). In the rural areas, sewage systems, waste water treatment and drinking water distribution systems or often non-existing (Gabizon, 2010). Also restrictions on pollution of surface and ground waters, especially by farmers, or the exertion of control are not in place or functioning well. For example, in Teleorman County there are large problems with finding clean drinking water locations due to the high pollution of nutrients and pesticides by the intensive farming in the region (observations and meetings 2, 3, 5, 6; interviewee NL3; Van Dijk, 2007). Another problem is that people dump waste, which results in the pollution of surface waters (observations, Sept/Oct 2010; discussions with WMC, Oct. 2010). Compared with the Netherlands, environmental awareness is much lower and waste treatment infrastructure is underdeveloped (Miranda & Blanco, 2009; Boer, n.d.).

Legal Context

Until 1974, water legislation was mainly focused on the management of water quantity per river basin (Vinke-de Kruijf, 2009). From 1974 onwards, water quality issues got increased attention. In recent years Romania has improved their legislation in order to harmonize the legislation with EU-standards (Teodosiu, 2007). The most relevant Romanian legislation on water management is currently the Water Law of 1996 and its subsequent modifications, in which an economic mechanism to protect the water resources and to improve efficient water use, and river basin committees for stakeholder participation are grounded (Vinke-de Kruijf, 2009). Other important legislation is about a framework for water management plans at the river basin level and access to information concerning water management activities. From 2007 onwards, EU laws are important as well; especially the Water Framework Directive, directives on water supply and sanitation and the need to implement Integrated Water Resources Management (Teodosiu, 2007). The Romanian water legislation is very complex, incomplete and sometimes even contradictive. Law enforcement, monitoring, inspection and implementation are poor. Because the water law is about some aspects vague, some public water actors escape implementing parts of the water law (Dinica, 2007).

Regarding drinking water quality it is important to note that drinking water operators are obliged to add chlorine and to monitor the quality of the water. The National Health Department checks each month the water on hazardous biota. Monitoring programs need to be approved by the County Health Authority. (Hooijer et al., 2009)

5.1.2.3 Expected Influence International/Country Context on Knowledge Sharing

Based on the description of the international and country context, the following contextual factors are expected to influence knowledge sharing in the cooperation between the Province of Overijssel and Teleorman County positively or negatively.

Aspects from the international/country context that can influence knowledge sharing positively are:

- openness of Romanians to foreigners and level of trust placed in foreigners;
- interest of Romanians in Western technology and ways of conducting work;
- good and important bilateral relationship between the Netherlands and Romania and the newly set-up panel for bilateral water projects;
- the obligatory implementation of EU-rules and the according restructuring processes of the public and water management administration;
- the need for improvement and lack of sanitation and water infrastructure in Romania;
- the EU-budgets available for the modernization and construction of water infrastructure in Romania.

Aspects from the international/country context that can influence knowledge sharing negatively are:

- the strict hierarchy in Romania which decreases the abilities for communication and cooperation;
- the distrust against fellow-Romanians and the related preference to do only business with people you know;
- in Romania many persons are passive, risk adverse and have not a critical attitude;
- administrative fragmentation in Romania, especially in the water sector;
- lack of expertise at lower government levels in Romania could make knowledge sharing more difficult;
- the poor water law, lack of law enforcement and related bureaucracy makes project execution more difficult;
- the lower awareness about environmental issues in Romania compared to the Netherlands;
- the limited cooperation and poor communication between government institutions in Romania;
- the corruption and lack of administrative capacity which impact ability to get funds for projects in Romania;
- the geographic distance between Romanian and Netherlands reduces abilities for face-to-face contact.

5.2 Key Characteristics of Actors

This section discusses the characteristics of the key actors in the analyzed drinking water projects between the Province of Overijssel and Teleorman County. First the perceptions and views of the organizations and key actors are discussed. Second, the results on motivation and trust of the cooperating organizations and of the key actors are described. Third, the results on the capabilities education, skills, power and work experience of the key actors are presented.\

5.2.1 Perceptions and Views

Perceptions on Goals of Cooperation

In the cooperation, the Province of Overijssel, the Dutch water boards and Vitens focus on knowledge sharing, contributing to the Millennium Development Goals, and (innovative) projects results with possible economic benefits for Dutch companies (interviewees NL1, NL2, NL3, NL4; Province of Overijssel, 2009 a). In the cooperation, the Province of Overijssel focuses relatively more on the successful and fast completion of projects, i.e. tangible project results, compared to the water boards and Vitens (Province of Overijssel, 2009 a; interviewees NL2, NL3, NL6, NL7, NL8; observations meeting 1). Further, the Province of Overijssel focuses relatively more on the creation of opportunities for companies in Overijssel to present innovative concepts in order to help improve the drinking water situation in Romania compared to the water board or Vitens. The Dutch water boards and Vitens focus relatively more on knowledge sharing, sustainability, contributing to the Millennium Development Goals and cooperation between the Dutch parties and the Romanian parties involved in the cooperation compared to the Province of Overijssel (interviewees NL3, NL6, NL7, NL8, RO12; meeting 1; Province of Overijssel, 2009 a). Normally, Vitens contributes to the Millennium Development Goals through Vitens-Evidens International, which focuses on the improvement of drinking water supply in the urban areas of developing countries outside Europe, often based on a long-term view (interviewees NL6, NL7; Vitens-Evidens International, 2011).

NGO Drinking Water for Romania strives to improve the drinking water situation in Romania (interviewee NL5).

The Romanian partners want to improve the drinking water situation in Teleorman County and focus relatively more on the successful and fast completion of projects with (tangible) project results they need.

They above shows that the goals of the organizations involved in the cooperation are partly overlapping and partly diverging.

Perceptions on Project Problem and Goals

The experts of Vitens state that they prefer to work based upon long-term drinking water master plan for the region, instead of doing individual pilot projects (interviewees NL6, NL7, NL8). The experts mention that the drinking water projects in itself are good initiatives to help the rural people (interviewees NL6, NL7, NL8). As Hooijer et al. (2009) and Van Dijk (2006) report, in 2005 a start was made with the development of an integrated rural drinking and waste water management plan. Hooijer et al. (2009: p.9) mention about the plan that “the preparation of the plan took apparently too long, and did not result in a plan that was seen as useful by the Romanian partners.” In the end, the plan was not used (Hooijer et al., 2009).

The project coordinators and a manager of the Province of Overijssel state that individual projects are in line with organizational goals, as long as they provide more people with safe drinking water, create economic opportunities for Dutch organizations and contribute to the Millennium Development Goals (interviewees NL1, NL2, NL3, NL4). An example of the innovative

pilot projects are the Perfector-E water purification units (case C) (interviewees NL2, NL3). Interviewee NL1 states that the economic opportunities for Dutch businesses over the period 2005-2009 were limited. In January 2011, officials of the Province of Overijssel decided to end the cooperation at the end of 2011 (interviewees NL2, NL3; Province of Overijssel, 2011; Janssen, 2011; observation Jan. 2011). According to interviewee NL2, reasons for this include the limited economic opportunities and the budgets cuts at the Province of Overijssel.

The Romanian partners value the drinking water projects, because they solve urgent problems in the rural areas of Teleorman (Van Dijk, 2007; interviewees RO9, RO10, RO12, RO13). The Romanian partners state that for them the goal is to improve the drinking water situation in the rural areas of Teleorman County (interviewees RO9, RO10, RO12, RO13). According to interviewees NL3, NL6, NL7, NL8, RO12, the Romanian and Dutch politicians appreciate the drinking water projects, because they result in tangible project results that address urgent basic needs of the communes and help to improve the politicians' image.

In September/October 2010, the differences in view on the cooperation and project approach between the Dutch partners did not have direct impact on the individual drinking water projects analyzed (observations meetings 2, 3, 4, 5, 6, 7, 8). All partners stated that their main goal was to improve the drinking water situation in the rural areas of Teleorman County (interviewees NL3, NL4, NL6, NL7, NL8, RO9, RO10, RO13; observations meetings 2, 3, 4, 5, 6, 7, 8).

Perceptions on Project Solution

Interviewees RO9, RO10, RO12 state that the project solutions for A, B, C and D are not much debated between the Romanian parties; the parties agreed with the proposed solutions. According to interviewees NL1, NL3, NL4, NL6, NL7, and NL8, the solutions for the project cases A, B and D are not much debated between the Dutch actors. The experts of Vitens state that the project solutions should fit in a long-term drinking water supply vision (interviewees NL6, NL7, NL8). During meeting 5 it was observed and it was stated by interviewees NL3, NL6, NL7, and NL8, that the Dutch parties have different views on the best solution for case C. In June 2010, Dutch and Romanian politicians agreed to install a Perfector-E purification unit in Islaz to purify the water of the public drinking water well. The agreed on this solution before the Dutch experts had given their advice. Experts of Vitens state that they had preferred as solution a new borehole with sand filters (interviewees NL6, NL7).

Interviewees RO9 and RO10 report that currently, the solution for the catching of the natural springs and its use is discussed (case E); the Romanians are discussing mainly among themselves which use they prefer for the water and in which solution this should result. The Dutch actors are mentioned to be critical about the costs of the proposed alternatives and prefer to use the water mainly for drinking (interviewees NL3, NL6, RO9).

Project Expectations

Case A*. Drilling of five boreholes (2005-2009)*: The Province of Overijssel and water boards had agreed to do several projects and capacity building activities in the cooperation with Teleorman County in order to improve the drinking water, sanitation and flood protection (interviewee NL1; Hooijer et al., 2009; Van Dijk, 2007 a). For case A, it was decided to drill five boreholes (interviewees NL1, NL5; Hooijer et al., 2009). According to interviewee NL5, NGO Drinking Water for Romania had expected to drill more boreholes, as they had expected that a larger budget would have been reserved for it. Further, he stated that the drilling projects were almost cancelled due to a lack of funds (interviewee NL5). These statements show that the project expectations differed between the Province of Overijssel and the NGO Drinking Water for Romania.

Case B *Improving drinking water quantity*: In general, the partners have the same project expectation: they expect that the drinking water projects supply more inhabitants of Talpa and Slobozia Mandra with safe drinking water all year round, what all actors perceive as important and needed (interviewees NL1, NL3, NL4, NL6, NL7, RO9, RO10, RO12).

Case C *Improving drinking water quality*: The statements of the project partners showed that they did not have the same expectations about the project solution (interviewees NL2, NL3, NL4, NL6, NL7, NL8; observations meeting 5). A manager of the Province of Overijssel and Dutch and Romanian politicians decided to install a high-tech water purification unit in Islaz, as they perceived it a good solution (meeting 5; interviewees NL2, NL3). The Dutch experts and project coordinators did not think that this would be an appropriate solution (interviewees NL1, NL3, NL4, NL6, NL7, NL8). The experts explained that high-tech drinking water solutions will not be sustainable on the long-term in the current rural setting of Teleorman, as (1) the operation and maintenance costs are too high, (2) maintenance is too complex for the communes (the Perfector-E in Saelele was already broken down) and (3) other alternatives are more robust and cheaper (interviewees NL6, NL7; discussions Sept/Oct 2010; observation field visit 4). The Romanian parties supported the proposed solution, as the village Islaz is in urgent need for safe drinking water (interviewees RO9, RO10). In meetings 5 and 7, the Romanian partners expressed their doubts about the solution, as the high-tech water purification unit is better suited for surface water treatment (observations meetings 5, 7).

Case D *Mobile laboratory*: According to the Dutch and Romanian partners, they had the same expectations regarding the mobile laboratory on the short-term, given the current situation in Teleorman County (interviewee NL8; meeting 7). They all wanted to improve the monitoring of the water quality as soon as possible and a mobile laboratory would improve the water quality monitoring on the short-term (interviewee NL8; meetings 2, 7). On the long-term, the expert of Vitens prefers the construction of a good quality laboratory (for one or more counties) in which at least the standard drinking water quality aspects can be monitored. Also the technical director of Apa Serv prefers another solution on the long-term (meeting 2, 7).

Case E *Using spring water:* The Dutch partners perceive that the water is suited for drinking water and would prefer to use the water for this (interviewees NL3, NL6). According to interviewees RO9 and RO10, the Romanian parties prefer to get economic benefits from the water available as well. Current ideas are to use the water for irrigation, a fish pound, hydro power or recreation as well, besides using it for drinking water (interviewees NL3, RO9, RO10).

Possibilities and Time for Discussion

According to interviewees NL3, NL4, NL6, NL7, NL8 and NL10, there are possibilities for discussion during meetings and presentations. On the other hand, the time for discussions was limited due to tight schedule of meetings and the short time experts had available in Romania (observations meetings 2, 3, 4, 5, 6, 7; interviewee NL3). Interviewees NL1, NL3 and NL4 state that parties often do not take the opportunity to discuss project aspects, the project plan or activity plan for the cooperation more thoroughly (observation, 2010; interviewees NL1, NL3, NL4). During the meetings in September and October 2010, it was observed and also reported by Romanian interviewees that most discussions on the data are among the Romanians and among the Dutch themselves (interviewees RO9, RO10, RO12; observations meetings, 2, 3, 4, 5, 6, 7).

The Romanian mayors have often difficulties for discussing things with the Dutch, as they often do not speak English (observations, 2010; interviewee RO12). Romanian interviewees mention that the Dutch experts often do not speak with the mayors in the field (interviewees RO12, RO15). In the cases analyzed, communication with the mayors was often difficult due to

language barriers and therefore the Dutch experts discussed with them through interpreters (observations meeting 2, 5, 6 and 7).

Collective Learning

Case A (period 2005-2009): interviewee NL1 states that collective learning took place mainly at the beginning of the project and at the end, when the wells were drilled. In the first phase of the project, the project partners discussed the places where to put the boreholes and pumps and which place had the highest urgency (interviewee NL1; Van Dijk, 2007). Interviewee NL5, confirms that the drilling method and installation of the wells was discussed by the Romanian and Dutch partners during a meeting at the Province Hall in Zwolle (interviewee NL5). Interviewee NL5 states that all partners could learn from the meeting, ask questions and share their opinions. According to interviewees NL1 and NL5, collective learning during the drilling of the boreholes was limited to none.

Case B**:** It was observed and confirmed by the expert of Vitens that the advice for this activity was based on the meetings (meetings 2, 6, 7, 8) and field visits with all involved partners (interviewee NL6; observations meetings 2, 6, 7, 8). In this project and the cases C and E, there was a lack of data (observations meetings, 2, 6, 7, 8; interviewees NL6, NL7, NL8). The first meeting in which it was discussed which data was lacking in order to give a good advice, was after the field visits and meetings with all involved partners on Saturday 2 October, when not all Romanian parties were there anymore (observations and meeting 8). In the field visits and meetings 2 and 6, the (mal)functioning of the boreholes, the extra water requirements of the inhabitants, the water treatment system, the installations and if possible the borehole drilling profiles have been discussed or observed (observations).

Case C**:** in July 2010, Dutch and Romanian politicians made a decision about the project solution in advance of the advice of the Dutch experts of Vitens. During meeting 5 in September 2010, the Dutch experts tried to give their independent advice (observations meeting 5; interviewees NL6, NL7). Due to the previous political decision, this independent advice created misunderstandings at the side of the mayor of Islaz and the director of Apa Serv, what resulted in a chaotic discussion. During this meeting the parties decided to reflect on the project process: all partners agreed that in a next project it is better when politicians make a decision after they receive the expert's advice (observations & meeting 5; interviewees NL3, NL6, NL7, NL8). Also the drinking water samples of the well were collectively discussed on their quality, as there were two samples with contradicting results (interviewees NL3, NL6, NL7, NL8; observations & meeting 5).

Case D**:** according to interviewee NL8, the partners learnt during the conservations with each other about the context, setting, and requirements of the laboratory (interviewee NL 8; meeting 7). Based on the exchange of thoughts, both parties developed the same vision on the needed equipment for the mobile laboratory (interviewee NL8; meeting 7).

Case E: The Romanian partners did not share their ideas and problems with the Dutch experts of Vitens when asked about it; they did, for example, not mention during the field visit the hazard of landslides (observations meeting 3). According to interviewees RO10 and RO13, the Romanian parties are not sure how to catch the spring water due to the risk of landslides. Further, the Dutch expert examined the spot and asked them questions about the location, the old storage tanks and the land use uphill of the source (observations meeting 3).

5.2.2 Motivation and Trust

Individual/Organizational Goals and Project Goal

The joint drinking water projects are officially in line with the organizational goals of the Province of Overijssel and water boards (interviewees NL1, NL2, NL3, NL4; Province of Overijssel, 2009 a). Many civil servants of the Province of Overijssel do not perceive the cooperation and its projects as one of the core tasks of the Province of Overijssel. In their opinion, the cooperation is mostly supported by politicians (interviewees NL1, NL2, NL3; discussions with civil servants). Interviewees NL1, NL3 and NL4 state that the projects have low priority within the Dutch organizations and report that support of the Provincial Council for the cooperation is very important. Interviewees NL1 and NL3 and other civil servants state that the level of priority the cooperation gets within the Province of Overijssel is limited, requires external staffing, lacks support from the international office of the Province, and lacks involvement of civil servants of the Province of Overijssel. Executive project tasks are mostly done by the water boards (interviewees NL1, NL3; Province of Overijssel, 2009 a). Currently, the Province of Overijssel states that the Province would like to end the cooperation, because they delivered tangible project results, contributed to the Millennium Development Goals and the cooperation can not deliver more economic gains (interviewee NL2). According to interviewee NL2, a continuation of the cooperation was hard to defend during the current tough budget cuts at the Province of Overijssel. In January 2011, it was decided by officials of the Province of Overijssel to end the cooperation in December 2011 (interviewees NL2, NL3; Janssen, 2011 (21 Feb. 2011); Province of Overijssel, 2011).

According to interviewee NL3, the drinking water projects are in line with the goals of the water board Velt & Vecht, but have relatively low priority within this organization. The drinking water projects are also in line with the goals of the other water boards, as they contribute to the Millennium Development Goals (Province of Overijssel, 2009 a). The borehole projects are in line with the organizational goals of the NGO Drinking Water for Romania and had high priority (interviewee NL5).

The Romanian drinking water projects are partly misaligned with the organizational goals of Vitens(-Evidens), which focuses on urban areas in transition and developing countries outside Europe (Vitens-Evidens, 2011; interviewees NL6, NL7, NL8). According to the experts, the projects have low priority for Vitens and staff has limited time available for the project (interviewees NL6, NL7, NL8).

The Romanian partners report that they give the cooperation high priority, because they can gain much from the cooperation (interviewees RO9, RO10, RO12). Especially projects that have (tangible) results are in the interests of the Romanian partners, commune or mayor (interviewees RO9, RO10, RO12). The analyzed projects are in line with the organizational goal of the Romanian partners, which is to improve the drinking water situation in the rural areas of Teleorman (Van Dijk, 2007; interviewees RO9, RO10, RO12). A sub goal of the Romanian parties joining the cooperation is often to secure funds for projects needed to be carried out (based on observations during discussions about drinking water projects in Romania, Sept/Oct 2010; meetings 5, 10; interviewee NL4).

Believe in Value of Project

Cases A and B, the drilling of boreholes, are seen as good projects by the Dutch project coordinators, experts of Vitens, the NGO Drinking Water for Romania and the Romanian partners (interviewees NL1, NL3, NL4, NL5, NL6, NL7, RO9, RO10, RO13).

