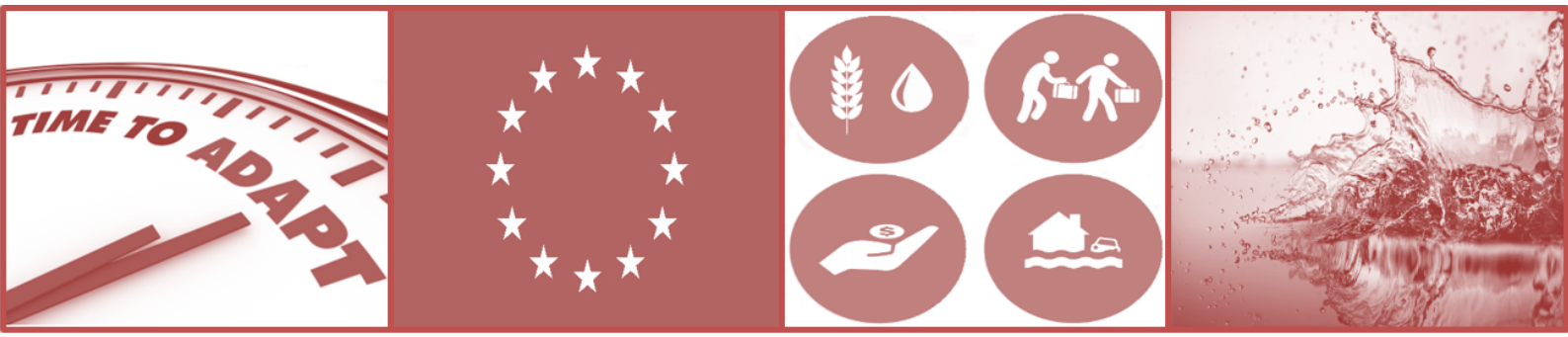
Transnational INTERREG projects within the context of climate change adaptation in the water sector: An evaluation of learning-based theories

A Master Thesis report



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Summary

In recent years, climate change adaptation (CCA) has been recognized as new approach to deal with the changing climate. CCA is especially relevant to the water sector, where the adverse effects of climate change has led to severe impacts like flood hazard and drought. European countries have different levels of knowledge about CCA making European cooperation projects a suitable environment for transnational learning.

In this study learning in two similar INTERREG B projects were assessed with the goal of making proposals for improving learning in similar projects. INTERREG B projects are European cooperation projects subsidized by the European Commission and are characterised by their transnational and practice-orientated nature. We assessed learning in such projects using an existing evaluation framework (Vinke-de Kruijf and Pahl-Wostl, 2016). This framework is organized around three learning outcomes and ten conditions that may produce these outcomes. It distinguishes between three learning outcomes: group learning (learning by project participants), organizational learning (learning by partner organizations represented by their project participants) and network/societal learning (learning by external actors in the wider contexts). For the assessment of the learning outcomes and conditions, both were given scores based on studied project documents and interviews with ten project participants.

The learning outcome and condition scores were quite similar in both cases. Interviewed project participants in general reported high level of group and network/societal learning and low level of organizational learning. Interviewees in both cases reported that their project was more beneficial in terms of acquiring substantive knowledge on climate change adaptation compared to building relations with other organizations. Also notable is how differently partner organizations used the project knowledge inside their organization. In both cases, authorities used the project knowledge to change practices (e.g. using new CCA measures) and policies (e.g. new flood protection standards). For knowledge institutions, project knowledge was used in scientific work and for changing education programs inside their organization. As for the condition scores, each interviewee scored high to very high for the conditions belonging to group learning. The condition scores belonging to organizational and network/societal learning varied among the ten interviewees. This variation in individual condition scores mirrors the variation in reported outcome scores for organizational and network/societal learning.

To make proposals for improving learning in INTERREG projects, the most relevant conditions were determined. The most relevant conditions were found through a combination of comparing the outcome and condition scores and analyzing the observations made in both cases. In addition, the most relevant conditions need to be supported by either the results from the previous case or by literature. For group learning the most relevant conditions were the three conditions ‘consortium’, ‘interaction process’ and ‘participant properties’ adopted from the evaluation framework. For organizational learning the most relevant condition was the need for project participants to spend more time in transferring project knowledge inside their partner organization. Regarding network/societal learning,

the most relevant conditions were the involvement of external actors through collaboration structures and making the project results available as wide as possible.

After identifying the most relevant conditions, proposals for improving learning in INTERREG projects were determined. For improving group learning we suggest that interpreters should be invited to ease communicating in the project language, project participants given sufficient time to regularly interact with others during the project, a project consortium represented by diverse types of partner organizations who can provide complementary knowledge and a well-designed interaction process that allow project participants to jointly work on actions. For improving organizational learning we suggest that participants should combine the knowledge transfer activities directed at colleagues and external actors. For instance, by inviting both colleagues and external actors to the same forum in which project results are presented. For improving network/societal learning we suggest that external actors should be invited to participate in the project through collaboration structures, like the Learning and Action Alliance and that project results should be made available as widely as possible through the use of online portals in which project documents could be uploaded.

These proposals are made with the aim of supporting future project participants in designing their projects. The monitoring committees of the INTERREG programs, who are tasked with accepting project proposals, can contribute to the improvement of learning in similar projects. This contribution can be in the form of raising awareness among future project participants about the learning opportunities and publishing guides with suggestions for improving learning in these projects.

Contents

Glossary

European (cooperation) project A project partly funded by the European Commission in which organizations from various Member States participate. The aim of these projects is to create an environment of learning and experience sharing. One type of partly funded EU project is INTERREG.

External actor Organization, community or network not directly involved in the European project who may learn from the project results.

Learning theory Describes or explains learning based on theories or concepts of learning found in the literature. Each learning theory may apply in a different context.

KNOW2ADAPT A research that assesses learning processes in European cooperation projects that focus on climate change adaptation in the water sector. What is being assessed are the learning outcomes and the conditions needed to produce these outcomes.

Knowledge The acquirement of information which can be new information or confirmation of past information.

Knowledge transfer Knowledge acquired in one situation is applied in another situation.

Multi-level learning process A process in which learning occurs at different levels. Learning may take place in one level or from one level to another.

Learning The process of change in the way we look upon the world. This change can be in the form of gaining new knowledge or insights. This process is often referred to as a learning process.

(Learning) condition The requirement to produce a learning outcome. These requirements may depend on the structure of the project or the characteristics of the project participants, partner organizations and external actors.

(Learning) outcome The product of the learning process. The learning outcome says something about the form of learning that occurs, at what level it occurs and the level or depth of the learning taking place.

Partner organization An organization from which one or multiple members are involved in an European project as project participants.

Project participant A member from a partner organization participating in an European project on their behalf.

Organizational member A member from a partner organization that was not involved as a project participant in an European project but can be described as a colleague.

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1. Introduction

One phenomenon that created many challenges in water management is climate change. Because of climate change there is an increase in sea level, river discharge and temperature. This has led to severe impacts like flood hazard and drought. Whether this change in climate is a permanent or a temporary phenomenon remains to be seen. However, on the short-term the impacts of climate change are being felt worldwide (IPCC, 2014, p. 42). In the past, mitigation was known as the main response to climate change through the reduction in the emissions of greenhouse gases (GHGs) and the enhancement of the carbon sinks (Füssel & Klein, 2006). However in recent years, adaptation as a response to climate change has been used as a supplement to mitigation (van Vuuren, et al., 2010). Using the definition of Füssel & Klein (2006), climate change adaptation (CCA) can be referred to as the moderating of the adverse effects of unavoided climate change through a wide range of actions that are targeted at the vulnerable system. The vulnerable system can be an area prone to floods or drought. Examples of actions associated with CCA may include communicating climate change information, building awareness of potential impacts, maintaining well-being, protecting property or land, maintaining economic growth, or exploiting new opportunities (Adger, Arnell, & Tompkins, 2005).

While CCA is being implemented in various countries, not all nations are adapting to climate change to the same extent. This can be due to differences in income, priority or knowledge among the countries (Lesnikowski, Ford, Berrang-Ford, Barrera, & Heymann, 2015). In Europe, the European Commission is encouraging its Member States to adopt comprehensive adaptation strategies (European Commission, 2013). However, the European Commission has recognized a knowledge gap in regard to CCA among its Member States. A Climate Adaptation Platform (Climate-ADAPT) was established to help address this knowledge gap, with the purpose of supporting mutual learning and the sharing of knowledge on CCA (European Commission, 2015). In addition, the European Commission believes that EU cooperation can also help to address the gap in knowledge on and build up capacity for CCA. It is currently financially supporting European cooperation projects through funding programs like INTERREG, involving actors and organizations from multiple European countries. Having actors and organizations from different countries participate in European cooperation projects may potentially create an environment in which best practices can be shared and learning can occur (Colomb, 2007).

Learning has been studied in many contexts and explained using various theories. While learning has been studied quite often in natural resource management (Reed, et al., 2010), little attention has been given to learning in European projects (Colomb, 2007). Given that the European Commission had issued a study on the exchange of experiences and learning in INTERREG projects (INTERREG IVC, 2013), there is a clear need for an improved understanding of learning in international cooperation. We believe that two parties involved in INTERREG projects may benefit from these insights: the monitoring committees of European funding programs and the project participants. The monitoring committees can use the insights on learning in INTERREG project to support their assessment of the project proposals and possibly provide advice to applicants on how to improve the learning processes in their proposed projects. Project participants may use these insights to gain more benefits from the project in terms of learning about CCA, transferring project knowledge to their respective partner organization and sharing this knowledge with organizations, networks and communities not directly involved in their project.

This research is inspired by the ongoing research project KNOW2ADAPT which focuses on learning in European projects in the context of CCA in the water sector (Vinke-de Kruijf, 2015a). The evaluation framework that was developed and validated in KNOW2ADAPT serves as a basis for this research. With this framework learning outcomes and conditions which may produce these outcomes can be assessed. Using the insights gained from assessing INTERREG projects, we can formulate proposals for improving the learning in these projects. In addition, this study will contribute to the ongoing research KNOW2ADAPT by further testing its framework and providing additional cases needed to systematically compare EU projects using the Qualitative Comparative Analysis approach.

1.1 Objective and central questions

Following this background the objective of this research is:

> *To formulate proposals for improving learning in INTERREG projects focusing on climate change adaptation in the water sector by providing insights into the conditions needed to produce learning outcomes*

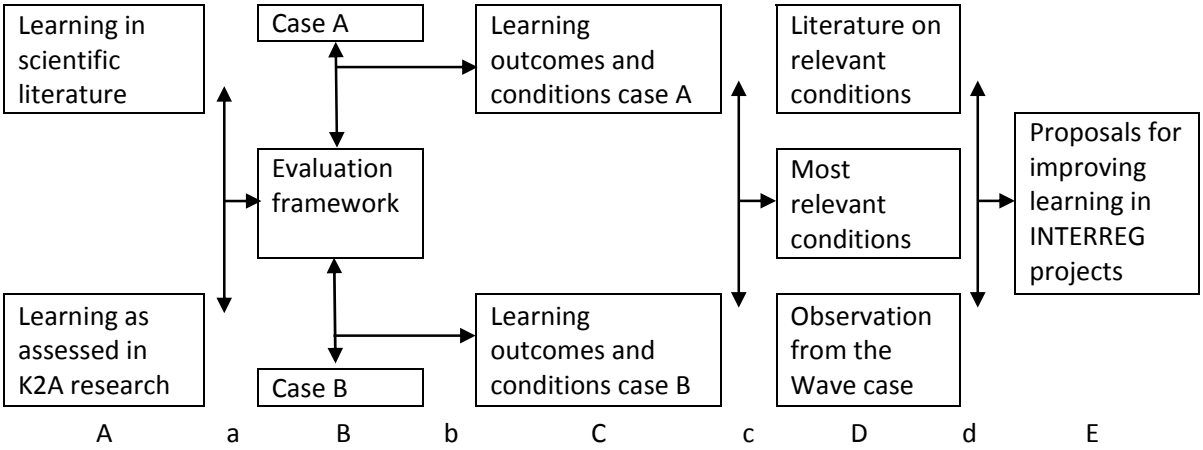

Figure 1-1 Research framework

Figure 1-1 visualizes how we expect to realize this objective. Learning theories that can explain learning in contexts that are relevant to this research are studied by reviewing the KNOW2ADAPT research project and the scientific literature (A). The scientific literature and the KNOW2ADAPT research are compared with each other (a), which leads to an evaluation framework (B). Using this framework, two projects are assessed (b) based on the learning outcomes and the conditions that may produce these outcomes (C). The learning outcomes and conditions in the first case are compared with the second case (c) in order to determine the most relevant conditions (D). A comparison of the most relevant conditions with observation from a previous case (WAVE) and literature (d) leads to proposals for improving learning in INTERREG projects that focus on climate change adaptation in the water sector (E).

Three central questions are needed to realize our objective:

1. What are the learning outcomes and conditions in the two evaluated cases?
2. When comparing the evaluated cases, what are the most relevant conditions and are these conditions supported by previous case(s) and literature?
3. What suggestions can be made in regard to improving learning in INTERREG projects that focus on CCA in the water sector?

1.2 Methodology

Here a summary of the research design is provided as well as an explanation on how we expect to answer the central questions and thus how to realize the research objective. The research design is a case study where two similar INTERREG projects are assessed based their learning processes. This small number of research units (usually referred to as cases) is one of the main characteristic of a case study (Verschuren & Doorewaard, 2005, p. 164). Other characteristics of a case study are labor-intensive data generation (open interview questions), strategically selected samples (i.e. case selection) and qualitative data collection methods (e.g. documents and interviews). More importantly, the case study offers the possibility to gain an overall picture of the research object. Verschuren & Doorewaard (2005) explained how having an overall picture may be a specific advantage in a research project aimed at changing an existing situation. This may be beneficial to our study since one of its purposes is to improve learning in INTERREG projects focusing on CCA.

To support the assessment of learning processes in INTERREG projects that focus on CCA in the water sector, we will be using an evaluation framework from Vinke-de Kruijf (2015a). This framework consists of learning outcomes and conditions which are assessed based on indicators. The evaluation framework is based on various scientific literature streams relevant to learning in CCA and EU cooperation contexts. The process of evaluating learning processes using this framework can be best explained by dividing it in three parts which follow each other up: first collecting of data, then transforming this data in qualitative data and lastly turning it into quantitative data (Figure 1-2).

Figure 1-2 Process of evaluating learning processes using the framework

The collected data here are documents (or online sources) containing relevant information about the project and open interviews with one project participant from each partner organization involved in this project. The interview design is semi-structured and made based on previous interview recording of the WAVE case (predecessor to our cases). The qualitative data are the descriptions made for every indicator in the evaluation framework and is also the source of our observations. The quantitative data are the scores given to the indicators based on these descriptions. How each indicator is assessed, is further explained in chapter 3. Having provided a summary of the research design and the evaluation

framework used in this research, below an explanation is given how we expect to realize the research objective.

The first step in formulating proposals for improving learning in INTERREG projects is to determine the learning outcomes and conditions in the two cases. Three learning outcomes and ten conditions are assessed. The different indicators determine the score of their respective learning outcomes and conditions. The end results here are learning outcome and condition scores as well as observations made during the case study.

The second step is to determine the most relevant conditions. The most relevant condition is found through two methods. In the first method we will compare each learning outcome score with its respective condition scores. A condition is viewed as relevant if its score does not differ greatly from the score of its respective learning outcome. Determining the most relevant conditions is done at the consortium and partner level. In the former, an overall (i.e. average) condition score is compared with its respective overall learning outcome score. In the latter, we assess which conditions were relevant to produce their respective learning outcome for each interviewee separately. If all or most interviewees have a score for a specific condition that does not differ greatly from its learning outcome score, than this condition is viewed as (one of) the most relevant condition(s). In the second method we will compare the observations done in both cases with the aim of finding other explanations for possible differences in learning outcome scores. Like in the first method, comparisons of observation will be done at the consortium and partner level. We accept that it is very difficult to determine the most relevant conditions to produce learning outcomes in other similar projects, based on only two cases. Therefore, the most relevant conditions should also be supported by either relevant literature or the previous case results (predecessor to our cases).

After determining the most relevant conditions, the third step is to formulate proposals for improving learning. Proposals here are specific suggestions that may positively influence any of the most relevant conditions and thus improve learning in INTERREG projects. The proposals will be, if possible, inspired by the observations made during the case study.

The focus of this study is not to create new insights about learning in CCA and EU cooperation contexts but instead to confirm or expand upon what is already known about this phenomenon.

1.3 Report outline

This report consists of 7 chapters. Chapter 2 will go deeper into how learning is understood in different literature and in the KNOW2ADAPT research. In Chapter 3 the methodology of this study is explained in more detail including data collection and analysis methods. The results of the first and second evaluated projects are presented in Chapter 4 and 5 respectively including observations done during the case study. The comparison and discussion of these cases can be read in Chapter 6. Chapter 7 will bring closure to the report by answering the central questions and making recommendations.

2. Understanding the role of learning in INTERREG project

Learning or the transfer of knowledge has been studied in various contexts with different interpretations. Before going through the different theories of learning that may be relevant to this research, it is important to define both knowledge transfer and learning. Learning in general can be seen as a process of change in the way we look upon the world (e.g. our feelings, thoughts, and actions), which depends on the learner, the object of learning, and the physical, biological, social, cultural and economic situation/setting (Krasny, Lundholm, & Plummer, 2010). Knowledge transfer can defined at two different levels: Individual and organizational level. Singley and Anderson (1989) defined transfer at the individual level as 'how knowledge acquired in one situation applies (or fails to apply) to another situation'. In organizational studies, transfer of knowledge at the organizational level is referred to as the process through which one group is affected by the experience of another (Argote & Ingram, 2000). This experience that affects other may lead to changes in the knowledge or actions of the affected group. Learning can occur as a result of knowledge transfer but this is not mandatory. Both learning and knowledge transfer are similar as they both result in a change in how individuals act or think.

The European Commission has studied the sharing of experience and learning in European interregional projects (i.e. INTERREG). In this study, learning was considered to occur at multiple levels (INTERREG IVC, 2013). In this multi-level representation learning at each level was explained by a different learning theory (Figure 2-1). Conceptualizing learning as a multi-level process is not uncommon in scientific literature. In the scientific paper of Pahl-Worstl et al. (2007), a framework is introduced that was developed in the European project Harmonicop. This framework considers learning as a multi-level process, in which knowledge can be transferred horizontally (i.e. between organizations or communities within one level) or vertically (i.e. from one level to another level) (Figure 2-2). The multi-level social learning process consists of three levels. The multiparty collaboration process in which actors from different stakeholder groups interact is level 1 (micro), the actors in the water management regime consisting of more or less organized stakeholder groups who may partly engage in two-sided interactions is level 2 (meso), and the governance regime and societal system that are characterized by cultural values, governance regime, or power structures is level 3 (macro) (Pahl-Wostl, et al., 2007). Another example of learning being conceptualized as a multi-level process is found in the work of Diduck (2010). His paper distinguishes among five levels of learning: individual, action group, organizational, network and societal (Diduck, 2010).

What all three studies have in common is that they point out that learning does not only take place in the project (by project participants). Partner organizations, represented in the project, and external actors (i.e. other organizations, networks or communities) not directly involved can also learn from the project. In other words, a project may also lead to a change in the way actors, who were not directly participating in the project, act or think. In this study, learning processes that do not occur in the project itself are also taken into account.

