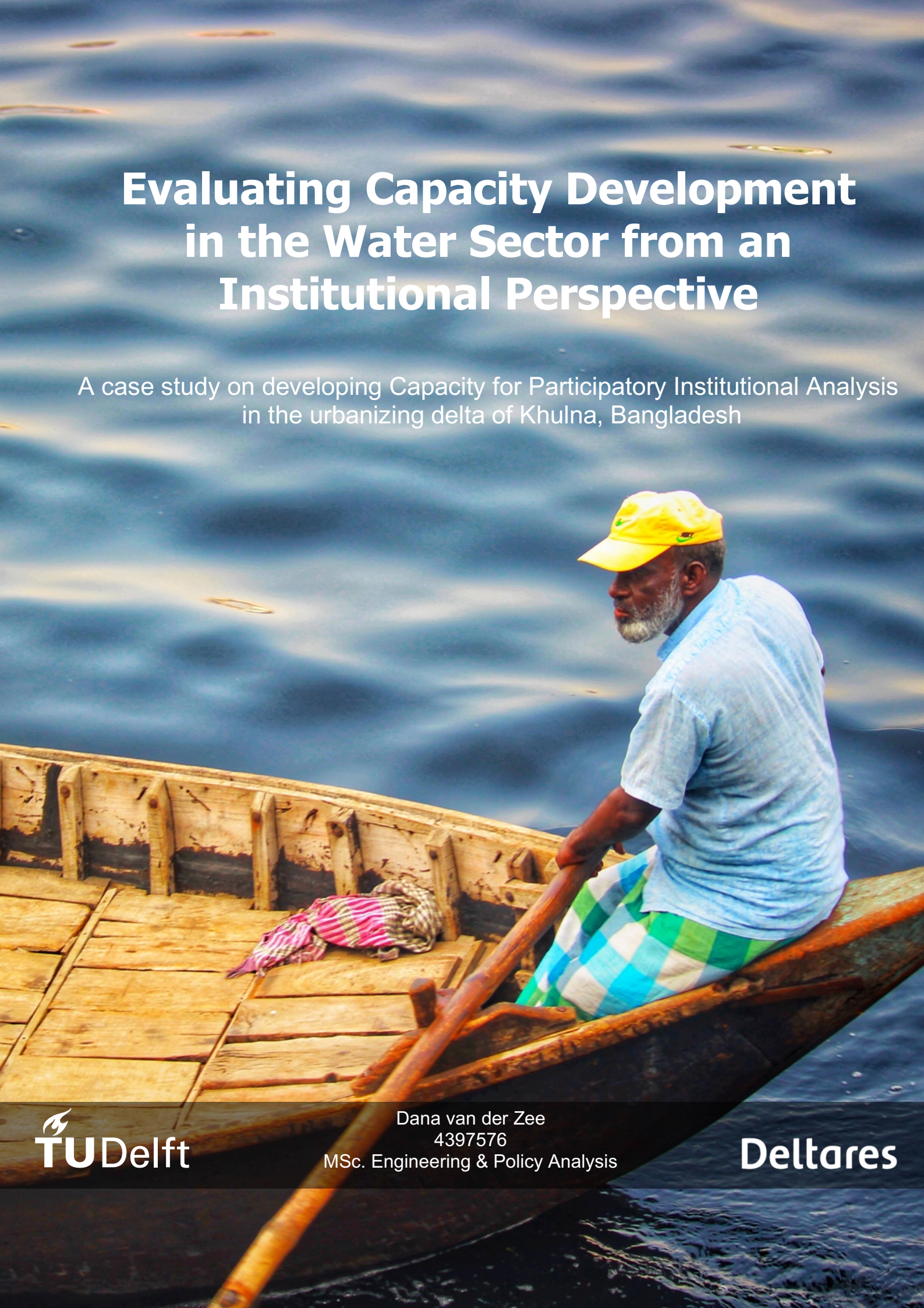
Evaluating Capacity Development in the Water Sector from an Institutional Perspective

A case study on developing Capacity for Participatory Institutional Analysis in the urbanizing delta of Khulna, Bangladesh



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A case study on developing Capacity for Participatory Institutional Analysis in the urbanizing delta of Khulna, Bangladesh

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An electronic version of this thesis is available at **http://repository.tudelft.nl/**.