Regarding **case C**, the Dutch project coordinators and experts of Vitens have the opinion that the Perfector-E installation does not suit the Romanian context, but think that the project helps the people of Islaz (interviewees NL1, NL3, NL6, NL7) (for the explanation, please see section 5.3.1, shared expectations). The technical director of Apa Serv had his doubts about using a Perfector-E for groundwater treatment, because it is officially better suited for surface water treatment and was pleased that the experts of Vitens suggested to add a re-mineralization unit (meeting 5; Norit, n.d.). He states that he thinks the project is very important for improving the drinking water situation in Islaz (meeting 5). The other Romanian partners think that the project is of added value for the commune (interviewees RO9, RO10, RO12).

The Dutch project coordinator states that he has doubts about the idea for the mobile lab (**case D**) (interviewee NL3). Apa Serv and the WMC state that they think that the mobile lab will improve the monitoring of the rural drinking water (meetings 2, 7, 10; interviewees RO10, RO13). The Dutch expert of Vitens believes that the project is good as solution for the coming 4-5 years (interviewee NL8).

The Romanian and Dutch partners state that they think that **case E** is valuable for the rural communes near the source, because it will provide them with a source of safe drinking water (interviewees RO9, RO10, RO12). Currently, the Dutch and Romanian partners differ in opinion about what to use the water for (interviewees NL3, NL6, RO9, RO10). The Dutch partners primarily want to use the source water for drinking water and optionally for irrigation (NL3, NL6). Teleorman County prefers to use the water for drinking water and the creation of a pond which can be used for irrigation and a fishery (interviewee RO9). The mayor of the commune prefers to use the water for drinking water, irrigation, a fishery and recreation pond (interviewee RO9). The Romanian project manager, former employee of Haskoning Romania, prefers to use the water for drinking water, irrigation and a small hydropower installation. According to interviewee RO9, the main concern of the Dutch partners are the costs of the ideas of the Romanian partners.

Commitment to Complete Project

Project Priority and Commitment

According to interviewees NL1, NL3, NL4, the priority given to the projects by the Dutch parties is rather low (see also section 5.2.2, subsection Individual/Organizational Goals and Project Goal). Interviewees NL2 and NL3 report that some of the civil servants of the Province of Overijssel intended to end the cooperation in 2009. In 2009, the deputy, dike reeves and politicians decided to extend the cooperation up to 2011 (Province of Overijssel, 2009 a; interviewees NL1, NL2, NL3). In January 2011, actors of the Province of Overijssel jointly decided to bring the cooperation to an end in December 2011; it will only continue if the new administration coming in office by April 2011 decides differently (interviewees NL2, NL3; Province of Overijssel, 2011; Janssen, 2011). Between 2005 and 2007, Vitens withdrew from the cooperation as they did not have the same vision on the cooperation as the Province of Overijssel (interviewees NL1, NL2, NL3, NL6, NL7, NL8; Van Dijk, 2007 a; section 5.2.1).

The project coordinator of the Province of Overijssel and an expert of the NGO Drinking Water for Romania state that they were motivated and committed to complete case A (interviewees NL1, NL5).

The project coordinators and manager of the Province of Overijssel, the technical experts of Vitens and the Romanian partners state that they were motivated and committed to complete the analyzed drinking water projects in order to deliver tangible results (NL2, NL3, NL4, NL6, NL7, NL8). A manager and the deputy of the Province of Overijssel focus on the delivery of

project results and urge partner organizations to stay active (interviewees NL2, NL3). According to interviewee NL4, the influence of the project coordinators and the deputy of the Province of Overijssel is felt in Romania as well, and helps to get things done, as hierarchy is important in the Romanian culture (interviewee NL4).

Project Importance

For Haskoning Romania, the importance of the cooperation projects increased over time, as the cooperation projects made up an increasing part of the order portfolio (interviewees NL4, RO9; discussions with employees of Haskoning Romania in October 2010). For the WMC, founded by the cooperating partners, the cooperation projects form one of their core activities and important sources of funding (interviewee RO13; Hooijer et al., 2009; observations at meetings 9, 10). Respondents of the WMC report that they use the cooperation projects for expanding their network and project acquisition (interviewees RO10, RO13). For Apa Serv, Teleorman County Council and the communes, the drinking water projects are important, because they result in tangible results they need for improving the drinking water situation (observations and meetings 2, 5, 7, 10; interviewee RO12). The Romanian parties state that they are motivated and committed to complete the projects (interviewees RO9, RO10, RO13).

Level of Trust in Project Actors

Trust in Project Members

In general, the Dutch project coordinators and Romanian project members trusted each other (interviewees NL1, NL3, NL4, RO9, RO10, RO12). The experts, who join the cooperation for a short period, mentioned that their level of trust in the project members did not change during the cooperation (interviewees NL4, NL7, NL8). The experts mentioned that they did not understand which roles the employees of the WMC and the project manager of Haskoning Romania performed in the drinking water projects (interviewees NL6, NL7, NL8). Interviewee NL5 stated that he trusted the project coordinator of the Province of Overijssel and an expert of Vitens who assed their drilling techniques. He stated that he had less trust in a project coordinator of Vitens (interviewee NL5).

Trust in Partner Organizations

Two project coordinators of the Province of Overijssel mentioned that their trust level in Vitens was negatively affected by Vitens' withdrawal in 2005 and difficult rejoining in 2010 (interviewees NL1, NL3). Their trust in Vitens as partner in the cooperation was partly restored after the successful mission in September/October 2010 (interviewees NL1, NL3). Several actors of the Province of Overijssel lost their trust in the willingness of the water boards Regge & Dinkel and Groot-Salland to cooperate within this cooperation, due to their minimal input (interviewees NL1, NL2, NL3, and NL4).

During meeting 1, actors of the water boards were disagreeing with the Province of Overijssel about how the cooperation was directed. Issues from the past and in other projects outside the cooperation influenced the relationship between the Province of Overijssel and the water boards, which affected the willingness of the water boards to cooperate with the Province of Overijssel and influenced trust between the partners (discussion with members of the water boards; observations meeting 1; interviewee NL1, NL3).

An interviewee from NGO Drinking Water for Romania stated that their trust in the goal of the drinking water projects and sincerity of the Province of Overijssel decreased, because the

NGO could only drill five boreholes (interviewee NL5). In general, the Dutch experts of Vitens trusted the Dutch and Romanian partner organizations (interviewees NL6, NL7, NL8).

Two Dutch actors state that they have moderate to low levels of trust in the Romanian politicians and mayors, because some of the project results were not used (Ecosan toilets) or broken half a year after placement (Perfector-E in Saelele; observation 2010) or due to the behavior of the mayors when deciding upon the place where the boreholes should be drilled (interviewees NL4, NL5).

The Romanian respondents initially stated that they trust all partner organizations (interviewees RO9, RO10, RO12). Later on, they mentioned several barriers that influenced trust levels during the cooperation:

- language barriers are an important source of misunderstandings;
- differences in way of working (the Dutch work based on ideas and a long-term vision; the Romanians more according to a plan to address a problem (ad hoc));
- issues related to the bureaucratic system of Romania and the financial system of the Netherlands (interviewees RO9, RO10, RO12).

At meeting 5, a misunderstanding between the Dutch and Romanian partners about the role of the Dutch experts and the consequences of their advice influenced temporarily trust levels between the Dutch and Romanian partners. As result of promises made in July by Dutch and Romanian politicians, the Romanian actors did not trust the independent advice of the Dutch experts of Vitens, as it differed from the decision made in July. The Romanian actors expressed their concerns and stated that they got the idea that the Dutch partners wanted to implement a cheaper, less good solution. The Dutch experts explained their role and the project coordinator of the Province of Overijssel stated that Islaz would get a good solution and that the promised solution still could be implemented if they preferred it. During the moment of misunderstanding between both partners it was not possible to share knowledge; after solving the misunderstanding, it was possible to share knowledge again (interviewees NL3, NL6, NL7, NL8; observations meeting 5).

Willingness to Continue Relationship

In 2009, civil servants at the Province of Overijssel wanted to end the cooperation, but the Provincial politicians and the dike reeves of the water boards decided to extend the cooperation up to 2011 (interviewee NL1, NL2; Province of Overijssel, 2009 a). Regge & Dinkel and Groot-Salland decided to be less active in the cooperation (interviewees NL1, NL3).

Currently, the Romanian parties are convinced that the Dutch partners want to end the relationship: all interviewees think that the Dutch parties will end the cooperation by the end of 2011 (interviewees RO9, RO10, RO12, RO13). All Romanian parties are willing to continue the relationship, because they can gain much from the cooperation (interviewees RO9, RO10, RO12, RO13). All the Dutch actors stated that they believed that the Romanian partners wanted to continue the cooperation after 2011 (interviewees NL1, NL2, NL3, NL4, NL6, NL7, NL8). At the Dutch side, the experts of Vitens expected that the Province of Overijssel wants to continue the relationship (interviewees NL6, NL7, NL8). According to interviewee NL3, the water board Velt & Vecht intends to continue the relationship with Romania even when the Province of Overijssel is ending the cooperation.

Trust in Capabilities of Project Partners

According to both Dutch and Romanian interviewees, the Dutch parties are capable of contributing relevant knowledge in the projects (observations Sept/Oct 2010; interviewees NL1, NL2, NL3, NL4, NL6, NL7, NL8, RO9, RO12). According to the Dutch interviewees, knowledge

exchange between the Dutch and Romanian partners is limited in the sense that both partners learn from the drinking water projects (interviewees NL1, NL2, NL3, NL5, NL6, NL7, NL8). The Dutch partners think that the Romanian partners are willing to cooperate and enthusiastic (interviewees NL1, NL2, NL3, NL4, NL5, NL6, NL7, NL8). The Dutch actors stated that they did not gain new technical knowledge of the Romanian partners (interviewees NL1, NL2, NL3, NL4, NL5, NL6, NL7, NL8).

According to respondents of the WMC, Apa Serv is capable of contributing technical drinking water knowledge (interviewees RO10, RO13). The respondents state that the WMC depends for their technical skills for a large part on experts of Apa Serv (interviewees RO10, RO13). Interviewee RO9 reports that for cases B, D and E local Romanian contractors are hired for the execution of the projects.

Fear for Loosing One's Unique Value

The Dutch parties do not have fear for loosing their unique values. They see knowledge sharing even as a necessity and beneficial (interviewees NL1, NL3, NL4, NL6, NL7, NL8). The former employees of Haskoning Romania state that they are not afraid of sharing knowledge and think it is a prerequisite for doing a project (interviewees RO9, RO12). Respondents of the WMC state that they are not afraid to share knowledge (interviewees RO10, RO13). However, when asked about their plans for cases B and E they are not really open about their ideas and considerations (observations meetings 2, 3, 6). A Dutch project coordinator and Romanian project manager remarked that information means power in Romania and that you often need to pay for it (interviewees NL1, RO9). The Dutch project coordinators and Dutch experts stated that sharing of data or receiving data from the Romanian partners is often difficult (interviewees NL1, NL3, NL6, NL7, NL8; observations meetings 2, 3, 5, 6, 8). This could indicate that the Romanian organizations are more afraid to loose their stakes (interviewees RO9, NL1); on the other hand, data is often simply unavailable in Romania (observations).

Rewards

Employee Rewards

The project coordinators of the Province of Overijssel state that they like the work they are doing, because they think the job is interesting, meaningful and because they are getting paid for it (interviewees NL1, NL3). They further mention that the cooperation helps them to get a broader view. They also appreciate that they can realize more project results within a short period of time compared to projects done in the Netherlands (interviewees NL1, NL3).

The consultants of Haskoning Romania and the hired project coordinator of Royal Haskoning Netherlands, mention that the cooperation projects have personnel rewards in the form of salary, opportunities for acquiring extra business, and an interesting and challenging job (interviewees NL4, RO9, RO12).

The Dutch experts of Vitens and NGO Drinking Water for Romania mention intrinsic rewards like job satisfaction from the helping of people by providing them with save and clean drinking water and job diversification (interviewees NL5, NL6, NL7, NL8).

Most of the Romanian actors mention that the cooperation is important for them because it gives them work and an income (interviewees RO9, RO10, RO12, RO13).

Organizational Rewards

The rewards from the cooperation for the Province of Overijssel are: (1) contributing to the Millennium Development Goals, (2) some economic benefits for companies in Overijsel

(installation of Perfector-Es from Norit; geotextile delivered by Royal Ten Cate), (3) having an international cooperation and (4) improving the relationship with the Dutch partners (Hooijer et al. 2009; interviewees NL1, NL2, NL3). Further, the Province of Overijssel and the politicians improve their image by contributing to the Millennium Development Goals through this cooperation (interviewees NL1, NL2, NL3, NL4).

The rewards for the water boards are improvement of their image, contributing to the Millennium Development Goals, capacity building and knowledge sharing (interviewee NL3; meeting 1). Furthermore, the water boards hoped to improve their relationship with the Province of Overijssel by working together with Provincial civil servants so that they could improve their cooperation in (future) joined projects carried out in Overijssel (meeting 1). However, from 2009 onwards, the project coordinators are hired externally, so that civil servants of the water boards are not cooperating directly with civil servants of the Province of Overijssel (observations, interviewees NL2, NL3, NL4).

The rewards of the cooperation projects for Haskoning Romania are business, extra assignments, more international expertise, and more knowledge about the Romanian water market (interviewees NL4, RO9, RO12). For Haskoning Romania, the cooperation projects formed a considerable part of their order portfolio (meetings with employees of Haskoning Romania in Sept/Oct 2010; interviewees NL4, RO9). At the end of 2010, the office of Haskoning Romania has been closed (meetings with employees of Haskoning Romania in Sept/Oct 2010; interviewees RO9, RO12).

The rewards for Vitens are a good relationship with the Province of Overijssel which could help for securing of water winning permits and other organizational objectives (interviewees NL6, NL7, NL8). Further rewards for Vitens are satisfied employees and improvement of their corporate image (interviewees NL6, NL7, NL8). The rewards for the NGO Drinking Water for Romania are orders, helping rural villages and income for the Romanians drilling the boreholes (interviewee NL5).

The reward of the drinking water projects for Teleorman County and the communes is an improved drinking water situation (interviewee RO12; Van Dijk 2007; Hooijer et al., 2009). For the mayors and politicians of the County, it increases their chances to be re-elected as well (interviewees NL5, RO12). For the WMC the cooperation is very important, because it makes the organization more known and visible, gives them opportunities to improve and strengthen their relationships with Apa Serv and Teleorman County, increases their network and the number of members paying a fee (interviewees RO10, RO13; meeting 9).

5.2.3 Individual's Capabilities

Level of Education, Work Experience and Skills

The former and a current project coordinator of the Province of Overijssel are educated in aspects of water management and have international work experience in this sector as project manager (interviewees NL1, NL4). The other current project coordinator of the Province of Overijssel has also some education and work experience in water quality issues, but has less experience in international project management (interviewee NL3). He speaks basic Romanian, which helps to overcome language barriers (observations; interviewee NL3).

A manager of the Province of Overijssel has work experience in the water policy field and has currently experience and schooling in project management. When the manager became responsible for the cooperation, she did not have experience or schooling in leadership and management (interviewee NL2). During the cooperation she learnt to steer on budgets and to tack between different actors (interviewee NL2).

In general, the Dutch experts have relevant expertise due to their education, work experience and technical skills and are able to share knowledge in their field of expertise (interviewees NL5, NL6, NL7, NL8; observations meetings 2, 3, 4, 5, 6, 7, 8).

The current Romanian project coordinator is responsible for the cooperation at the Romanian side since 2009 (interviewee NL3). It is difficult to make appointments with her and the other Romanians much in advance (observations during research; interviewee NL3). According to respondents, the reason for this could be related to cultural differences as the Romanian partners arrange things often at the last moment (interviewees NL1, NL3, NL5, NL8). This makes knowledge sharing, data exchange and project preparation difficult according to interviewees NL1, NL3, NL5, NL6, NL7 and NL8.

According to interviewees RO10, RO12, RO13, RO15, the WMC, mayors, local communes, and Teleorman County lack technical expertise on drinking water issues. Actors of the WMC have expertise in Romanian law, communication, economics and hydrology (interviewees RO10, RO13). For most of their technical expertise, the WMC depends often on Apa Serv (interviewees RO10, RO13). The technical director of Apa Serv, has knowledge of drinking water and work experience in management and drinking water issues, but not at the level of an expert according to interviewee NL8.

The project manager of Haskoning Romania is educated in and has quite some work experience in the fields of water management, environmental issues, project management and cooperating with international organizations (interviewee RO9). According to herself, she lacks expertise in the drilling of boreholes and setting up of laboratories, but she has been able to get most necessary knowledge from Dutch and Romanian experts of sub-contractors (interviewee RO9).

Power and Capabilities

The former project coordinator (period 2005-2008) states that he had support of the Romanian partners and most water boards, but support of water board Regge & Dinkel was limited. According to himself, he directed most aspects of the cooperation and the Dutch had the lead in the period 2005-2007. He adds that, with hindsight, he as project coordinator was maybe too dominant in the cooperation regarding the formulation of project proposals and project problems (interviewee NL1). Hooijer et al. (2009) concluded about the period 2005-2009 that not all projects were implemented with full consent of the Dutch and Romanian partners and a better usage of the expertise of the partners could had improved project results in the period 2005-2009 (Hooijer et al., 2009).

A current project coordinator of the Province of Overijssel states that he had difficulties (1) to address malfunctioning of project members, (2) to let project members take responsibility for their daily tasks, and (3) to enforce partner organizations to cooperate, partly because he is also responsible for the affairs of water board Velt & Vecht in the cooperation (interviewee NL3). For example, at a meeting with the water boards in May 2010, it proved to be difficult for the project coordinator to urge the water boards to take responsibility for their tasks (observations meeting 1; interviewees NL3, NL4). He addressed the lack of cooperation by the project partners to his supervisor at the Province of Overijssel and placed the support problem on the meeting agenda of the deputy of the Province of Overijssel and dike reeves of the water boards in order to get administrative as well as political support for the cooperation (interviewee NL3).

Later on, a project coordinator of Royal Haskoning Netherlands was hired by the Province of Overijssel to keep track of the cooperation and project planning, the execution of tasks by parties involved and project results (interviewees NL3, NL4). This project coordinator has

sometimes difficulties to let the Dutch cooperating partners carry out the tasks they are responsible for, because the organizations give the cooperation projects often low priority and have often different views on the cooperation (interviewees NL2, NL3, NL4; observations meeting 1). According to interviewee NL4, in their function the Dutch project coordinators have influence on the Romanian parties and often they can direct their actions. Also, it was observed that the Dutch project coordinators of the Province of Overijssel may direct parts of the budgets available for the drinking water projects (i.a. meeting 5, 10; interviewee NL2).

In their function, the project coordinators can influence the communication and information channels and have influence on the activities done within the cooperation (Hooijer et al., 2009; interviewees NL1, NL3, NL4). A Dutch deputy and a manager of the Province of Overijssel have most executive power and use it to control the cooperation and projects and allocate resources (interviewees NL2, NL3, NL4, NL6, NL7, NL8; meeting 1; Province of Overijssel, 2010). A deputy of the Province of Overijssel is politically responsible for the cooperation at the Dutch side. A manager of the Province of Overijssel communicates with him, the Provincial Council and higher civil servants about the cooperation (interviewee NL2, NL3). The Provincial Council has the final say on issues like funding and continuation of the cooperation. The dike reeves are politically responsible for the input of the water boards in the cooperation (interviewee NL3).
Teleorman County is politically responsible for the cooperation in Romania (interviewee NL3, RO12). Several of the Romanian parties stated that the Dutch parties may decide as they are also providing most of the funds for the projects (meeting 10; interviewee RO12).