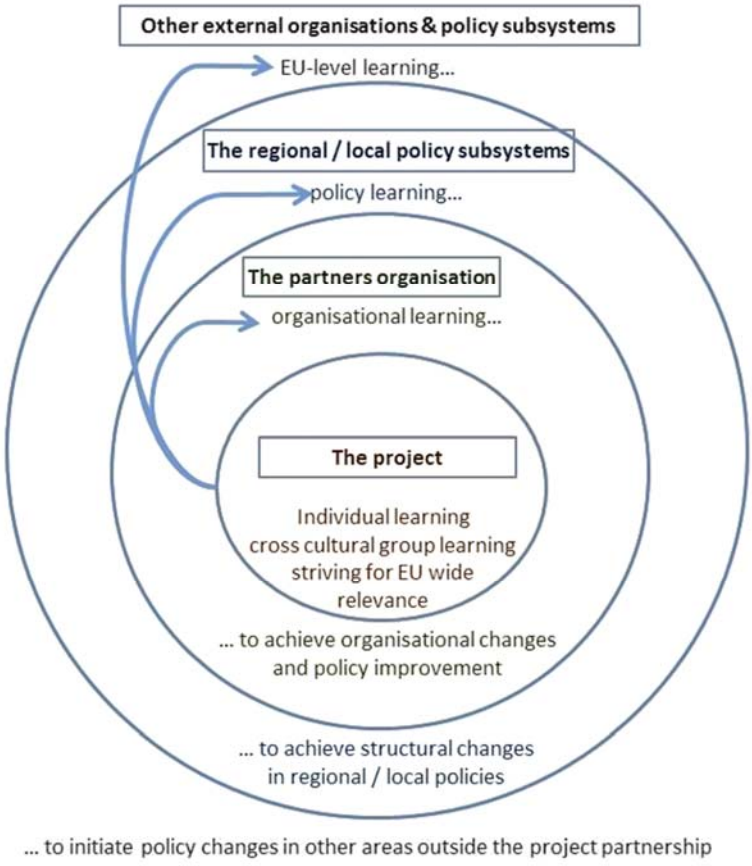

Figure 2-1 Multi-level representation of learning processes in INTERREG projects from INTERREG IVC (2013) pp. 11

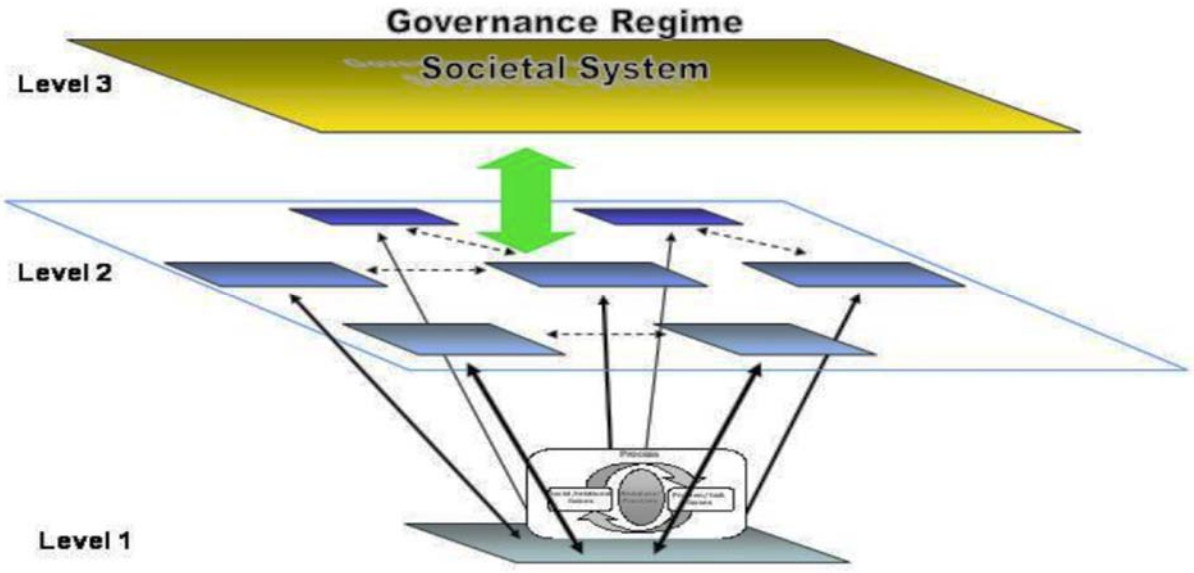

Figure 2-2 Three level representation of multi-level learning processes from Pahl-Wostl et al. (2007) pp. 6

2.1 Learning in natural resource management

The INTERREG projects that will be assessed involve climate change adaptation in the water sector. Climate change adaptation is closely related to natural resource management: both involve issues related to environmental challenges. From all the different learning theories, social learning is probably most widely applied in natural resource management literature (Diduck, 2010). Originally social learning was conceptualized as an individual learning process taking place in a social context by observing and imitating role models (Bandura, 1977). Since then, social learning has moved from focusing on multiple individuals that learn to perceiving learning as a group process that may benefit wider groups or organizations (Pahl-Wostl, et al., 2007). Concepts on learning which apply to whole wider groups or organizations originate from scientific work on organizational learning (Argyris & Schön, 1978) (Argyris & Schön, 1996). In recent times, social learning has been defined in multiple, overlapping ways. It has resulted in researchers confusing social learning with the conditions and methods necessary to facilitate social learning, or its potential outcomes (Reed, et al., 2010). The diverse definitions of social learning may have something to do with the researchers coming from a wide spectrum of disciplines (Rodela, Cundill, & Wals, 2012). They all bring other scientific theories/insights to build different theories of 'social learning'.

Reed et al. (2010) argue that if learning is to be considered 'social learning', then it must: (1) demonstrate that a change in understanding has taken place in the individuals involved, which can occur by recalling new information or by a changes in attitudes, world views or epistemological beliefs; and (2) as something that goes beyond the individual to become situated within wider social units. Wider social units can refer to partner organizations as well as external actors not directly involved in the project. Other studies define social learning as something that leads to a change in understanding of the individuals which can happen when we share our experience, ideas and environments with each other (Bardsley, 2015) (Rodela, Cundill, & Wals, 2012). This definition differs from the definition of Reed, et al. (2010), since it does not require a change in understanding to occur in wider social units.

How social learning takes place is through social interactions and processes between actors within a social network which can be either a direct interaction (conversation), or through other media (telephone or mass media) (Reed, et al., 2010). Baird, et al. (2014) distinguish between three different typologies for social learning: Cognitive (or substantive), normative, and relational learning. Cognitive learning is defined as the acquisition and restructuring of substantive knowledge. Normative learning involves changes in norms, values or beliefs. Relational learning is referred to as the improved understanding of others, building relations, enhanced trust and cooperation (Baird, Plummer, Haug, & Huitema, 2014). The actors involved in social learning processes are defined as individual persons, who act in the role of representing their organization or another collective entity (Newig, Günther, & Pahl-Wostl, 2010).

Another learning theory found in the natural resource management literature is transformative learning. The theory of transformative learning examines learning experiences of adults in which frames of reference (i.e. assumptions that make us understand experiences) are transformed through critical reflection, action based on reflection, and assessment of the action (Mezirow, 1994). Two domains of the transformative learning exist in the literature: instrumental and communicative

learning (Vulturius & Swartling, 2015) (Diduck, Sinclair, Hostetler, & Fitzpatrick, 2012) (Tarnoczi, 2011). Instrumental learning focuses on problem solving to help individuals improve the performance of their activities and to better achieve their objective. In the context of climate change adaptation, instrumental learning includes the acquisition of knowledge about potential risks, impacts and the application of adaptation measures. Communicative learning refers to the improvement of people's ability to understand their own and others' values, beliefs, interests and action, and identify commonalities and disagreements between them. In the context of climate change adaptation, communicative learning may change a person's perception of how other actors deal with scientific knowledge on climate change impacts. Vulturius & Swartling (2015) argue that personal experiences with extreme natural events can motivate actors to take action to lower the risks from natural hazards. In the case of INTERREG projects concerning CCA, for example, a project participant may be more motivated to learn from and engage with other project participants about climate change adaptation, if this individual experienced the risks or impacts caused by climate change in the past. While both transformative learning and social learning take into account the social context in which learning occurs, transformative learning literature have tended to put an emphasis on outcomes of learning (e.g. instrumental or communicative learning) whereas social learning literature have focused more on the aspects of the learning process. Having discussed learning in natural resource management, we will review learning theories that are relevant to INTERREG projects in the next section.

2.2 Learning as a result of cooperation projects

In European cooperation various organizations from different European countries participate in projects. According to a study concerning the exchange of experience and learning in European interregional cooperation, two forms of learning can occur in INTERREG projects at the project level: individual and group learning (INTERREG IVC, 2013, p. 16). Individual learning can be defined as the process through which a person's knowledge, skills, beliefs, or behaviors changes as a result of experience, and group learning can be referred to as the process in which individual learning outcomes become part of a web of mutual outcomes in a collection of individuals (Diduck, 2010). In INTERREG projects the unit of analysis for learning at the project level (individual or group learning) are the project participants. Each of these individuals represents a partner organization. The project participants can exchange existing knowledge between them (learn 'from' each other) and jointly develop new knowledge as a group (learn 'with' each other) (Valkering, Beumer, de Kraker, & Ruelle, 2013). The former may refer to learning at an individual level while latter can occur at the collective level. The project participants together form a project team and its composition may affect the learning process at the project level. For example, while the same project participants working together in a project team may promote learning, there is a danger that they will become less creative and innovative because they lack an influx of new ideas (Brady, Marshall, Prencipe, & Tell, 2003).

The aforementioned study concerning the exchange of experience and learning in European interregional cooperation has also mentioned that organizational learning may occur as a result of INTERREG projects. Organizational learning can be defined as the integration of project results (e.g. the project knowledge) into the partner organization (Bakker, Cambré, Korlaar, & Raab, 2011). These organizations are characterized by long lifespans, and formal membership and institutions (Diduck,

2010). The unit of analysis of organizational learning may include: individual members or groups within the partner organization (i.e. organizational members), or the whole organization. Organizational learning may occur through the transfer of knowledge from project to the partner organization. Borrowing from Vinke-de Kruijf (2015a) six levels of knowledge transfer exists (Table 2-1). From transmission (lowest level of knowledge transfer) to implementation (highest level of knowledge transfer). The higher the level of knowledge transfer, the greater the importance of this knowledge transfer (Crona & Parker, 2012). Böhme et al. (2003) mention that it is not always the case for organizational learning to occur, and that it could remain as individual learning. A barrier that may hinder organizational learning is that knowledge acquired on the project is easier through active participation than studying the project report (Böhme, Josserand, Haraldsson, & Polverari, 2003). Another barrier is that project participants may lack the motivation to share knowledge with other organizational members and that an incentive program is needed to encourage these project participants (Brady, Marshall, Prencipe, & Tell, 2003).

Table 2-1 Six level of knowledge transfer. Adapted from Vinke-de Kruijf (2015a)

1.	**Transmission**	Sharing project results with colleagues who were not involved in the project.
2.	**Presentation**	Presenting project results in some kind of tailor-made form to colleagues who may potentially use them.
3.	**Interaction**	Discussing project results with colleagues within the context of relevant working groups or similar.
4.	**Adoption**	Colleagues make an effort to adopt some of the project results or actively support the adaptation of project results, or project participants are asked for advice regarding the adoption of the project results
5.	**Influence**	Colleagues used project results to contribute to the development of new or improved policies, products or services.
6.	**Implementation**	Project results have been implemented by colleagues.

Another learning theory found in the organizational studies is project learning. Project learning is referred to as learning in the project and the transfer of lessons learned to the organization. In other words, project learning focuses on learning processes at the project and organizational level (Bakker, Cambré, Korlaar, & Raab, 2011). Barriers exist which may hinder project learning. Carlile (2002) & Scarborough et al. (2004) have referred to such barriers as 'knowledge boundaries'. They mention three boundaries: a syntax (language) boundary, where the flow of knowledge is obstructed by the lack of a common language between the project members involved; a semantic (meaning) boundary, where participants are unable to share knowledge because they bring different interpretations to it; and a pragmatic (practice) boundary, where the flow of knowledge is constrained by differences in practices and interest between participants (Carlile, 2002) (Scarbrough, et al., 2004). These boundaries may also apply to other forms of learning (e.g. individual and group learning), especially the syntax boundary can be common problem because of the cross-cultural nature of European collaboration projects (INTERREG IVC, 2013, p. 64).

2.3 Learning beyond the project and organizational level

Other learning theories exists that go beyond the project and the organizational level. To be clearer, the things learned by the project participants and their respective partner organization, can be transferred to and shared with external actors that were not directly participating in the project. Diduck (2010) has referred to this form of learning as network and societal learning. The former involves processes though which organizational outcomes become part of a web of distributed and mutual outcomes in a collection of organizations and the latter includes processes by which core societal institutions are modified in response to social and environmental change. One difference between network and societal learning lies with the unit of analysis. The unit of analysis for network learning is a network which is a collection of organizations lacking-organizational structure but sharing political, social, economic, or cultural interests. Societal learning is more focused on communities of people living in a particular region or country having shared customs, organizations and laws (Diduck, 2010). Both involve the transfer of project knowledge to external actors.

Another theory of learning mentioned in the literature is 'policy transfer' and can be relevant to this study since it involves some form of knowledge transfer. The transfer of knowledge that may lead to 'policy change' has been mentioned in literature analyzing transnational cooperation (Colomb, 2007) and interregional cooperation (INTERREG IVC, 2013). Policy transfer is defined as a process or a set of processes in which knowledge about institutions, policies, or delivery systems at one sector or level of governance is used in the development of institutions, policies, or delivery systems at another sector or level of governance (Evans, 2009). Vinke-de Kruijf & Özerol (2013) have put an emphasis on the transfer of policy relevant knowledge. The thing being transferred is not the methods or technologies (objects) themselves but the knowledge associated with these objects. Objects of policy transfer may include: policy aspects; concrete programs; institutions; ideologies, ideas and attitudes (Vinke-de Kruijf & Özerol, 2013). The transfer of policy knowledge is mentioned to take place at and between any of the following levels: international, transnational, national, regional and local (Evans, 2009). In the context of INTERREG projects, policy transfer may lead to a transfer of policy knowledge from one EU member state to another member state. The individuals involved in policy transfer can be governmental, nongovernmental or private actors.

2.4 Theoretical framework

As mentioned in Chapter 1, assessing learning processes in European cooperation context is currently ongoing in the KNOW2ADAPT research. The KNOW2ADAPT research systematically compares learning in completed European projects that focus on CCA in the water sector. For the comparison of learning in European projects, multiple projects need to be assessed using an evaluation framework developed in the KNOW2ADAPT research. This framework evaluates European projects based on the multi-level learning process by measuring the learning outcomes and conditions needed to produce these outcomes. The results of each project evaluation, using this framework, can then be systematically compared with each other. By comparing the results of various evaluated projects, generalizable insights can be produced on learning outcomes as well as the combination(s) of condition(s) that may produce these outcomes in European projects that focus on CCA in the water sector (Vinke-de Kruijf, 2015a). In the evaluation framework, the three learning outcomes measured in European projects each

occur on a different level. First, at the micro level, group learning may occur which is referred to as the increase in knowledge/insights by project participants. Second, at the meso level, is organizational learning which is defined as the uptake and use of project knowledge by the partner organizations represented by their respective project participants. Third, at the macro level, is network/societal learning which is referred to as the uptake and use of project knowledge by external actors. The aim of the framework is not to identify whether a learning outcome has occurred but to measure the level or depth of learning for each outcome. Learning involves some form of change and the level or depth of learning says something about the extent of this change. Figure 2-3 and Table 2-2 visualizes the three levels in which learning is assessed in KNOW2ADAPT.

Table 2-2 The three learning outcomes in European cooperation projects. Adapted from Vinke-de Kruijf (2015a)

Level of analysis	**Learning theory**	**Learning outcome**	**Unit of analysis**
Micro	Group Learning	Increase of knowledge, insights and skills (substantive and relational)	Project participants and consortium
Meso	Organizational learning	Utilization of project results, including lessons learned, by organizations	Partner organizations represented by the project participants
Macro	Network/societal learning	Utilization of projects results, including lessons learned, by networks and communities	Organizations, networks and communities not directly participating in the project forming the structural context

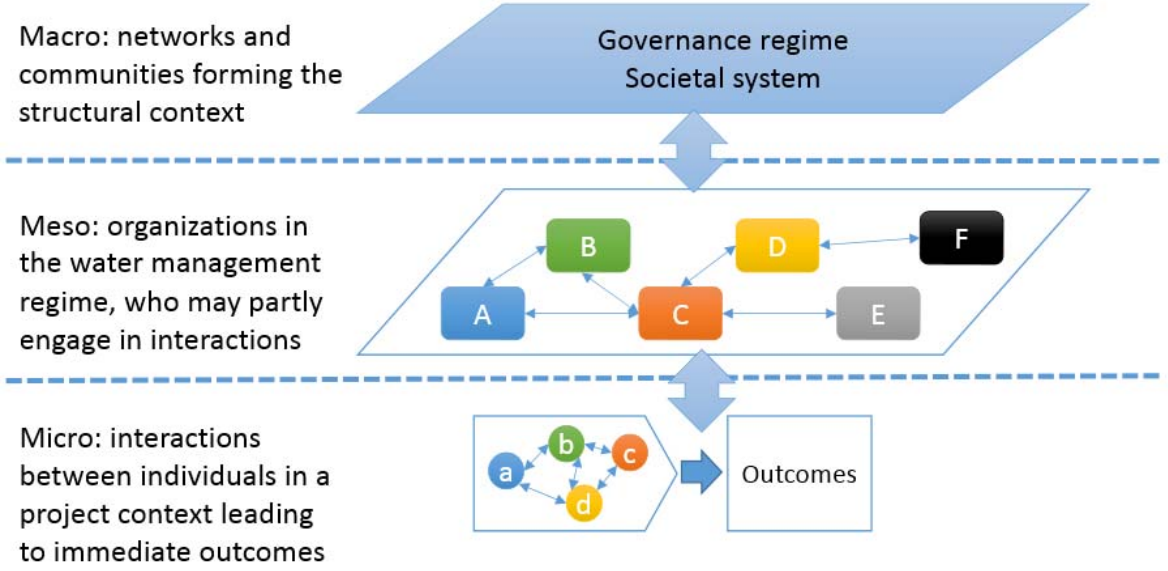

Figure 2-3 A multi-level process of learning in the KNOW2ADAPT research from Vinke-de Kruijf (2015a) pp. 50

The evaluation framework also supports the identification of the conditions that may be necessary to produce the learning outcomes. Each learning outcome has a set of conditions and this framework helps in identifying which condition(s) are more relevant or important in producing a learning outcome. For the conditions, we can differentiate between project-specific and partner-specific conditions. Project-specific conditions are measured based on the characteristics of the project, while the partner-specific conditions vary for each project participant or partner organization.

To support the assessment of learning processes in INTERREG projects in this study, the framework from the KNOW2ADAPT research will be used. A consideration was made to adjust this framework based on reviewed literature. For instance: adding an additional outcome or condition. Instead we decided not to change the original evaluation framework for two reasons. Firstly, one of the goals of this study is to make a contribution to the KNOW2ADAPT research. This contribution is in the form of provided two additional cases (i.e. evaluated INTERREG projects) which can be compared with an already finished case called WAVE. Another contribution to the KOW2ADAPT research can be recommendations on possible changes to the framework based on the experiences gained during this study. Secondly, it is difficult to make any changes to the original framework based on the reviewed literature. The literature review presented above only tries to capture a basic understanding of learning in relevant contexts. Unlike the literature review in the KNOW2ADAPT research, from which the original framework was conceptualized, this literature review is not as broad and detailed. This will not harm the study since its primary objective is to make proposals for improving learning in INTERREG projects.

The various learning theories presented earlier are also present in the KNOW2ADAPT framework. Obviously theories of group, organizational, network and societal learning are fully present in the framework. In addition, elements found in other theories like the typologies of social learning (i.e. substantive and relational learning) and the multi-level learning process are also present in the framework. So to summarize the evaluation framework found KNOW2ADAPT research will be used as our theoretical framework to support the assessment of learning process in INTERREG projects that focus on CCA in the water sector. The next chapter will explain how learning processes were evaluated using our theoretical framework as well as introducing the methods used and the data needed for evaluating learning processes in INTERREG projects.

3. Evaluating learning processes in INTERREG projects

In section 3.1, we will discuss the application of the evaluation framework which support the assessment of learning processes in our study. Section 3.2 explains how we familiarized ourselves with this framework. The selection of cases is discussed in section 3.3 followed by section 3.4 which provides an overview of the activities belonging to the case study including the data collection and analysis methods. Section 3.5 explains when conditions in the evaluation framework are deemed relevant to produce their respective learning outcome based the quantitative data.

3.1 Introduction of the framework

The framework consists of three learning outcomes and ten conditions. Each outcome and condition consists of indicators that are relevant to that outcome or condition. These indicators are each given a score which then determine the score of their respective condition or outcome. The outcome score reflects the level of learning and will help identify which actors with an interest in the project (project participants, colleagues or external actors) may learn the most from it. The purpose of the condition scores is to determine which condition(s) are important in producing their respective learning outcome.

Determining the scores for indicators and their respective outcome or condition scores

Based on the data collected during the case study, each indicator is given a score using a 'score system'. The idea is to compare the indicator description with the description in each scoring box (i.e. 0, 0.3, 0.7 and 1) and then determine which of scoring box description is the most similar to the indicator description. For example, the indicator 'interaction' (condition: 'interaction process' of the outcome: 'group learning') can be given a score of 0 if the indicator description described the interaction as not long enough to develop relations and leading to many misunderstandings, while a score of 1 is given if, according to the indicator description, interactions were characterized as pleasant moments and the exchange of information did not lead to any problems (Table 3-1). The scores 0.3 and 0.7 function as some form of middle ground between the two extremes. The score system of all the forty-three indicators can be found in Appendix A.

Table 3-1 Score system for the indicator 'interaction'

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Interaction: Did interactions occur in a good atmosphere and were they regular and long enough to develop relations?	Interactions were superficial, no time to develop mutual relations. There were misunderstandings.	Interactions were enough to develop a basic understanding, but did not allow for relations to develop.	Interactions were just long and often enough to develop mutual relations and understandings.	Interaction moments are characterized by a pleasant atmosphere. Information exchange was without problems.

From the ten conditions, four are project-specific (applies for all project participants) and six are partner-specific (differs for each project participant). The conditions are spread among the learning outcomes with group learning having three conditions, organizational learning having two conditions and network/societal learning having five conditions. Below an explanation is provided for determining the indicators of each outcome and condition in the framework. The condition scores were determined by taking the average scores of all indicators belonging to their respective condition. How the outcome

scores were determined is different for each of the three learning outcomes and will be discussed in more detail below.

Group learning

For the assessment of the outcome 'group learning' both substantive and relational learning were measured. The outcome of substantive learning was measured by the degree to which the project has changed knowledge, insights, and understanding of the project participants while the outcome of relational learning assesses the extent in which the project has changed relations and communication/collaboration skills of the project participants. Only changes that are relevant to climate change adaptation were measured. Examples of learning processes that were excluded, are a financial manager learning about the management of INTERREG projects or a project participant learning how to collaborate in INTERREG projects. We distinguished between four possible changes in substantive and relational knowledge and thus four possible scores given to interviewees. Interviewed project participants may report that the project led to no changes in knowledge (score = 0), improved knowledge (score = 0.3), partly improved and partly new knowledge (score = 0.7) or entirely new knowledge (score = 1). It is possible for the scores of substantive and relational learning to differ from each other. The score of the learning outcome 'group learning' was found by taking the average of both the maximum score and the average score of substantive and relational learning. If we were to write this as an formula it would look like this: $Score\ GL = \frac{1}{2} \times (MAX(SL\&RL) + \frac{(SL+RL)}{2})$.

Table 3-2 Overview of indicators for the outcome and conditions belonging to group learning. Adapted from Vinke-de Kruijf (2015a)

Outcome/condition	**Indicator**	**What is measured?**
Group learning	*Substantive*	Degree to which knowledge, insight and understanding have been changed.
	Relational	Degree to which relations, communication and collaboration skills have been changed.
Consortium	*Balanced cohesiveness*	How acquainted the project organizations were with each other before the start of the project?
	Balanced diversity	To what extent partner organizations were representing different roles and functions?
	Complementary knowledge	What type of knowledge the project participants provided during the project?
Interaction process	*Interactions*	To what extent all project participants had the opportunity to engage in the project activities and how open participants were towards sharing knowledge?
	Activities	To what extent the project was designed to really encourage collaboration between project participants, to what extent activities were logically connected and whether new knowledge was created?
	Facilitation	To what extent project activities and learning processes were facilitated by a professional facilitator?
Participant properties (GL)	*Ability*	To what extent project participants had the international experience and felt comfortable communicating in the project language which are needed to meaningfully interact with others?
	Motivation	How willing were project participants to take part in the project?
	Opportunity	To what extent did project participants have the opportunity to stay involved in the project over a longer period of time?