Preface

In front of you lies my final master thesis on the evaluation of institutional focussed capacity development. The study has been written as part of the Engineering and Policy Analysis (EPA) Masters programme at Delft University of Technology. As requirement of the EPA programme, this thesis addresses the grand societal problem of the role of institutions in water and delta management issues. Moreover, the study is concerned with one of the core principles of today's international development work: capacity development.

Some guidance on the structure can be of relevance to the reader. The thesis is structured in four phases, referred to as (I) introduction, (II) conceptualization, (III) operationalization and (IV) reflection (see Figure 1).

Figure 1 Structure of the Thesis

This thesis for sure has been a surprising, challenging, but exciting ride. At the start of this thesis, the world looked quite different. As part of the thesis, I was supposed to conduct a couple of weeks field work in Khulna and provide on-sight support for the CPIA project. However, due to the global COVID-19 pandemic the research set up was forced to change from an empirical to a methodological focus. On one hand, the pandemic challenged the research process by complicating supervision, brainstorming and data collection. On the other hand, the new situation taught me useful lessons about conducting research independently and improved my skills regarding collaboration and team-work from a distance.

This thesis would not have been shaped without the help of a number of people.

A first big word of thanks is expressed to the thesis committee. Sharlene, thank you for always making time to reflect on my work, brainstorm together and being open to my ideas. You have taught me a lot on conducting independent research and helped me in developing my own critical thinking. Nishchal, thank you for giving me the freedom to explore my own directions, but being there when it was needed. Thank you for regularly checking in on me, keeping me on track and introducing me to Deltares. Leon, thank you for introducing me to this topic and the CPIA project. Due to your comments, suggestions and constructive feedback, my research has made some big improvements. And ultimately, thanks to Rolf who helped me stick to the red line and provided useful comments on the scoping when this was really needed.

Secondly, I owe thanks to the kind, intelligent and hardworking people that contributed to this thesis. Raju and Haider, thank you for assisting me throughout the data collection in Bangladesh and sharing your thoughts on my interview structure. This thesis would not have been possible without you. Zakir and Riad, thank you for your feedback and collaboration. Lastly, thanks to all the participants of the CPIA project who participated in the interview sessions and the experts who were willing to share their opinions and provided suggestions for improvements.

Besides, I am very grateful to the many people surrounding me during this thesis research. My friends, my fellow interns at Deltares, and the other second year EPA students, thanks for your support. A special word of thanks goes out to my family, for supporting me during difficult times but also to celebrate achievements along the way.

Should there be any questions or remarks on the thesis, please do not hesitate to contact the author. Contact details can be found on the second page.

Enjoy the read and may this work contribute to the evaluation of international development work and motivate one for tackling grand societal challenges.

Dana van der Zee
The Hague, 2020

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List of Abbreviations

5Cs	5 Core capabilities
APIA	Approach for Participatory Institutional Analysis
BWDB	Bangladesh Water Development Board
CAS	Complex Adaptive Systems
CD	Capacity Development
CMOc	Context-Mechanism-Output configuration
CPIA	Capacity for Participatory Institutional Analysis
EICD	Evaluating Institution Capacity Development
FAO	Food and Agricultural Organisation of the United Nations
FGD	Focus Group Discussion
JJS	Jagrata Juba Shangha
KCC	Khulna City Cooperation
KCD	Knowledge and Capacity Development
KDA	Khulna Development Authority
KUET	Khulna University of Engineering and Technology
KWASA	Khulna Water supply And Sewage Authority
LFA	Logical Framework Analysis
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization
RBM	Results Based Management
SDGs	Sustainable Development Goals
ToC	Theory of Change
UN	United Nations
UNDP	United Nationals Development Programme

Executive Summary

The Global South is facing severe water and delta management challenges, such as floods, saturation of groundwater, and contamination of drinking water. Strong institutions, defined as the formal and informal 'rules of the game', are necessary to find solutions to these water challenges. To improve the understanding on institutions, development of knowledge and skills on institutions could be strengthened among local stakeholders. This process can be referred to as institutional focussed capacity development. Yet, assessing the impact of these capacity development activities remains to be challenging.