Teleorman County Council and Apa Serv have the power to steer the projects in Romania once they are going on and have the ability to propose new projects (Hooijer et al., 2009; meeting 10; interviewees RO10, RO12). The Romanian partners use their power to influence the selection of the project solution and by selecting the communes in which they would like to implement the project (observations meeting 5; interviewees NL1, NL3, RO9, RO10, RO12). According to a respondent, the communes are selected by Teleorman County Council on the basis of political preferences (political party) or personal relations with the County Council (interviewee RO12). In the drinking water projects analyzed, all selected communes have the same political color as the majority of the Teleorman County Council (observations; interviewee RO12).

According to interviewee RO12, the Romanian mayors have limited power; they can agree or reject a project that is proposed to be implemented in the commune by Teleorman County Council. Once a project is carried out in their commune, the mayors can try to improve the project or enlarge the project (interviewees RO9, RO12). A vice mayor confirmed that the influence of the commune on a project was limited (interviewee RO15). As reasons he gave that the communes (1) lack the expertise and (2) are often later on in the project process involved when most aspects have been decided (interviewee RO15).

The Romanian project manager of Haskoning Romania has influence on the cooperation as a result of her expertise and facilitating position, but her power is quite limited (observations; interviewee RO9).

The WMC has limited power to influence the cooperation, because it depends on its partners for technical expertise (Apa Serv), funding (Teleorman County, Apa Serv and the municipality of Turnu Magurele), and project funding (the Province of Overijssel) (Hooijer et al., 2009; interviewees RO10, RO13; meetings 9, 10).

In general, the Dutch experts of Vitens and NGO Drinking Water for Romania have limited to moderate power; their task was to give advice on how to execute (the next steps) in a project (observations cases B, C, D and E). In case C, the influence of the experts was reduced, because

there was already a solution (observation meeting 5). In the other activities, the Dutch project coordinator and Romanian project manager use the advices for taking decisions on the next project steps (observations; interviewees NL3, RO9).

5.3 Facilitation of Knowledge Sharing

Facilitation of knowledge sharing helps to improve the knowledge sharing activities. Knowledge sharing facilitation is influenced by the organizational context, as organizational factors affect the acting of key actors in knowledge sharing activities. Knowledge sharing can be facilitated through management support and priority, allocation of resources, limited management control, a knowledge supportive culture, effective communication, knowledge gatekeepers and broker, reducing knowledge fragmentation and technology. In this section these aspects are described in more detail.

Management Support

The team managers of Vitens supported their employees in the projects, however the projects were not under their supervision, but under that of Vitens-Evidens (interviewees NL6, NL7, NL8). Interviewees NL6, NL7 and NL8 explained that support of managers of Vitens-Evidens was of less importance, as they were not directly involved in the cooperation. In practice, the project coordinators of the Province of Overijssel functioned as daily managers of the experts; they were responsible for the program and arranged the daily matters in Romania (observations Sept./Oct. 2010). The experts of Vitens stated that the project coordinators of the Province of Overijssel supported them to do their jobs and stated that the trip to Romania was arranged well (interviewee NL6, NL7, NL8); only the program for investigating the requirements for the mobile laboratory was at first not clear (interviewee NL8).

A manager of the Province of Overijssel supported her employees especially when there were urgent matters or if there was a crisis (interviewees NL2, NL3; observations). She stated that she is committed to complete the project activities before the end of 2011, so that tangible project results can be delivered (interviewee NL2).

The majority of the Dutch and Romanian politicians involved supported the cooperation and the analyzed projects (interviewees NL2, NL3, RO12; Province of Overijssel, 2009; Province of Overijssel, 2009 a; Hooijer et al., 2009 Janssen, 2011; meeting 10). At the beginning of 2011, Dutch politicians and civil servants decided to bring the cooperation to an end in 2011 (Province of Overijssel, 2011; Janssen, 2011; interviewees NL2, NL3).

Management Priority

A manager of the Province of Overijssel especially gave priority to the projects in times of crisis; when there was a crisis she acted (interviewees NL2, NL3). The manager reported that other projects within the Province of Overijssel are currently relatively more important (interviewee NL2). According to some civil servants, the deputy of the Province of Overijssel gave relatively high priority to the cooperation projects (i.a. interviewees NL2, NL3). Several respondents state that the projects have often limited management priority at organizations involved in the cooperation (interviewees NL3, NL4, NL6, NL7, NL8). Interviewees RO9, RO10 and RO12 argued that the drinking water projects receive high priority in Romania.

Management Control and Power

During the research period, it was observed that management control by the manager of the Province of Overijssel varied among cooperation projects. The manager controlled the administrative issues, took care of the communication with politicians and was involved in some

project activities like the Danube Days and the Perfector-E projects (case C) (Province of Overijssel, 2010; interviewees NL2, NL3). The manager mentioned that she made sure that the projects are in line with public and political goals and are in the interests of the partners involved (interviewee NL2).

Politicians from both the Dutch and Romanian sides had much influence on the cooperation. One of the Dutch project coordinators stated that Dutch politicians focused mainly on the completion of projects and project results, which reduced the time and possibilities for experts to share knowledge (interviewee NL3). Further, the deputy and manager of the Province of Overijssel kept in touch with partner organizations in order to keep them involved in the cooperation (interviewees NL2, NL3).

Management control by the Dutch project coordinators in the drinking water projects analyzed was limited (observations; interviewees NL6, NL7, NL8). Interviewees NL6, NL7, NL8 reported that they felt supported by the project coordinators to do their job.

According to interviewee RO12, Teleorman County tried to control the cooperation at the Romanian side by selecting the communes in which a project may be carried out, based on political party, the relationship the commune has with the County Council and by reducing the options for mayors to influence the cooperation projects (see section 5.3).

At the Romanian side, management control was visible during meetings, as the person highest in rank spoke and decided (observations meetings 2, 5, 6, 7, 10). For lower level Romanian employees it was more difficult to participate in meetings, when their boss or someone of higher rank (or from a more powerful organization) was present (observations meetings 2, 5, 6, 7, 10).

In the case of case C, the influence and control of Romanian and Dutch politicians and a manager of the Province was observed. In case C, the politicians made an agreement on the project solution before experts had analyzed the problem (interviewee NL3, NL6, NL7, NL8; meeting 5). The project coordinator had preferred that he and experts of Vitens had defined the exact problem and best solution for case C before the politicians had made a decision on it (interviewee NL3). In the other projects, management control was not directly visible.

Allocation of Resources

The Provincial and water board councils decide about the amount of funds made available for the cooperation (Hooijer et al., 2009). The Province and water boards decide, in consultation with their Romanian partners, how to use the funds (Hooijer et al., 2009). A manager of the Province of Overijssel and the project coordinators have also influence on the allocation of parts of the funds (observations; meeting 5; interviewee NL2). Further, the manager of the Province of Overijssel decides about the deployment of Provincial employees and the hiring of external employees (interviewee NL2, NL3; Province of Overijssel, 2010).

According to interviewee NL1, the amount of time and money available was not enough to coordinate the project and deliver significant tangible project results. After the accession of Romania to the EU in 2007, the availability of funds for the cooperation reduced (Van Dijk, 2007b). The extra funds that became available for the Romanian parties can not be used directly in the cooperation and the Romanian government institutions lack the ability to apply for funds or do not dare to apply for funds due to the strict rules (Van Dijk, 2007b; interviewees NL3, RO9, RO10). Interviewee NL5 reported that there were difficulties regarding the budget reserved for case A due to a lack of money in 2007. The current project coordinators argued that financial resources were adequate (interviewee NL3, NL4). A current project coordinator of the Province stated that time and manpower were often issues (interviewee NL4).

Knowledge Sharing Facilitation by Knowledge Catalysts

The organizational structure, which specifies some of the communication lines, includes several knowledge catalyst functions (observations; Hooijer et al., 2009).

The former employees of Haskoning Romania mentioned that their expertise helped to overcome barriers between the Dutch and Romanian parties due to language differences, misunderstandings, and differences in way of work and attitude (interviewees RO9, RO12). Interviewees RO9 and RO12 stated that they often explained the Romanian parties why the Dutch used a certain approach and what their goals are and they explained the Dutch often why things were different from what they had expected. Further, the experts of Haskoning Romania improved the cooperation by helping to improve the match between Dutch and Romanian organizational goals (interviewee RO12).

Both the Dutch and Romanian project coordinators fulfilled a knowledge gatekeeper and broker function, because they coordinated the cooperation, were responsible for the communication and updating of the organizations involved and had influence on the selection of organizations and experts. The project coordinators had sometimes difficulties to coordinate the cooperation as a result of the limited options the project coordinators have to address issues and make parties responsible for their tasks and as a result of the large number of organizations involved in the cooperation that have often their own ideas and wishes (meeting 1; interviewee NL2, NL3, NL4). One of the project coordinators mentioned that his double function made it difficult for him to address certain cooperation issues (interviewee NL3; observations meeting 1).

The coordinators coordinated the input of experts in the cooperation. In the case of the drinking water projects, the project coordinators sent a request to Vitens for three experts with expertise in water quality monitoring, water winning and water purification (interviewee NL3, NL6, NL7, NL8; observations September/October 2010). In the analyzed cases, Vitens had selected very skilled and motivated experts (sections 5.3.2 and 5.3.3) (observations meetings 2, 3, 4, 5, 6, 7, 8).

The manager of the Province of Overijssel functioned as knowledge gatekeeper between the project coordinators and the politicians as she informed the politicians of the Province of Overijssel about the cooperation and the project coordinators about the political aspects and goals of the cooperation (interviewee NL2, NL3; Province of Overijssel, 2010).

Communication

Communication forms an important part of knowledge sharing facilitation. Regarding communication over the period 2005-2009, Hooijer et al. (2009: p. 5) concluded: “Very little communication has taken place between the partners, depending only on irregular communication between the coordinator of the Dutch partners and the Romanian coordinator of EuroTeleorman. Minutes of meetings of the Dutch Working Groups were only prepared in Dutch and were not shared with the Romanian partners.” In 2007, Romanian high delegates often did not show up or were replaced by their representatives during meetings between high level delegates from the Netherlands and Romania (Hooijer et al., 2007; interviewee NL2). In Romania, meetings between all Romanian partners to discuss the cooperation together did not take place (Hooijer et al., 2009). Dinica (2007) stated that in Teleorman County communication between County, local government institutions and national government institutions was poor. Furthermore, “due to a lack of communication between the (cooperation) partners it appeared that not all (project) activities were implemented with the full consent of all stakeholders and that (project) activities could have been more successful if the experience (i.e. expertise red.) of all partners would have been used for the design of the activities” (Hooijer et al., 2009: p.5).

For the period 2009-2011, it was observed that communication between project members was often insufficient. For example, a manager of the Province of Overijssel stated that she was lately informed about problems with regard to the delivery of the Perfector-E for Islaz (interviewee NL2). A Dutch project coordinator stated that the Province of Overijssel changed sometimes project agreements and did not communicate these changes sufficiently with the project coordinator and partners, so that it was unclear how to advance in the cooperation projects. This happened more often after the decision was taken to end the cooperation in 2011. Further, a Dutch project coordinator reported that the Romanian partners communicated less with the Dutch partners when they were occupied by other priorities (interviewee NL3). In addition, project partners often did not know each others vision on the cooperation or which knowledge a party could contribute (observations and interviewees NL3, NL5, NL6, NL7, NL8). The manager of the NGO Drinking Water for Romania and the experts of Vitens stated that they did not know how the cooperation projects were progressing or what was done with their inputs (interviewees NL5, NL6, NL7, NL8).

Openness of Culture to Knowledge Sharing

In the period 2005-2009, there was not much discussion about the implementation of projects. The former project coordinator concluded that the Dutch were maybe too dominant in the cooperation (interviewee NL1). Also not all projects were implemented with full consent of all stakeholders (Hooijer et al., 2009). These aspects probably reduced the opportunities for knowledge sharing in the cooperation projects.

In the period 2009-2010, opportunities for discussion were not always used or time available for discussion was limited (interviewees NL3, NL4). However, it seemed that there was more discussion about the projects between the Dutch and Romanian partners and the Romanian partners had more opportunities to suggest project activities themselves (Hooijer et al., 2009; interviewees NL1, NL2, NL3, NL4, RO10, RO12). The Dutch parties thought that the Romanian parties were willing to share knowledge (interviewees NL1, NL2, NL3, NL6, NL7, NL8), but sometimes wondered why certain information was not made available (earlier on) (interviewees NL1, NL6). As interviewees NL1 and RO9 mentioned, it is sometimes difficult to obtain information and data in Romania, because information is also power. According to interviewees NL1 and RO9, it is often required that government organizations pay each other for the data they need. The interviewees stated that they thought that most of the Dutch parties were willing to share their knowledge (interviewees NL1, NL2, NL3, NL4, NL6, NL7, NL8, RO9, RO10, RO12).

Fragmentation of Knowledge

Knowledge, needed in the cooperation projects, was fragmented among various cooperating organizations (observations meeting 1, 2, 3, 4, 5, 6, 7, 8, 9; Hooijer et al., 2009). Technical expertise was mainly provided by NGO Drinking water for Romania, Vitens and the Dutch water boards (interviewee NL1, NL3, NL5, NL6, NL7, NL8; meeting 1). Coordination and knowledge about the overall cooperation was mainly brought in by the Province of Overijssel and EuroTeleorman (interviewees NL3, RO14). Knowledge about law, local conditions, and politics was brought in by Apa Serv, WMC and Teleorman County/EuroTeleorman (interviewees RO10, RO13). Apa Serv brought in also technical knowledge about drinking water (interviewees RO10, RO13; meeting 10). The former employees of Haskoning Romania brought in expertise about project management and interpreted between the Dutch and Romanian actors (observations meetings 2, 3, 4, 5, 6, 7, 10; interviewees RO9, RO12)

According to Hooijer et al. (2009), the cooperating partners had difficulties to use the expertise of all partner organizations in the project carried out over the period 2005-2009. In the drinking water projects analyzed (period 2009-2011), the different organizations brought in their expertise, but had also difficulties to locate all relevant knowledge available (observations; interviewees NL6, NL8). From a field study in 2005 by Vitens, data was already available of several drinking water wells (De Jonge et al., 2005; interviewees NL6, NL8). Vitens nor the Province of Overijssel knew about the data anymore (interviewees NL6, NL8). The experts of Vitens located the data after the field trip when it was not needed anymore (interviewees NL6, NL8). Furthermore, the NGO Drinking water for Romania had information about the soil and drilling techniques used from the boreholes drilled in 2007 (case A) what could have been relevant for case B (observations; interviewee NL5).

Technology

The cooperating partners did not use a database in which they shared data and information that was visible for each party active in a cooperation project. Each organization used its own data system (interviewees NL3, NL6, NL8). Communication technology like e-mail and telephone were used for sharing knowledge (interviewees NL1, NL3, NL4, NL5, NL6, NL7, NL8, RO9, RO10).

5.4 Knowledge Sharing Activities

In this section, the knowledge sharing activities are described. Also, the type of knowledge shared and the way in which it is communicated are discussed. Further, feedback, evaluation, interaction, timing of knowledge sharing and updating of project members are described.

Before the field visit to Romania in Sept./Oct. 2010, the experts of Vitens sent a request to the director of the WMC to answer some questions about the drinking water projects per e-mail (observations project briefing Sept/Oct 2010; interviewees NL6, NL7, NL8; RO13). According to the Dutch experts, the provided knowledge by the WMC was limited and reduced the ability of the experts of Vitens to prepare themselves, (interviewees NL6, NL7, NL8). It was also observed that the questions asked by the Dutch experts were broadly defined (observation of questions asked in briefing document, Sept/Oct 2010).

The experts stated that most of the knowledge they share is based on tacit knowledge obtained through work experience or expertise (interviewees NL 5, NL 6, NL7, NL8). In the drinking water projects, knowledge is shared in meetings or face-to-face discussions (observations and meetings 2, 4, 5, 6, 7). The experts share most of their tacit knowledge collectively in group meetings and group presentations (observations & meetings 2, 4, 5, 6, 7; interviewee NL3, NL5, NL6, NL7, NL8).

An expert of Vitens and an expert of NGO Drinking Water for Romania shared also explicit knowledge based on theory learnt from books (interviewees NL5, NL6). In the drinking water project cases B, C, D and E, parts of the explicit and tacit knowledge shared by the experts was codified by them in written advice reports (observations; De Vin, 2010; Wuestman, 2010). Furthermore, an expert of Vitens shared knowledge about drilling methods obtained from books and the internet also per e-mail with the Romanian project manager (interviewees NL6, RO9). The Vitens expert in laboratories used his experience to help the Province of Overijssel and the Romanian project manager to write a tender for the mobile laboratory (interviewee NL8). Evaluation reports and progress reports of the cooperation are written each year in order to keep actors and politicians updated (interviewees NL2, NL3, NL4; Van Dijk, 2007; Hooijer et al., 2009; Van Dijk, 2007 b; Van Dijk, 2007 c; Van Dijk, 2008).

In the project cases B, C and E, lack of data influenced the knowledge sharing (observations & meetings 2, 3, 5, 6, 7). According to experts of Vitens, the Romanian partners did not prepare themselves well, did not knew which data and information the Dutch experts would need or had the data and information not available. During the whole visit the experts missed some crucial data about the project they had to analyze or it was delivered quite late as for example with some of the bore profiles in case B (observations and meetings 2, 4, 5, 6, 8; interviewees NL6, NL8). Furthermore, in case B, the Dutch expert lacked knowledge on the water availability and replenishment of the Frateşti aquifer (observation; NL6; meetings 2, 6, 8). In 2005, De Jonge et al. (2005: p.22) recommended already "to examine the effects of the use of groundwater carefully." Further, in case B. knowledge lacked on the (geo)morphology and soil layers, the hydraulic heads, raw water quality of the aquifer, if the aquifer was connected to the Danube, and which people extract water from the layer and how much (observations meeting 8). The project partners did not requested for information of the NGO Drinking Water for Romania as the NGO was not actively involved in the cooperation projects at the moment; however it could have been that the NGO had the knowledge the partners lacked about the soil layers and bore profiles from their drillings in 2007 (observations meeting 8). During this research, it was not verified with the Romanian partners what the reason was for the lack of certain data needed in the drinking water projects.

In case C, two water quality tests of the water from the public drinking water well in Islaz were contrasting, so that it was not known what the exact conditions of the water were, which made it difficult to give a good advice on the purification method (observations meeting 5). In this case, the exact water quality was not so important anymore, because the final solution was already decided upon by Dutch and Romanian politicians (interviewees NL3, NL6, NL7; observations meeting 5). Furthermore, it was certain that the nitrate levels were exceeding the maximum standards so that reversed osmosis was needed, if the Romanian partners liked to use this well for purified drinking water (interviewee NL3, NL6, NL7, NL8; observations meeting 5). After this, the Romanian and Dutch partners discussed if it was needed to add a re-miniralization unit to the Perfector-E (observations meeting 5). Furthermore, the Dutch experts expressed their opinion on which alternative would have been better than the solution proposed by the Dutch and Romanian politicians in an attempt to transfer as much knowledge as possible (observation meetings 5, 8).

In case D, both parties exchanged their ideas and thoughts, their expectations and analyzed together what the mobile laboratory should be capable of (meeting 7; interviewee NL8).