The conditions that can be relevant to this outcome are 'consortium', 'interaction process' and 'participant properties'. Table 3-2 provides an overview of all indicators belonging to their respective condition or outcome including an explanation how they were measured.

Organizational learning

The outcome of organizational learning was measured in terms of the level of knowledge transfer from project participants to their partner organization. We analyzed six forms of knowledge transfer: transmission, presentation, interaction, adoption, influence and implementation. In other words, we did not only look at the extent in which project knowledge has been transferred to the partner organization but also what was done with the project knowledge inside this organization. All six knowledge transfer were measured based on the intensity (i.e. how much) and the width (i.e. to whom) of the knowledge transfer activities. Important to note is that some partner organizations involved in INTERREG project can be responsible for diverse tasks and not only water management related tasks. For these partner organizations, organizational learning is linked to knowledge transfer toward relevant parts of the organization. For the learning outcome 'organizational learning', the overall score was found by taking the weighted average of all six indicators belonging to this outcome. The weighting of the scores depended on the level of knowledge transfer (transmission = 1, presentation = 2, interaction = 3, adoption = 4, influence = 5 and implementation = 6). To bring the overall score back to a value between 0 and 1, the total score was divided by 21 (1+2+3+4+5+6=21). The conditions that can be relevant to this outcome are 'partner organizations properties' and 'participant properties'.

Table 3-3 Overview of indicators for the outcome and conditions belonging to organizational learning. Adapted from Vinke-de Kruijf (2015a)

Outcome/condition	**Indicator**	**What is measured?**
Organizational learning	*Transmission (weight 1)*	Degree to which communication means were used to share project knowledge with the partner organization.
	Presentation (weight 2)	Degree to which presentations on the project knowledge were provided to the partner organization.
	Interaction (weight 3)	Degree to which the project knowledge was discussed with the partner organization.
	Adoption (weight 4)	Degree to which the project knowledge was supported or efforts made to adopt it by the partner organization.
	Influence (weight 5)	Degree to which project knowledge had an influence on the partner organization's policies and practices.
	Implementation (weight 6)	Degree to which project knowledge were implemented by the partner organization.
Participant properties (OL)	*Ability*	To what extent project participants had the knowledge and skills, and whether they were in the position to transfer project knowledge to their partner organization?
	Motivation	How willing were project participants to transfer project knowledge inside their partner organization?
	Opportunity	Amount of chances provided to project participants to transfer project knowledge inside their partner organization?
Partner organization properties	*Prior related knowledge*	How experienced the partner organization was with the project theme or/and international projects?
	Cognitive embedding	How relevant the project theme was to the partner organization (before, during and after the project)?
	Supportive organizational context	To what extent the partner organization were supportive or restrictive towards learning, change and evaluation?

Table 3-3 provides an overview of all indicators belonging to their respective condition or outcome including an explanation how they were measured.

Network/societal learning

Similar to organizational learning, the outcome of network/societal learning was measured in terms of different levels of knowledge transfer. However, for this learning outcome the knowledge transfer from the project participants or their partner organization to so-called 'external actors' was measured.

Table 3-4 Overview of indicators for the outcome and conditions belonging to network/societal learning. Adapted from Vinke-de Kruijf (2015a)

Outcome/condition	**Indicator**	**What is measured?**
Network/societal learning	*Transmission (weight 1)*	Degree to which communication means were used to share project knowledge with the external actors.
	Presentation (weight 2)	Degree to which presentations on the project knowledge were provided to the external actors.
	Interaction (weight 3)	Degree to which the project knowledge was discussed with the external actors.
	Influence (weight 4)	Degree to which project knowledge had an influence on the external actor's policies and practices.
	Implementation (weight 5)	Degree to which project knowledge were implemented by the external actors.
Participant properties (N/SL)	*Ability*	To what extent project participants/partner organizations had the knowledge and skills, and whether they were in the position to transfer project knowledge to external actors?
	Motivation	How willing were project participants/partner organizations to transfer project knowledge to external actors?
	Opportunity	Amount of chances provided to project participants to transfer project knowledge to external actors?
Participant scoping strategy	*Activities*	To what extent project actions or more precisely regional actions included the development or testing of new or alternative solutions?
	Framing	In what way the project actions and knowledge were adjusted to fit user-specific situations and circumstances?
	External actor involvement	To what extent project participants/partner organizations strategically involved different kind of external actors?
	Change process	In what way the project is connected to other projects or actions of the partner organization or other organizations?
Wider context properties	*Policy agenda*	How relevant was the project theme in the project region and to the external actors?
	Governance system	How supportive was the structural governance system toward learning about and knowledge transfer of CCA?
Communication strategy	*Proactive*	To what extent a communication plan has been developed and implemented and how the dissemination activities have been pursued throughout the project?
	Specific	Who were the potential users of the project knowledge and was there a concrete strategy in place to transfer the project knowledge to these users?
	Engaging	To what extent partner organizations were given a role to disseminate project knowledge to external actors?
Lessons learned	*Availability*	To what extent the project knowledge/results were made available to external actors?
	Accessibility	To what extent project knowledge was understandable or easy to absorb?
	Relevance	To what extent was the project knowledge generalizable or came at right time?

External actors are defined here as organizations, networks or communities who were not directly involved as partner organizations. Another difference was that only five forms of knowledge transfer were analyzed: transmission, presentation, interaction, influence and implementation. The reason for excluding 'adoption' was that project participants are generally not knowledgeable about the extent to which external actors just consider or actually will adopt certain project knowledge (Vinke-de Kruijf, 2015b). For the learning outcomes 'network/societal learning', the overall score was found by taking the weighted average all five indicators belonging to this outcome. The weighting of the scores depended on the level of knowledge transfer (transmission = 1, presentation = 2, interaction = 3, influence = 4 and implementation = 5). To bring the overall score back to a value between 0 and 1, the total score was divided by 15 (1+2+3+4+5=15). The conditions that can be relevant to this outcome are 'participants scoping strategy', 'wider context properties', 'communication strategy', 'lessons learned' and 'participant properties'. Table 3-4 provides an overview of all indicators belonging to their respective condition or outcome including an explanation how they were measured.

Adaptions to the framework

In the KNOW2ADAPT research, the purpose of the framework is to systematically compare EU projects, based on the condition and outcome scores, using the Qualitative Comparative Analysis (QCA) approach (Vinke-de Kruijf, 2015a). Our study does not benefit from using quantitative data to provide proposals for improving learning in INTERREG project, since a low number of cases are evaluated. Drawing conclusions from the outcome and condition scores alone also restricts the richness of the case results. We are more interested in the insights that the indicator descriptions (qualitative data) may provide. Still, the outcome score can help us identify how much different actors may learn from the project. Instead of removing the quantitative aspects of the framework, we decided to present the indicator, condition and outcome scores in a less quantitative way. This was done by grouping the scores in four categories: very low (0 to 0.29), low (0.30 to 0.49), high (0.50 to 0.70) and very high (0.71 to 1). The indicator, outcome and condition scores will be presented with plusses and minuses: '--' for very low, '-' for low, '+' for high and '++' for very high. The case results with the scores presented as numbers can be viewed in Appendix B.

3.2 Verification of application of the framework

Since the theoretical framework is based on an existing framework, we needed to familiarize ourselves with this framework and verify its application. To ensure that this framework was used correctly and in consistency with earlier applications in literature, two simulations (i.e. exercises) were designed. For the first simulation data was used from the WAVE case while the second simulations used data from the first case of this study. What we did during these simulations was to transform indicator descriptions into indicator scores and then compare them with scores given by the author of the KNOW2ADAPT research. Since that individual designed the framework, we expect to receive feedback on how to use the framework correctly.

During both simulations, differences in our scores and scores given by the author were identified. One of the major explanation for this difference was due to a 'grey area' in the score system. To be clearer, even if the indicator description were the same, the given score may differ because this description can fit in either scoring areas hence the use of the term 'grey area' (Figure 3-1).

Figure 3-1 The 'grey area' in the score system

To give an example of what was perceived to be a 'grey area', we take a look at the indicator 'transmission' of the learning outcome 'network/societal learning'. During the first exercise, a score of ++ was given to this indicator with the reason being that 'various communication means were used to communicate the project and its results'. However most of those means were used within the partner region and not in a wider context. Therefore a score of + seems to be more appropriate which was also the original score given by Vinke-de Kruijf (2015b). What this example tells us, is that an indicator description should fulfil all the requirements that belong to a certain score. In the example this means that a score of ++ for the indicator 'transmission' can only be given if various communication means were used, at several point time and were communicated as widely possible.

The results of both simulations showed a reduction in the amount of difference between scores given. In the first simulation (WAVE case) fourteen differences in scores were identified from the forty-three indicators (i.e. 33% failure) while in the second simulation (our first case) seven differences in scores were found from the forty-three indicators (i.e. 17% failure). This improvement shows that the simulations were beneficial to the familiarization with the framework. However since there are still difference in scores, we accept that different users of the framework may provide different results.

3.3 Selecting the cases

For the selection of cases to be assessed in this study, we either selected two cases that showed a minimum number of differences. Because of the similarity of the cases it was possible to generalize to other identical cases. We are interested practical/implementation-orientated projects that are common in INTERREG strand B (Hachmann V. , 2012). In addition, the possibility of comparing case results from this study with those from the WAVE case (also INTERREG B), made us keep out other strands of INTERREG projects (A and C) in the case selection and only consider INTERREG B projects. Like the WAVE case, the two cases selected were recently completed projects (from the fourth program period), fall under either the North West Europe or North Sea Region operational area and had topics related to climate change adaptation and water management. From the ten INTERREG projects which fit these characteristics, we chose the INTERREG IVB MARE and INTERREG IVB FRC projects as our two cases. Both projects had a similar theme (i.e. urban flood risk management), number of partner organizations involved and types of activities and partner organizations. The most noticeable difference between FRC and MARE cases was the project budget (16.5 versus 5.2 million euro respectively) which was the result of a longer project duration (80 versus 48 months respectively).

Both the MARE and FRC project involved different types of partner organizations from different countries. Partner organizations were either an authority (local, regional or national), a knowledge institution (e.g. university) or a private organization. While the plan was to invite all partner organizations from both projects to allow a complete comparison of both projects, the priority was to ensure that there was a variation in the type of partner organization involved. This variation will allow us to gain an overall picture of learning in INTERREG projects by viewing them from multiple

perspectives. Firstly, we tried to invite a least one local authority, regional authority, national authority, university and private organization. In addition, at least one partner organization from each country was be invited. We believed both the variety in the type of organization involved and their national background can provide a broader and richer insights on the learning processes in INTERREG projects.

3.4 Case study research

The case study consists of activities needed for the study of two cases. The end result of the case study will be qualitative data in the form of a description for each indicator. The activities shown in Figure 3-2 will be done separately for each case. The characters next to each of the red boxes in Figure 3-2 indicate the order or sequence of the activities.

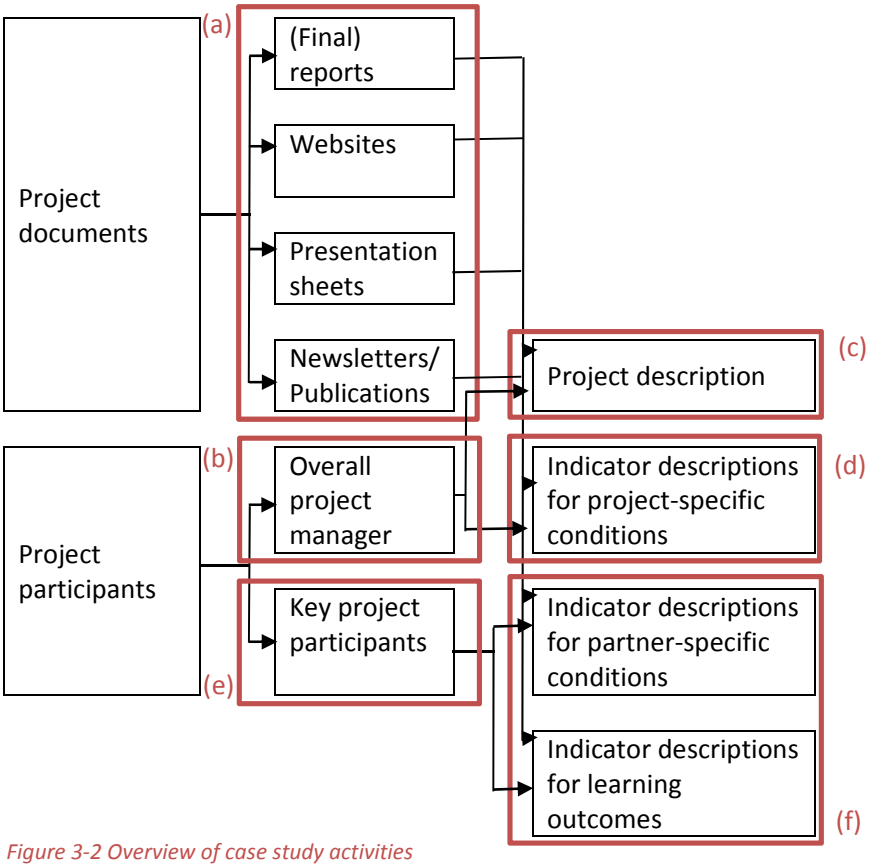

Figure 3-2 Overview of case study activities

The very first activity of the case study was to collect project documents about the case and extract data from them (see box 'a' in Figure 3-2). For the extraction of data from documents, we used the method 'content analyses'. Content analysis generates data from documents with the help of a category system (Verschuren & Doorewaard, 2005, p. 133). The categories were the project description and the forty-three indicators used in the framework. The documents collected in the case study are the outputs of the project (i.e. case) and can be (final) reports, newsletters/publications, presentation sheets and websites.

The second activity of the case study was the extraction of data from the overall project manager using an open interview (face-to-face or by Skype) (see box 'b' in Figure 3-2). The overall project manager is

the individual who has managed or coordinated the whole project. From the overall individual manager we expected to gain data needed to provide a description for all indicators belonging to the project-specific conditions and some general insights on the project (for the project description). The interview with the overall project manager also provided us with information on who were the key project participants from each involved partner organization. This information was necessary since we are interested in the experiences of project participants who were the most intensively involved in the project. Thus these participants can provide a complete description needed for the indicators that are relevant to the partner-specific conditions and the learning outcomes.

The data extracted from the project documents and overall project manager were analyzed in the third and fourth activity of the case study. The aim of the third activity was to turn the extracted data into a project description of the case (see box 'c' in Figure 3-2). The project description gives general information on the project and can be divided in sub-categories: involved organizations, purpose, theme, objectives, work packages, joint/regional actions, duration, budget, etc. For the fourth activity of the case study the extracted data was transformed into a description for each indicator belonging to the project-specific conditions (see box 'd' in Figure 3-2).

The fifth activity of the case study was the extraction of data from key project participants using a semi-structured interview (face-to-face or by Skype) (see box 'e' in Figure 3-2). The key project participant is the individual, who was directly and intensely involved in the project representing a partner organization. The idea was to invite one project participant from each partner organization to participate in the case study. Before the interview, we asked the interviewees to review the project description (from box 'c') to refresh their memories and to check its correctness. From each key participant we expected to gain data needed to provide a description for all indicators belonging to the partner-specific conditions and the learning outcomes.

The data extracted from the project documents and key participants were analyzed in the sixth activity of the case study. The sixth activity transforms the extracted data into a description for each indicator belonging to the partner-specific conditions and the learning outcomes (see box 'f' in Figure 3-2). These descriptions may differ for each interviewed project participant.

3.5 Determining the most relevant conditions

After turning the collected data in descriptions for each indicator, we transformed this qualitative data into quantitative data. In this transformation indicator descriptions were turned into indicator scores. For this transformation we used score systems found in the evaluation framework (see Appendix A). Each indicator had a score system which contained four score descriptions. A score for an indicator was given based on a comparison between one indicator description and four score descriptions with the goal of choosing one of the four score descriptions that best fit with the indicator description. The score belonging to the chosen score description was then given to that specific indicator. The indicator scores were then used to determine the learning outcome and condition scores (see section 3.1).

When the learning outcome and condition scores were known, we determined which of the condition in the evaluation framework were relevant to produce their respective learning outcome. To determine

whatever a condition was relevant in producing a certain outcome, we looked at the difference in scores between the condition and the outcome it belongs to. If this difference in scores was large, then that would suggest that a condition was not necessary to produce a certain outcome. A large difference here could be defined as a gap of more than one scoring category. For instance, a score for the condition 'interaction' was low (-) and the score for the outcome 'group learning' was very high (++). In this example there was a gap of one scoring category (+). This would suggest that the condition 'interaction' had almost no influence in producing the outcome 'group learning'. The most relevant conditions were determined based on this study's quantitative and qualitative data.

Based on the quantitative data

Determining the most relevant conditions was done at the consortium and partner level. In the former, an overall (i.e. average) condition score was compared with its respective overall learning outcome score. In the latter, we assessed which conditions were relevant to produce their respective learning outcome for each interviewee separately. A specific condition with a score that does not differ greatly from its learning outcome score, for all or most interviewees, was viewed as (one of) the most relevant condition(s).

Based on the qualitative data

We also determined the most relevant conditions based on the observations made during this study. These observations were found in the indicator descriptions. Like how the most relevant conditions were determined based on the quantitative data, observations are compared on the consortium and partner level. At the consortium level, we compared the overall learning outcome scores of both cases with each other. Differences in scores of a specific learning outcome were explained using the observations that describe project characteristics, which may had influenced this learning outcome. At the partner level, we compared the learning outcome scores of all interviewees with each other. Differences in scores of a specific learning outcome were explained using the observation that describe the characteristics of a project participant or partner organization, which may have influenced this learning outcome.

4. Case A – INTERREG IVB MARE

This chapter provides a description of the case A results. In section 4.1 the case is introduced to give background on the project. In three other sections the case results are presented for group learning (section 4.2), organizational learning (section 4.3) and network/societal learning (section 4.4). In these three sections we present a summarized description of the relevant learning outcome, the conditions that may produce this learning outcome and the indicators belonging to a specific learning outcome or condition. Each of the three sections ends with a synthesis of the results and some preliminary observations. This is where learning outcome and condition scores of each interviewed project participant are compared and where additional insights are presented that might explain why some project participants had higher learning outcome scores than others.

4.1 Introduction of the MARE case

The INTERREG project 'Managing Adaptive Responses to Changing Flood Risk' (MARE) was implemented by a project group consisting of fifteen partner organizations from four countries. MARE was led by the Municipality of Dordrecht from the Netherlands. Other than the Municipality of Dordrecht, a total of fourteen other partner organizations from The Netherlands, United Kingdom, Germany and Norway participated in the project (Table 4-1). From the fifteen partner organizations, one project participant from Municipality of Dordrecht (MP1), Municipality of Bergen (MP2), University of Sheffield (MP3), Municipality of Sheffield (MP4), Municipality of Rotherham (MP5) and UNESCO-IHE (MP6) were interviewed during the case study.

Table 4-1 Overview partner organizations of the MARE project

	Country	Interviewed	Not interviewed
Partner organizations	The Netherlands	- Municipality of Dordrecht - UNESCO-IHE	- Ministry of Transport, Public Works and Water Management - Regional Water Authority Hollandse Delta - Rijkswaterstaat Zuid-Holland - Province Zuid-Holland - Dura Vermeer
	England	- Municipality of Sheffield - Municipality of Rotherham - University of Sheffield	
	Norway	- Municipality of Bergen	
	Germany		- Leibniz University of Hannover - Municipality of Hannover - Technical University Hamburg-Harburg - Hannover Region Environment Department

This project falls under the INTERREG IVB program for North Sea Region. MARE started on the 1st of January 2008 and was concluded on the 30th of December 2012. It had budget of 5.2 million euro with around 2.5 million euro funded by the European Commission. MARE was a follow-up to the COST C22 project called Urban Flood Management (UFM) and aspects like Learning & Action Alliance approach and Multi-level flood protection were further developed in MARE. From the MARE consortium the Technical University Hamburg-Harburg and all the Dutch partner organizations excluding the Ministry of Transport, Public Works and Water Management were also involved in the UFM project. The Municipality of Dordrecht was the lead partner in that project as well.

The reasoning for starting with the MARE project was that recent flooding (e.g. New Orleans 2005, Yorkshire 2007) had demonstrated the vulnerability of North Sea Region and beyond against flood risks. These flood events had resulted in huge economic and social disruptions including the loss of life. Local authorities (e.g. municipalities) had an urgent need to reduce flood risks in their own cities, but lacked capabilities, information, tools and resources to do so. MARE was set up to support widespread implementation of local adaptive measures that mitigate flood risk, by providing the tools, approaches and experiences needed for urban flood risk management and climate change adaptation.

The activities of the MARE project had a logical structure and could be summarized in five steps (i.e. five work packages):

1. The first step was the establishment of Learning and Action Alliances (LAAs) in each project region (i.e. Dordrecht, Bergen, Hannover and Sheffield/Rotherham LAAs) and within the MARE consortium (i.e. transitional LAA). LAA is some form of collaboration designed to not only allow its participants to share and create knowledge (i.e. learning) but also to put this knowledge into practice (i.e. action). In these LAAs, partner organizations could invite relevant stakeholders (e.g. authorities, academia and local communities) from their project region to participate in the regional actions of the MARE project. The transnational LAA provided feedback for the actions of the regional LAAs;
2. For the second step, the academic partner organizations (i.e. universities or knowledge institutions) were tasked with the development of adaptation tools and approaches to urban flood risk management which was called a Climate Proofing Toolbox. The toolbox introduced, what were at the time, new approaches to urban flood risk management like the integration of flood risk with urban planning and multilevel safety approach;
3. The third step was to demonstrate the application of the LAAs and Climate Proofing Toolbox through the regional projects (i.e. regional actions). Each regional LAA worked on its own regional project using the aforementioned toolbox while being supported by the transnational LAA;
4. For the fourth step the impacts of the MARE actions were analyzed by the MARE consortium. These impacts can range from new cooperation and relations (due to LAAs) to a change in national policy;
5. The fifth and last step was the dissemination of the project results and experiences through education, training and guidelines.