The need for institutional focussed capacity development is illustrated by the situation in the urbanizing delta of Khulna, Bangladesh. This region is facing severe water and delta management problems and dealing with weak institutions. Currently, an intervention called the Capacity for Participatory Institutional Analysis (CPIA) project is ongoing in Khulna. The project aims to develop institutional capacity among local professionals for the use of a participatory institutional analysis method. This method is designed to help professionals improve their institutional understanding which offers support for establishing institutional change and thereby help in solving water issues.

In this study, it is explored how institutional focussed capacity development activities among local professionals in the water sector can be evaluated. Looking into the current literature on institutional capacity development and evaluations, we can conclude that capacity development is a complex, dynamic and interrelated phenomenon highly dependent on its context. Literature shows that the current evaluation frameworks available such as the Context-Mechanism-Output framework, the Theory of Change and the Knowledge and Capacity Development framework are not sufficiently satisfying to capture the complexities of institutional focussed capacity development (Kaspersma, 2013; Mayne, 2015; Pawson & Tilley, 1997).

To bridge these scientific gaps identified in literature and address the societal needs for capacity development of strong institutions regarding water challenges, an analytical evaluation framework for assessing capacity development initiatives from an institutional perspective is proposed. The framework is complemented by a step-by-step approach in which different elements necessary to identify change such as input of an intervention, the output, outcome and impact are specified. These elements are nested on an individual, organizational, and environmental level. The framework allows one to capture the relations between the elements and the interaction with the context through causal relations.

To evaluate the development of institutional capacity, the framework is applied to the CPIA project in Khulna to conduct an illustrative case study. Project documents such as the project proposal, progress reports and developed materials are analysed accompanied by survey data and interviews with project partners and participants.

To validate the first version of the framework, expert sessions are organized to test the accuracy and reliability of the framework. Semi-structured interviews are conducted with four experts in the field of capacity development, evaluation, the water sector, and Bangladesh.

The study demonstrates that the first version of the developed framework showed potential to evaluate if and how institutional capacity development occurred. The framework contributes to existing work by using causal relations and feedback loops to capture emergent behaviour that underlies the process of capacity development. The framework allows us to identify different mechanisms of change caused by the process of capacity development and influenced by the contextual factors. These help in assessing the indicators of capacity development on different levels. It can be concluded that the framework and the step-by-step approach serve as an explorative analysis tool which supports in identifying the crucial elements and the relations of institutional capacity development.

With respect to the CPIA project, this study shows that some form of capacity is developed among the local professionals. The extent to which analytical competences are developed turned out to be dependent on the opportunities for participants to practise, which was in turn influenced by contextual factors such as the global pandemic. Moreover, the prior knowledge and education level of the participants influenced the interest and motivation of the participants to learn. Another interesting result was the importance of sharing perspectives on the current water issues among the professionals, which stimulated trust and improved knowledge on the water challenges. In parallel to these observations of individual capacity, we could identify some signs of institutional capacity development on the organizational level. Most participants started to share theoretical knowledge on the APIA with their colleagues. Furthermore, involvement of colleagues and managers, sufficient practising and a certain embeddedness of institutional analysis seemed to contribute to organizational capacity development. As the intervention is still ongoing, these findings should be interpreted as preliminary.

The study produces recommendations for improvement of the framework. The framework is observed to fall short on incorporating the actor perspective towards capacity development. Personal characteristics of participants underlying their ability to learn and the selection of participants seemed to be influential to the capacity development process. Moreover, the framework could be improved by designing guidelines to make it a useful evaluation tool for practitioners dealing with institutional capacity development projects. To improve the validity of the research, it is suggested to use these recommendations to develop a second version of the framework and generalize the findings by application to additional cases both within and outside the water sector.

I Introduction

1 Problem Introduction

The first chapter of this thesis provides an introduction of the problem addressed in this research. In **Section 1.1**, the societal challenge of capacity development for institutional water challenges in the urbanizing delta of Khulna, Bangladesh, is described. **Section 1.2** introduces the scientific purpose of this research by addressing the challenges faced when evaluating institutional capacity development initiatives. Thereafter, the research gaps are defined and the research questions are formulated in **Section 1.3**. The research approach and methods used to answer the research questions are introduced in **Section 1.4**. Ultimately, a reading guide for this study is presented in **Section 1.5**.