In case E, the Romanian partners did not explain their ideas and issues regarding the catching of the springs with the Dutch expert of Vitens (observations meeting 3). During the meetings and field visits, the Romanian partners did not share their ideas and problems, also not when asked about them (observations meeting 3; interviewee RO13). Interviewee RO10 stated that the Romanian partners did not know how to catch the water from the source due to the risk on land slides in the area. Furhter, it was also observed that the Dutch parties did not explicitly ask the Romanian parties about their ideas and what kind of assistance they required (observations meeting 3).

During the meetings in Romania, the Dutch experts discussed much of the uncertainties and issues among themselves and due to language barriers, less with the Romanian partners (observations Sept/Oct 2010). Therefore, it was for the Romanian partners often not clear which assumptions and knowledge was behind the advice the experts gave. In addition, the Dutch experts gave their preliminary conclusions often too early, so that they raised expectations at the side of the Romanian partners (observations Sept/Oct 2010). When plans changed due to new information made available, this gave misunderstandings (observations and meetings 2, 3,

5, 6). The Romanian partners, on their turn, did not explain why they chose for a certain location or approach and discussed most of their issues also among themselves only (observations Sept/Oct 2010; interviewees RO9, RO10, RO12, RO13).

The Dutch experts stated that they did not receive feedback on the knowledge they shared and that they were not updated about project progress (interviewees NL5, NL6, NL7, NL8). According to the former project coordinator of the Province of Overijssel (interviewee NL1), there was anyhow not so much reflection on the projects in the period 2005-2009, which supports also the conclusions by Dinica (2007) and Hooijer et al. (2009) on the poor communication in that period. According to the experts of Vitens and the current Dutch project coordinators, there has not been much discussion about knowledge; only about the water quality sample and some of the assumptions made (interviewees NL3, NL4, NL6, NL7, NL8). If the Romanian partners received feedback on their inputs or gave feedback could not be verified during this research.

Evaluation of the knowledge shared was not done systematically (meetings 2, 3, 4, 5, 6, 7, 8). In the cases analyzed, it was observed that the Dutch and Romanian partners did not discuss possibilities for follow-up meetings together and issues they would like to address further. For example, the experts of Vitens noted that there is a need for follow-up projects regarding laboratory operations and quality control, drilling of boreholes, and water quality monitoring (interviewees NL6, NL8). These issues were now ad hoc mentioned during a field visit or partly recommended in the advice report (observations 6, 7; Wuestman, 2010). It was observed that these issues were sometimes not mentioned at all.

The time for joint fact finding and cooperating on the problems together was limited during the field visits as a result of the tight schedule and limited time the experts had for their job (schedule and observations Sept/Oct 2010; observations meetings 2, 3, 4, 5, 6, 7, 8). This reduced the options for experts to learn from each other's approaches, methods and knowledge. During meetings 2, 7, and 10, Apa Serv and some of the communes were interested in issues related to the selling of water, water pricing, water taxation systems, implementation of a water use measurement system and purification of drinking water (with new) techniques. For the Dutch experts of Vitens it was difficult to answer especially the more complex questions regarding purification methods for water containing ammonium for instance, due to the limited extra time available to address other topics besides the project activities (observations meeting 8).

The Dutch partners meet at least once every three months at both the level of the civil servants and on the level of the dike reeves and deputy of the Province (interviewees NL1, NL3). The project coordinators, both the Dutch and Romanian, have weekly contact by phone to keep each other updated and have also some semi-planned meetings by phone (interviewees NL1, NL3, NL4). The Dutch partners use most often e-mail (interviewees NL1, NL2, NL3, NL6, NL8). In the cases that things are going wrong or if something is urgent, they call each other (interviewees NL1, NL2, NL3, NL4).

The communication between the project coordinators and the experts of Vitens and the NGO Drinking Water for Romania was concentrated around the moment that the experts were active in Romania (interviewees NL6, NL7, NL8). Just before, during and afterwards there was communication by e-mail, phone and face-to-face (interviewees NL6, NL7, NL8). The communication between the experts and the project coordinators was rather ad hoc (interviewees NL6, NL8).

At the Romanian side, the partners communicate especially when they need information from each other (interviewees RO9, RO10, and RO13). Several times a year the Romanian partners have a planned meeting as well (interviewees RO10, RO13). For communication, the Romanian partners use e-mail most (interviewees RO9, RO10, RO13). If things are not clear or if there are problems, face-to-face meetings are arranged or phone calls are made (interviewees RO9, RO10, RO13).

Besides the meetings, once or twice a year evaluation reports are made by the Dutch and Romanian partners to inform all partners (interviewees NL2, NL4).

Over the period 2005-2009 communication was limited and depending on the irregular communication between the Dutch coordinator and EuroTeleorman (Hooijer et al., 2009). Communication among the Romanian partners was often insufficient (Dinica, 2007; Hooijer et al., 2009). For the period 2009-2011, it was observed that communication was not always sufficient (see section 5.4). Interviewees NL5, NL6, NL7, NL8 stated that they were not updated about the progress of the cooperation and projects. Furthermore, a project coordinator and a manager of the Province of Overijssel mentioned that some follow-up meetings were delayed (interviewees NL2, NL4). The Romanian project manager stated that communication with the Dutch partners was difficult due to the many partners involved and the tight schedules of the actors involved (interviewee RO9).

5.5 Knowledge Sharing Results

The knowledge sharing process has several knowledge sharing results. Section 5.5.1 shows the learning and application of new knowledge results. Section 5.5.2 discusses how knowledge was evaluated and feedback was given. In section 5.5.3, the results on the relationships between the cooperating parties are described. In section 5.5.4, the project results are discussed.

5.5.1 Learning and Application of New Knowledge and Skills

The Dutch manager and coordinators of the Province of Overijssel mentioned that they improved their management and communication skills through the cooperation projects, which they could use and apply in their daily work (interviewees NL2, NL3, NL4). However, several respondents also stated that they that they did not learn new knowledge from the cooperation projects (interviewees NL2, NL4, NL5, NL6, NL8). One expert and a project coordinator learnt more about the winning and extraction of ground and surface waters for drinking water (interviewees NL3, NL7). Up to now, they could not apply or pass the knowledge through (interviewees NL3, NL7). Most of the Dutch participants mentioned that the experiences in the Romanian setting gave them ‘a broader view on things’ and ‘a reflection on what is really important in life’ (interviewees NL1, NL3, NL5, NL6, NL7, NL8).

Experts of Vitens learnt that aspects of the cooperation projects could have been implemented differently (interviewees NL6, NL7, NL8). They learnt that project execution was more difficult as a result of the many partners involved in the drinking water projects (interviewees NL6, NL7, NL8). Furthermore, they learnt that a master plan defining the steps needed for improving the drinking water situation is important for effectively improving the rural drinking water situation in Teleorman County on the long-term (interviewees NL6, NL7, NL8).

According to interviewee RO12, civil servants and politicians of Teleorman County learnt to communicate better and to express their real needs more often: “In the past, the Romanian partners approved many projects, because the Dutch were willing to pay for it and the projects

sounded interesting. But some of these projects did not address the problems they perceived as urgent and existing, so that the cooperation was going less well and both parties got disappointed. Haskoning Romania helped to create understanding between both parties and to improve the communication."

The Romanian project manager learnt more about the advantages and disadvantages of several borehole drilling techniques due to the exchange of knowledge with an expert of Vitens (interviewees NL6, RO9). Furthermore, she learnt more about hydro power installations and laboratory procedures. Until now, she did not bring this knowledge into practice, but she is going to apply it in the next phases of the projects.

Interviewees of the WMC stated that they improved their skills in the organization and set-up of meetings and in the facilitation of knowledge exchange (interviewees RO10, RO13). They mentioned that they applied these skills in the organization of other activities and meetings (interviewees RO10, RO13). They stated that the exchange of experiences and information with the Dutch experts helped them to get more technical skills and perceive things from another perspective (interviewees RO10, RO13). The director of the WMC stated that she applied the technical knowledge and skills learnt in the cooperation projects (interviewee RO13; meeting 9). How much these meetings helped the WMC to get more technical skills is questionable; according to the director of the WMC, the WMC relies for their technical expertise on her and on the support from Apa Serv (interviewees RO10, RO13; meeting 9). Further, the Romanian project manager reported that she and especially her subcontractors are doing most of the technical aspects in the drinking water projects (interviewee RO9).

5.5.2 Evaluation and Feedback on Knowledge

As already discussed in section 5.4.1, the evaluation of knowledge and feedback on the advices given by the experts is limited (interviewees NL1, NL3, NL4, NL6, NL7, NL8). The interviewees stated that there has not been much discussion on knowledge between the Dutch and Romanian parties and the parties also did not take the possibilities for discussion (interviewees NL1, NL3, NL4, NL6, NL7, NL8); however between the Dutch experts themselves and between the Romanian parties themselves, more discussion was taking place (interviewee RO9; observations Sept/Oct 2010).

Evaluation of the knowledge available took place in meeting 8, after the field visits and when not all Romanian partners were present (observations meeting 8). In meeting 5, the water quality samples were discussed and evaluated by the Dutch experts (interviewee NL7; observations meeting 5).

5.5.3 Relationship Building

The project coordinator hired of water board Velt & Vecht and the former project coordinator of the Province of Overijssel, were personally willing and able to continue the relationship with (some of) the Romanian partners (interviewees NL1, NL3). The former project coordinator added that he established good relationships with the Dutch water boards (interviewee NL1). Currently he is setting-up other international cooperation projects with water boards Groot-Salland and Regge & Dinkel (interviewee NL1).

Interviewee NL3 stated that at the level of the politicians and deputy relationships were established between the Dutch and Romanian partners. Most of the other Dutch and Romanian key actors interviewed stated that they did not develop international relationships that will continue after ending the cooperation between the Province of Overijssel and Teleorman County (interviewees NL2, NL4, NL5, NL6, NL7, NL8, RO9, RO10). A manager of the Province of Overijssel stated that she did not build a relationship with the Romanian partners (interviewee

NL2). The Dutch experts established temporary work relationships with the Dutch and Romanian partners (interviewees NL5, NL6, NL7, NL8). According to interviewee NL3, the civil servants of the Province of Overijssel did not establish relationships with the cooperation partners through the cooperation projects, as they were not involved in the cooperation. The statements of the Dutch interviewees show that the Dutch project coordinators established most and the strongest relationships with the Romanian partners (interviewees NL1, NL2, NL3, NL4, NL5, NL6, NL7, NL8).

According to interviewees RO9, RO10 and RO13, the Romanian parties focused on establishing relationships with each other; at least the former consultants of Haskoning Romania and the WMC were doing this, in order to strengthen their positions and secure future projects (interviewees RO9, RO10, RO13). Further, they tried to establish a relationship with the Province of Overijssel, but they were aware that the Dutch partners were most likely to end the relationship in 2011 (interviews RO9, RO10). The Romanian project leader stated that the strength of the relationships with the Romanian partner organizations varied as a result of misunderstandings she had to solve between the partners (interviewee RO9). The WMC reported that they would like to continue the cooperation with the Dutch and Romanian partners (interviewee RO10, RO13). Further, employees of the WMC reported that they established relationships with Apa Serv and Teleorman County Council/EuroTeleorman (interviewees RO10, RO13).

5.5.4 Project Results

Case A. Five deep wells. At a meeting in the Province Hall of Overijssel between Dutch and Romanian partners, the pump system for the deep wells was discussed. Based on the arguments presented, the partners selected a robust, almost maintenance free hand-pump system, instead of an electric or diesel pump system which required more maintenance, was less robust and more expensive (also to operate). Many communes have modest financial resources, so that a cheaper, maintenance free and robust system is to be preferred in Teleorman County (interviewees NL3, NL4; observations meeting 4).

Case B Drilling of Boreholes. The mayors of Talpa and Slobozia Mandra and the other Romanian partners could not give clear explanations for the lower than expected yield of the newly drilled boreholes (observations and meetings 2, 6; De Vin, 2010). To increase the water yield of the boreholes in Talpa, a local contractor had increased the length of the filter, so that it extracted also water from a polluted aquifer (De Vin, 2010). Based on his experience, the Dutch expert expected that the boreholes were not drilled properly, what reduced the yield of the borehole and could cause clogging of the borehole filter (interviewee NL6; field visit and meeting 6; De Vin, 2010; figure 10b). Therefore he advised to use another drilling method that reduces the chance on clogging of the filter and probably increases the yield of the borehole (interviewee NL6; De Vin, 2010). Therefore, it is expected that it is not necessary to extend the filter and extract water from the polluted aquifer, so that also the water quality will improve (interviewees NL6, RO9; observations meeting 6; De Vin, 2010).The project manager of Haskoning Romania ordered this technique for the five boreholes to be drilled (interviewee RO9).

Case C Perfector-E. According to Hooijer et al. (2009), the Romanian partners see the installed Perfector-Es as a success. However, the Perfector-E installed in Saelele was broken already half a year after its installation (observation and field visit 4; figure 11; interviewees NL3, NL4). According to interviewees NL3 and NL4, the mayor of Saelele did not heat the container in

which the Perfector-E was standing during winter, as it was expensive and the village was recently connected to the drinking water network (discussions with experts of Vitens and Province of Overijssel Sept. 2010; interviewees NL3, NL4). As a result of frost, the purification unit was broken (observations meeting 3; figure 11; interviewees NL3, NL4). According to interviewees NL3 and NL4, the mayor used the installation to show the people how much he did for them in order to get re-elected (discussions field visit 4; interviewees NL3, NL4). The Province of Overijssel, however, was not aware of the fact that the village was going to be connected to drinking water network in such a short period (field visit 4; interviewees NL3, NL4).

In case C, knowledge sharing improved the solution as decided upon by the Dutch and Romanian politicians and directors of Norit (meeting 5). Experts of Vitens and a project coordinator of the Province of Overijssel noticed, that the project result could have been improved further, if knowledge sharing was done timely (observations meetings 5, 7; interviewees NL3, NL6, NL7). In this activity, the politicians had made an agreement on the solution to be implemented before the experts had given their advice (observations & meeting 5; interviewees NL3, NL7). The Dutch and Romanian politicians and directors of Norit had decided to place a Perfector-E combined with a reversed osmosis unit in order to remove the high nitrate levels and other substances from the water of the public well in Islaz (interviewee NL3; observations meeting 5). According to the experts of Vitens such an installation delivers de-mineralized purified water, which incurs health risks and is disapproved to drink by the World Health Organization (WHO) (Kozisek, 2004; interviewees NL6, NL7; observations meeting 5). The experts of Vitens (interviewees NL6, NL7; observations and meeting 5) therefore recommended the partners to add a re-mineralization unit to the water purification unit (interviewees NL3, NL6, NL7; observations meeting 5). The Dutch and Romanian partners agreed to implement the proposed solution by the experts of Vitens during meeting 5 (observations meeting 5).

According to the experts of Vitens, the best solution for Islaz would have been to drill a new well in an aquifer with good quality water in combination with placing some sand filters (interviewees NL6, NL7, NL8; observations and meeting 5). The latter option would have cost only one third (circa €30,000) of the Perfector-E with reversed osmosis and a re-mineralization unit (circa €100,000). Further, the latter option is easier and cheaper to maintain and less expensive in operation (interviewees NL3, NL6, NL7; observations and meeting 5).

Case D Mobile Laboratory. In this project, the tender procedure was improved as a result of the knowledge sharing process, so that a cheaper bid could be obtained (interviewee NL8). At first, the bid was written based on the equipment one supplier delivered. In this way that supplier would always win the bid. After intervention by the expert of Vitens, the tender was written more general, so that other suppliers could bid as well, which could reduce the end price for the mobile laboratory much (interviewee NL8).

Case E Using Spring Water. The Romanian parties did not express their concerns about the risk of landslides in the area (observations field visit and meeting 3; interviewees NL6, RO10). Also they did answers clearly on questions of the Dutch experts about their plans for catching the water or on which topics they lacked knowledge (observations meeting 3; interviewee RO13). The Dutch expert was unaware of the risk on landslides in the region (observations meeting 3; interviewee RO10). In his advice, the Dutch expert proposed a standard solution for the catchment of the source water (De Vin, 2010; interviewee NL6). Interviewee RO10 later on reported that the Romanian partners did not know if the suggested solution is landslide proof, and hence, suited for the area.

6. Discussion and Reflection

This chapter discusses the method, data, results and the knowledge sharing evaluation framework. In section 6.1, the data and methodology are reflected upon. Section 6.2 discusses the results and knowledge sharing evaluation framework used to evaluate knowledge sharing in drinking water projects. In section 6.3 the practical relevance of this study is discussed.

6.1 Reflection on Methodology and Data

The theoretical knowledge sharing evaluation framework was developed based on a meta-analysis of academic literature and the widely accepted knowledge value chain of Weggeman (1996 in Uit Beijerse, 1999). As knowledge sharing is scientifically still not thoroughly grasped (see chapters 1 and 2), the framework could lack factors that influence knowledge sharing. Nevertheless, the knowledge sharing framework, used in this report, is valid, as the framework is based on a meta-analysis of 22 papers, including a narrative meta-analysis by Wang & Noe (2010) covering 76 quantitative and qualitative researches. Therefore, the evaluation framework developed in this report gives a comprehensive reflection of the current state of the art academic knowledge on knowledge sharing.

The framework was not tested empirically previously. In this research, the knowledge sharing evaluation framework proved to be helpful for indicating knowledge sharing barriers and catalysts in the cooperation between the Province of Overijssel and Teleorman County. The broad analysis of the cooperation context and individual actor characteristics proved useful for pinpointing knowledge sharing barriers and catalysts. This was also noted by Wang & Noe (2010: p. 115), who stated that the failure of knowledge management systems and sharing is often due to a "lack of consideration of the organizational and interpersonal contexts as well as individual characteristics."

A disadvantage of the knowledge sharing evaluation framework was that it was quite demanding to analyze all the operationalized items. Further, the indicators for each operationalized item were not elaborated in the reviewed academic literature on knowledge sharing. So, the used indicators were not tested previously. Furthermore, most knowledge sharing factors and variable are interrelated (see figure 4), what made it hard to distinguish the exact effects on certain knowledge sharing factors and overall knowledge sharing effectiveness. With the knowledge sharing evaluation framework it was difficult to measure the level of adequate education related to the project role, the relevant work experience and the relevant skills of each project member, as a clear job description of each project member was not obtained. Further, organizational culture, power use, management control, management support and influence of politicians on knowledge sharing could not be measured precisely. This was partly related to the fact that the most important manager active in the cases analyzed could not be directly observed and the interview session with the manager was relatively short due to time restrictions. Also, a difficulty was how to operationalize the items adequately. Wang & Noe (2010) also reported that more research is needed into the effect of management leadership styles on knowledge sharing. Therefore, a further testing of the framework, variables and operationalized items is desirable, so that the measurement of the different items will improve.

In this study, it was sometimes not possible to obtain data on the Romanian side of the cooperation, as was planned for at the beginning of the research. So was it difficult to arrange interviews with Romanian key actors, for example. It was planned to interview 8 Romanian key

actors involved in the drinking water projects, existing of a mix of Romanian mayors, the Romanian project coordinator, the project manager, representatives of the WMC and the technical director of Apa Serv. Three of the selected persons were interviewed; representatives of the WMC and the Romanian project manager. To get more insight in the role of the Romanian mayors in the cooperation, a vice mayor, who was involved in a previous cooperation project, and a Romanian expert on this subject and who was involved in the cooperation as well, were interviewed. The Romanian project coordinator and the technical director of Apa Serv, who have key roles in the cooperation, however, could not be interviewed.