Internal communication was managed through: (1) Steering committee meetings (annually, by senior decision-makers); (2) LAA meetings (quarterly, by LAA partners); (3) Design meetings (two meetings for each regional LAA (by design teams and transnational LAA); (4) Work package meetings (depending on the work package, by work package partners); (5) Management committee meetings (semi-annually, by coordinators from municipalities). Other means of internal communication was through website, newsmail, intranet, progress reports, and final reports. Project participants from each partner organization took part in a three-day site visits to each of the four MARE cities. These visits were combined with thematic workshops about themes such as: LAA cooperation, urban design, communication and transnational feedback session.

External communication differed depending on the target audiences. Five target audiences were identified in the communication plan: (1) Partner organizations: through the participation of steering committee members; (2) Policy makers and cross-sector platforms: partly involved in LAAs, otherwise targeted through workshops, conferences and presentations; (3) Urban planners and water managers: workshops for these professionals from small to large municipalities were organized in each project region; (4) Academia across the North Sea Region and beyond: reached through networks such as SAWA, COST22 and general publications and conferences; and (5) Wider community: inhabitants and local businesses were involved in workshops and general communication was done through media, flyers and events. An end conference was held in November 2012 and project documents were uploaded to an open online portal which was linked to the project website.

4.2 Group learning (MARE)

This section describes the results of the learning outcome and conditions belonging to group learning. The hypothesis is that (a combination of) the conditions 'consortium', 'interaction process' and 'participant properties' may be relevant to the group learning in a project context.

Outcome: substantive and relational learning by project participants

The substantive learning largely took the form of 'learning how others deal with climate adaptation'. The highest level of learning was reported by two interviewed project participants (MP4)(MP5). They described working in the project as a huge learning curve and MARE was even seen as an eye-opener in terms of the amount of knowledge. For three other interviewed project participants, the project led to partly improved and partly new knowledge, insights and perspectives. Only the lead partner (MP1) had a low score for substantive learning. The interviewed project participants reported rather contrasting levels of relational learning. A key characteristic of regional actions was the involvement of organizations, networks and communities in the LAAs. Three out of the six interviewed project participants (MP5)(MP4)(MP2) profited from the LAA established in their region since it led to partly new cooperation with other relevant actors and organizations. Three other interviewees reported low level of relational learning in the form of slightly improved cooperation with other organizations.

Condition: Consortium

This condition was assessed using the following indicators: 'balanced cohesiveness', 'balanced diversity' and 'complementary knowledge'. The hypothesis belonging to this condition reads: the more balanced a consortium is (neither too homogeneous nor too diverse, neither too new to each other nor too close) and the greater the extent to which project participants had complementary knowledge the greater the degree of group learning.

Balanced cohesiveness

Six out of the seven Dutch partner organizations were also involved in the UFM project (2005 – 2008) in collaboration with partners from Hamburg and London. This project was led by the same partner organization as the MARE project. Three out of the four academic partner organizations knew each other from a European research project on flood risk management (University of Sheffield, UNESCO-IHE, and Technical University Hamburg-Harburg). One partner organization (University of Sheffield) also worked with another partner organization (Municipality of Hannover) in an INTERREG project from

the third program period (NORIS). Four out of the fifteen partner organizations were entirely new (Municipality of Bergen, Leibniz University of Hannover, Municipality of Sheffield, Municipality of Rotherham). In summary, partner organizations either knew each other too well (Dutch project organizations) or were entirely new (other project organizations).

Balanced diversity
Five partner organizations were local authorities facing similar problems (Municipality of Bergen, Municipality of Hannover, Municipality of Dordrecht, Municipality of Sheffield, and Municipality of Rotherham). Four scientific partners provided the technical expertise (University of Sheffield, UNESCO-IHE, Technical University Hamburg-Harburg and Leibniz University of Hannover). Regional and national authorities also took part as partner organizations in the MARE project. One private organization was involved due to its expertise in damage modelling (Dura Vermeer). In summary, partner organizations represented diverse functions, experienced similar problems and can learn a great deal from each other.

Complementary knowledge
Project participants who were heavily involved in MARE fulfilled various roles including expert, financial manager, project manager, urban planners, researchers, policy developers and decision makers. As a result, those involved could provide substantive, procedural and political knowledge.

Condition: Interaction process
This condition had been assessed in terms of: 'interaction', 'activities' and 'facilitation'. The hypothesis belonging to this condition reads: the greater the quality, and quantity of interaction moments and activities and the better they are facilitated, the greater the degree of group learning.

Interactions
Various types of meetings were organized including: steering group, LAA, management and design meetings. The atmosphere was described as pleasant and every partner organization was willing to share knowledge. Project information was made accessible to all partner organizations through intranet. Workshops were combined with three-day site visits to each of the four project regions.

Activities
LAAs were established in each project region and also included a transnational LAA (WP1). Climate Proofing Toolbox was developed which includes innovative tools and approaches for flood risk management (WP2). Regional projects in each project region were done by the responsible regional LAA using the early mentioned toolbox (WP3). The impacts of the MARE activities on national practice or policy were then evaluated (WP4). A large part of the project involved working with and creating new knowledge (e.g. Climate tool box, LAAs). External actors were engaged through the participation in the LAA of their project region. The scientific partner organizations also represented the role of an expert.

Facilitation
A professional facilitator (Bax & Willems Consulting) was hired to manage the transnational meetings/workshops of the project (not all the activities e.g. regional LAAs). The facilitator was very

knowledgeable on climate change adaptation and good at facilitating knowledge exchange. Was facilitated by mostly the same individual who had a lot of insights in the MARE project. Lessons learned were presented in various project documents. One of the partner organization (University of Sheffield) was responsible for editing and finalizing project documents.

Condition: Participant properties

This condition had been assessed in terms of: 'ability', 'motivation' and 'opportunity'. The hypothesis belonging to this condition reads: The higher the ability, motivation, opportunity of project participants in relation to the project, the greater the degree of group learning.

Ability

Four of the six interviewed project participants had participated in at least one international project before MARE and all four were comfortable with project language (MP1)(MP2)(MP3)(MP6). While the other two interviewed project participants did not have any experience with international projects, they were comfortable with the project language since it was their native language.

Motivation

Five out of the six interviewed project participants were eager to participate in MARE and were interested to learn from other partner organizations on how adapt to climate change. Colleagues, involved in MARE, were interested to participate in the project. Only one partner organization (MP4) scored low on motivation. The PM of this partner organization mentioned how difficult it was to get colleagues enthusiastic to participate in MARE.

Opportunity

Two out of the six interviewed project participants (MP3)(MP6) scored very high for opportunity and had just two or three colleagues participating in the project compared to six to ten colleagues from the other four interviewed project participants. While the two interviewed project participants had a small number of colleagues participating, both recalled that these colleagues were involved in all regional and joint actions of the project. Two other partner organizations had a high score for opportunity due to only a core group of person being involved for a longer period of time while participation of others changed over time (MP1)(MP2). The remaining two partner organizations (MP4)(MP5) had a low score for opportunity due to a loss of staff during MARE or participants being too busy with responsibilities inside their organization.

Synthesis and preliminary observations

For group learning, our hypothetical model reads that the conditions 'consortium', 'interaction process' and 'participant properties' or a combination of these condition may influence group learning. In other words, productive interactions, a balanced consortium and participants with the ability, motivation and opportunity to learn are expected to lead to high levels of substantive and relational. Two variables in the hypothetical model of group learning were measured separately for every partner organization: the condition 'participant properties' and the outcome 'group learning'.

Table 4-2 Overview of scores for conditions and outcome of group learning (MARE)

	Project	(MP1)	(MP2)	(MP3)	(MP4)	(MP5)	(MP6)
Group Learning	**+**	**-**	**+**	**+**	**++**	**++**	**+**
Substantive	*++*	*-*	*+*	*+*	*++*	*++*	*+*
Relational	*-*	*-*	*+*	*-*	*+*	*+*	*--*
Consortium	**++**						
Balanced cohesiveness	*+*						
Balanced diversity	*++*						
Complementary knowledge	*++*						
Interaction process	**++**						
Interactions	*++*						
Activities	*++*						
Facilitation	*+*						
Participant properties	**++**	**++**	**++**	**++**	**+**	**++**	**++**
Ability	*++*	*++*	*++*	*++*	*++*	*++*	*++*
Motivation	*++*	*++*	*++*	*++*	*-*	*++*	*++*
Opportunity	*+*	*+*	*+*	*++*	*-*	*-*	*++*

Table 4-2 provides an overview of all the scores for conditions and outcome of group learning. For five out of the six interviewees the scores for all three conditions reflected the level of learning. Only odd result was the level of group learning reported by the lead partner (MP1) despite scoring very high for the condition 'participant properties'. This low level of learning can be explained by the added responsibility as a lead partner of managing the project.

Substantive learning largely took the form of 'learning how others deal with climate adaptation'. While project participants learned what type of measures other project participants use to adapt to climate change, two of the interviewed project participants (MP3)(MP2) noted how difficult it was to implement these measures in their own project region due to geographical and political differences. From the six project participants we interviewed, four of them were quite experienced with water management related projects (national or international) and two other participants (MP5)(MP4) had little to no experience with these kind of projects. For these two project participants the project was an opportunity to catch up with other project participants and their partner organization in terms of basic know-how in the field of flood risk management and climate change adaptation. The above example show that project participants can play the role of a 'source' (highly advanced) or a 'receiver' (lagging behind) of knowledge which does play a role in group learning. Relational learning took the form of 'creating new relations with other relevant organizations'. This was largely thanks to the LAA approach in which different type of organizations (authorities, private organizations and universities) were invited to participate in the regional actions. Project participants profited from LAA established in their region since it led to the new or improved relations with other relevant actors and organizations.

4.3 Organizational Learning (MARE)

This section describes the results of the learning outcome and conditions belonging to organizational learning. The hypothesis is that (a combination of) two conditions could be relevant to organizational learning: 'participant properties' and 'partner organization properties'.

Outcome: organizational learning

One interviewed project participant reported very high level of organizational learning (MP2). Two interviewees (MP3)(MP5) scored high for the outcome 'organizational learning' while three other partner organizations had scores which suggest that the level of organizational learning was quite low. The methods used to transfer project knowledge inside the partner organization varied for each interviewee. Two interviewees (MP2)(MP3) used meetings to inform others about project results. Four interviewed project participant chose to present the project knowledge and results through a presentation, which were given to direct colleagues (i.e. colleagues from the same department) and in some cases to other departments. We can differentiate two ways in which project knowledge was used by the partner organizations. Local authorities used the project knowledge to improve policies (e.g. new design standards for urban planning) or write new guidelines focusing on climate change. The scientific partner organizations included the project knowledge in their education (e.g. Climate Proofing Toolbox) and their scientific work.

Condition: Participant properties

The assessment of this condition had been done in terms of: ability, motivation and opportunity. The hypothesis belonging to this condition reads: The higher the ability, motivation, opportunity of project participants in relation to knowledge transfer to their respective organization, the greater the degree of organizational learning.

Ability

All interviewed project participants had generally worked for a long time period at their respective partner organization before MARE started (+3 years). All of them had insights in what different departments inside their respective organization do. Most interviewed project participants held some influence in their respective departments and for two partner organizations (MP2)(MP1) this influence extends to various relevant departments including higher-ups and decision makers.

Motivation

Three out of the six interviewed project participants (MP6)(MP3)(MP1) were not actively trying to share project knowledge with other colleagues from the same partner organizations and only transferred knowledge when the opportunities arose. For example, one project participant mentioned how project knowledge was only transferred when colleagues came asking for information about the MARE project. Three other project participants made an effort to share project knowledge with direct colleagues and one of those three participants (MP2) also shared project knowledge with other colleagues including colleagues at higher positions (e.g. decision-makers).

Opportunity

There was a clear difference in the amount of opportunities to transfer knowledge which were provided to the interviewed project participants. For two interviewed project participants (MP6)(MP4), one

opportunity arose in which project knowledge could be transferred to colleagues. For example presenting project results during one lunch presentation. Two other project participants (MP3)(MP1) were afforded more than one opportunities to transfer project knowledge to direct colleagues. There were also two project participants (MP5)(MP2) who had various opportunities to transfer knowledge to direct colleagues and colleagues from other departments.

Condition: Partner organization properties

This condition was assessed based on the following indicators: 'prior related knowledge', 'cognitive embedding' and 'supportive organizational context'. The hypothesis reads, the higher the adsorption capacity of partner organizations, which relates to their prior related knowledge and experience, the relevance of the project theme and the supportiveness of the organization, the greater the degree of organizational learning.

Prior related knowledge

The past experience with the project theme or/and international projects differed for the six partner organizations. According to three interviewed project participants (MP5)(MP4)(MP2) their respective partner organization had none or limited experience with the project theme or the international contexts. Two other partner organizations (MP1)(MP6) had participated in at least one international project and one project with a similar theme. One partner organization (MP3) had extensive experience with both the theme and the international context due to its participation in several INTERREG III projects, national and international research projects focusing on a similar theme.

Cognitive embedding

The project theme was seen as highly relevant to large parts of most partner organizations. Only one partner organization (MP4) reported a low score for cognitive embedding, with the project theme only being relevant to one department. The highest score for cognitive embedding was given to a partner organization (MP6) whose organization identified the project theme as one of the research topics. According to its project manager, the project theme was important to all relevant parts of the organization.

Supportive organizational context

Three out of the six project participants (MP6)(MP2)(MP1) stated that their respective partner organizations had only supportive factors and no restrictive factors towards learning and knowledge transfer related to climate change adaptation. Two other partner organizations were more supportive than restrictive towards learning and knowledge transfer. Only one partner organization (MP4) was fully restrictive towards learning about climate change adaptation. The interviewed project participant from this partner organization mentioned how colleagues showed no interest in the project and that the lack of technical background restricted the uptake of project knowledge.

Synthesis and preliminary observations

Our hypothetical model reads that two partner-specific conditions 'participant properties' and 'partner organization properties' may affect the outcome 'organizational learning'. Participants with the ability, motivation and opportunity to share project results with colleagues inside their partner organizations,

and partner organizations with prior related knowledge, who view the project theme as urgent and are open to learning or change are expected to lead to high levels of organizational learning.

Table 4-3 Overview of scores for conditions and outcome of organizational learning (MARE)

	Project	(MP1)	(MP2)	(MP3)	(MP4)	(MP5)	(MP6)
Organizational learning	**-**	**--**	**++**	**+**	**-**	**+**	**-**
Transmission (weight 1)	+	-	++	+	-	+	-
Presentation (weight 2)	-	--	++	--	--	+	-
Interaction (weight 3)	-	+	+	+	-	--	--
Adoption (weight 4)	-	--	+	+	--	+	-
Influence (weight 5)	+	-	+	+	+	++	-
Implementation (weight 6)	-	--	+	-	-	+	-
Participant properties	**+**	**+**	**++**	**+**	**-**	**++**	**-**
Ability	++	++	++	+	-	+	+
Motivation	+	-	++	-	+	++	-
Opportunity	+	+	++	+	-	++	-
Partner organization properties	**+**	**++**	**+**	**++**	**--**	**+**	**++**
Prior related knowledge	+	+	-	++	--	-	+
Cognitive embedding	+	+	+	+	-	+	++
Supportive organizational context	++	++	++	+	--	+	++

Table 4-3 provides an overview of all the scores for the conditions and outcome of organizational learning. For four project participants (MP2)(MP3)(MP4)(MP5) the scores of both conditions reflected the level of organizational learning. For two other partner organizations the opposite holds true and low level of organizational learning was reported despite the high scores in 'participant properties' and 'partner organization properties'. A major factor behind the low level of organizational learning for two project participants (MP1)(MP6) appears to be the lack of motivation to share project knowledge with colleagues ('-' score for both project participants). In additions, we believe that there was a lack of time in transferring project knowledge to partner organizations either due to the extra responsibilities as a lead partner (MP1) or the huge learning curve as a result of a lack of prior related knowledge (MP4). This might explain the low amount of knowledge transfer to colleagues and the resulting uptake of this knowledge by these colleagues for both partner organizations.

The outcome 'organizational learning' was measured based on the extent to which project knowledge had been transferred to the partner organization and what was done with the project knowledge inside this organization. The methods used to transfer project knowledge in the organization was either through meetings to inform colleagues or giving presentations. How partner organizations used the project knowledge or results differed depending on the type of partner organization. Local authorities used the project knowledge to improve policies (e.g. new design standards for urban planning) or write new guidelines focusing on climate change. The scientific partner organizations included the project knowledge in their education (e.g. Climate Proofing Toolbox) and their scientific papers.

4.4 Network/societal Learning (MARE)

In this section we describe the results of the learning outcome and conditions belonging to network/societal learning. The hypothesis is that (a combination of) five conditions could be relevant to the network/societal learning. The two conditions 'lessons learned' and 'communication strategy' were project-specific while the three conditions 'participant properties', 'participant scoping strategy' and 'wider context properties' were partner-specific.

Outcome: Network/societal learning

Three interviewed project participant (MP1)(MP2)(MP6) reported very high levels of network/societal learning. Two other interviewees (MP3)(MP5) scored low for network/societal learning while transfer of knowledge to external actors was non-existent for one partner organization (MP4). Many methods were used to transfer project knowledge to external actors with presentations being the most used method. Four interviewed project participants (MP1)(MP2)(MP3)(MP6) were successful in transferring project knowledge beyond their project region (e.g. through international forum/conferences and publishing project documents/scientific papers online).

Project results had influenced the policies and practices in the Netherlands and Norway in several ways which was also alluded in the project documents. The Learning and Action Alliances approach used in the MARE project also influenced new forms of collaborations in all four project regions. Some project results did not only had an influence on policies and practice of external actors but were in Norway and the Netherlands implemented beyond the project context. For Norway this implementation of project results was in the form of a temporary regional collaboration of municipalities, established in MARE, becoming a permanent collaboration. For the Netherlands more than one aspect of the project was implemented by external actors. Implementation of project results also occurred outside Europe. One partner organization (MP6) assisted organizations from Asia in the implementation of the LAA approach in an Asian based MARE project.

Condition: Participant properties

The assessment of this condition had been done in terms of ability, motivation and opportunity of the partner organization to transfer project knowledge to external actors. The hypothesis belonging to this condition reads: The higher the ability, motivation, opportunity of project participants in relation to knowledge transfer to other organizations, networks and communities (external actors), the greater the degree of network/societal learning.

Ability

All interviewed project participants had many good contacts inside their project region. Three project participants (MP1)(MP3)(MP6) also had good contacts with international organizations. One partner organization (MP1) described how international organizations would come visit their office to ask for advice about water management related aspects. Another partner organization (MP6) was providing expert guidance to various Asian projects that focus on water management.

Motivation

Four out of the six partner organizations (MP1)(MP2)(MP5)(MP6) made an effort to transfer project knowledge to external actors. This was mostly done by giving presentations in national contexts and

international settings. One partner organization (MP3) tried to transfer the project knowledge as wide as possible in the form of publishing project documents of MARE in an online portal and publishing scientific papers about the project results. One interviewed project participant (MP4) did not have the time to transfer project knowledge to external actors.

Opportunity

The project contexts provided project participants or their respective partner organization many opportunities to share project results. All partner organizations took part in their respective regional Learning and Action Alliance (LAA). In this LAA external actors from the project region were invited to participate in the MARE demonstration projects. This gave partner organizations many opportunities to share project knowledge (e.g. Climate Proofing Toolbox) with external actors, since the regional LAA involved meeting up regularly to work on the demonstration projects. During the project three out of the six partner organizations (MP1)(MP3)(MP3) had many opportunities to transfer project knowledge to external actors in the same project region as well as from other countries. During the MARE project, project participants from one partner organization (MP3) were also participating in two other INTERREG IVB project with a similar theme to MARE. The project participants from this partner organization, therefore, had many opportunities to transfer project knowledge to the partner organizations of the two other INTERREG project.

Condition: Participant scoping strategy

This condition was measured by how much partner organizations have been strategic about the project scope (i.e. what they do and communicate, with and to whom and how). It was assessed based on the indicators: 'activities', 'framing', 'external actor involvement' and 'change process'. The hypothesis of this condition is: the more strategic partners are about the project scope, the greater the degree of network/societal learning.

Activities

One interviewee (MP3) reported that while every project participant could share their ideas with others, most approaches used in the project were not really new given the fact that they were already researched in the past. Five other interviewed project participants reported that two or more regional actions were aimed to test new solutions. Of those five interviewees, two project participants commented how all demonstration projects in their project region were used to test new solutions (i.e. Multi-level safety and Tipping Point approaches).

Framing

Three out of the six interviewed project participants (MP1)(MP2)(MP6) mentioned how they tried to frame the project theme differently to make it more understandable for one group (e.g. citizens, politicians or professionals). Two other interviewees (MP3)(MP5) tried to communicate the project theme to two different groups. Examples of framing the project theme were when one project participant (MP5) used the flood event of 2007 in the UK to convince the higher-ups to participate in the MARE project. Another project participant (MP6) used visualization to explain a new approach to CCA which was directed at citizens. Only one partner organization (MP4) did not frame the project theme in a different way for a specific group.

External actor involvement
Through the regional LAAs, all project participants or their respective partner organization engaged relevant organizations like local, regional and national authorities, universities and private organizations. In Norway and England local communities and businesses with an interest in the project theme were also involved in their regional LAA. This was not the case for the Dutch LAA, but one Dutch partner organization (MP6) engaged citizens in a workshop instead.

Change process
The MARE project was a stand-alone project but can be seen as a follow-up to the UFM project in which two of the interviewed project participants and their respective partner organization participated (MP1)(MP6). MARE was also linked to the subsequent INTERREG IVB CAMINO project in which four partner organizations participated (MP1)(MP2)(MP5)(MP6). For two partner organizations (MP4)(MP6) the project had specific connection to follow-up actions (MP4) or projects (MP6). Four other project participants (MP1)(MP2)(MP3)(MP5) reported how MARE was part of a longer and more encompassing change process inside their respective organization. In most cases this change process was in the form of an increased consideration for climate change in water sector. For one interviewed project participant (MP2), their change process was not limited to their organization but extends all the way to the national level. MARE was an extension to the national project called Cities of the Future which was initiated by the Norwegian government to make the fourteen largest cities in Norway climate proof. (MP2) was the local authority of one of those fourteen cities.

Conditions: Wider context properties
This condition referred to the adsorption capacity of external actors and was assessed in terms of policy agenda and governance system. The hypothesis reads, the more relevant the project theme is in the wider context and the better interactions and information in the network and structural context are managed, the greater the degree of network/societal learning.

Policy agenda
Three interviewed project participants from the same project region (i.e. England) reported that the project theme was mostly considered relevant by local authorities in the UK, due to a national policy change, which occurred during the MARE project which gave local authorities more responsibility in managing their urban flood risks. The project theme was not on the national agenda and the UK government was more concerned with other matters. This was in sharp contrast to how the project theme was perceived in Norway and the Netherlands. For both countries the project theme was high on the political agenda and across local, regional and national governance levels. Especially in the Netherlands which had local, regional and national authorities all taking part in MARE as partner organizations. Norway only had one partner organization in the MARE project, but its government were promoting a national project called 'Cities of the Future' (started in 2008) which focuses on making the 13 largest cities in Norway climate proof (e.g. reduction of flood risk and carbon emission).

Governance system
In England there were more restrictive than supportive factors. Local authorities did not receive much funding from the government to implement adaptation measures and were expected to find other ways to fund these measures. Furthermore, there was no environment were best practice of CCA could

be shared. Lastly, organizations with a lot of power in the water sector like the Environment Agency and Yorkshire Water Services were reluctant to share power which had been a major barrier towards effective innovation. Only supportive factors were the forums like the Sheffield Water Centre, Yorkshire Regional Flood and Coastal Committee and the Yorkshire and Humber LAA which allowed universities and local authorities to work with other organizations on water management related issues and in some cases share knowledge and experiences. For both the Netherlands and Norway only supportive factors towards learning and knowledge transfer of CCA were reported. Both governance systems had forums or networks in which local authorities could share knowledge and experiences on CCA (Dordrecht Living Lab, Cities of the Future, Klimaatverbond and Hordaland Climate Council). Furthermore, both the Netherlands and Norway had an online information management system in place in which best practices of climate change adaptation can be openly shared (www.klimatilpasning.no and www.ruimtelijkeadaptatie.nl). Lastly both governments were supportive toward learning about CCA.

Condition: Communication strategy

For this condition we assessed the communication strategy and the dissemination of project knowledge/results. This condition was assessed using the indicators: 'proactive', 'specific' and 'engaging'. The hypothesis for this condition is: The more proactive, specific and engaging the communication and dissemination strategy of a project, the greater the degree of network/societal learning.

Proactive

A communication plan was prepared together with the project proposal and was implemented at the beginning of the project through various means: workshops, training, scientific papers, education, project website (in four languages), online portal (contains project documents) and an end conference in November 2012. External communication was divided in three steps: (1) attracting the attention of local and regional organization, professionals and wider communities through partner networks and media; (2) Involving the aforementioned stakeholders in MARE design processes through workshops and regional LAA; and (3) Informing/promoting project results through workshops and training. The first two steps were done through the establishment of LAA in each of the four project region in which external actors were invited to participate (WP1) and contribute to the demonstration projects (WP3).

Specific

Five target audiences were identified in the communication plan: (1) Partner organizations: through the participation of Steering Committee members; (2) Policy makers and cross-sector platforms: partly involved in LAAs, otherwise targeted through workshops, conferences and presentations; (3) Urban planners and water managers: workshops for these professionals from small to large municipalities were organized in each project region, and national and the European Associations of Municipalities had offered their networks to reach its members; (4) Academia across the North Sea Region and beyond: reached through networks such as SAWA, COST22 and general publications and conferences; and (5) Wider community: inhabitants and local businesses were involved in workshops and general communication was done through media, flyers and events. From the above, it was clear that for each

target audience the communication plan contained concrete ideas on how to engage them in the project.

Engaging
Dissemination of project knowledge was not limited to the lead partner. Each project region had a LAA coordinator (usually the local authority) who was responsible for external communication inside their region. In the communication plan, some partner organizations were tasked to disseminate project knowledge outside their project region (i.e. country) by managing the project website, publishing project documents in an online portal, sending newsmails and presenting in international conferences. Partner organizations generally disseminated more widely than described in this plan. The communication plan was not evaluated however.

Condition: Lessons learned
For this condition we measured the actual implementation of the project knowledge. We assessed how the project knowledge was made 'available', the degree which project knowledge was 'accessible' and the level of 'relevance' of the project knowledge. The underlying hypothesis is: the more and better communicated and directly relevant project results, the greater the degree of network/societal learning.

Available
The project website contained summaries of the project and its work packages. Also, an online portal contained the output reports from all the work packages (no final report). The project website was linked to the online portal so readers can always jump from website to portal if they want to read about something in more detail. Apart from making project knowledge available through the online portal, some partner organizations distributed the project knowledge through the publication of scientific papers and included project results in their education.

Accessible
Some project knowledge did not require a technical background in water management (i.e. LAA approach) and could be applied in different contexts. For documents that require a technical background in water management (i.e. Climate Proofing Toolbox) two documents were written with a description of flood risk and flood risk management to help those that were not experienced with flood risk management. Most documents on regional actions contained the lessons learned and the performance of the action implemented/to be implemented. Furthermore, project actions had been analyzed regarding its influence on national policy. While output reports had the same structure, the lay-out was not graphically attractive.

Relevance
LAA approach was a big hit in INTERREG and Asia. MARE led to the establishment of MARE projects in Indonesia and various other countries in Asia. The MARE ASIA projects adopted the LAA approach to work on green infrastructure issues (slightly different project theme). Unlike the LAA approach, the Climate Proofing Toolbox created in MARE contained some measures that were not applicable in all project regions due to geographical differences. So, some but not all project knowledge were relevant to other areas of environmental management and thus other group of users.

Synthesis and preliminary observations

Our hypothetical model reads that two project-specific conditions 'communication strategy' and 'lessons learned' and three partner-specific conditions 'participant properties', 'participant scoping strategy' and 'wider context properties' may affect the outcome 'network/societal learning'.

Table 4-4 Overview of scores for conditions and outcome of network/societal learning (MARE)

	Project	(MP1)	(MP2)	(MP3)	(MP4)	(MP5)	(MP6)
Network/societal learning	**+**	**++**	**++**	**-**	**--**	**-**	**++**
Transmission (weight 1)	+	+	+	++	--	+	++
Presentation (weight 2)	+	++	+	++	--	-	++
Interaction (weight 3)	-	+	+	--	--	+	+
Influence (weight 4)	++	++	++	++	-	-	++
Implementation (weight 5)	-	++	+	--	--	--	++
Participant properties	**++**	**++**	**++**	**++**	**-**	**+**	**++**
Ability	++	++	+	++	+	+	++
Motivation	+	+	+	++	--	+	+
Opportunity	++	++	++	++	+	+	+
Participant scoping strategy	**+**	**+**	**++**	**+**	**+**	**++**	**+**
Activities	++	++	+	-	+	+	++
Framing	-	-	-	+	--	+	-
External actor involvement	++	+	++	++	++	++	++
Change process	+	+	++	+	-	+	-
Wider context properties	**+**	**++**	**++**	**-**	**-**	**-**	**++**
Policy agenda	+	++	++	-	-	-	++
Governance system	+	++	++	-	-	-	++
Communication strategy	**++**						
Proactive	++						
Specific	++						
Engaging	+						
Lessons learned	**+**						
Availability	+						
Accessibility	+						
Relevance	+						

Table 4-4 provides an overview of all the scores of conditions and outcome relevant to network/societal learning. Only the condition 'wider context properties' reflects the level of network/societal learning. The other two partner-specific conditions seems to be less relevant to the learning outcome 'network/societal learning' according to the large difference in condition and outcome scores reported by two interviewees (MP3)(MP5). The same was true for the project-specific conditions which did not always reflect the level of network/societal learning.

The outcome 'network/societal learning', like organizational learning, was measured based on the extent in which project knowledge had been transferred to external actors and what was done with the project knowledge by these external actors. Presentation was the most used method to transfer project knowledge to external actors. Most partner organizations were successful in transferring project knowledge beyond their project region (e.g. through international forum/conferences and publishing project documents/scientific papers online). What was special about the MARE project was that it inspired organizations in Asia to start their own 'MARE' project, implementing many aspects like the LAA approach. One partner organization (MP6) assisted these organizations during their own MARE project.

5. Case study B – INTERREG IVB FRC

This chapter provides a description of the case B results. In section 5.1 the case is introduced to provide some background on the project. In three other sections the case results are presented for group learning (section 5.2), organizational learning (section 5.3), and network/societal learning (section 5.4). In these three sections we present a summarized description of the relevant learning outcome, the conditions that may produce this learning outcome and the indicators belonging to a specific learning outcome or condition. Each of the three sections ends with a synthesis of the results and some preliminary observations. This is where learning outcome and condition scores of each interviewed project participant are compared and where additional insights are presented that might explain why some project participants had higher learning outcome scores than others.

5.1 Introduction of the FRC case

The transnational collaboration project FloodResilienCity (FRC) was implemented by a project group consisting of eleven partner organizations from six countries. FRC was led by Rijkswaterstaat (RWS) from the Netherlands. In addition to RWS, a total of ten partner organizations from France, England, Republic of Ireland, Germany and Belgium participated in the project (Table 5-1). From the eleven partner organizations, project participants from RWS (FP1), Flemisch environment agency (FP2), University of Sheffield (FP3) and Stadtwerke Mainz (FP4) were interviewed for the case study.

Table 5-1 Overview partner organizations of the FRC project

	Country	Interviewed	Not interviewed
Partner organizations	The Netherlands	- Rijkswaterstaat Utrecht	
	England	- University of Sheffield	- Municipality of Bradford
	Belgium	- Flemish environment agency	
	Germany	- Stadtwerke Mainz	-
	Republic of Ireland		- Municipality of Dublin
	France		- The City of Paris Engineering School - County Council of Loiret - Community of Orleans City – Loire - Municipality of Orleans - The Great Lakes of the Seine

This project falls under the INTERREG IVB program for North West Europe. FRC started on the 1st of May 2007 and was concluded on the 31st of December 2013. It had budget of 16.5 million euro with around 8.25 million euro funded by the European Commission. FRC builds upon work done in several INTERREG III projects: Urban Water, Freude Am Fluss, SAFER, ESCAPE and TRUST. Some partner organizations had been involved in these projects.

One of the main challenges of FRC was to integrate the increasing demand for more houses and other buildings with the increasing need for more and better flood risk management measures in North West European cities. Central to this theme was the use of a '4As' framework which was an adapted version of the Scottish Sustainable Flood Management framework. Under the 4As the measures, from different partner organizations, were categorized under four themes: (1) Awareness, strategy and capacity which involves making people aware of flooding and building capacity to deal with it; (2) Analysis and

assessment which refers to the identification of flood risk and assessing options to deal with it; (3) Alleviation of current problems and Avoidance of future problems through various measures; (4) Action taken by the flood risk owners and Assistance provided by responsible organizations before, during and after flood events. The 4As framework differentiated between technical measures (e.g. dykes and flood walls) and non-technical measures (e.g. contingency plans).

This project gave its participants the opportunity to compare how others deal with climate change at different levels (e.g. professional, policy and political). The idea was to first develop and share measures with each other within this framework and to then apply some of these measures in regional actions of each project region. Information exchange was mostly through Coordination Group meetings (semi-annually, by 1 representative from each partner). Furthermore, the project encourages partner organizations to participate in partner staff exchanges. Partner organizations may allow its organizational members to travel abroad to other partner organizations to work for one or two weeks on FRC actions or to learn how the other partner organization dealt with flood risk and climate change adaptation. Many partner organizations made use of this opportunity by sending students, water managers or policy makers to other partner organization abroad.

External communication differed depending on the target audiences. Actors or groups at three different levels were targeted in the project: (1) Public level: residents and communities; (2) Political level: politician and decision makers; and (3) Professional level: professional advisors and water managers. The means used to transfer project knowledge to these actors and groups were through workshops, conferences and scientific publications. An end conference was held in May 2013 and project documents were uploaded to an open online portal which was linked to the project website.

5.2 Group learning (FRC)

This section describes the results of the learning outcome and conditions belonging to group learning. The hypothesis is that (a combination of) the conditions ‘consortium’, ‘interaction process’ and ‘participant properties’ may be relevant to the group learning in a project context.

Outcome: substantive and relational learning by project participants

The substantive learning largely took the form of ‘learning how others deal with climate adaptation’. All interviewed project participants scored high for substantive learning. So for these project participants the project led to partly improved and partly new substantive knowledge. All four interviewed project participants scored high for relational learning. However the type of relational learning differed for those four project participants. For one project participant (FP1) the project led to new relations with international actors while another project participant (FP4) gained new relations with regional organizations that live near the Rhine and deal with similar flood risks. Another project participant (FP3) learned how to communicate project knowledge different types of actors (i.e. people, politicians and professional).

Condition: Consortium

This condition was assessed using the following indicators: ‘balanced cohesiveness’, ‘balanced diversity’ and ‘complementary knowledge’. The hypothesis belonging to this condition reads: the more

balanced a consortium is (neither too homogeneous nor too diverse, neither too new to each other nor too close) and the greater the extent to which project participants have complementary knowledge the greater the degree of group learning.

Balanced cohesiveness
For most partner organizations, FRC was the first international project they participated in. There were some linkages that may had eased collaboration. For example RWS and Municipality of Orléans were involved in INTERREG IIIB Freude am Fluss, and the Municipality of Bradford and University of Sheffield were involved in INTERREG IIIB NORIS and Urban Water Cycle. Partner organizations got to know each other in a number of international meetings including an INTERREG IIIB on flood risk management conference held in Mainz 2005, a workshop in anticipation of the new INTERREG IVB program held in Utrecht 2006 and a SDF Seed Money workshops in Manchester and Dublin.

Balanced diversity
There was a good mix of (local, regional and national) authorities, private organizations and knowledge institutes. Three out of the six project regions were represented by at least one local authority (Municipality of Bradford, Municipality of Dublin and Municipality of Orléans). Three other three project regions were represented by a regional authority (Flemish environment agency), a national authority (Rijkswaterstaat) or a private organization (Stadtwerke Mainz). Two scientific partner organizations provided the technical expertise (University of Sheffield and Paris School of Engineering).

Complementary knowledge
Project participants who were heavily involved in FRC fulfilled various roles including water managers, financial manager, project manager, urban planners, researchers, policy developers and decision makers. As a result, those involved could provide substantive, procedural and political knowledge.

Condition: Interaction process
This condition had been assessed in terms of: 'interaction', 'activities' and 'facilitation'. The hypothesis belonging to this condition reads: the greater the quality, and quantity of interaction moments and activities and the better they are facilitated, the greater the degree of group learning.

Interactions
Various activities were mentioned to promote internal communication including coordination group meetings, financial managers meetings, intervisions and partner staff exchanges. Good atmosphere but some clear difference between interacting done between north (GB, NL, DE) and south (FR) European partner organizations. This was mostly due to the French project partners having difficulties with project language leading to less input from them in the beginning of the project. Intranet while available for sharing information was not used that often. Information exchange was mostly through interactions.

Activities
The activities were of high quality with many joint actions. The output of the joint actions included: a guide for raising awareness and developing local flood risk management strategy, a study on Water Sensitive Urban Design and contingency planning, and a document introducing the concept of flood

management. Those outputs suggest that there was some degree of knowledge creation occurring during the project. Exchange of knowledge took place between partners through workshops, theme sessions and conference.

Facilitation
The University of Sheffield was responsible for editing and finalizing most joint action. Only some meetings, especially in the beginning of the project, were facilitated by a professional facilitator.

Condition: Participant properties
This condition had been assessed in terms of: 'ability', 'motivation' and 'opportunity'. The hypothesis belonging to this condition reads: The higher the ability, motivation, opportunity of project participants in relation to the project, the greater the degree of group learning.

Ability
Three out of the four interviewed project participants had participated in international project before FRC and were also comfortable with project language (FP1)(FP2)(FP3). Another project participant (FP4) had participated in an INTERREG project before and was knowledgeable about water management related aspects. This project participant noted that there were some difficulties in understanding some of the academic terms used in the beginning of the project since English was not a native language to this participant.

Motivation
All four interviewed project participants were eager to participate in FRC and were interested to learn from other partner organizations on how to adapt to climate change. Colleagues were eager to visit other partner organizations during various staff exchanges to learn about how others deal with flood risks.

Opportunity
All four interviewed project participants noted that they and their colleagues were involved throughout the project. The number of colleagues participating in the project differed for each partner organization. Two interviewed project participants (FP3)(FP4) had only three to four colleagues participating in the project, while for two other interviews the number of colleagues participating was greater.

Synthesis and preliminary observations
For group learning, our hypothetical model reads that the conditions 'consortium', 'interaction process' and 'participant properties' or a combination of these condition may influence group learning. In other words, productive interactions, a balanced consortium and participants with the ability, motivation and opportunity to learn were expected to lead to high levels of substantive and relational learning. Two variables in the hypothetical model of group learning were measured separately for every partner organization: the condition 'participant properties' and the outcome 'group learning'.

Table 5-2 Overview of scores for conditions and outcome of group learning (FRC)

	Project	(FP1)	(FP2)	(FP3)	(FP4)
Group Learning	**+**	**+**	**+**	**+**	**+**
Substantive	*+*	*+*	*+*	*+*	*+*
Relational	*+*	*+*	*+*	*+*	*+*
Consortium	**++**				
Balanced cohesiveness	-				
Balanced diversity	*++*				
Complementary knowledge	*++*				
Interaction process	**+**				
Interactions	*+*				
Activities	*++*				
Facilitation	-				
Participant properties	**++**	**++**	**++**	**++**	**++**
Ability	*++*	*++*	*++*	*++*	*+*
Motivation	*++*	*++*	*++*	*++*	*++*
Opportunity	*++*	*++*	*++*	*++*	*++*

Table 5-2 provide an overview of all the scores for conditions and outcome of group learning. The case results suggested that a combination of high to very high scores for the conditions 'participant properties', 'interaction process' and 'consortium' may produce high level of group learning. So for the four interviewed project participants the hypothetical model for group learning seemed to be correct.

When looking deeper in the case results, two indicators seems to be less relevant to high level of group learning. In FRC, most project participants and partner organizations had not collaborated before, and only a small part of the project was facilitated by a professional facilitator. This had led to a low score for both the indicators 'balanced cohesiveness' and 'facilitation'. This may suggests that both indicators were not relevant to group learning. For the indicator 'facilitation', having a professional facilitator may not be needed if the lead partner was capable of facilitating the activities on its own.

All interviewed project participants scored high for substantive learning. Interviewees mentioned that they learned how others deal with climate adaptation. One example was the sloping design of a quay in the municipality of Orleans which was mentioned as a learning point by two of the interviewed project participants (FP4)(FP1). This quay design was praised by both project participants due to the way it created more space for water and at the same time a public attraction for local residents. (FP4) and (FP1) both applied this design in their own FRC regional project. One interviewed project participant (FP2) mentioned that the addition of non-structural measures gave them many new insights. Examples of these non-structural measures were the communication of flood risk to residents to raise awareness, the design of a contingency planning and the placement of sandbags in the front door of buildings. Relational learning took many forms and differed for all four interviewed project participants.

5.3 Organizational Learning (FRC)

This section describes the results of the learning outcome and conditions belonging to organizational learning. The hypothesis is that (a combination of) two conditions could be relevant to the organizational learning: 'participant properties' and 'partner organization properties'.

Outcome: organizational learning

The score for organizational learning varied among the interviewed project participants. Two out of the four interviewed project participants (FP2)(FP3) reported high levels of organizational learning inside their partner organizations. One interviewee (FP1) scored low for the outcome 'organizational learning' while another interviewed project participant's (FP4) level of organizational learning was almost non-existent.

The methods used to transfer project knowledge inside the partner organization varied for each project participant. Three out of the four interviewed project participants (FP1)(FP2)(FP4) used presentations to transfer project knowledge to colleagues. Project knowledge was also transferred in written form, like scientific papers, brochures, magazines, and through events like FRC symposiums and staff exchanges. We differentiated two ways in which project knowledge was used by the partner organizations. For authorities, project knowledge was used to change practices inside the organization. For example one interviewee (FP2) noted how the use of non-structural measures like communication and raising awareness were now common practices inside his respective partner organization. The one scientific partner organization (FP3) included the project knowledge in its scientific papers.

Condition: Participant properties

The assessment of this condition had been done in terms of: ability, motivation and opportunity. The hypothesis belonging to this condition reads: The higher the ability, motivation, opportunity of project participants in relation to knowledge transfer to their respective organization, the greater the degree of organizational learning.

Ability

All interviewed project participants had generally worked for a long time at their respective partner organization before FRC started. Also, all interviewed project participants or other key participants held some influence in their respective departments. However, this influence did not extend to various relevant departments like higher-ups and decision makers.

Motivation

Three out of the four interviewed project participants (FP1)(FP2)(FP4) were actively trying to share project knowledge with other colleagues in their respective partner organizations and not just transferring knowledge when the opportunity arose. For example, one project participant (FP1) invited people from other partner organizations to show colleagues how other countries deal with climate change adaptation. Another project participant (FP2), who scored very high for this indicator, mentioned how they organized symposium in which project knowledge was presented. Direct colleagues as well as colleagues from other departments including colleagues at higher positions (e.g. decision-makers) were invited in these events.