Further, documents about the cooperation made by the Romanian partner organizations were not available in the database of the Province of Overijssel and could not be obtained during this research. For the researcher, it was also difficult to get a view on the activities going on in the cooperation in Teleorman County. A positive aspect was that most issues in the cooperation needed approval of the Province of Overijssel, so that data on the Romanian partners partly was collected through documents in the Provincial database. Further, data on the Romanian partners was collected from meetings, field visits, responses of Dutch and Romanian interviewees, and evaluation reports on the cooperation. In this way, it was possible to get an impression of the role of the Romanian partners in the cooperation, however, not complete.

At the Dutch side, data collection through interviews, observations and project documents was easier and more successful. But, also data about the Dutch partners in the project activities analyzed in this report could not always be obtained.

Despite the incomplete data, this report gives probably a good reflection of knowledge sharing in the drinking water activities, because the results presented could be triangulated based on observations, meetings, field visit data, project documents and interviews. Further, knowledge sharing in the analyzed drinking water projects mainly took place during the field visit in September/October; of all these meetings data and observations were obtained. After the field visit, knowledge sharing between the Dutch and Romanian actors took place a few times; these moments were covered during the interviews. Also most key actors could be interviewed.

When interviewing, there is always a risk on bias (see chapter 3). In this research, bias was minimized by creating overlap in interview questions, asking questions rephrased and asking follow-up question to specify what the interviewee meant. Triangulation of interviewees' responses was used to check correspondence and trustworthiness. Yin (2003) stated also that triangulation is an effective method to reduce bias. Moreover, during the interviews, it was observed that respondents were responding openly and answered questions without hesitation.

However, there were not many actors involved in the drinking water projects, so that each respondent has a large impact on the results. This can affect the reliability of the results and makes triangulation sometimes more difficult. A positive aspect of the limited project member group was that most Dutch project actors and a substantial part of the Romanian project actors were interviewed during this research. In this study, it was tried not to present the results that could not be triangulated and for which triangulation was important, in order to maintain objectivity.

The external validity of this research to the other projects in the overall cooperation between the Province of Overijssel and Teleorman County could be partly biased, as only the drinking water projects were evaluated. A project coordinator of the Province of Overijssel reported that, in his opinion, the importance of knowledge sharing over the various cooperation projects varied. According to him, the drinking water projects formed a part of the projects in which knowledge sharing was relatively more important in comparison to other projects in the

cooperation (see also table A1). So, it is likely that on average there has been less knowledge sharing in the overall cooperation compared to the drinking water cases.

The project context of the drinking water projects can be generalized to the other projects in the overall cooperation between the Province of Overijssel and Teleorman County, as all cooperation projects between the Province of Overijssel and Teleorman County were embedded projects, facing the context of the overall cooperation. Knowledge sharing effectiveness could differ per cooperation project, but it can be concluded that several general cooperation barriers influence knowledge sharing in all the cooperation projects carried out between the Province of Overijssel and Teleorman County.

The knowledge sharing evaluation framework and the recommendations for improving the knowledge sharing process can be generalized to other cooperations with a focus on knowledge sharing/project work, as the framework and recommendations describe general factors and aspects influencing the knowledge sharing process.

6.2 Reflection on Results and Evaluation Framework

The knowledge sharing evaluation framework is one of the first frameworks that analyses the knowledge sharing process holistically and more thoroughly. The only other comprehensive knowledge sharing framework found during this research was that of Wang & Noe (2010). The framework presented in this study therefore provides more insight in the complexity of knowledge sharing and gives more tools for managers to steer knowledge sharing processes than most other evaluation tools. Based on this research, it is however not possible to give a judgment on the quality of this framework compared to the quality of other evaluation tools, as this was not assessed in this research. Into this subject more research is needed.

6.2.1 Reflection on Framework

Wang & Noe (2010) discussed that knowledge sharing is influenced by the context and interpersonal relationships. Vinke-de Kruijf (2009a; 2009b) stated that the actions of the key actors in a project result from the actor characteristics and are influenced by the context and interpersonal relationships. In this research their findings are confirmed by using the knowledge sharing evaluation framework.

Koskinen et al. (2003) stated that previous (context related) experiences of project actors with organizations and project members shape their levels of trust and willingness to cooperate and share knowledge. In this research, the evaluation framework points out that previous experiences of project actors with other project members and organizations influenced their trust levels, willingness to cooperate and share knowledge, as the project context and trust were incorporated in the framework. Examples of this effect are the participation levels of the water boards/civil servants of the water boards or the increase in trust of the project coordinators in Vitens after their rejoining.

Further, the evaluation framework shows that the organizational context clearly influences the actions of the project members through the facilitation of knowledge sharing by the organizations and sometimes also their characterists. For example, the actions of the project coordinators were influenced by political and managerial decisions, management support, the allocation of resources, and organizational priority. Some of the managerial decisions or decisions by partner organizations, often as they came unexpected, influenced sometimes also their motivation, perception or trust levels. In addition, communication within and between the partners organizations impacted the knowledge sharing process. As Hooijer et al. (2009) already concluded over the period 2005-2009, the lack of communication influenced the cooperation.

So in the knowledge sharing framework (figure 5) an extra arrow should be added between the organizational

This research also shows that the characteristics of the key actors are very important for the final knowledge sharing taking place in the project activities. For example, several knowledge sharing facilitation and contextual factors, influencing the actions of the key actors in the drinking water projects, were not supportive for effective knowledge sharing, but the experts of Vitens and other actors were able to overcome most of them by their high level of expertise and motivation.

In the knowledge sharing evaluation framework, the national and international contexts were analyzed with the PESTEL model as well. This analysis provided insights into, for example, cultural differences, political issues, and EU-funds available for the cooperation. However, important background information, in this research the (inter)national context proved less important than the organizational context, expressed through the facilitation of knowledge sharing, and interpersonal relationships and capabilities for getting a thorough understanding of the actions of the key actors in the knowledge sharing process. So, in future research it is not always required to analyze the (inter)national context in order to evaluate the knowledge sharing process in international cooperations; it is only necessary to look at the (inter)national context if one wants to have a complete comprehensive detailed view of the cooperation setting as well.

The other knowledge sharing factors presented in the evaluation framework all influence knowledge sharing or the knowledge sharing results as the testing of the framework made clear. This confirms the correctness of the meta-analysis.

The evaluation framework points out that power, management control, management support and politics had large influence on knowledge sharing, however these aspects could not be measured completely in this study. Wang & Noe (2010), Hannah & Lester (2009), Bresnen et al. (2003), Verbiest (2006) and McKinlay (2002) also reported that these factors have influence on knowledge sharing. The meta-analysis showed that there is not much focus on power issues and politics in knowledge sharing literature, however it was observed to be very important in this study. Wang & Noe (2010) also argued that more research is needed into the effect of management leadership styles on knowledge sharing. During this research, it became also clear that more research is needed in the influence of politics on cooperations with public organizations. So, however the knowledge evaluation framework was not able to measure the relationship between power, management control, management support, politics and knowledge sharing completely, it showed that these relationships are important.

The evaluation framework shows that the knowledge sharing process and knowledge sharing result can not be seen separately; several of the knowledge sharing results are in fact improvements in the knowledge sharing process. The evaluation framework also showed that knowledge sharing improves the project results. Boh (2007), Renzl (2008), Fugate et al. (2009) and Wang & Noe (2010) concluded already that effective knowledge sharing results in cost reduction and improved team/organizational/project performance.

6.2.2 Reflection on Knowledge Sharing in the Drinking Water Projects

(Inter)national context

The cooperation is positively influenced by: the need for improvement and lack of sanitation and water infrastructure in Romania and the will of Teleorman County Council, Apa Serv and the

WMC to address them in Teleorman County, the interests of the Romanian partners in Western technology and approaches, the obligatory implementation of EU rules which forces politicians and public administrators to address drinking water issues. The cooperation with the Province of Overijssel gave Teleorman County the opportunity to address the rural areas, as EU budgets were at first instance only available for the towns.

Knowledge sharing was negatively impacted by differences in working systems between the Netherlands and Romania, the relatively strict Romanian hierarchy and the geographic distance between the cooperating partners. Furthermore, in Romania the cooperation and communication between government institutions is often insufficient. In the analyzed projects, it was difficult to get certain data needed for the drilling of the boreholes from other government institutions, what decreased the possibilities for experts to share knowledge. But it should also be noted that data is often just simply lacking in Romania.

Characteristics of Individual Key Actors

The cooperating organizations had different visions on the general cooperation. Differences in view on the cooperation, especially between the Dutch organizations, made cooperating often more difficult, as it reduced the level of priority or involvement in the cooperation of several Dutch partner organizations and formed barriers to collective understanding of knowledge and determining collective action.

In the drinking water projects, the key actors were motivated and willing to complete the projects successfully and improve the drinking water situation in Teleorman County. In one project analyzed, the placement of a water purification unit in Islaz, the key actors differed about the preferred project solution, as result of a wrong order in project steps, but managed to reach consensus about the solution. The solution for catching the source water in Uda Clococoiv was not defined yet. In the other drinking water cases, the project members agreed on the solution. Their shared vision and motivation helped the project members to overcome general differences in vision on the cooperation. Especially, the Dutch experts were motivated and skilled to share knowledge, which improved knowledge sharing.

The project members' rewards were motivating and consisted of a mix with among others job diversification, satisfaction from helping people and salary. Organizational rewards seemed valuable as several were related to strategic goals, such as improving relationships with cooperating partner organizations in order to improve the cooperation with these partners in other projects (Province of Overijssel, Vitens, Dutch water boards, WMC) and possible positive effects of the cooperation related to the securing of resources (Vitens, Dutch water boards, WMC, Teleorman County, Apa Serv). However, the cooperation activities were not a part of the Dutch organizations' core tasks. (Knowledge) rewards were often partly or not obtained or not clearly traceable to the cooperation projects. This influenced organizational commitment and priority to the cooperation by the Dutch organizations over time negatively. For the Romanian organizations, cooperation rewards were motivating and important.

The often lower organizational priority in the Dutch organizations, caused delays and influenced trust among the Dutch partners. Trust between the Dutch partners was further influenced by past experiences with each other.

In general, trust between the Dutch and Romanian partners and among the Romanian partners themselves was good. Sometimes trust was harmed due to misunderstandings related to language barriers, differences in way of working, project delays, or not well explained changes in the preliminary conclusions of the Dutch experts, what affected knowledge sharing. Trust in the capacities of Dutch actors was high. Trust between the project members was good in the drinking water projects.

In this cooperation the time for discussions, feedback on inputs (of experts) and collective reflection sessions was limited. This reduced the possibilities for knowledge sharing, (collective) learning and creation of a shared view. In the analyzed drinking water cases, (collective) learning of drinking water related knowledge from the knowledge sharing activities was moderately.

Knowledge Sharing Facilitation

Dutch and Romanian politicians and management of the Province of Overijssel were committed to deliver tangible results and supported the cooperation. This helped to increase priority of partners to act and cooperate and probably reduced delays in follow-up meetings, so that knowledge could be shared more timely. A disadvantage of their approach was that they focused mainly on project results and timely completion of the projects and less on knowledge sharing and the project process. The resulting time pressure decreased the ability to share knowledge in the projects. McKinlay (2002) concluded as well that political focus on project results without paying attention to the project process, decreases knowledge sharing.

Management control varied per cooperation project. In some projects, e.g. the improvement of drinking water quality in Islaz by placing a water purification unit, management control was relatively strict, which reduced knowledge sharing possibilities. In Romania, Teleorman County tried to control the cooperation projects. Also in Romania hierarchy is relatively strict, which decreased the possibilities for lower level Romanian employees to share knowledge. Also Dutch and Romanian politicians had a relatively strong influence on several cooperation projects, which reduced in some activities knowledge sharing.

In the drinking water projects, the selected Dutch experts were very skilled, which made it possible for them to share knowledge adequately. So, the selection of the Dutch experts was good. The project coordinators functioned as their daily managers and supported them to do their job. During the meetings, Romanian drinking water experts were not present and the expertise of the members of the WMC and the technical director of Apa Serv on drinking water issues was lower than of the Dutch experts.

(The former employees of) Haskoning Romania functioned as knowledge gatekeepers by helping to overcome misunderstandings due to language barriers, differences in working systems and project approaches that influenced knowledge sharing. Also they helped to improve the match between project proposals and the needs of the Romanian partners, what improved commitment of the Romanian partners.

The project coordinators functioned as knowledge brokers and gatekeepers, as they were responsible for the communication with and updating of the project members and partner organizations and coordinated the joined efforts of the key actors.

In the cooperation, communication between the Dutch and Romanian partners could be improved. In the period 2005-2009, communication between the Dutch and Romanian partners was irregular and minutes of Dutch meetings were not shared. In Romania, communication between the partners was minimal. In the period 2009-2011, project actors were not always well informed or updated about project progress, project problems or differences in view. The insufficient communication and interaction between the key actors influenced knowledge sharing.

In the drinking water activities, the feedback on knowledge inputs of experts was limited. The lack of feedback and evaluation reduced the possibilities for (collective) learning and knowledge sharing. Furthermore, project data was not always available in Romania, which reduced knowledge sharing options. Knowledge was rather fragmented over the cooperating partners, as each partner brought in different kinds of knowledge. Sometimes the partners had difficulties to locate all the useful knowledge available at the cooperating partners. The locating of knowledge

collected from cooperation projects in the past was more difficult, as a shared database for storing documents and information was not used.

In the cooperation, resources as time and manpower were often limited and restraining possibilities for knowledge sharing. For example, the limited time experts had available to work together with the Romanian partners reduced the possibilities for knowledge sharing. Money could be a resource that is limited available as well, but this is not sure as interviewees differed in opinion about this. The lack of several resources reduced the ability, and of some actors their motivation, to share knowledge.

Knowledge Sharing Activities

The way in which knowledge was shared in the projects fitted with the type (implicit or explicit) of knowledge shared. Most of the shared knowledge was based on expertise, and thus implicit, and was shared face-to-face in group discussions and through presentations in Romania. Furthermore, it was tried to codify (parts of) the knowledge shared in reports, which improves knowledge sharing and possibilities for learning. So, taking the project context into account, the knowledge sharing activities were designed rather well, so that knowledge sharing effectiveness increased.

In the knowledge sharing activities, it was observed that the Dutch experts often did not explain well why their preliminary conclusions changed as new data came available. At the side of the Romanian partners, this caused often misunderstandings and influenced their trust in the Dutch partners, what affected knowledge sharing. The misunderstanding arose because uncertainties and data problems were mainly discussed among the Dutch partners themselves and among the Romanian partners and not collectively.

Knowledge Sharing Results

Effective knowledge sharing activities result in clear improvements in the project results. In this research knowledge sharing helped to improve the final project results of four drinking water projects, only not in case E where knowledge sharing was insufficient. The learning of technical drinking water knowledge by the project members was limited. In general, the relationships between the Dutch and Romanian partners will not continue when the cooperation ends in 2011. The Romanian partners expected already that the cooperation would end in 2011 and were trying to build relationships among themselves.

6.3 Relevance to Practice

The proposed knowledge sharing framework (figure 5) specifies the knowledge sharing process more thoroughly than in most previous studies, gives a deeper understanding of knowledge sharing, can be applied in international settings as well, and is founded on a strong theoretical basis. Therefore the knowledge sharing framework provides a strong basis for managers to direct the knowledge sharing process in organizations.

The knowledge sharing (evaluation) framework provides also a basis for further research into knowledge sharing relationships that are less tested, like the effect of leadership, power or politics on knowledge sharing. More of such examples are given in the study by Wang & Noe (2010).

As Wen (2009) stated, most of the knowledge sharing evaluation tools are generally unsatisfactory. Further testing and developing of the evaluation framework proposed in this research, could help to find a scientifically satisfactory knowledge sharing evaluation tool. Also a practical evaluation of the theoretical based knowledge sharing frameworks proposed in this research is recommended to improve the applicability of the frameworks in organizations.

7. Conclusions

In this study, knowledge sharing has been evaluated in five drinking water projects that are part of the cooperation between the Province of Overijssel and Teleorman County. The main scientific research question answered in this research is:

How can knowledge sharing be evaluated in international projects carried out in the field of water management?

The main objective of this study is: to develop and test a knowledge sharing evaluation framework. The sub objectives of this study are: (1) to determine which factors influence knowledge sharing in international projects carried out in the field of water management, (2) to asses knowledge sharing in the five selected drinking water cases in the cooperation between the Province of Overijssel and Teleorman County with the developed evaluation framework, (3) to determine the strengths and weaknesses of the knowledge sharing evaluation framework and (4) to give recommendations for improvement of knowledge sharing in the cooperation between the Province of Overijssel and Teleorman County.

7.1 Developed Knowledge Sharing Evaluation Framework

To answer the main research question, a knowledge sharing evaluation framework has been developed, based on the knowledge value chain model and a meta-analysis of academic literature. The main factors influencing knowledge sharing, as reported in academic papers, are taken into account in the knowledge sharing evaluation framework: i.e. (inter)national, organizational and project contexts, characteristics of key actors, knowledge sharing facilitation factors, knowledge sharing activity factors and knowledge sharing result factors.

The developed knowledge sharing evaluation framework is tested on the five selected drinking water cases of the cooperation between the Province of Overijssel and Teleorman County. The testing of the knowledge sharing evaluation framework is also used to answer the research question how knowledge is currently shared in the five drinking water cooperation projects.

7.2 Knowledge Sharing in Drinking Water Projects

Overall, it can be concluded that several knowledge sharing factors can be improved and several are relatively strong. Therefore, the main conclusion on knowledge sharing in the drinking water cases, as part of the cooperation between the Province of Overijssel and Teleorman County, is that knowledge sharing was moderately well.

In the other cooperation projects, the importance of knowledge sharing varied and was in most cases less important. So knowledge sharing in the overall cooperation was probably less compared to the analyzed cases. Knowledge sharing in all cooperation projects could be improved if the overall cooperation barriers are improved.

(Inter)national context

The overall cooperation was positively influenced by: (1) the need for improvement and lack of sanitation and water infrastructure in Romania and the will of the Romanian partners to address them in Teleorman County, (2) the interests of the Romanian partners in Western technology and approaches, and (3) the obligatory implementation of EU rules.

Knowledge sharing was negatively impacted by: (1) differences in working systems between the Netherlands and Romania, (2) the relatively strict Romanian hierarchy and (3) the geographic distance between the cooperating partners.

Characteristics of Key Actors

In the overall cooperation, the Dutch organizations had diverging ideas about how to direct the cooperation and the objectives of the cooperation. The diverging ideas and past experiences between the Dutch partners sometimes affected mutual trust. As a result of the diverging ideas about the cooperation, the Dutch organizations had more difficulties to obtain their strategic rewards from the cooperation or obtained them partly. Furthermore, since the cooperation activities were not part of the Dutch organizations' core tasks, organizational commitment and priority to the cooperation projects, compared to other projects within the Dutch organizations, was lower. The above mentioned aspects negatively affected organizational commitment to the cooperation and made cooperating together more difficult.

In general, trust between the Dutch and Romanian partners and among the Romanian partners themselves was good. However, there were also occasions at which trust was harmed due to misunderstandings related to language barriers, differences in way of working or project delays. For the Romanian organizations, the cooperation rewards were motivating and important.

In the drinking water projects, the key actors were motivated and wanted to complete the projects successfully and improve the drinking water situation in Teleorman County. Their shared vision and motivation helped the project members to overcome general differences in vision on the cooperation. The project members were motivated to do the projects, as the projects provided them with job satisfaction, job diversification and salary. In general, also trust between the project members in the drinking water projects was good.