Opportunity

One interviewed project participant (FP1) recalled how the project context (e.g. staff exchanges) gave them the opportunity to engage colleagues in the project. For another project participant (FP4) the FRC regional project was part of big project in which many colleagues were involved and according to this participant there were many opportunities to transfer project knowledge to these colleagues. Another project participant (FP3) mentioned opportunities through the organizational context in the form of monthly meetings with colleagues from the same department. The organizational context gave one interviewed project participant (FP2) opportunities to transfer project knowledge through its partner organization's self-published magazines which were read by the whole organization.

Condition: Partner organization properties

This condition was assessed based on the following indicators: 'prior related knowledge', 'cognitive embedding' and 'supportive organizational context'. The hypothesis reads, the higher the adsorption capacity of partner organizations, which relates to their prior related knowledge and experience, the relevance of the project theme and the supportiveness of the organization, the greater the degree of organizational learning.

Prior related knowledge

This past experience differed for the four partner organizations. According to three interviewed project participants (FP1)(FP2)(FP3) their respective partner organization had extensive experience with both the theme and the international context. Those three partner organizations participated in several INTERREG III and national projects, focusing on a similar theme. The other interviewee (FP4) reported that his partner organization only had some experience with the project theme and in national context. This organization has never participated in an international project.

Cognitive embedding

The project theme was seen as highly relevant to large parts of two partner organizations (FP3)(FP4). According two other interviewed project participants the project theme was important in all relevant parts of their respective organization.

Supportive organizational context

One project participant (FP1) described how difficult it was to changes things inside its partner organization due to the size of the organization. Change was influenced by what public and politic wants. However, this partner organization was open towards learning from other counties because this allows them to enhance its daily activities. Another partner organization (FP3) was more supportive than restrictive towards learning and knowledge transfer. There were also two partner organizations (FP2)(FP4) who were fully supportive toward learning and change.

Synthesis and preliminary observations

Our hypothetical model reads that two partner conditions 'participant properties' and 'partner organization properties' may affect the outcome 'organizational learning'. Participants with the ability, motivation and opportunity to share project results with colleagues inside their partner organizations, and partner organizations with prior related knowledge, who view the project theme as urgent and are open to learning or change are expected to lead to high levels of organizational learning.

Table 5-3 Overview of scores for conditions and outcome of organizational learning (FRC)

	Project	(FP1)	(FP2)	(FP3)	(FP4)
Organizational learning	**-**	**-**	**+**	**+**	**--**
Transmission (weight 1)	*+*	*++*	*++*	*+*	*-*
Presentation (weight 2)	*+*	*++*	*+*	*--*	*+*
Interaction (weight 3)	*--*	*--*	*--*	*+*	*--*
Adoption (weight 4)	*-*	*-*	*+*	*+*	*--*
Influence (weight 5)	*+*	*+*	*+*	*+*	*--*
Implementation (weight 6)	*-*	*-*	*+*	*+*	*--*
Participant properties	**+**	**+**	**++**	**+**	**+**
Ability	*+*	*+*	*+*	*+*	*+*
Motivation	*+*	*+*	*++*	*-*	*+*
Opportunity	*+*	*-*	*++*	*-*	*+*
Partner organization properties	**++**	**++**	**++**	**++**	**+**
Prior related knowledge	*++*	*++*	*++*	*++*	*-*
Cognitive embedding	*++*	*++*	*++*	*+*	*+*
Supportive organizational context	*++*	*-*	*++*	*+*	*++*

Table 5-3 provides an overview of all the scores of conditions and outcome of organizational learning. What really stand out was the very low level of organizational learning reported by one interview project participant (FP4). This despite scoring high for the 'participant properties' and 'partner organization properties' conditions. For the three other interviewees the score for the condition 'participant properties' reflect the level of organizational learning. One interesting insight provided by one of the interviewee (FP2) was how knowledge transfer activities targeted both colleagues and external actors at the same time. For instance, by inviting colleagues and external actors to the same forum or by publishing magazines aimed at both colleagues and external actors.

The outcome 'organizational learning' was measured based on the extent to which project knowledge had been transferred to the partner organization and what was done with the project knowledge inside this organization. The four interviewed project participants used different methods to transfer project knowledge in their respective partner organization. The means used to transfer project knowledge included presentations, scientific papers, brochures and magazines. Also, inviting colleagues to events like FRC symposiums and staff exchanges was one way to engage colleagues in the project. We differentiated two ways in which project knowledge was used by the partner organizations. For authorities, project knowledge was used to change practices inside the organization. The scientific partner organizations included the project knowledge in their scientific papers.

5.4 Network/societal Learning (FRC)

In this section we describe the results of the learning outcome and conditions belonging to network/societal learning. The hypothesis is that (a combination of) five conditions could be relevant to the network/societal learning. The two conditions 'lessons learned' and 'communication strategy'

were project-specific while the three conditions 'participant properties', 'participant scoping strategy' and 'wider context properties' were partner-specific.

Outcome: Network/societal learning

Three out of the four interviewed project participants (FP4)(FP3)(FP2) reported high levels of network/societal learning. Only the lead partner (FP1) reported low levels of network/societal learning. Methods used to transfer project knowledge to external actors was more varied compared with methods used to share this knowledge with colleagues. In addition to presentations, scientific papers and magazines, project knowledge was transferred through newspaper, media, short movie, web application, online portal and flood risk guide. All four interviewed project participants reported that they were successful in transferring project knowledge beyond their project region (e.g. through international forum/conferences and publishing project documents/scientific papers online).

How project knowledge influenced external actors differed among the four interviewed project participants. In Germany and the Netherlands the influence of project knowledge did not extend beyond the project region/context. For example, in the Netherlands the project knowledge led to changes in the design of the FRC regional project and in Germany the project results led to the formation of a working group for the FRC regional project. For Belgium and UK, the project knowledge influenced external actors beyond the project region/context. For instance, in the UK an incident recording system and assets recording system, developed in the project, implemented by various local authorities around the UK.

Condition: Participant properties

The assessment of this condition had been done in terms of ability, motivation and opportunity of the partner organization to transfer project knowledge to external actors. The hypothesis belonging to this condition reads: The higher the ability, motivation, opportunity of project participants in relation to knowledge transfer to other organizations, networks and communities (external actors), the greater the degree of network/societal learning.

Ability

All interviewed project participants and their respective partner organization had many good contacts inside their project region. Three project participants (FP1)(FP2)(FP3) also had good contacts with international organizations. National contacts were gained through collaboration structures inside their region/country while international relations were formed through participation in international projects like INTERREG. Only one interview (FP4) reported that its organization did not have any international relations.

Motivation

All project participants and their respective partner organization made an effort to transfer project knowledge to external actors. This was mostly done by giving presentations in national contexts and international settings. One partner organization (FP3) tried to transfer the project knowledge as wide as possible in the form of publishing project documents of FRC in an online portal and publishing scientific papers about the project results.

Opportunity

There was a common theme when looking at the opportunities given to project participants/partner organizations to share project results. During the project, three out of the four interview project participants were participating in another INTERREG IVB project with a similar theme to FRC. This meant those project participants could share the project knowledge with people from the other INTEREG IVB projects. One interviewee recalled how workshops were organized in which people from the aforementioned INTERREG IVB projects participated which gave this interviewee the opportunity to share project knowledge with project participants of other INTERREG projects.

Condition: Participant scoping strategy

This condition was measured by how much partner organizations have been strategic about the project scope (i.e. what they do and communicate, with and to whom and how). It was assessed based on the indicators: 'activities', 'framing', 'external actor involvement' and 'change process'. The hypothesis of this condition is: the more strategic partners are about the project scope, the greater the degree of network/societal learning.

Activities

One two interviewed project participants (FP2)(FP4) mentioned how all their regional action made use of new solutions in the form of non-structural measures. Two other project participants (FP1)(FP3) reported that only a small part of their regional actions were perceived as something new or innovative.

Framing

Two out of the four interviewed project participants (FP1)(FP4) mentioned how they tried to frame climate change adaptation differently to make it more understandable for one group (e.g. citizens, politicians or professionals). One project participant (FP1) used recent flooding in Europe to communicate the project theme to the citizens through the media. The other project participant (FP4) used guides to help residents during flood events. Communication of the project theme to two different groups was done by two other interviewed project participants (FP3)(FP2). One project participant (FP3) tried to communicate the project theme to the public and politicians in such a way that even young teenagers could understand it. Another interviewed project participant (FP2) reported that flood events during the FRC project were used to communicate CCA to politicians and citizens through the media. Also, this interviewee recalled that a terrace alongside a river was constructed and an information panel about flood risk was placed there to improve awareness among citizens.

External actor involvement

Two out of the four interviewed project participants (FP2)(FP4) went out of their way to involve a wide range of external actors including communities, authorities, universities and professionals. Another partner organization (FP3) involved two types of organizations in the project (local authorities and professional water managers). One interviewed project participant (FP1) recalled how its respective partner organization only involved one organization in the project. This organization was the municipality located near its FRC regional project and therefore was deeply engaged.

Change process

The FRC project was followed up by the INTERREG IVB CAMINO project. One of the four interviewed project participant (FP2) also participated in this follow-up project. In what way FRC was connected to other projects or actions, differed among the four interviewed project participants and their respective partner organization. For two partner organization (FP1)(FP4) FRC was connected to a regional/national project and was not seen as part of a change process inside the partner organization. According to one interviewed project participant (FP3) FRC was seen as part of a larger change process inside its respective partner organization. Another interviewee (FP2) described FRC as the start of an evolution in water management which extend beyond its respective partner organization. In the past, flood risk was managed through the adoption of structural measures. Furthermore, authorities were responsible for protecting citizens against flood risk. Due to the FRC project non-structural measures were now considered when managing flood risk and citizens were expected to contribute in managing flood risk. Examples of this contribution can be in the form of assisting other citizens during flood events and placing sand bags near the front door of their homes.

Conditions: Wider context properties

This condition referred to the adsorption capacity of external actors and was assessed in terms of policy agenda and governance system. The hypothesis reads, the more relevant the project theme is in the wider context and the better interactions and information in the network and structural context are managed, the greater the degree of network/societal learning.

Policy agenda

How the project theme was viewed by external actors differed among the countries of the interviewed project participants. One project participant (FP3) reported that the project theme was mostly considered relevant by local authorities in the UK, due to a national policy change earlier during the FRC project which gave local authorities more responsibility in managing their urban flood risks. The project theme was not on the national agenda and the UK government was more concerned with other matters. This was in sharp contrast to how the project theme was perceived in Germany and the Netherlands. For both countries the project theme was high on the political agenda and across local, regional and national governance levels. According to another project participant (FP2), prior to the start of FRC there were believers and non-believers regarding climate change. During FRC, flood events in Europe (e.g. Dublin, 2011) had made the project theme more relevant to Belgium. Still climate change was not so relevant at the political level, mostly because Belgium did not flood that often.

Governance system

In England there were more restrictive than supportive factors. Local authorities did not receive much funding from the government to implement adaptation measures and were expected to find other ways to fund these measures. Furthermore, there was no environment were best practice of climate change adaptation can be shared. Lastly, organizations with a lot of power in the water sector like the Environment Agency and Yorkshire Water Services were reluctant to share power which had been a major barrier towards effective innovation. Only supportive factors were the forums like the Sheffield Water Centre, Yorkshire Regional Flood and Coastal Committee and the Yorkshire and Humber LAA which allowed universities and local authorities to work with other organizations on water management related issues and in some cases share knowledge and experiences. The interviewed

project participants from Germany, the Netherlands and Belgium reported only supportive factors towards learning and knowledge transfer of CCA. All three governance systems had forums or networks in which organizations (authorities or knowledge institutions) can work together on CCA in water sector. Furthermore, there was an online information management system in place in which best practices of climate change adaptation can be openly shared (www.awac.be, www.anpassung.net and www.ruimtelijkeadaptatie.nl).

Condition: Communication strategy

For this condition we assessed the communication strategy and the dissemination of project knowledge/results. This condition was assessed using the indicators: 'proactive', 'specific' and 'engaging'. The hypothesis for this condition is: The more proactive, specific and engaging the communication and dissemination strategy of a project, the greater the degree of network/societal learning.

Proactive

A communication plan for engaging external actors at the political, professional and public levels was part of the project proposal. According to the lead partner the communication plan was implemented at an early stage of the project. Means of communications included workshops, conferences, online portal, newsletters and project website (the latter two were communicated in four languages). Around halfway through the project, social media was adopted (i.e. Twitter).

Specific

Three target audiences at different levels were identified in the communication plan. External actors at the public, professional and political level were engaged throughout FRC. There were no concrete plans to engage each target audiences but project participants had some idea on how to engage these actors through various means.

Engaging

In FRC each partner organization was considered a prominent player in the national networks on flood risk management and therefore was given a role to disseminate project results in its own region. Therefore, dissemination of project knowledge was not limited to the lead partner only. Dissemination of project knowledge was not limited to the project participant's own region either. Some project participants presented their project results during international conferences. The communication plan was not evaluated however.

Condition: Lessons learned

For this condition we measured the actual implementation of the project knowledge. We assessed how the project knowledge was made 'available', the degree which project knowledge was 'accessible' and the level of 'relevance' of the project knowledge. The underlying hypothesis is: the more and better communicated and directly relevant project results, the greater the degree of network/societal learning.

Available

The project website contained summaries of the project and its work packages. Also, an online portal contained the output reports from all the work packages (no final report). The project website was linked to the online portal so readers could always jump from website to portal if they wanted to read about something in more detail. Newsletters and social media were used to inform people of the activities of FRC partner organizations. Project knowledge was also transferred through publications and scientific papers.

Accessible
Most output reports had the same structure and lay-out. Project knowledge required technical background in water management. For this reason a flood risk management guide was written to introduce the topic to project managers and urban planners. Hardly any lesson learned mentioned in the documents.

Relevance
Some measures introduced in FRC were mentioned as best practice by SIC-ADAPT cluster. This shows that project participants from other projects in the cluster viewed the measures, introduced in FRC, as something useful.

Synthesis and preliminary observations
Our hypothetical model reads that two project-specific conditions 'communication strategy' and 'lessons learned' and three partner-specific conditions 'participant properties', 'participant scoping strategy' and 'wider context properties' may affect the outcome 'network/societal learning'.

Table 5-4 provides an overview of all the scores of conditions and outcome of network/societal learning. From the three partner-specific conditions only the condition 'participant scoping strategy' reflected the level of network/societal learning reported by all four interviewees. The same could not be said for the conditions 'participant properties' and 'wider contexts properties'. For two interviewees the difference between these two condition scores and the outcome was large. Both of those project participants put a lot of effort in sharing project knowledge with external actors inside and outside their project participant's region. However, project knowledge had hardly influenced practices or policies of external actors.

The project scored very high on the condition 'communication strategy' and low for the condition 'lesson learned'. While project documents were made available to users at multiple levels through the project website and online portal, those document hardly contained any lessons learned. Some of the measures, however, were considered best practices in a knowledge platform that was developed by a cluster of INTERREG IVB projects dealing with CCA (SIC-ADAPT). Communicating and disseminating project knowledge was through presentations, scientific papers, magazines, newspaper, media, short movie, web application and online portal. Regarding the transferring of project knowledge, it was interesting when one of the four interviewees (FP2) mentioned how they decided to combine knowledge transfer activities directed at colleagues and external actors. For example, when organizing forums to discuss project knowledge, both colleagues and external actors were invited. All four project participants reported that they were successful in transferring project knowledge beyond their project region (e.g. through international forums).

Table 5-4 Overview of scores for conditions and outcome of network/societal learning (FRC)

	Project	(FP1)	(FP2)	(FP3)	(FP4)
Network/societal learning	**+**	**--**	**+**	**+**	**-**
Transmission (weight 1)	*++*	*+*	*++*	*++*	*++*
Presentation (weight 2)	*++*	*++*	*++*	*+*	*++*
Interaction (weight 3)	*-*	*--*	*++*	*-*	*-*
Influence (weight 4)	*+*	*-*	*++*	*+*	*-*
Implementation (weight 5)	*--*	*--*	*--*	*+*	*-*
Participant properties	**++**	**++**	**++**	**++**	**++**
Ability	*++*	*++*	*++*	*++*	*+*
Motivation	*++*	*+*	*++*	*++*	*++*
Opportunity	*++*	*++*	*++*	*++*	*+*
Participant scoping strategy	**+**	**-**	**++**	**+**	**+**
Activities	*+*	*-*	*++*	*-*	*+*
Framing	*+*	*-*	*+*	*+*	*-*
External actor involvement	*++*	*-*	*++*	*+*	*++*
Change process	*+*	*-*	*++*	*+*	*-*
Wider context properties	**++**	**++**	**++**	**-**	**++**
Policy agenda	*+*	*++*	*+*	*-*	*++*
Governance system	*++*	*++*	*++*	*-*	*++*
Communication strategy	**++**				
Proactive	*++*				
Specific	*+*				
Engaging	*+*				
Lessons learned	**-**				
Availability	*+*				
Accessibility	*-*				
Relevance	*-*				

6. Comparison and discussion

In this chapter we discuss the comparison of the case results in section 6.1, whether the proposals in this study are generalizable to other types of European cooperation projects in section 0, the limitations of our methodology in section 6.3 and reflect on the applied evaluation framework in section 6.4.

6.1 Comparison of case results

Here we compare the learning outcomes and conditions of the MARE case with the FRC case. The learning outcomes and conditions are each discussed in a separate subsection with a similar structure consisting of four parts. Firstly, we look specifically at potential differences in scores (at consortium and partner levels) of both projects and determine the most relevant conditions based on the condition scores. Secondly, following this comparison of scores, we try to find whether potential differences in learning outcome scores are reflected in the observations from the case study, and determine the most relevant conditions based on observations done during the case study. Thirdly, we present the overall scores in the WAVE case (predecessor to our cases) and we assess whether our most relevant conditions are support by the WAVE case results. Lastly, we discuss whether the learning outcomes and the most relevant conditions are supported in the literature, and provide specific suggestions for the most relevant conditions.

Table 6-1 Overall scores of learning outcomes and the conditions needed to produce them for both projects

	MARE	FRC
Group Learning	**+**	**+**
Consortium	++	++
Interaction process	++	+
Participant properties	++	++
Organizational learning	**-**	**-**
Participant properties	+	+
Partner organization properties	+	++
Network/societal learning	**+**	**+**
Participant properties	++	++
Participant scoping strategy	+	+
Wider context properties	+	++
Communication strategy	++	++
Lessons learned	+	-

The learning outcomes in the case studies

Scores

What is really striking about the case results is how similar the overall outcome scores are for both cases (see Table 6-1). In both cases the overall score for the outcomes 'group learning' and 'network/societal learning' is high while for organizational learning the overall outcome score is low. According to the evaluation framework these outcome scores suggest three things. Firstly, project participants in general acquired partly improved and partly new CCA knowledge or relations. Secondly, the project knowledge in general was shared with and adopted by only one relevant department of a

partner organization. Thirdly, the project knowledge in general was shared with and adopted by external actors from the same region as the partner organization as well as in other regions, national or international contexts. The overall score for group learning is reflected in the individual outcome score since nine out of the ten interviewees scored high to very high for group learning. For organizational and network/societal learning the individual outcome scores varied among the interviewees which is realistic since both of these learning outcomes have more indicators and are measured differently than group leaning. Regarding the two indicators of group learning, in both cases the indicator 'substantive learning' has a higher score than the indicator 'relational learning'. This means that for project participants both projects were more useful in terms of improved or new substantive knowledge (i.e. substantive learning) than they were in terms of improved or new relations or communication/collaboration skills (i.e. relational learning).

Observations

There are no differences in the overall learning outcome scores and this is mostly supported in our observations. A large part of group learning inside both projects took the form of sharing and creating knowledge about how to adapt to climate change. The big difference is that MARE involved the creation of a Climate Proofing Toolbox (adaptation tools and approaches) while FRC involved the creation of a framework containing various adaptation measures. Regarding organizational and network/societal learning, we observed that different types of partner organizations and external actors used the project knowledge in differently. Authorities used the project knowledge to change practices (new CCA measures or policies (e.g. new flood protection standards). The knowledge institutions applied the project knowledge in their scientific work and education programs. One difference, which is not reflected in the learning outcome scores of network/societal learning, is that, unlike in FRC, the project knowledge of MARE reached external actors outside Europe. In Asia, CCA projects implemented the LAA approach found in the MARE project.

Comparison with WAVE results

When comparing the learning outcome scores in both cases with the outcome scores found in the WAVE case, similarities and differences are found. One similarity is that the indicator scores of substantive learning is in general higher than relational learning. Furthermore, the outcome score of 'group learning' is high and included both the sharing and creation of knowledge. In addition, we find in our cases that, like in the WAVE case, that it is possible for project participants to play the role of a 'source' (individuals who are highly advanced) or a 'receiver' (individuals who are lagging behind) of knowledge. The differences are in the outcome scores of 'organizational learning' and 'network/societal learning'. Organizational learning was high in the WAVE case (not as high as group learning) and low in the FRC and MARE cases. Network/societal learning was low in the WAVE case and high in the FRC and MARE cases (not as high as group learning). In a forthcoming paper about the findings in the WAVE case it was noted how the low learning outcome for 'network/societal learning' is disappointing given the high knowledge dissemination ambitions of European funding programs (Vinke-de Kruijf & Pahl-Wostl, 2016). In the MARE and FRC project these ambitions appears to met but this was in exchange for a rather low transfering of project knowledge to partner organizations and the adoption of this knowledge by these organizations.

Qualitative interpretation

Findings in scientific literature show that learning in CCA contexts is highest among those who interact most directly and intensely (Baird, Plummer, Haug, & Huitema, 2014). This is further supported by scientific findings on learning in EU cooperation contexts (Böhme, Josserand, Haraldsson, & Polverari, 2003). The Baird et al. (2014) statement appears to reflect the learning outcomes of WAVE, MARE and FRC cases since in all three cases group learning has the highest overall score.

Conditions influencing learning in INTERREG projects

Scores

When looking at the overall scores of the conditions in both projects, we find no clear differences (see Table 6-1). It is also clear that the overall scores of the learning outcomes and conditions are high to very high for group and network/societal learning. Thus, we find that the properties of the participants, the structure of the consortium as well as the quality of the interaction process appeared to be relevant to group learning in MARE and FRC. Also, the results of the outcome and condition scores belonging to network/societal learning suggest that the properties of the project participants and the external actors as well as the strategic scoping of the project, the usefulness of the project knowledge and the communication strategy appeared to be relevant to the network/societal learning in MARE and FRC cases. For organizational learning we find that high to very high overall scores for conditions lead to a low overall score for their respective learning outcome. This would indicate that the participant properties and the partner organization properties were not relevant to organizational learning in both cases.

We also find differences between learning outcome scores and their respective condition scores when looking at each interviewed project participant separately. This difference is more apparent in quantitative data of organizational and network/societal learning, where each interviewee had different combinations of conditions that were relevant to their self-reported learning outcomes. We believe that for organizational and network/societal learning it is possible that their respective conditions were necessary but insufficient to produce these two learning outcomes. On a positive note, regarding group learning, for nine out of the ten interviewees the conditions were relevant to their respective learning outcome. Although it is unclear whether low scores for the three conditions will result in a low score for their respective learning outcome, for a large number of interviewees those condition were relevant in producing high level group learning (e.g. acquiring new knowledge). Therefore the conditions ‘consortium’, ‘interaction process’ and ‘participant properties’ are the most relevant conditions.

Observations

When looking specifically at the qualitative data gathered during the case study, we find most relevant conditions for organizational and network/societal learning. For organizational learning we observed that project participants who hardly transfer project knowledge to colleagues (i.e. indicators ‘transmission’, ‘presentation’ and ‘interaction’ for organizational learning), have a low score for the learning outcome ‘organizational learning’. It seems that project participants need to spend more time in transferring project knowledge inside their partner organization to improve organizational learning. Regarding network/societal learning both projects have an overall high outcome scores. In both

projects, knowledge was made widely available and external actors were invited to participate in the regional actions of the project. The latter was done in a more structural way in MARE compared to FRC. Other observations that were expected to influence the learning outcomes are not as convincing and not considered very relevant conditions. For instance, there is a major difference in the project duration of both cases with FRC being 80 months long and MARE taking 48 months to finish. But both overall learning outcomes scores are similar. It seems that longer project duration do not lead to higher levels of learning and instead projects having to meet a certain minimum duration. The European Commission recommends a project duration longer than 36 months (INTERREG IVC, 2013). Another example of less convincing observation is that unlike the MARE case, the FRC project contained activities that encouraged learning between partner organizations. In FRC these activities were called staff exchanges in which organizational members (not project participants) from one partner organization visited another partner organization. Despite having these staff exchanges the overall score for organizational learning, like in MARE, is low for the FRC. This would suggest that having staff exchanges alone is not enough to improve organizational learning.

Comparison with WAVE results

The WAVE case supports the most relevant conditions we identified earlier. For all interviewees in the WAVE case, the condition scores belonging to group learning did not differ greatly from their respective learning outcome score. Thus we find that for fifteen out of the sixteen interviewees from WAVE, FRC and MARE the difference between scores of the learning outcome 'group learning' and its conditions 'participant properties', 'interaction process' and 'consortium' is small. In addition, the WAVE case scores low for network/societal learning and project participants from WAVE case relied only on interactions with external actors to share project knowledge. In MARE and FRC, project participants made project knowledge available as widely as possible in addition to the sharing of this knowledge through interactions with external actors. We believe that a wider audience was reached in the MARE and FRC case. On a negative note, the most relevant condition we identified for organizational learning, is not supported by the WAVE case.

Qualitative interpretation

Studying recently published documents on INTERREG programs does not provide useful suggestions for improving learning in INTERREG projects. Documents published by the INTERREG program are mostly focused on providing advice to future project participants for writing a project proposal, e.g. (INTERact, 2013). A cooperation program document on the fifth INTERREG program period (2014-2020) briefly touched on how to \improve learning in the fifth program period (INTERREG, 2014, p. 10). Yet, the suggestions written in the cooperation program document do not provide any specific insights for improving learning in INTERREG projects. On a positive note, our case results do provide practical insights to supplement the suggestions prescribed by INTERREG (2014).

Firstly, the need for project knowledge to be transferred to partner organizations in an effective way, can be achieved by combining the knowledge transfer activities directed at colleagues and external actors. The general impression from both FRC and MARE is that project participants appeared to be either focused on sharing project knowledge with external actors or with colleagues from the same partner organization. Whether this was the result of time constraints is hard to tell. But for one

interviewed project participant, combining transfer activities led to high learning outcome scores for both organizational and network/societal learning.

Secondly, INTERREG prescribes involvement of relevant external actors in project activities and for external communication methods that can effectively reach these external actors. The former can be achieved through the use of collaboration structures like the Learning and Action Alliance (LAA). In MARE we observed that LAAs had been successful in involving external actors by allowing them to participate in the regional actions of their own region. In addition, LAAs make learning through active participation in INTERREG project possible. Acquiring knowledge about the project is easier through active participation compared to studying the project documents (Böhme, Josserand, Haraldsson, & Polverari, 2003). The latter suggestion made by INTERREG can be achieved through the use of open online portals to make project documents available to wide range of external actors. This makes effective external communication possible and allows easy access to project knowledge (INTERREG, 2014, p. 10).

Thirdly, for group learning we find that having interpreters who can translate spoken words real-time could have been helpful in MARE and FRC especially at the start of the project. Designing an interaction process that contains multiple joint actions can be beneficial in projects since it allows project participants to jointly create new knowledge. Inviting different types of partner organizations can lead to a project consortium that represents diverse functions and can provide complementary knowledge. Project participants should be given sufficient time by their partner organization to allow these participants to regularly interact with others during the project.

6.2 Generalizability of the proposals for improving learning

Based on the comparison of the two cases in terms of scores and observations, the inclusion of the WAVE case in this comparison and the use of literature to support this comparison, we provide proposals for improving learning in INTERREG B projects that focus on CCA in the water sector. We are confident that these proposals will prove useful in INTERREG B program that focus on CCA in the water sector since our cases and the WAVE case are part of this program. There are four other well-known programs that subsidize various European cooperation projects. The INTERREG program has two other strands with strand A focusing on cross-border cooperation while strand C focuses on the transfer of best practices. Other well-known programs include the more research orientated Framework Program (FP) and the LIFE program which focusses on environmental and climate actions. We believe that our proposals can also be applied in these programs only if the focus (CCA) of their projects are similar to the projects assessed in this study. While the characteristics of these programs differ from each other the main goal of these programs is to facilitate exchange of experiences and learning in the project and to wider contexts. For projects that have a different focus, it is unclear whether proposals made to improve group learning are applicable. In this study group learning is assessed based on what was learned about CCA. The learning outcome score for group learning might differ if the project focus was different since the most relevant conditions for group learning are based on the comparison between learning outcome and condition scores. Organizational and network/societal learning are not affected by this issue due to both of them revolving around the transfer of any knowledge gained from the project and not just about climate change adaptation.

6.3 Limitation of the methodology

During the case study we discovered three limitations that may have affected the case results. Firstly, there is an issue concerning the data obtained on organizational learning. Hardly any project documents described how the project knowledge was transferred to and influenced the partner organization. This meant that there was an overreliance on getting data about organizational learning through the interviews with project participants (triangulation becomes difficult). Since the questions are about their partner organizations, there is a risk that data collected from the interview may have been affected by the interviewed project participant's secrecy. To be clearer there may have been aspects about a partner organization that were not allowed to be known.

Another limitation was the time at which the data is collected. Project participants were interviewed three years after the FRC project and four years after the MARE project had finished. The interview results may be incomplete because project participants may forget things that happened three years ago. Also, there is a risk that project participants would be working at another organization by the time we started the interviews. This made it more difficult to contact these participants as experienced during this study. Collecting the data right after the completion of the project may restrict the amount of knowledge transfer being measured at organizational and network/societal levels. One example from the case study was one interviewee who mentioned how a colleague requested project documents two years after the completion of the MARE project. Another interviewee mentioned how the project results were shared with partner organizations from an Asian project one year after the end of the MARE project. What those two examples tell us is that organizational or network/societal learning can occur over longer period of time after the project has finished. It is, however, better to interview project participants directly after the completion of the project. Memories of project are still fresh and the risk of project participants not working for their partner organization anymore is smaller. If necessary, the collected data about the learning outcomes 'organizational learning' and 'network/societal learning' can be updated after five to six years by contacting the same interviewees.

Lastly, the involvement of partner organizations in the case study has not gone as expected. In the MARE case only six out of the fifteen partner organizations were willing to participate in the case study. For FRC case this was four out of the eleven partner organizations. Fortunately, leading partner organizations from both cases took part in the interview, which provided many insights in not just partner-specific conditions and outcomes but also in project-specific conditions. Still, not having interviewed all partner organizations has made comparison of both cases difficult. Comparing overall scores of conditions or outcomes is less reliable since not all partner organizations participated in the case study. In addition, there are uncertainties on whether the most involved and knowledgeable project participant of a specific partner organization was interviewed. When we were inviting project participants to an interview, in three instances we could not invite the project participant who, according to the project documents, was the most involved and knowledgeable. Either we did not receive any response or we were asked to interview a colleague instead. Not being able to interview the desired person would not lead to large differences in quantitative results but it would have provided a larger amount of qualitative insights about the learning outcomes and conditions.

6.4 Reflections on the evaluation framework

Through the experiences gained in the case study and the exercises done before the case study, we are able to reflect upon the evaluation framework. The framework consisted of three outputs: the collected data, the indicator descriptions and the indicator scores. Difficulties arose from turning indicator descriptions into indictor scores. Transforming qualitative results in quantitative results was done through a score system containing four possible scores. Each of the four scores contains a description and the idea is to match this description with the indicator description. However when trying to match similar descriptions, there were times when one indicator description would match the description of two scores. In other words there was a 'grey area' between two scores resulting in different scores giving. The framework can be prone to subjectiveness. By doing the two simulations to familiarize ourselves with the framework, we were able to reduce this risk.

The framework assesses learning processes inside the project as well as the transfer of knowledge, created inside the projects, to partner organizations and external actors. This top down view on learning gives the impression that learning occurs only one-way (from project participants to colleagues and external actors). What is not taken into account in the framework is that those not directly participating in the project may also influence group learning inside the project. In addition, the learning outcomes are not measured in the same matter. During the case study, the outcome 'group learning' was measured in terms of how new the knowledge acquired is. In contrast, the organizational and network/societal learning were measured based on the intensity (i.e. how much) and the width (i.e. to whom) of the knowledge transfer to and adaptation by partner organizations and external actors respectively. On a positive note, only needing to interview one key project participant from each partner organization (usually the project manager) is time-saving and more practical compared having to interview multiple project participants and colleagues from the same partner organization as well as various external actors from the same project region. The evaluation framework was very valuable during the case study and served as our guide in this study.

7. Conclusion and recommendation

In section 7.1 the three central questions of this study will be answered. This is followed by section 7.2 where recommendations will be made for possible changes to the existing evaluation framework. In section 7.3 recommendations will be made in regard to future research.

7.1 Conclusion

1. *What are the learning outcomes and conditions in the two evaluated cases?*

In this study, we assessed the learning outcomes and conditions of two INTERREG B projects that focus on climate change adaptation in the water sector using an existing evaluation framework. Regarding the learning outcomes, in both cases the overall learning at the project and network/societal level is high while organizational learning is low. Both cases were more beneficial for project participants in terms of acquiring substantive knowledge on climate change adaptation compared to building relations with other organizations. Due to the variety in the type of partner organizations involved, we discovered differences in the way project knowledge is used by these organizations. In both cases, authorities used the project knowledge to change practices and policies. For knowledge institutions, project knowledge is used in scientific work and for changing education programs inside their organization. Looking at the individual learning outcome scores of each interviewee we find that nine out ten interviewed project participants reported high to very high scores for the learning outcome 'group learning'. For organizational and network/organizational learning, the individual scores varied among the interviewees from very low to very high.

Regarding the conditions, apart from one condition, we find that the overall scores for every condition in both cases is high or very high. Looking at the conditions scores of each interviewee we find that conditions belonging to group learning are high to very high for all interviewed project participants. The condition scores belonging to organizational and network/societal learning varies among the ten interviewees. This variation in individual condition scores mirrors the variation in the learning outcome scores of organizational and network/societal learning.

2. *When comparing the evaluated cases, what are the most relevant conditions and are these conditions supported by previous case(s) and literature?*

The most relevant conditions are found based on the comparison of outcome and condition scores, and by analyzing the observations made in both cases. For group learning our research has confirmed the relevance of three conditions found in the evaluation framework. Firstly, project participants need to be comfortable with communicating in the project language, highly motivated to participate and have the opportunity to regularly interact during the project. Secondly, the project consortium should consist of project participants from which some know each other and some are new, who represent diverse functions and who can provide complementary knowledge. Thirdly, the interaction process should be designed in such a way that it allows easy information exchanges and developing of mutual understanding, includes well designed activities meant to develop new knowledge and facilitates learning processes in the project. This is supported by the results found in a previous case that used the same framework.

For organizational learning we observed that project participants who hardly transfer project knowledge to colleagues (i.e. indicators 'transmission', 'presentation' and 'interaction' for organizational learning), have a low score for the learning outcome 'organizational learning'. Project participants need to spend more time in transferring project knowledge inside their partner organization.

Regarding network/societal learning, the most relevant conditions are the involvement of external actors through collaboration structures and making the project results available as wide as possible. This is supported by the comparison of the observations done in both cases of this study and the earlier mentioned previous case as well as by literature.

On a separate note, we observe that project participants and the monitoring committees of the INTERREG programs focus more on the transfer of project knowledge to external actors than to colleagues. It seems that project participants are not aware of the opportunities for organizational learning inside their respective partner organizations.

3. *What suggestions can be made in regard to improving learning in INTERREG projects that focus on CCA in the water sector?*

The suggestions provided in this study are made for the most relevant conditions which are supported by the case results of the WAVE case or relevant literature. We can provide suggestions to future project participants for improving group, organizational and network/societal learning. Regarding group learning we provide the following suggestion(s) for lead partners (a, b, c) and partner organizations (d):

a) To allow project participants to be comfortable with communicating in the project language, having interpreters who can translate spoken words real-time could be helpful especially at the start of the project;
b) For a well-designed interaction process, we suggest organizing multiple joint actions in which project participants can jointly work on an action. For instance, a guide or framework;
c) To create a project consortium which represents diverse functions and can provide complementary knowledge, we suggest inviting different types of partner organizations. Each type of partner organization brings project participants who may possess technical insights (e.g. universities), practical know-how (e.g. private organizations) and political/policy knowledge (e.g. authorities);
d) Project participants should be given sufficient time by their partner organization to allow these participants to regularly interact with others during the project.

Regarding organizational learning we provide the following suggestion(s):

e) To increase knowledge transfer activities directed at colleagues, we suggest that project participants should combine the knowledge transfer activities directed at colleagues and external actors. For instance, by sending the same project magazines or publications to both colleagues and external actors, or by inviting both groups to the same forum in which project results are presented. This was especially beneficial for FP2 from the FRC case who reported high scores for the learning outcomes 'organizational learning' and 'network/societal learning'.

Regarding network/societal learning we provide the following suggestion(s):

f) For involvement of external actors through collaboration structures, we suggest project participants invite external actors in Learning and Action Alliance (LAA). As observed in the MARE case, project participants could invite external actors from the same region to participate in their regional actions. This allows external actors to learn from the project through active participation which makes acquiring knowledge easier for them;
g) A possible method of making project results as widely available as possible, is through the use of online portals as was done in both the FRC and MARE case (not in the WAVE case). In these portals project documents could be uploaded to make them available to wide range of external actors.

The monitoring committees of the INTERREG programs, who are tasked with accepting project proposals, can also contribute to the improvement of learning in similar projects. Since the monitoring committees are involved before the start of a project, they have the opportunity to make future project participants more aware about the learning opportunities in these projects. In addition they can produce guides that focus specifically on improving group, organizational and network/societal learning. The above suggestions could be included in such a guide together with many other possible suggestions for improving learning in INTERREG projects.

7.2 Recommendations for framework improvement

Regarding the potential improvements for the existing framework found in KNOW2ADAPT research. Based on the experiences gained during the exercises and the case study, we find that different users of the framework may give different indicator scores. This is the result of the 'grey zones' that existed in the scoring system. Each indicator can be given a score of either --, -, + or ++ based on a comparison between indicator description and the description found in each of the four scoring boxes. However, it is not always clear in which scoring box an indicator description can fit. To reduce this risk we suggest to replace the description in each scoring box with a requirement list. The amount of requirements depends on the score with a higher score having more requirements. The requirements stack up meaning that the requirement(s), needed to be fulfilled for a low score, is/are also present in the scoring box of a higher score. To be clearer, each time a jump is made between scoring boxes one requirement is added. For instance, zero requirements for a score of --, one requirement for a score of -, two requirements for a score of + and three requirements or a score of ++.

7.3 Recommendations for future studies

During the study our framework was used as a post-project evaluation tool but we believe it has the potential to be used as a pre-project evaluation tool. What is meant by this is that the framework may be suitable as a tool to predict the overall level of group, organizational and network/societal learning in INTERREG projects based on the condition scores. For instance, if a combination of conditions belonging to the learning outcome 'group learning' have a high to very high score (i.e. between + and ++), the overall level of group learning can be expected to be high as well. Important to keep in mind is that the framework requires further testing before it can be used as a prediction tool for the learning outcomes. In addition, practical issues like time and resources needed for the pre-project evaluation have to be assessed. But as a concept it should be considered since it can greatly support the monitoring committees of European funding programs during the project proposal phase in accepting proposals based on the predicted level of learning. In addition future studies, that use the framework of (Vinke-de Kruijf, 2015a), should consider evaluating learning process in INTERREG A and C projects with the aim of providing proposals for improving learning in those projects and comparing these proposals with our proposals.

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Appendices

A. Scoring system for the indicators of each learning outcome and condition

Below the score systems for all indicator of the evaluation framework are shown. These score systems are adapted from Vinke-de Kruijf (2015a).

Group learning

Outcome GROUP LEARNING

- Starting-points: project learning may concern substantive aspects as well as relational aspects on how to deal with climate change adaptation (including understanding, planning and implementing). High levels of learning have occurred when project documents reflect and participants report that truly new understandings, insights and knowledge were acquired.

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Substantive aspects: Relational aspects:	Project did not provide new knowledge or insights to participants. Understandings did not change.	Project led to improved or broader (not new) knowledge, insights or understandings.	Project led to partly improved and partly new knowledge, insights and perspectives.	Project was an eye-opener providing truly new knowledge and perspectives.

Condition CONSORTIUM (project-specific)

- Hypothesis: The more balanced a consortium is (neither too homogeneous nor too diverse, neither too new to each other nor too close) and the greater the extent to which partners have complementary knowledge, the greater the degree of substantive and relational learning.

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Balanced cohesiveness: Did partners and their organizations collaborate before?	None of the partners collaborated before. Or: one or more partners collaborated before but this experience was rather negative.	Most of the partners are new but there are some linkages that ease collaboration.	Collaboration is only slightly constrained by partners being either too new or knowing each other rather well.	There has been previous collaboration but cognitive blockage has been prevented by adding new persons and partners.
Balanced diversity: Was the partnership characterized by balanced diversity?	Partners and partner regions are highly heterogeneous and therefore have great difficulty to find a common theme of interest.	Some of the partners and partner regions can learn from each other but there is no common theme or interest binding all of them.	Partners are rather similar but share a common interest and can still learn from each other.	Partners represent diverse roles and functions, experience highly similar or common problems and can learn a great deal from each other.
Complementary knowledge: Did participants have complementary and possess all relevant knowledge?	Participants were similar in terms of role and function in the project and their own organization.	Some diversity was achieved but most of the participants had similar knowledge.	Diversity of knowledge but not all relevant knowledge types were covered.	Participants were diverse and included persons who could provide substantive, procedural and political knowledge.

Condition INTERACTION PROCESS (project-specific)

- Hypothesis: The greater the quality and quantity of interaction moments and activities and the better they are facilitated, the greater the degree of substantive and relational learning.

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Interactions: Did interactions occur in a good atmosphere and were they regular and long enough to develop relations?	Interactions were superficial, no time to develop mutual relations. There were misunderstandings.	Interactions were enough to develop a basic understanding, but did not allow for relations to develop.	Interactions were just long and often enough to develop mutual relations and understandings.	Interaction moments are characterized by a pleasant atmosphere. Information exchange was without problems.
Activities: Were activities well designed and organized (e.g. thematic, involving experts)?	Cooperation activities are scattered and hardly provide new perspectives or ideas.	Only some of the cooperation activities are of high substantive quality. There is no logical connection or overall design.	Cooperation activities are of high quality but focused on knowledge transfer rather than development.	Cooperation activities are of high substantive quality (i.e. well designed and connected in a logical way) and meant to jointly develop new knowledge.
Facilitation: Were the exchanges and learning processes facilitated?	No involvement of any experienced or professional facilitator.	Some of the meetings have been facilitated in a professional way.	The project included a series of professionally facilitated exchange and learning processes.	All project interactions were designed and supported by professional facilitators to enhance learning processes.

Condition PARTICIPANT PROPERTIES (partner-specific)

- Hypothesis: The higher the ability, motivation, opportunity of project participants in relation to the project, the greater the degree of substantive and relational learning.