Knowledge Sharing Facilitation

Dutch and Romanian politicians and management of the Province of Overijssel were committed to deliver tangible results and supported the cooperation. As a result, management control in some cooperation projects was relatively strict. This helped to increase the organizational priority of partner organizations. But, a disadvantage of their approach was that they focused mainly on project results and timely completion of the projects and less on knowledge sharing and the project process, which resulted in time pressure and decreased the ability to share knowledge in the projects. Resources as time and manpower were often limited and restraining possibilities for knowledge sharing.

In Romania, Teleorman County tried to control the cooperation projects what influenced sometimes the possibilities for knowledge sharing. Also in Romania hierarchy was relatively strict, which decreased the possibilities for lower level Romanian employees to share knowledge.

The selected Dutch experts were skilled. In the projects analyzed, the Romanian project members had less knowledge about drinking water issues than the Dutch experts. Knowledge was rather fragmented over the cooperating partners and sometimes difficult to locate. A shared database for storing documents and information was not used, which reduced options to locate available data and knowledge.

(The former employees of) Haskoning Romania functioned as knowledge gatekeepers by helping to overcome misunderstandings between the Dutch and Romanian partners and improving the match between project proposals and the needs of the Romanian partners. The

project coordinators functioned as knowledge brokers and gatekeepers, as they were responsible for the communication with and updating of the project members and partner organizations and coordinated the joined efforts of the key actors. In the cooperation, communication between all the Dutch and Romanian partners could be improved and influenced sometimes knowledge sharing.

Knowledge Sharing Activities

The way in which knowledge was shared in the projects fitted with the type (implicit or explicit) of knowledge shared. The time for discussions, feedback and collective reflection was limited, which reduced the possibilities for knowledge sharing, (collective) learning and creation of a shared view. In the analyzed drinking water cases, (collective) learning of drinking water related knowledge from the knowledge sharing activities was moderately.

However, the Dutch experts often did not explain well why their preliminary conclusions changed as new data came available, as uncertainties were mainly discussed among the Dutch partners themselves and among the Romanian partners and not collectively. At the side of the Romanian partners, this caused often misunderstandings, what affected knowledge sharing. Furthermore, project data was not always available in Romania, which reduced knowledge sharing options.

Knowledge Sharing Results

In four out of five analyzed cases, knowledge sharing helped to improve the final project results. The learning of technical drinking water knowledge by the project members was limited. The Romanian partners expected that the cooperation would end in 2011 and were trying to build relationships among themselves.

7.3 Quality of the Knowledge Sharing Evaluation Framework

Theoretically, the framework provides a thorough understanding of knowledge sharing. Practically, the framework is useful for pinpointing knowledge sharing barriers and catalysts. However, the framework is elaborative and it is difficult to measure each factor separately as many factors are interrelated. Also the operationalization of several items could be improved. Therefore a further testing of the evaluation framework and its operationalized items is needed.

Further, it has been noted that it is not always necessary to include the (inter)national context into the evaluation framework, as the interpersonal relationships and organizational contexts prove to influence knowledge sharing much stronger. It is only interesting to analyze the (inter)national context if insights into the background and setting of the cooperation are required. The organizational context mainly expresses itself through the facilitation of knowledge sharing by the organizations.

The knowledge sharing actions of the key actors are mainly influenced by their own characteristics (trust, motivation, capabilities and perceptions & views) and the knowledge sharing facilitation factors from the organizational context. The framework showed that in some occasions, the knowledge sharing facilitation factors also affect the actor characteristics directly. Further, the evaluation framework points out that power, management control, management support and politics have large influence on knowledge sharing. Also, the evaluation framework shows that the knowledge sharing process highly determines the knowledge sharing results. Except for the (inter)national context and the organizational context, the knowledge sharing evaluation framework proves that the other factors are influencing knowledge sharing.

8 Recommendations

8.1 Create a Shared Vision

In the cooperation between the Province of Overijssel and Teleorman County, the partners did not have a shared vision. It is therefore recommended that the partners rethink the cooperation on aspects as the objectives, the inputs each party delivers, guidelines for cooperating and communicating, and what is expected of each party. Especially a refocus on the cooperation goals is recommended, as not all goals of the cooperation could be reached and were supported by all partners. When rethinking the project goals, it should be noted that the Romanian partners preferred projects that (1) address urgent problems, (2) have results that they consider as useful (often tangible project results) and (3) help them to comply with law.

Rethinking the cooperation, means also rethinking if a partner wants to join the cooperation (any longer). Partners that would like to withdraw are often unmotivated to cooperate and share knowledge, which decreases the efficiency of the knowledge sharing and cooperating. Therefore, in cooperations there should be opportunities for cooperating partners to withdraw.

8.2 Improving Knowledge Sharing

- Continue to select very skilled and motivated experts, as they are often better capable of knowledge sharing.
- During the field visits and meetings, the Dutch experts often did not explain changes in their preliminary conclusions. This created often distrust and misunderstandings among the Romanian partners, as they regarded the preliminary findings as promises and often received insufficient explanation about changes in plans due to language barriers. For the knowledge sharing process, it is therefore better to present the results when the results are final so that no false expectations are created and to explain them well. Further, group discussions between both the Romanian and Dutch partners help to explain uncertainties in the data better.
- In the cooperation, most knowledge sharing takes place in the meetings. For effective knowledge sharing it is therefore important that the Dutch and Romanian partners have enough time to work on a project activity together, so that they can exchange ideas, knowledge, methods and approaches and can give feedback on it and discuss and evaluate it together.
- Communication between the partners could be improved, so that partners are aware of differences in point of view, project problems and delays and are timely updated. Furthermore, improved communication helps to determine which follow-up activities are needed for anchoring knowledge or improving the level of knowledge partners have.
- Knowledge sharing and communication could be improved by using a shared database in which for example project documents, information and project updates can be shared. In this way, it is easier to locate relevant data and expertise from projects done in the past and knowledge gets codified in the database, which functions as a kind of collective memory.
- In the project about improving the water quality in Islaz by placing of a water purification unit, the project order was wrong: politicians decided upon a project solution before experts had given their advice. It is recommended to take care of the planning of order of the process steps so that experts first can exchange knowledge with the partners and give their advice to both the partners and politicians, before the politicians make a decision. “Without careful planning it is likely that the project will fail to achieve its objectives” (Department for Business, Enterprise, and Regulatory Reform, 2007: p. 28).

8.3 Further Research

- It is recommended to test and develop the knowledge sharing evaluation framework, as presented in this report, on other cooperations, so that a practical and scientific satisfactory knowledge sharing evaluation is developed as still is needed. Especially more research into objective measures for evaluation of knowledge sharing is recommended. Further, a comparison of the knowledge sharing evaluation framework with other frameworks is recommended, so that the quality of the different evaluation frameworks can be compared and this framework can be improved.
- Scientifically, the knowledge sharing (evaluation) framework provides a basis for further research into relationships that are less tested, like the effect of leadership, power, an individual's capabilities or politics on knowledge sharing (for more examples please see Wang & Noe, 2010).
- During this research it was observed that politicians had much influence on the cooperation between the Province of Overijssel and Teleorman. Therefore it was wondered if knowledge sharing between commercial organizations is easier than between government organizations, as commercial organizations lack, in general, the direct influence of politicians. (Note that both types of organizations, of course, experience internal politics by managers and employees). It is therefore recommended to analyze the effect of politics on (international) knowledge sharing by comparing evaluations of (international) knowledge sharing between commercial organizations with (international) knowledge sharing between public organizations.

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Glossary

In the glossary definitions are standing of the main concepts used in this report.

Actors: Every individual, group of organization involved in the process of problem solving (and hence knowledge sharing). (Vinke-de Kruijf, 2009 a: p. 48).

Boundary spanner: someone who establishes communication links beyond an organization's borders, and is often isolated from many sectors of the organization that are not within his purview. (Hannah & Lester, 2009)

Capabilities: The skills, expertise, and knowledge a person has.

Context: The wider (i.e. political, economical, social, technical, environmental and legal), organizational and project specific circumstances and setting in which a project is carried out.

Expertise: A great skill or knowledge a person has in a particular field, which may relate to the content , the process or network. Expertise is also a capability of actors involved and thus a source of capacity a power. (Vinke-de Kruijf, 2009 a: p. 48)

Knowledge: Information processed by individuals including ideas, facts, expertise, and judgments relevant for individual, team, and organizational performance. (Wang & Noe, 2010: p.117)

Knowledge broker: Brings a person who needs a certain kind of knowledge in contact with an expert that has the needed knowledge.

Knowledge catalyst: person who is better motivated and prepared to engage in learning experiences and is better capable of reflecting and learning from those experiences compared to colleagues and helps to create and diffuse knowledge within an organization. (Hannah & Lester, 2009)

Knowledge gatekeeper: a person who facilitates or. in some cases, hinders the communication between multiple parties, (Hannah & Lester, 2009)

Knowledge sharing: The provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures. (Wang & Noe, 2010: p. 117)

Knowledge sharing mechanism: The formal and informal mechanisms for sharing, integrating, interpreting and applying know-what, know-how, and know-why embedded in individuals and groups that will aid in the performance of project tasks. (Boh, 2007: p. 28)

Learning by an individual: the integration of new knowledge and/or skills into the existing knowledge and/or skills an individual has.

Motivation: Internal and external factors that stimulate desire and energy in people to be continually interested in and committed to a job, role, or subject and to exert persistent effort in attaining a goal. (Business Dictionary, 2010)

Perceptions: The knowledge of actors involved, which results from the process of acquiring available information and knowledge and the interpretation of this knowledge by the actor. In other words, the information actors held to be true. They become visible in actors' formulations of the present and future situation, chances and bottlenecks, possible solutions and the definition of criteria. (Vinke-de Kruijf, 2009 a: p. 48)

Trust: A person's confidence in the capabilities, commitment, and sincerity of individuals, groups or organizations based on (earlier) experiences with or prejudges about the individual, group or organization a person is cooperating with and the perception that cooperation with the individual, group or organization is net benefiting or at least not harmful for the person.

Appendices

A1. Tables Literature Review

Table A1a. Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.

Factor / Author	Way of knowing/knowledge framework	Context/history	Interaction	Resources available to party/ individual	Government policies	Fragmentation of knowledge
Blackler (1995)	Yes *-Encultured knowledge*	Yes	Yes			
Dolowitz & Marsh (1996)	Yes *-Ideology, values, beliefs* *-Institutions structure actions and values of actors* *-Actor process*	Yes *-Past policy constraints, values and rules*	Yes	Yes *-Technological abilities* *-Efficiency level* *-Size of bureaucracy* *-Economic resources available*	Yes	
Boogerd et al. (1997)	Yes *-Socially and politically constructed* *-Multiple perspectives* *-Problem finding, defining, solving* *-Knowledge system* *-Consensus* *-Support*		Yes *-Network*			
Uit Beijerse (1999)	Yes *-Organizational goals* *-Strategy* *-Mission that leads to shared vision and collective ambition*	Yes	Yes *-Knowledge generated by doing and in conversations between individuals* *-Communication & information technology* *-Horizontal conversations*	Yes *-Information resources* *-Resources to stimulate and motivate people to share knowledge: organizational structure, organizational culture, style of management, systems and procedures* *-Personnel*		
McKinlay (2002)		Yes *-Tacit knowledge context specific and relationship dependent*	Yes *-Face-to-face knowledge sharing: prime source of knowledge* *-Discussions* *-Self-reflection and group reflection important for knowledge sharing* *-Willingness to share*	Yes *-Knowledge is mainly team resource; diffusion difficult* *-Shifting of people: knowledge losses* *-Information technology*	Yes *-Political pressure: focus on result and not on process* *-Time pressure*	

Table A1a. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.						
Factor / Author	**Way of knowing/knowledge framework**	**Context/history**	**Interaction**	**Resources available to party/ individual**	**Government policies**	**Fragmentation of knowledge**
Bresnen et al. (2003)	Yes *-Shared values and norms* *-Shared mental model* *-Shared system of meaning* *-Shared ideas through collaborative mechanisms such as narration and joint work* *-Clear definition of roles* *-Goals*	Yes *-Institutional, professional, contractual boundaries* *-Temporally differences* *-Context of practice*	Yes *-Social communities & structures* *-Behavior* *-Senior working with junior increases knowledge sharing* *-E-mail* *-Meetings, for a, informal contact, word of mouth, face-to-face, telephone*	Yes *-Information and communication technology* *-Knowledge catalyst/broker/gatekeeper* *-Organizational scale: large companies can transfer knowledge by cross-project and cross-regional staffing* *-Lack of integration of information streams*		Yes *-Caused by different disciplines and complex division of labor* *-Discontinuities between projects* *-Temporally, spatially and culturally differences*
Koskinen et al. (2003)	Yes *Seen as a model of the world that people adjust when needed* *-Learning* *-Values, norms, physical factors*	Yes *-Depend on both context and individual perceptions*	Yes *-Personal network*	Yes		
Marra (2004)	Yes *-Participation* *-Socialization* *-Externalization of knowledge* *-Sharing of values and beliefs* *-Networks* *-Consensus about goal* *-Commitment* *-Learning*	Yes	Yes *-Top-down and bottom-up* *-Socialization*			
Thompson & Walsham (2004)		Yes				
Small & Sage (2005/2006)	Yes *-Mission, vision & goals* *-Strategy and alignment of knowledge management with strategy* *-Organizational philosophy*	Yes *-Environment: competition, fashion, markets, technology*	Yes *-Behavior of persons* *-Socialization* *-Structures & roles* *-Social capital*	Yes *-Manuals, letters, customer information, knowledge derived from work processes, financial resources* *-(Information) technology* *-Personnel*		

Table A1a. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.						
Factor / Author	**Way of knowing/knowledge framework**	**Context/history**	**Interaction**	**Resources available to party/ individual**	**Government policies**	**Fragmentation of knowledge**
Brookes et al. (2006)		Yes	Yes *-Knowledge sharing depending on social patterns, practices and processes* *-Social capital*	Yes *-Number of project members* *-Training* *-Consultants*		
Blackmore (2007)	Yes *-Different values and beliefs* *-Individual and social learning* *-Understanding and consensus* *-Resource dilemma* *-Multiple stakeholders*	Yes	Yes *-Debates* *-Social processes* *-Every individual has a different role*	Yes	Yes	
Boh (2007)	Yes *-Individualized type* *-Institutionalized type*		Yes *-Social networks* *-Discussions* *-Word of mouth* *-Meetings* *-But also impersonal forms as databases useful in large organizations*			Yes *-The larger the organization how more the knowledge can be fragmented between individuals*
Renzl (2008)	Yes *-Shared vision*		Yes *-Relationship dependent* *-Interaction network: strong ties stimulate sharing of complex knowledge; weak ties of less complex knowledge* *-Reward dependent* *-Cognition-part and emotional part*			
Berkes (2009)	Yes *-Need for consensus because - different world views, assumptions & rules* *-Knowledge framework* *-Shared vision* *-Learning*		Yes *-Bridging organization: knowledge catalyst, information/knowledge coordinator)* *-Social capital* *-Interaction: dialogue, discussions*			Yes

Table A1a. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.						
Factor / Author	**Way of knowing/knowledge framework**	**Context/history**	**Interaction**	**Resources available to party/ individual**	**Government policies**	**Fragmentation of knowledge**
Fugate et al. (2009)	Yes *-Shared interpretation of knowledge* *-Common understanding*		Yes *-Dialogue*	Yes	Yes *-Politics*	
Hannah & Lester (2009)	Yes *-Clear vision* *Developmental readiness* *-Goal orientation to learning (leader-follower or performance-goal)* *-Shared mental model based on similar experiences, social influences and knowledge*		Yes *-Social network: homophilous groups best for knowledge sharing and heterophilous groups for knowledge creation* *-Networks are based on social capita (trust, information, advice) and exchange of resources* *-Knowledge catalysts and gatekeepers* *-Shared leadership*	Yes *-Important in networks*		
Hommes et al. (2009)	Yes *-Certainty of knowledge* *-Consensus about knowledge, goal of project and solutions* *-Ambiguity of problem due to overload of information, confusion and/or knowledge conflicts* *-Learning* *-Multiple stakeholders*	Yes	Yes			Yes
Van Buuren (2009)	Yes, further influenced by: *-Certainty of knowledge* *-Consensus about knowledge and goal of project* *-Values, beliefs, ideology* *-Utilization of organization capacity* *-Interaction*	Yes	Yes			Yes
Vinke-de Kruijf (2009)	Yes *-Cognitions* *-Motivation* *-Consensus about the problem: negotiated knowledge* *-Learning*	Yes	Yes *-Follow-ups are important*	Yes		

Table A1a. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.						
Factor / Author	**Way of knowing/knowledge framework**	**Context/history**	**Interaction**	**Resources available to party/ individual**	**Government policies**	**Fragmentation of knowledge**
Wen (2009)				Yes *-Capacity* *-Staffing (number and skills)* *-Technology*		
Wang & Noe (2010)		Yes	Yes *-Social network* *-Team diversity and cohesiveness* *-Open workplace* *-Job rotation* *-Regular meetings* *-Network form (amount of structural holes); weak ties: better sharing simple knowledge,, strong ties: better for sharing complex knowledge*			Yes *-Fragmentation induces knowledge sharing* *-Less focus on position and central control*

Table A1b. Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.

Factor / Author	Knowledge level/skills	Effectiveness of communication	Trust	Cultural differences	Geographic distance	Timing	Management skills
Blackler (1995)	Yes	Yes and adds *language*		Yes			Yes
Dolowitz & Marsh (1996)				Yes	Less important, but sometimes it is		
Boogerd et al. (1997)	Yes *-Expert knowledge* *-Local knowledge* *-Scientific knowledge* *-Skills*	Yes *-Communication barriers disappear when priority is given to project*	Yes *-Distrust against other cultures due to different rules, values, language etc.*	Yes *-Distrust against other cultures* *-Culture obstacles less important when dealt with clearly defined issues* *-Gap between government levels*			
Uit Beijerse (1999)	Yes *-Skills* *-Experience* *-Character, feelings & personality*	*-language: metaphors, analogies, hypotheses, models*		Yes *-Organization culture*		Yes *-Short and long term goals*	Yes *-Motivation of employees* *-Making sure that knowledge sharing is facilitated*
McKinlay (2002)		Yes *-Risk of information overload of managers and employees when "all knowledge" is shared* *-Knowledge catalyst*				Yes *-Time pressure decreases ability to share knowledge* *-Need for real-time knowledge sharing*	Yes *-Management wants to maintain knowledge and often negatively impacts knowledge generation within the team* *-Database helps managers to get more control over employees* *-Organizational politics* *-Hierarchy influences knowledge sharing often negatively*

Table A1b. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.

Factor / Author	Knowledge level/skills	Effectiveness of communication	Trust	Cultural differences	Geographic distance	Timing	Management skills
Bresnen et al. (2003)	Yes *-Skills*	Yes *-Language*	Yes	Yes *-Champion that support knowledge sharing/change* *-Supportive climate*	Yes		Yes *-Management wants to control employees, diminishes ability of employees to share knowledge* *-Lack of incentives and resources to use up-to-date knowledge* *-Motivating employees to keep knowledge up-to-date*
Koskinen et al. (2003)	Yes	Yes *-Used language* *-Media richness*	Yes and depends on: *-Behavior of project team members* *-Sincerity* *-Expectations* *-Perceptions of motives and abilities of trustee* *-History dependent* *-Performance of role* *-Stake of parties involved*		Yes *-Physical barriers* *-Less effective types of communication possible*	Yes	
Marra (2004)			Yes Adds also: *-Pride* *-Freedom* *-Loyalty* *-Prestige* *-Self-confidence*	Yes *-Hierarchical structure* *-Centralization* *-Degree of horizontal communication*			
Thompson & Walsham (2004)				Yes			
Small & Sage (2005/2006)		Yes *-Communication flows and direction* *-Shared codes and languages*	Yes *-Employee care & trust* *-Relational trust and norms* *-Behavior* *-Respect* *-Conditions of support and relationships with supervisors*	Yes *-Organizational change entities* *-Convincing people to share knowledge* *-Employees attitudes* *-Values, norms & unwritten rules*			Yes *-Leadership, coordination, control, and measurement* *-Rewards & recognition* *-Managing employee relations*

Table A1b. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.							
Factor / Author	**Knowledge level/skills**	**Effectiveness of communication**	**Trust**	**Cultural differences**	**Geographic distance**	**Timing**	**Management skills**
Brookes et al. (2006)		Yes *-Information overload or erroneous information; others argue that this is not a problem*	Yes *-Depending on: age relationship, degree shared background, interaction outside project*	Yes *-Openness of culture* *-Approachability of culture* *-Access to (sensitive) information*			Yes *-Quality of decisions: good proactive decision-making best performance results*
Blackmore (2007)		Yes	Yes	Yes		Yes	
Boh (2007)	Yes *Seniors should share knowledge or refer people to experts*	Yes *Richness of medium based on bandwidth, customization and interactivity*		Yes *-Easiness to approach colleagues for information*	Yes *E-mail, messenger, videoconferencing more effective over long distance*		Yes *-Experience and expertise for guidance* *-Organizing the work in such a manner that knowledge must be shared*
Renzl (2008)		Yes *-Shared language*	Yes *-Affects attitudes, behavior, performance* *-Increases the willingness to share knowledge* *-Management trust important, just as peer trust* *-Diminishes due to fear of losing one's unique value* ***-Fragile: risk of free-rider ship***				Yes *-Trust in management important for knowledge sharing and depends on role model* *-Management needs to reward knowledge sharing*
Berkes (2009)			Yes				Yes *-Shared leadership* *-Conflict resolving* *-Feedback*
Fugate et al. (2009)		Yes *-Effective communication* *-Boundary spanner/information flow coordinator*		Yes			Yes *-Integrated decision-making* *-Hierarchy influences the ability to get a shared understanding*

Table A1b. (Continued) Factors influencing knowledge sharing as mentioned in knowledge sharing, knowledge management, and organizational learning literature.

Factor / Author	Knowledge level/skills	Effectiveness of communication	Trust	Cultural differences	Geographic distance	Timing	Management skills
Hannah & Lester (2009)			Yes *-Environment of psychological safety* *-Confidence in learning, which influences abilities and motivation. Four types of confidence building (enacted mastery experiences, vicarious learning, social persuasion, physiological & psychological arousal)*				Yes *-Top-down as well as bottom-up process (shared leadership). Managers must shape conditions* *-Improves learning, but managers should not be involved too much in order to stimulate creativity* *-Support knowledge sharing, ideas, resources* *-Need to give feedback to leader-follower types of persons* *-Creation of policies and barriers to stimulate knowledge sharing*
Hommes et al. (2009)	Yes		Yes				Yes *Important to shape WOK, but not taken into account in research*
Van Buuren (2009)	Yes		Yes				Yes
Vinke-de Kruijf (2009)			Yes	Yes			
Wen (2009)	Yes *-Capabilities*			Yes *-Supporting organizational structure, processes & procedures*			
Wang & Noe (2010)	Yes *-Experience, education, motivation*	Yes *-Richness of communication medium* *-Absorption capacity of person*	Yes *-Individual attitudes* *-Perceived benefits & costs* *-Team level trust and cohesiveness* *-Justice* *-Individual competition* *-Capabilities, trustworthy-ness, integrity, benevolence* *-Free-ridership*	Yes *-Organizational culture* *-Level of collectivism* *-In-group/out-group* *-Knowledge sharing encouragement* *-Ability to make mistakes* *-Different national cultures and languages*			Yes *-Rewards, incentives* *-Management support* *-Leadership characteristics* *-Motivation of employees*

A2. Extended Theoretical Knowledge Sharing Framework

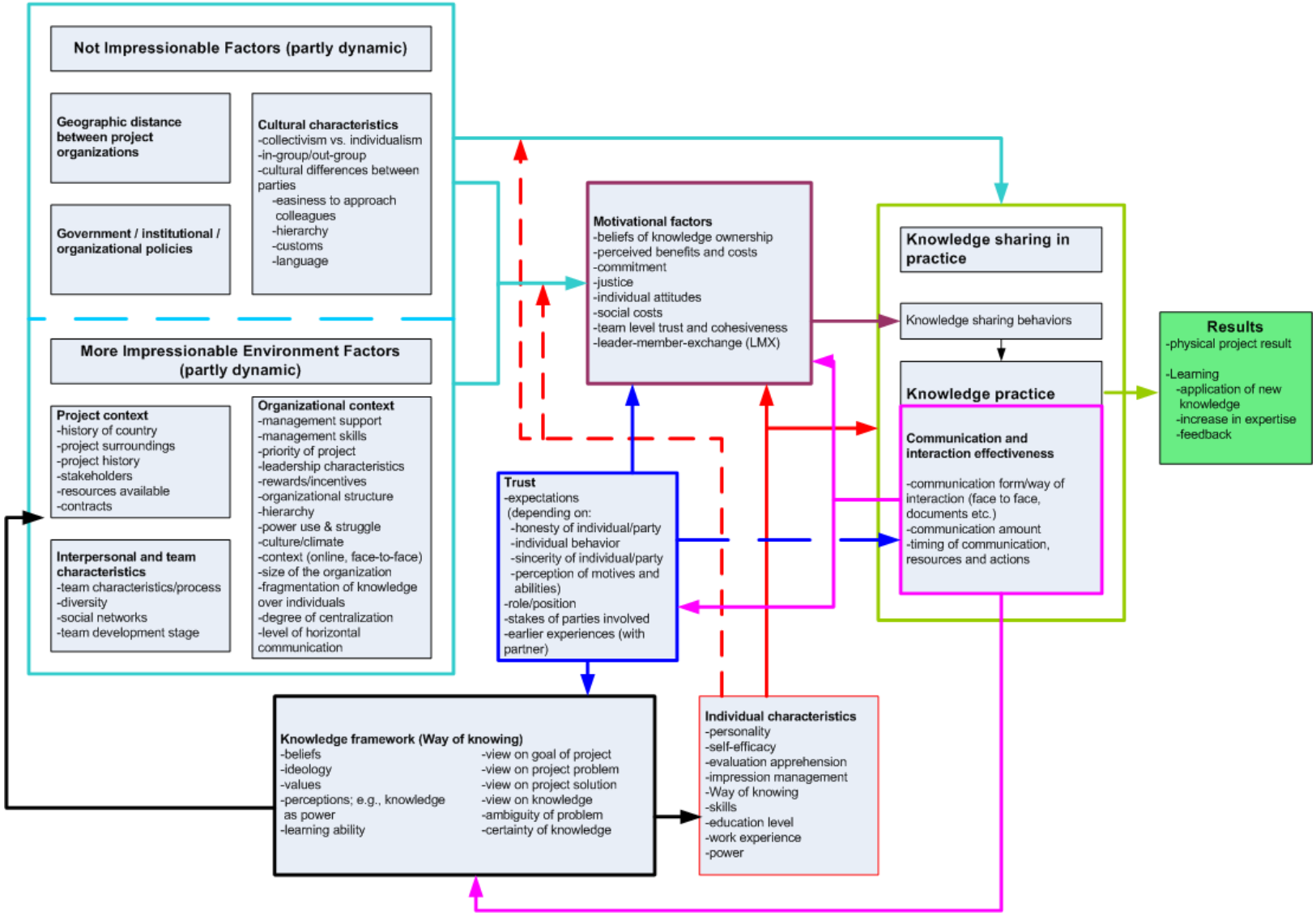

Figure A1. Theoretical knowledge sharing framework based on academic literature as described in appendix 1 and by Wang & Noe (2010).

A3. Case Study Selection

Table A1. Assessment of all activities carried out in the cooperation between the Province of Overijssel and Teleorman County for suitability as case study.

Description	Item	Academic value regarding knowledge sharing	Practical value of project evaluation for the Province of Overijssel	Feasibility	Comments
Activities period 2005-2009					
Activity 1.1 Flood risk management					
-Preparation of an integrated water management plan *-Teleorman Flood Risk Management Pilot Project*	-Environmental impact assessment, social and economic analysis, preparation of activity plan -Flood risk management in Calnistea basin: LiDAR, preparation of inundation maps, workshops, institutional analysis, hydrological analysis, hydrological modeling, preparation of GIS, -Stabilization of the Botoroaga dam	+	+	0/+	
Institutional analysis	Analysis of the Romanian government and institutions related to capabilities and organization in the water management field	-/0	-	+	
Activity 1.2 Drinking water and sanitation					
5 deep wells for drinking water (follow-ups 1.1 & 1.2 (2009-2011))	High nitrate content in current drinking water; need for deep wells	+	+	+	Yes, chosen
2 Perfector-E drinking water treatment installations	Treatment of groundwater for drinking water using membrane technology	-	-	+	
Improvement of Chlorine doses at Turnu Magurele	Improved regulation of chlorine concentration added to the drinking water	-	-	+	
Establishment of the Water Management Centre (WMC)		0	0	+	
Institutional Strengthening of the WMC	Strengthening of the WMC in order to assist water authorities in Teleorman County in the field of data collection, preparation of applications, organizing workshops and awareness raising campaigns.	+	+	+	Optional/not chosen; water board Reest & Wieden is doing an evaluation
Water Plan Rural Area	Sanitation plan in 3 villages comparing conventional and alternative sanitation: septic tank, helophyte filtration or Ecosan toilet.	0	0	-/+	
Ecosan toilets	5 toilets build at private houses and 1 at a school	-/0	-/0	+	
Technical courses	Yearly technical courses on waste water treatment and drinking water supply	+	+	+	Optional

Activity 1.3 Danube days	Yearly event to exchange ideas on water management in Teleorman County and beyond	-	-	-	
Activities period 2009-2011					
1.1 Improve drinking water quantity	-Installation of 5 wells by local company	+	+	+	Yes, chosen (started in Oct 2010)
1.2 Improve drinking water quality	-Investigation of locations -Installation of 4 treatment units	+	+	+	Yes, chosen (started in Oct 2010)
1.3 Reforestation	-Making of reforestation plan by local company -Actual reforestation	-	-	+	Carried out in March/April 2010
2.1 Innovative flood protection project	-Making application by local company -Implementing the actual project	0/+	0/+	0	Starts in Oct/Nov 2010
2.2 Flood risk mapping	-Making application by local company -Technical assistance by international consultant	-	-	-	No project going on until now
2.3 Emergency preparedness (FLIWAS)	-Installation of FLIWAS -Support by international consultant	-	-	-	Uncertain if project will be carried out
3.1.Water quality monitoring	-Preparation of proposal by local expert -Equipment for laboratory -Salaries and operational costs lab	+	+	+	Yes, chosen (started in Oct 2010)
4.1 Portfolio WMC	-Material -Workshops for testing and training -Local public relations expert	0/+	0/+	+	
4.2 Internal organization WMC	-Step 1 –Local institutional analyst -Step 2 Local database expert to make database -Step 3 – Purchase of new software and updates	0/+	0/+	+	
5.1 Integrated water management	-Cost of materials	+	0	+	Started in Oct 2010
5.2 Using spring water	-Analysis of costs by local company -Installation of equipment identified	+	+	+	Yes, chosen (started in Oct 2010)
5.3 Sanitation pilot	-Further exploration of possibilities in rural areas -Actual construction of pilot	-	-	+	
6.1 Danube days	Organization of Danube days	-	-	-	
6.2 Work visits to Holland	Visits to Holland by Romanian partners	0	0	-	

-: Limited 0:Moderate +:High

Green: projects scoring a + on all three criteria

A4. Interviews

A4.1 Interviewees

In December 2010 and January 2011 interviews were conducted with key stakeholders in the five drinking water cases selected. The purpose of these interviews was to evaluate the knowledge sharing in the cooperation between the Province of Overijssel and Teleorman County based on the theoretical knowledge sharing evaluation framework (table 1). Based on the interviews it is possible to indicate the bottlenecks in the knowledge sharing process and formulate recommendations.

Table A3. Overview of the interviewees and their role in the cooperation. Interviewee NL3 is interviewed twice, because he has a double function within the cooperation.

Organization	Interviewee no.	Role
Netherlands (in person)		
(Province of Overijssel)	NL1	Former employee of the Province of Overijssel and project coordinator of the cooperation between the Province of Overijssel and Teleorman County (period 2005-2008)
Province of Overijssel	NL2	Manager of the Province of Overijssel responsible for the cooperation
Province of Overijssel	NL3	Project coordinator of the cooperation for the Province of Overijssel since 2009
Royal Haskoning Netherlands	NL4	Project coordinator of the cooperation for the Province of Overijssel since 2009
Water board Velt & Vecht	NL3	Coordinator international cooperations for the water board Velt & Vecht
Stichting Drinkwater voor Roemenië	NL5	Manager of the NGO; responsible for the drilling of five wells in the period 2005-2008 (activity 1)
Vitens	NL6	Expert in water winning
Vitens	NL7	Expert in water purification
Vitens	NL8	Expert in laboratories and water quality monitoring
Romania (by phone)		
Haskoning Romania	RO9	Project manager of the drinking water projects and facilitator of the cooperation by keeping in touch with all parties and by interpreting in discussions
Haskoning Romania	RO12	Communication expert and expert on the role parties play in the cooperation
Water Management Centre	RO13*	Director WMC; advisory role in projects
Water Management Centre	RO10	Legal advisor at the WMC; advisory role in projects
Vice-mayor of Botoroaga	RO15[#]	Explained their role in the stabilization of Botoroaga Dam

*The director of the WMC was not interviewed with the semi-structured interview schema, but it was possible to use an interview held by the water board Reest & Wieden from October 2010 which analyzed the capacities, role and functioning of the WMC. This interview had much overlap with the semi-structured interview schema used in this research. On top of that the legal expert of the WMC explained the role of the WMC.

[#]The vice mayor was not interviewed with the semi-structured interview schema, but more about the way knowledge was shared between them and the Romanian and Dutch partners in the stabilization of the Botoroaga Dam and what their role was in the cooperation.

The length of the interviews varied from 120 to 210 minutes. The interviews with the Dutch interviewees were held in Dutch and with the Romanian interviewees in English. In total 12 interviews have been conducted; interviewee NL3 is interviewed twice, because he has a double function in the cooperation (table A3). It was not possible to arrange an interview with the Romanian coordinator of international and national cooperation projects from Teleorman County, working at the international office of EuroTeleorman. Her role is to coordinate the

projects from the Romanian side. Due to internal affairs at the Province of Overijssel, it was also not possible to interview the technical director of Apa Serv and the Romanian mayors. Therefore interviewee RO12 was interviewed, because she could explain the role of the mayors in the cooperation based on her experiences and role as communication expert in different project activities carried out within the cooperation. Interviewee NL15, the vice mayor of Botoroaga explained their role in the stabilization of the Botoroaga Dam project and how knowledge was shared. This interview has been used as well to get insight in the role of the mayors. The lack of data from the side of Teleorman County and Apa Serv is tried to overcome by using the answers of other interviewees, observations, and information obtained from meetings and project documents.

During the research several meetings and field visits have been attended. Table A4 gives an overview of the meetings and field visits attended and observed.

Table A4. Overview of the meetings and field visits attended from which observations are obtained.

No.	Date	Parties attending	Where	About
1	May 2010 Meeting	-Water boards -Province of Overijssel	Province Hall, Zwolle Netherlands	The cooperation in general and how to continue
2	30 Sept. 2010 Meeting & field visit	-Mayor of Slobozia Mandra; -Municipal councilor; -Apa Serv; -WMC; -EuroTeleorman/Teleorman County; -Haskoning Romania; -Province of Overijssel; -Vitens	Municipality Hall, Slobozia Mandra, Romania	The drinking water quality of the boreholes and natural springs, determining suitable locations for boreholes and the quality of the natural spring location, and a field visit to the borehole and natural spring location *(activities 1.1 and 5.2/cases B and E)*
3	30 Sept. 2010 Field visit	-EuroTeleorman/Teleorman County; -WMC -Province of Overijssel; -Vitens	Uda-Clocociov, Romania	Natural source and spring water site of which the water is planned to be caught.
4	30 Sept. 2010 Field visit	-EuroTeleorman/Teleorman County; -WMC -Province of Overijssel; -Vitens	Saelele, Romania	Installed, but already broken, Perfector-E in Saelele
5	30 Sept. 2010 Meeting & field visit	-Mayor of Islaz; -Apa Serv; -WMC; -EuroTeleorman/Teleorman County; -Haskoning Romania; -Province of Overijssel; -Vitens	Municipality Hall, Islaz, Romania	Urgent drinking water problems in Islaz due to heavily polluted public drinking water well; by the National Health Department it was forbidden to use the well for drinking water any longer *(activity 1.2/case C)*
6	1 Oct. 2010 Meeting & field visit	-Mayor of Talpa; -WMC; -EuroTeleorman/Teleorman County; -Haskoning Romania; -Province of Overijssel; -Vitens	Municipality Hall, Talpa, Romania	Talpa has a shortage of drinking water. One well clogged. It is discussed which further actions are necessary in order to increase the water production and availability in the two villages. *(activity 1.1/case B)*
7	1 Oct. 2010 Meeting	-Mayor of Islaz; -Apa Serv; -WMC; -EuroTeleorman/Teleorman County; -Haskoning Romania; -Province of Overijssel; -Vitens	Apa Serv office, Alexandria, Romania	Presentation of and discussion about the intermediate results of the Dutch drinking water experts of Vitens regarding the drinking water installations, boreholes, the suggested new locations for boreholes and the needed mobile lab for monitoring the drinking water quality.

Table A4 (continued). Overview of the meetings and field visits attended from which observations are obtained.				
No.	**Date**	**Parties attending**	**Where**	**About**
8	2 Oct. 2010 Meeting	-EuroTeleorman/Teleorman County; -Haskoning Romania; -Province of Overijssel; -Vitens	Teleorman County Hall, Alexandria, Romania	Review of the past days; what do the experts know and what do they not know. Which data they need further.
9	4 Oct. 2010 Meeting	-Water board Reest & Wieden -WMC	WMC office, Turnu Magurele, Romania	Evaluation of the WMC through interviews with the staff The reason for the evaluation is the criticism as expressed in the report of Hooijer et al. (2010) that the WMC is not functioning well and that the customers were not satisfied with the products delivered by the WMC. The goal of the visit is to strengthen the WMC.
10	5 Oct. 2010 Meeting	-Water board Reest & Wieden -WMC -Teleorman County Council -Apa Serv -Municipality of Turnu Magurele	Turris Hotel, Turnu Magurele, Romania	-The activities carried out by the WMC; -What the board of directors think of the customer satisfaction and if they think that the customers like their products; -The cooperation within the WMC
11	6 Oct. 2010 Meeting	-Water board Reest & Wieden -WMC	WMC office, Turnu Magurele, Romania	End conclusion evaluation of the WMC in order to strengthen its position
12	7 Oct. 2010 Field visit	-Vice mayor Botoroaga	Botoroaga Dam, Botoroaga, Romania	Observation of dam site

A4.2 Interview Guide

Comments

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

Introduction of the Interview

The following issues are addressed in the introduction before the interview:

- *Welcome the interviewee and introduction of interviewer;*
- *Introduce the topic of the interview: knowledge sharing between the Province of Overijssel and Teleorman County;*
- *Explain the role differentiation 'interviewer' / 'interviewee';*
- *Explain why the interviewee has been selected;*
- *Indicate the duration of the interview and what is done with the data.*

Introduction:

Good *[morning / afternoon / evening]* dear *[Mr / Mrs X]*. First of all, I would like to thank you for participating in this interview. My name is Bert Kort and I am a Master student at the University of Twente in the Netherlands. For my research I am doing research on knowledge sharing for the Province of Overijssel. Therefore I would like to ask you a few questions about knowledge sharing in the cooperation between the Province of Overijssel and Teleorman County.