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Ability: Did participants have the knowledge and skills (ability) to meaningfully interact?	Partner organization has not been involved in similar projects and participants do not feel comfortable with the project language.	The lack of knowledge and skills of some but not all participants was limiting interactions.	Participants are not fully comfortable but have sufficient ability to interact and contribute.	Partner organization is experienced and participants are comfortable with communicating in project language.
Motivation: Did the project and organization contexts provide participants with a motivation to participate and learn?	The theme is not of direct interest to most participants. There is little support inside the partner organization.	Several participants were reluctant to participate multiple times. The project theme was not of specific interest to key participants.	Some participants were initially reluctant to participate or some participants were not really interested in the topics being discussed.	Project has priority in partner organizations and participants are highly motivated to participate and learn.
Opportunity: Did the project/organization context provide participants with the chance to regularly interact over a longer period of time?	No continuity in participation. Participation on an ad hoc basis.	Participants were changing during the project with very few persons interacting regularly over a longer period of time.	A core group of persons interacted regularly over a longer period of time. Participation of others changed over time.	Regular interactions and high continuity in participation with hardly any changes in staff.

Organizational learning

Outcome ORGANIZATIONAL LEARNING

- Starting-points: Organizational learning is measured in terms of six different levels of knowledge transfer with transmission of project knowledge being the lowest level and implementation being the highest level.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Transmission: Did participants share project knowledge inside their own organization?	No sharing with colleagues who were not involved.	Sharing was done ad hoc on a one-to-one basis.	Efforts were made to share the project results with direct colleagues and the organization at large.	Various communication means were used to share project results as widely as possible.
Presentation: Did participants present project knowledge in a tailor-made way inside their own organization?	No presentations.	Presentation once for a small group only.	Multiple presentations for smaller groups or one highly influential presentation.	Various presentations were provided at various points in time for different groups.
Interaction: Did participants discuss or interact about project knowledge inside their own organization?	No discussion or interactions	Discussions at one point in time	Discussions at more than one point in time.	Discussions throughout the project duration in all relevant parts of the organization.
Adoption: Did the partner organizations have concrete plans/efforts to adopt project knowledge?	No aspects are planned to be adopted.	Efforts/support to adopt a single, relatively small aspect in a small part of the organization.	Efforts/support to adopt multiple aspects in larger or multiple parts of the organization.	Efforts/support to adopt project knowledge in all relevant parts of the organization.
Influence: Did project knowledge have an influence on the partner organizations?	Project did not have an influence on the organization.	Project had an influence on a small part of the organization only.	Several aspects of project knowledge has influenced larger or multiple parts of the organization.	Project knowledge had a major influence on the relevant organizational policies and practices.
Implementation: Did the partner organizations use or apply project knowledge thereby changing policies or practices?	Project knowledge has not been implemented.	An aspect of the project knowledge has been implemented in a small part of the organization	Several aspects of project knowledge have been implemented by larger or multiple parts of the organization.	Multiple aspects of project knowledge were implemented leading to major, organization-wide changes in policies and practices.

Condition PARTICIPANT PROPERTIES (partner-specific)

- Hypothesis: The higher the ability, motivation, opportunity of project participants in relation to the transfer of knowledge to their respective organizations, the greater the degree of organizational learning.

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Ability: Did participants have the knowledge and skills and were they in the position (ability) to transfer project knowledge to their organizations?	Key participants are rather new and not in the position to transfer knowledge inside their own organization.	Key participants have contacts in a limited part of the organization.	Key participants have an extensive network in a smaller part of the organization and can exert some influence on decision/policy processes.	Key participants had an extensive network in various parts and at various levels of the organization and in the position to influence the organization.
Motivation: Were participants willing to make an effort to transfer project knowledge to their organizations?	No efforts have been made. Relevance of knowledge transfer is not recognized.	When an opportunity arose knowledge has been transferred.	Made an effort to involve and transfer knowledge to direct colleagues.	Throughout the project widespread efforts were made to transfer knowledge and to engage colleagues.
Opportunity: Did the project/organization context provide participants with chances to transfer project knowledge to their organizations?	No concrete opportunities.	Few opportunities to engage relevant colleagues.	Some opportunities to engage specific colleagues or to transfer knowledge.	Several very good opportunities to engage different colleagues and to transfer knowledge.

Condition PARTNER ORGANIZATION PROPERTIES (partner-specific)

- Hypothesis: The higher the absorption capacity of the partner organizations, which relates to their prior related knowledge and experience, the relevance of the project theme and structural factors, the greater the degree of organizational learning.

Indicators:	Score = 0	Score = 0.3	Score = 0.7	Score = 1
Prior related knowledge: Did partners have prior related knowledge and experience related to the project theme or the international context?	Organization has no relevant experience with the theme and the international context.	Organization has some but limited experience with the theme or the international context.	Organization has some experience with both the theme and the international context.	Organization has extensive experience with both the theme and the international context.
Cognitive embedding: Was project knowledge (particularly theme) relevant to partner organizations?	Project theme was and has not become a relevant theme.	Theme was or has become relevant to part of the organization.	Theme is or has become relevant to important part of the organization.	Project theme was and is highly relevant to the organization.
Supportiveness organizational context: Was the structural organization context supportive or rather restrictive towards learning and knowledge transfer for climate change adaptation?	Restrictive and no supportive structural factors.	More restrictive than supportive factors.	More supportive than restrictive factors.	Several supportive and no restrictive structural factors.

Network and societal learning

Outcome NETWORK AND SOCIETAL LEARNING

- Starting-points: Network and societal learning is measured in terms of five different levels of knowledge transfer (the level "adoption" is removed in this version) with transmission of lessons learned or project results to external actors (i.e. organizations, networks and communities that have not been involved in the project) being the lowest level and implementation being the highest level. When the indicators below read 'participant' one may also read 'partner organization'.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Transmission: Did participants share project knowledge with external actors?	No sharing.	Sharing within the context of (regional) project actions.	Some sharing beyond the partner region and/or project context.	Various communication means were used at several points in time to share project results as widely as possible.
Presentation: Did participants provide a tailor-made presentation of project knowledge to external actors?	No presentations.	Presentations within the context of (regional) project actions or project knowledge included in other presentations.	Several project-specific presentations to promote project and results.	Presentations were provided in diverse contexts to promote the project and its results.
Interaction: Did participants discuss or interact about project knowledge with external actors?	No discussion or interactions.	Interactions within the context of (regional) project actions.	Some interactions beyond the partner region and/or project context.	Widespread and frequent interactions inside and outside partner region.
Influence: Did project knowledge somehow influence the policies or practices of external actors?	No influence.	Influence within the context or related to the scope of (regional) project actions.	Certain influence beyond the partner region and/or project context.	Project results have influenced the policies and practices of external actors at multiple levels in several ways.
Implementation: Did external actors use or apply project knowledge to change policies or practices?	No implementation.	Influence within the context or related to the scope of (regional) project actions.	Certain use beyond the partner region and/or project context.	Multiple project results have been implemented by various external actors.

Condition COMMUNICATION STRATEGY (project level)

- Hypothesis: The more proactive, specific and engaging the diffusion strategy of a project, the greater the degree of network and societal learning.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Proactive: Did the project provide a proactive and comprehensive communication and dissemination strategy?	No strategy.	Strategy exists but is limited in terms of timing and diversity of means.	Strategy was limited in means but implemented throughout the project.	Early strategy included a wide range of communication means to be implemented at various points in time.

Specific: Did the project provide a clear idea of the potential users and how to obtain their commitment or support?	No users were identified.	Target groups were identified.	Target groups were identified and partners had some idea on how to engage them.	For each target group, partners had concrete ideas on how to obtain support/commitment.
Engaging: Were various partners explicitly given a role in disseminating project knowledge to external actors?	Dissemination was a lead partner task only.	Partners helped to develop or implement actions, with a focus on their own region.	Partners were engaged in shaping and implementing actions, also beyond their region.	Partners were engaged in designing, developing, implementing and evaluating actions, also beyond their region.

Condition LESSONS LEARNED (project-specific)

- Hypothesis: The more and better communicated and directly relevant the project results, the greater the degree of network and societal learning.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Available: Did the project make project knowledge available to larger groups of relevant users?	Project knowledge was not distributed.	Project knowledge was made available to a limited number of users.	Project knowledge was distributed among users at multiple levels.	Project knowledge was widely distributed across regions and governance levels.
Accessible: Did the project make project knowledge accessible (attractive and understandable) to users?	Project knowledge was not accessible to external actors.	Project information but hardly any concrete results or lessons learned are accessible to external actors.	Project information, results and lessons learned are presented but not in a way that makes them attractive and easy to understand.	Project knowledge was presented in an attractive and tailor-made way.
Relevance: Was project knowledge potentially relevant to external actors?	Project knowledge was of no particular relevant to external actors.	Project knowledge was relevant to a very specific group of users.	Project knowledge was relevant to several groups of users.	Project knowledge was highly relevant to users across regions and governance levels.

Condition PARTICPANT PROPERTIES (partner-specific)

- Hypothesis: The higher the ability, motivation, opportunity of project participants or partners towards the transfer of project knowledge to other organizations, network and communities (external actors), the greater the degree of network and societal learning.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Ability: Did participants/partners have the knowledge and skills and were in the position (ability) to transfer lessons learned to external actors?	No ability outside own organization.	Participants' ability is limited to a small group of actors in the partner region.	Participants' ability includes a large group of actors inside the partner region as well as a small group outside the partner region.	Participants' ability includes large groups of actors inside and outside the partner region and country.

Motivation: Did participants/partners actively look for ways to engage external actors or to enhance knowledge transfer?	No motivation or recognition of relevance.	Project knowledge has been transferred when the opportunity arose (ad hoc).	Made an effort to engage external actors and transfer knowledge.	Throughout the project widespread efforts were made to engage external actors and transfer knowledge.
Opportunity: Did the project/organization context provide participants/partners with concrete opportunities to transfer the project results?	No concrete opportunities arose.	One concrete opportunity in direct context (e.g. partner region).	Multiple opportunities in direct contexts or one opportunity in wider context.	Multiple opportunities across regions and governance levels.

Condition PARTICIPANT SCOPING STRATEGY (partner-specific)

- Hypothesis: the more strategic partners are about the project scope (i.e. what they do and communicate, with and to whom and how), the greater the degree of network and societal learning.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Activities: Were project activities chosen to develop or test new or alternative solutions?	Project activities were 'business-as-usual'	A very small part of the project was about developing or testing new or alternative solutions.	Some project activities were selected to develop and test new or alternative solutions.	All project activities were selected to develop and test new or alternative solutions.
Framing: Was project knowledge (including theme and results) framed in a way that matches the user-specific situations and circumstances?	No framing of project knowledge.	Project knowledge was framed to match specific situation or circumstance of one group of users.	Project knowledge was framed to match specific situation and circumstances of two groups of users.	Project knowledge was framed in multiple ways to match situations and circumstances in various regions and at various levels.
External actor involvement: Were relevant external actors (e.g. users, policy or decision-makers, informal networks) actively engaged in the project to enhance the project impact?	No engagement of specific users or other relevant external actors.	Engagement of one specific group of users, policy or decision-makers or informal networks.	Engagement of several relevant groups of users, policy or decision-makers or informal networks.	Engagement of a wide range of relevant groups, including users, policy or decision-makers and informal networks.
Change process: Was the project seen or designed as part of a longer and more encompassing change process?	Project was not linked to change process.	Project has specific connections to other projects or actions rather than to a wider change process.	Project was in multiple ways connected to a longer and more encompassing change process.	Project was in multiple ways connected to a longer and more encompassing change process that extends beyond the partner organization.

Condition WIDER CONTEXT PROPERTIES (partner-specific)

- Hypothesis: the more relevant the project theme and the better interactions and information in the network and structural context are managed, the greater the degree of network and societal learning.

Indicators:	**Score = 0**	**Score = 0.3**	**Score = 0.7**	**Score = 1**
Policy agenda: Was the project theme on the agenda or of particular relevance to external actors?	During the project and towards its end, project theme or knowledge was of no particular relevance to external actors.	During the project and towards its end, project theme or knowledge was relevant to a small group of external actors only.	During the project and towards its end, project theme or knowledge was relevant to several groups of external actors.	The project knowledge came at the "right" time since it was high on the political and/or policy agenda of various users.
Governance system: Was the structural governance system supportive or rather restrictive towards learning and knowledge transfer for climate change adaptation?	Restrictive and no supportive structural factors.	More restrictive than supportive factors.	More supportive than restrictive factors.	Several supportive and no restrictive structural factors.

B. Outcome and condition scores in numbers

Below the outcome, condition and indicator scores from the case results are presented. Unlike the case results presented in the main report, the scores here are shown in numbers for both MARE and FRC case.

MARE case

	Project	(MP1)	(MP2)	(MP3)	(MP4)	(MP5)	(MP6)
Group Learning	**0.66**	**0.30**	**0.70**	**0.60**	**0.93**	**0.93**	**0.53**
Substantive	*0.73*	*0.30*	*0.70*	*0.70*	*1.00*	*1.00*	*0.70*
Relational	*0.45*	*0.30*	*0.70*	*0.30*	*0.70*	*0.70*	*0.00*
Consortium	**0.90**						
Balanced cohesiveness	*0.70*						
Balanced diversity	*1.00*						
Complementary knowledge	*1.00*						
Interaction process	**0.90**						
Interactions	*1.00*						
Activities	*1.00*						
Facilitation	*0.70*						
Participant properties	**0.85**	**0.90**	**0.90**	**1.00**	**0.53**	**0.77**	**1.00**
Ability	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Motivation	*0.88*	*1.00*	*1.00*	*1.00*	*0.30*	*1.00*	*1.00*
Opportunity	*0.67*	*0.70*	*0.70*	*1.00*	*0.30*	*0.30*	*1.00*

	Project	(MP1)	(MP2)	(MP3)	(MP4)	(MP5)	(MP6)
Organizational learning	**0.45**	**0.19**	**0.74**	**0.52**	**0.31**	**0.67**	**0.26**
Transmission (weight 1)	*0.55*	*0.30*	*1.00*	*0.70*	*0.30*	*0.70*	*0.30*
Presentation (weight 2)	*0.33*	*0.00*	*1.00*	*0.00*	*0.00*	*0.70*	*0.30*
Interaction (weight 3)	*0.40*	*0.70*	*0.70*	*0.70*	*0.30*	*0.00*	*0.00*
Adoption (weight 4)	*0.40*	*0.00*	*0.70*	*0.70*	*0.00*	*0.70*	*0.30*
Influence (weight 5)	*0.62*	*0.30*	*0.70*	*0.70*	*0.70*	*1.00*	*0.30*
Implementation (weight 6)	*0.38*	*0.00*	*0.70*	*0.30*	*0.30*	*0.70*	*0.30*
Participant properties	**0.67**	**0.67**	**1.00**	**0.57**	**0.43**	**0.90**	**0.43**
Ability	*0.73*	*1.00*	*1.00*	*0.70*	*0.30*	*0.70*	*0.70*
Motivation	*0.60*	*0.30*	*1.00*	*0.30*	*0.70*	*1.00*	*0.30*
Opportunity	*0.67*	*0.70*	*1.00*	*0.70*	*0.30*	*1.00*	*0.30*
Partner organization properties	**0.64**	**0.80**	**0.67**	**0.80**	**0.10**	**0.57**	**0.90**
Prior related knowledge	*0.50*	*0.70*	*0.30*	*1.00*	*0.00*	*0.30*	*0.70*
Cognitive embedding	*0.68*	*0.70*	*0.70*	*0.70*	*0.30*	*0.70*	*1.00*
Supportive organizational context	*0.73*	*1.00*	*1.00*	*0.70*	*0.00*	*0.70*	*1.00*

	Project	(MP1)	(MP2)	(MP3)	(MP4)	(MP5)	(MP6)
Network/societal learning	**0.58**	**0.92**	**0.78**	**0.47**	**0.08**	**0.31**	**0.94**
Transmission (weight 1)	*0.68*	*0.70*	*0.70*	*1.00*	*0.00*	*0.70*	*1.00*
Presentation (weight 2)	*0.67*	*1.00*	*0.70*	*1.00*	*0.00*	*0.30*	*1.00*
Interaction (weight 3)	*0.47*	*0.70*	*0.70*	*0.00*	*0.00*	*0.70*	*0.70*
Influence (weight 4)	*0.77*	*1.00*	*1.00*	*1.00*	*0.30*	*0.30*	*1.00*
Implementation (weight 5)	*0.45*	*1.00*	*0.70*	*0.00*	*0.00*	*0.00*	*1.00*
Participant properties	**0.78**	**0.90**	**0.80**	**1.00**	**0.47**	**0.70**	**0.80**
Ability	*0.85*	*1.00*	*0.70*	*1.00*	*0.70*	*0.70*	*1.00*
Motivation	*0.63*	*0.70*	*0.70*	*1.00*	*0.00*	*0.70*	*0.70*
Opportunity	*0.85*	*1.00*	*1.00*	*1.00*	*0.70*	*0.70*	*0.70*
Participant scoping strategy	**0.67**	**0.68**	**0.75**	**0.68**	**0.50**	**0.78**	**0.65**
Activities	*0.73*	*1.00*	*0.70*	*0.30*	*0.70*	*0.70*	*1.00*
Framing	*0.38*	*0.30*	*0.30*	*0.70*	*0.00*	*0.70*	*0.30*
External actor involvement	*0.95*	*0.70*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Change process	*0.62*	*0.70*	*1.00*	*0.70*	*0.30*	*0.70*	*0.30*
Wider context properties	**0.65**	**1.00**	**1.00**	**0.30**	**0.30**	**0.30**	**1.00**
Policy agenda	*0.65*	*1.00*	*1.00*	*0.30*	*0.30*	*0.30*	*1.00*
Governance system	*0.65*	*1.00*	*1.00*	*0.30*	*0.30*	*0.30*	*1.00*
Communication strategy	**0.90**						
Proactive	*1.00*						
Specific	*1.00*						
Engaging	*0.70*						
Lessons learned	**0.70**						
Availability	*0.70*						
Accessibility	*0.70*						
Relevance	*0.70*						

FRC case

	Project	(FP1)	(FP2)	(FP3)	(FP4)
Group Learning	**0.70**	**0.70**	**0.70**	**0.70**	**0.70**
Substantive	*0.70*	*0.70*	*0.70*	*0.70*	*0.70*
Relational	*0.60*	*0.70*	*0.70*	*0.70*	*0.70*
Consortium	**0.77**				
Balanced cohesiveness	*0.30*				
Balanced diversity	*1.00*				
Complementary knowledge	*1.00*				
Interaction process	**0.67**				
Interactions	*0.70*				
Activities	*1.00*				
Facilitation	*0.30*				
Participant properties	**0.98**	**1.00**	**1.00**	**1.00**	**0.90**
Ability	*0.93*	*1.00*	*1.00*	*1.00*	*0.70*
Motivation	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Opportunity	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

	Project	(FP1)	(FP2)	(FP3)	(FP4)
Organizational learning	**0.45**	**0.45**	**0.61**	**0.63**	**0.08**
Transmission (weight 1)	*0.75*	*1.00*	*1.00*	*0.70*	*0.30*
Presentation (weight 2)	*0.60*	*1.00*	*0.70*	*0.00*	*0.70*
Interaction (weight 3)	*0.18*	*0.00*	*0.00*	*0.70*	*0.00*
Adoption (weight 4)	*0.43*	*0.30*	*0.70*	*0.70*	*0.00*
Influence (weight 5)	*0.53*	*0.70*	*0.70*	*0.70*	*0.00*
Implementation (weight 6)	*0.43*	*0.30*	*0.70*	*0.70*	*0.00*
Participant properties	**0.68**	**0.57**	**0.90**	**0.57**	**0.70**
Ability	*0.70*	*0.70*	*0.70*	*0.70*	*0.70*
Motivation	*0.68*	*0.70*	*1.00*	*0.30*	*0.70*
Opportunity	*0.68*	*0.30*	*1.00*	*0.70*	*0.70*
Partner organization properties	**0.81**	**0.77**	**1.00**	**0.80**	**0.67**
Prior related knowledge	*0.83*	*1.00*	*1.00*	*1.00*	*0.30*
Cognitive embedding	*0.85*	*1.00*	*1.00*	*0.70*	*0.70*
Supportive organizational context	*0.75*	*0.30*	*1.00*	*0.70*	*1.00*

	Project	(FP1)	(FP2)	(FP3)	(FP4)
Network/societal learning	**0.50**	**0.26**	**0.67**	**0.64**	**0.44**
Transmission (weight 1)	*0.93*	*0.70*	*1.00*	*1.00*	*1.00*
Presentation (weight 2)	*0.93*	*1.00*	*1.00*	*0.70*	*1.00*
Interaction (weight 3)	*0.40*	*0.00*	*1.00*	*0.30*	*0.30*
Influence (weight 4)	*0.58*	*0.30*	*1.00*	*0.70*	*0.30*
Implementation (weight 5)	*0.25*	*0.00*	*0.00*	*0.70*	*0.30*
Participant properties	**0.93**	**0.90**	**1.00**	**1.00**	**0.80**
Ability	*0.93*	*1.00*	*1.00*	*1.00*	*0.70*
Motivation	*0.93*	*0.70*	*1.00*	*1.00*	*1.00*
Opportunity	*0.93*	*1.00*	*1.00*	*1.00*	*0.70*
Participant scoping strategy	**0.60**	**0.30**	**0.93**	**0.60**	**0.58**
Activities	*0.58*	*0.30*	*1.00*	*0.30*	*0.70*
Framing	*0.50*	*0.30*	*0.70*	*0.70*	*0.30*
External actor involvement	*0.75*	*0.30*	*1.00*	*0.70*	*1.00*
Change process	*0.58*	*0.30*	*1.00*	*0.70*	*0.30*
Wider context properties	**0.79**	**1.00**	**0.85**	**0.30**	**1.00**
Policy agenda	*0.75*	*1.00*	*0.70*	*0.30*	*1.00*
Governance system	*0.83*	*1.00*	*1.00*	*0.30*	*1.00*
Communication strategy	**0.80**				
Proactive	*1.00*				
Specific	*0.70*				
Engaging	*0.70*				
Lessons learned	**0.43**				
Availability	*0.70*				
Accessibility	*0.30*				
Relevance	*0.30*				