The interview focuses on your experiences and ideas with knowledge sharing. I will ask a number of questions about knowledge sharing within the projects carried out between the Province of Overijssel and Teleorman County. You have all the time to formulate your answer and reply. Please feel free to give any answer you want; no 'wrong' answers can be given in this interview.

You have been selected on the basis of our interviewee requirements, which are (1) projects carried out under the cooperation of the Province of Overijssel with Teleorman County, and (2) persons involved in the drinking water projects. (Based on these criteria, Mr *[X]* told me that it was interesting to talk with you, because you were involved in the project on *[X].*)

The interview will be used to get insight in the knowledge sharing process between the Province of Overijssel and Teleorman County. The interview will be used to give recommendations for improvement of knowledge sharing in the cooperation. The interview will take around 2 hours. The answers and data of the interview will only be used in the context of my research on knowledge sharing between the Province of Overijssel and Teleorman County. The information provided in this interview will be used confidentially.

Main Questions and Follow-up Questions

Individual's Background and Capabilities:

1. Could you tell something about your educational background and work experience?
2. What kind of activities are you responsible for in your daily work?
3. In which international projects have you been involved? Did you also participate in any study visits to the Netherlands or another country? When did you become involved in the projects of the Overijssel-Teleorman cooperation?
4. What was your typical role in the international projects in the Overijssel-Teleorman cooperation? (Coordinator, technical expert, calculator, trainer, designer, project manager, information expert etc.)
5. In which activities did you participate?

Motivation

6. What are the reasons that you participate in these projects? And for your organization?
7. How do you benefit from the cooperation? And your organization?
8. How important are the projects to you? And to your organization?
9. Are the projects in line with the goals of your organization? What kind of projects are currently having priority in your organization?
10. Did the importance of the projects increase or decrease during the cooperation? Has your willingness to participate in the projects increased or diminished?
11. Have there been any problems during the cooperation? If yes, by what or whom were these problems caused?
12. Did you or your organization ever consider to stop participating in the cooperation?

Organizational/Management Support

13. Does the manager support you when there are difficulties in the project? And the project partners?
14. Do you have sufficient support to participate in the project (do you for example have the facilities, expertise, manpower, time)?
15. How often do you discuss the project with your manager? To what extent is your manager involved in the cooperation? Does your manager interfere in the project or tries to control it? In what way?

Knowledge Sharing Activities/Communication and Interaction

16. What kind of information, data, knowledge and expertise did you contribute to the project? (NB: Make sure that you discover if it is tacit or explicit!)
17. By what means (e-mail, telephone, face-to-face, documents, meetings) do you prefer to share knowledge? How was it usually done in the projects? (NB: Make sure that you understand if it is personal or collective, codification or personification!)
18. How was your knowledge used during the project? Was the knowledge discussed? How was the knowledge valued by the other partners; was it accepted?
19. What kind of knowledge did the other project partners contribute? How did they share this with you?
20. How often do you communicate with the project partners? Is the communication based on regular meetings? Who is taking the initiative for communication? Are there enough follow-ups? Are you satisfied with the way knowledge is shared?

Perceptions & Views; Creating Shared Vision

21. What were according to you the problems to be solved and the best solutions for the problems that were addressed in the project? Was this view shared by the other project partners?
22. How did you arrive at the problem formulation?
23. Did you have the possibility to influence the problem formulation of the project? And did you have the possibility to influence the selection of the solution?
24. What is your opinion about the quality of the projects?
25. During the project, were there moments that certain types of knowledge or information were discussed on 1) validity, 2) usefulness, 3) trustworthiness etc. or reflected upon?

Trust/Perceptions on Other Actors

26. Is it important for you to have a relationship before you start sharing knowledge/cooperating?
27. Do you have the feeling that the Dutch/Romanian parties are willing to continue the relationship? Do you think that this relationship is important to both parties?
28. Do you trust the other project partners? Do you think they want to share knowledge? Do you think they are capable of contributing knowledge to the projects? Do you perceive knowledge sharing as valuable? Why or why not?
29. Do you feel afraid that sharing of knowledge could harm your position within the organization? Why?

Knowledge Sharing Results

30. Did you develop any basis for further cooperation in the future? Do you like to continue the relationship?
31. Did your level of trust in the Dutch/Romanian partners increases during the project?
32. During the project, did you get more excited about the project?
33. What did you learn during the project? What kind of new knowledge/skills? And from whom?
34. Did you apply this new knowledge in this project or in other projects? How did you do this? Did you pass this knowledge through to others (in your organization for example)?

Context

35. Did you experience differences between the Dutch and Romanian partners? For example, regarding type of knowledge, knowledge level, view on problem, importance of relationship, cultural differences? Do these differences affect knowledge sharing?
36. Do you experience barriers to knowledge sharing in the projects? For example, related to culture, language, level of knowledge, motivation?

General Evaluation

37. What was the added value of the cooperation between Teleorman County and the Province of Overijssel for the project? And of the Dutch/Romanian knowledge? And of being involved?
38. Are you satisfied with the cooperation between the Province of Overijssel and Teleorman County? Do you think the project was successful?
39. What are strong points in the cooperation between the Province of Overijssel and Teleorman County? And regarding knowledge sharing?
40. Do you have suggestions for improvement of knowledge sharing in the cooperation between the Province of Overijssel and Teleorman County? Or for the cooperation itself?

Interview Vragen en Vervolgvragen

Individuele Achtergrond en Capaciteiten:

1. Kun je mij vertellen welke opleiding je hebt gevolgd en wat je werkervaring is?
2. Voor welke soort activiteiten ben je verantwoordelijk in je dagelijks werk?
3. Bij welke internationale projecten ben je betrokken? Heb je deze landen ook bezocht voor je werk? Wanneer ben je betrokken geraakt bij de samenwerking tussen de Provincie Overijssel en Teleorman County?
4. Wat is je taak in de samenwerking tussen de Provincie Overijssel en Teleorman County? En welke rol vervul je in de projecten? (Coördinator, technisch expert, constructeur, trainer, ontwerper, project manager, informatie expert etc.)
5. In welke projecten heb je deelgenomen?

Motivatie

6. Wat is de reden dat je meedoet aan deze projecten? En voor je organisatie?
7. Wat levert de samenwerking op voor jezelf? En voor je organisatie?
8. Hoe belangrijk zijn de projecten voor jou? En voor jouw organisatie?
9. Zijn de projecten in overeenstemming met de organisatiedoelen? Welke projecten hebben op dit moment prioriteit in de organisatie?
10. Is de prioriteit en het belang van de projecten in de samenwerking tussen de Provincie Overijssel en Teleorman County tijdens de projecten toegenomen in de organisatie? Ben je ook meer betrokken geraakt bij de projecten of is je betrokkenheid juist afgenomen?
11. Zijn er problemen geweest gedurende de samenwerking? Zo ja, door wie of wat waren deze problemen veroorzaakt?
12. Heb jij of je organisatie ooit overwogen om de samenwerking stop te zetten?

Organisatie/Management Support

13. Steunt je manager je wanneer er moeilijkheden zijn tijdens de uitvoering van het project? En krijg je steun van je project partners?
14. Heb je voldoende ondersteuning van je organisatie om goed deel te kunnen nemen aan het project? (Heb je bijvoorbeeld voldoende faciliteiten, expertise, mankracht, tijd, etc.?)
15. Hoe vaak bespreek je het project met je leidinggevende? Op welke manier is je manager betrokken bij de projecten? Probeert het management het project naar zich toe te trekken of te controleren? Op welke manier?

Kennisdelen Activiteiten

16. Welke soort informatie, data, kennis en/of expertise heb je bijgedragen aan het project? (NB: Let erop dat je ontdekt of de kennis tacit of explicit is!)
17. Hoe heb je deze kennis gedeeld (via de mail, telefoon, face-to-face, bij een meeting, via documenten)? (NB: Let erop dat je weet of de kennis persoonlijk, collectief, op papier of in een gesprek is gedeeld!)
18. Hoe is de kennis die je ingebracht hebt gebruikt tijdens het project? Zijn er discussies geweest over de kennis die je hebt ingebracht? Hoe werd de kennis door de projectpartners beoordeeld; werd de kennis gebruikt?
19. Wat voor soort kennis hebben de andere projectpartners gedeeld? Hoe hebben ze deze kennis met je gedeeld?
20. Hoe vaak communiceer je met je project partners? Is de communicatie gebaseerd op regelmatig gepland contact? Wie neemt het initiatief voor communiceren over het project? Zijn er genoeg follow-up meetings? Ben je tevreden over de manier waarop kennis wordt gedeeld in het project?

Percepties & Views; het Samen Creëren van een Gedeelde Visie

21. Wat waren volgens jou de problemen die in het project aangepakt dienden te worden en wat waren de beste oplossingen voor de problemen in het project? Werd deze mening ook gedeeld door de andere projectpartners?
22. Hoe zijn jullie gezamenlijk tot de probleemformulering gekomen?
23. Had je de mogelijkheid om de probleemformulering te beïnvloeden? En had je de mogelijkheid om de keuze voor de geschikte oplossing van het probleem te beïnvloeden?
24. Wat vind je van de kwaliteit van de projecten? (Nuttig, relevant, goed opgezet, effectief)
25. Zijn er tijdens het project momenten geweest waarop de beschikbare kennis en informatie is bediscussieerd op betrouwbaarheid, bruikbaarheid, waarheid etc.?

Vertrouwen

26. Vind je het belangrijk om een relatie te hebben met degene met wie je kennis deelt?
27. Heb je het idee dat de Nederlandse/Roemeense partijen bereid zijn om de relatie voort te zetten? En heb je het idee dat ze allebei de samenwerking belangrijk vinden?
28. Vertrouw je de project partners? Denk je dat ze bereid zijn om kennis met je te delen? Denk je dat ze in staat zijn om belangrijke kennis input te geven voor de projecten? Beschouw je kennisdelen als waardevol en nodig in projecten? Waarom?
29. Als je kennis deelt met anderen, ben je er dan bang voor dat dit je positie in het bedrijf minder belangrijk maakt? Dat je dan eerder vervangbaar bent? Waarom?

Resultaten van Kennisdelen

30. Heb je tijdens het project een relatie kunnen opbouwen met de andere project partners voor verder samenwerking? Is je vertrouwen in de andere projectpartners gedurende het project toegenomen? Ben je van plan om in de toekomst de samenwerking voort te zetten?
31. Is je vertrouwen in de Nederlandse/Roemeense partners toegenomen gedurende het project?
32. Ben je tijdens het project meer enthousiast geworden over de projecten en de samenwerking?
33. Wat heb je geleerd tijdens het project? Welke nieuwe kennis/vaardigheden heb je opgedaan? En van wie heb je dit geleerd?
34. Heb je deze nieuwe kennis toegepast binnen het project of in andere projecten? Hoe heb je dit gedaan? Heb je de kennis doorgegeven aan derden?

Context

35. Heb je verschillen tussen de Nederlandse en Roemeense partijen ervaren tijdens de uitvoer van het project m.b.t. bijvoorbeelde de soort kennis dat gebruikt wordt/beschikbaar is, het kennisniveau, kijk op het probleem, het belang van de samenwerking, culturele verschillen? Hebben deze verschillen het kennisdelingsproces beïnvloed? Op welke manier?
36. Welke barrières heb je waargenomen om kennis te kunnen delen in de projecten? Bijvoorbeeld door cultuurverschillen, taal, kennisniveau, motivatie etc.?

Algemene Evaluatie

37. Wat was de toegevoegde waarde van de samenwerking tussen de Provincie Overijssel en Teleorman County voor het project? En van de Nederlandse dan wel Roemeense kennis? En van jouw deelname?
38. Ben je tevreden over de samenwerking tussen de Provincie Overijssel en Teleorman County? Denk je dat het project succesvol was?
39. Wat zijn de sterke punten van de samenwerking tussen de Provincie Overijssel en Teleorman County? En met betrekking tot kennisdelen?
40. Heb je nog suggesties voor de verbetering van kennisdelen tussen de Provincie Overijssel en Teleorman County? En voor de samenwerking?

A5. Organization Set-up and Communication Structure

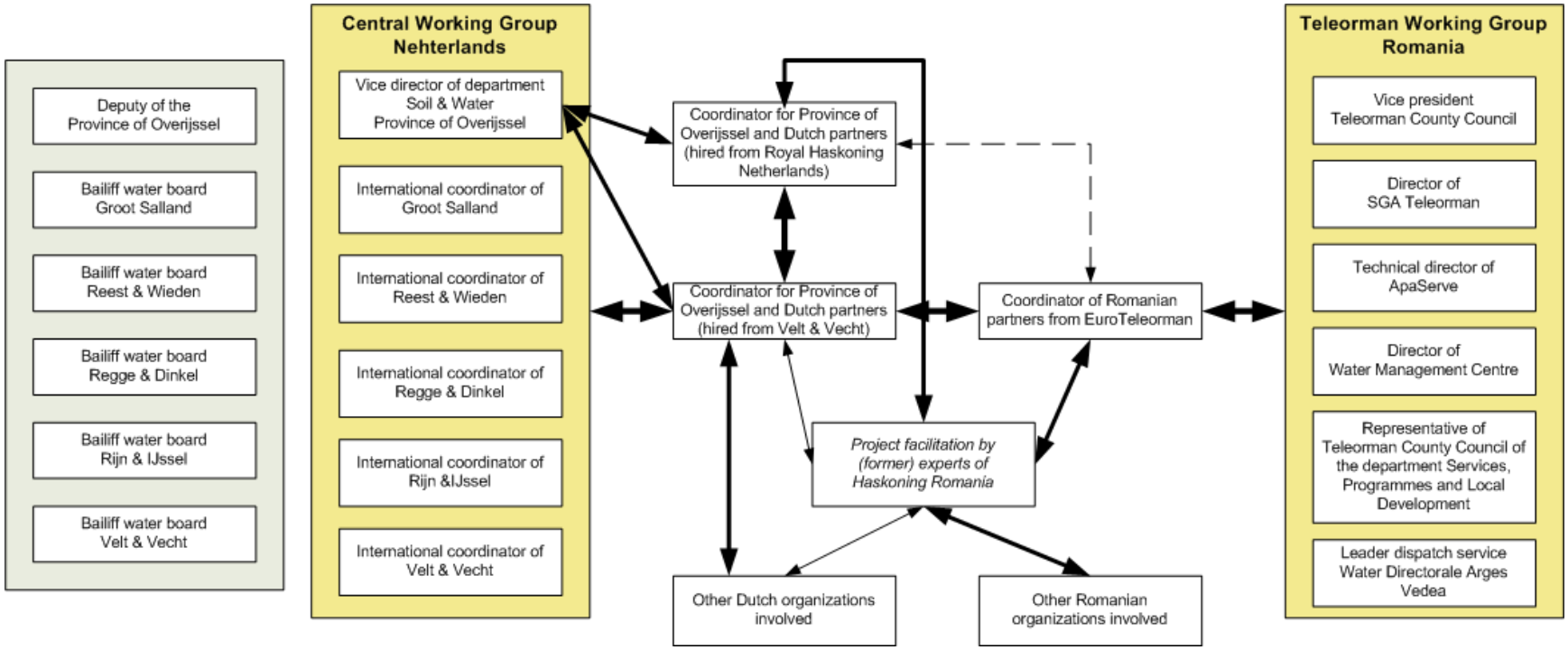

Figure A2. Organizational set-up and communication structure of the cooperation between the Province of Overijssel and Teleorman County, period 2009-2011 (based on Hooijer et al. (2009 figure 2.1: p. 6) and interviewees NL3, NL4, NL5, NL6, NL7, NL8 RO9, RO12). The thickness of the lines gives an indication of the importance of the communication channel based on observations and interviewee responses (interviewees NL3, NL4, NL5, NL6, NL7, NL8 RO9, RO12). The project coordinator of the Province of Overijssel hired from water board Velt & Vecht is also the international coordinator for water board Velt & Vecht, giving him a double function.

A6. Overview of Case Activities: Partners, Resources and Planning

Table A5. Overview of the case activities; overiew per activity of the location, the organizations involved, the funding and the planning (based on Van Dijk, 2007; Hooijer et al., 2009).

Activity	Location	Organizations involved	Financial contribution	Planning
1 (case A). Five deep wells for drinking water (2005-2009)	• Viişoara at a school; • Săceni; • Trivalea-Moşteni; • Tătarăştii de Jos; • Sârbeni.	• Province of Overijssel; • EuroTeleorman; • SGA; • NGO Stichting Drinkwater voor Roemenië.	• €48,000 by Province of Overijssel	• Start: 2005 (agreement on idea) • Start location search: 2006 • Expected delivery: April 2007 • Delivered: August 2007
1.1 (case B) Improve drinking water quantity	• Talpa (2 wells); • Slobozia Mândra (2 wells); • Still unknown (?)	• Province of Overijssel; • EuroTeleorman; • WMC; • Communes of Talpa and Slobozia Mândra	• €45,000 by Province of Overijssel • Romanian partners: €4,500	• Start: 2009/2010 (agreement on idea) • Start location search: Spring 2010 • Advice location: Oct 2010 • Tender procedure for finding local contractor: Jan/Feb 2011 • Expected delivery: August 2011 (?)
1.2 (case C) Improve drinking water quality	• Islaz • Other 4 places: still unknown	• Province of Overijssel; • Apa Serv; • EuroTeleorman; • WMC; • Commune of Islaz;	• ±€35,000 per installation • 80% by Province of Overijssel • 20% Romanian partners	• Start: 2009/2010 (agreement on idea) • Start location search: Spring 2010 • Agreement on solution: June 2010 • Advice on location: Oct 2010 • Expected delivery: Oct 2010 • Delivery: March 2011 (?)
3.1 (case D) Water quality monitoring	• Rural areas/WMC	• Province of Overijssel; • Apa Serv; • EuroTeleorman; • WMC;	• €35,000 by Province of Overijssel • Romanian partners: salary of lab operator	• Start: 2009/2010 (agreement on idea) • Advice on set-up of mobile laboratory: Oct 2010 • Tender procedure for finding supplier: Dec 2010/Jan 2011 • Expected delivery: Feb 2011 • Delivered: Feb 2011
5.2 (case E) Using spring water	• Uda Clococoiv	• Province of Overijssel; • Apa Serv; • EuroTeleorman; • WMC; • Commune of Islaz;	• ±€6,000 per spring • 10% of cost price: Local Council or owner • Maximum budget available of €10,000	• Start: 2009/2010 (agreement on idea) • Start location search: Spring 2010 • Advice location: Oct 2010 • Tender procedure for finding local contractor: Jan/Feb 2011