1.1 Problem Identification

The societal problem addressed this thesis research is introduced by looking at the importance of institutions in the water sector and the need for capacity development to support this. This is illustrated with an example of water challenges in the urbanizing delta of Khulna, Bangladesh.

1.1.1 Water Challenges and the Role of Institutions

The water sector is of vital importance to all of us. Water is an essential resource for anyone in the world to be able to live healthy lives (Alaerts, 2019). This is highlighted by the sixth United Nation's Sustainable Development Goals (SDGs) , in which the need to achieve a resilient water system and to cope with increasing water demand is expressed (UN, n.d.). However, water challenges occur more frequently due to societal challenges such as urbanization and climate change.

Institutions play an important role in accomplishing sustainable water and delta management. In this study, the terminology 'institutions' is defined as the formal and informal 'rules' that offer guidelines to actors during decision making and interactions (North, 1992). An example of formal rules are regulations, customs and constitutions whilst informal rules refer to norms, customs and beliefs. Institutions can serve as guidelines in helping actors to tackle societal problems and resolve conflicting interests. Moreover, they govern the behaviour of actors and thereby shape social interaction. As such, institutions affect how individuals and organizations interact and behave given certain circumstances thereby influencing the actors' response to any particular event, such as water issues.

Previous research concluded that the water sector has a high need for functioning institutions (Kaspersma, 2013). Alaerts & Kaspersma (2009) have shown that water management challenges caused by weak institutions at local levels of governments and in communities are mostly visible in developing countries. Due to its location, social-economic circumstances, and institutional system, especially the Global South is vulnerable to institutional challenges in the water sector (Alaerts, 2019; Gomes & Hermans, 2018). Arrangements are required to coordinate decision-making and guarantee sustainable water management (Ostrom, 2015).

1.1.2 Need for Institutional Capacity Development

In order to solve these problems, developing knowledge and skills to understand the function of institutions and cope with these complexities becomes more and more important. Gaining a better understanding on how institutions constrain or enable more sustainable solutions contributes to sustainable management of these deltas. By developing capacity, insights in institutional designs can support stakeholders in establishing institutional change and thereby create a more favourable situation.

Capacity development can be defined as the process of developing knowledge and skills among people. Capacity development is currently seen as a core principle in development projects in general. More specifically it is recognized as a way to support urbanizing deltas in sustainable water management. By improving the understanding, knowledge and skills of local actors, conflicts about sustainable water management between users could be solved (Brown & Farrelly, 2009).

Institutional focussed capacity development can be seen as a specific approach towards capacity development, in which the capacity of actors to learn from the rules and support reflection on the situation is developed. On the long term, this could lead to institutional development. The process contributes to strengthening institutions and thereby supporting governments and other local actors with policy development and implementation (Brinkerhoff & Morgan, 2010).

Capacity development is nested in any institutional change or development effort (Alaerts & Kaspersma, 2009). Strong capacities and knowledge about institutions in the water sector can serve as a basis for a sustainable water sector (Kaspersma, 2013). Capacity development, in terms of developing knowledge and skills, are required to support and implement changes in institutional design (Alaerts & Kaspersma, 2009).

1.1.3 An Example: Water Challenges in the Urbanizing Delta of Khulna

An example of developing institutional focussed capacity to solve water challenges can be found in the urbanizing delta of Khulna, Bangladesh. Khulna is located in the Ganges Delta, in the South West of Bangladesh and close to the Sundarbans, the world's largest mangrove forest (see Figure 2). Similar to many other cities in the Global South, Khulna is experiencing urbanization and climate change putting severe pressure on the contemporary water and delta management. This brings challenges such as heavy rainfall, saturation of groundwater, contamination and scarcity of drinking water, and siltation of the river (DhakaTribune, 2018; Kumar et al., 2011; Mondal et al., 2014). Together with other challenges such as a lack of proper infrastructure, declining availability of land, and a limited number of public resources and capacity, the water and delta management problems form the key points for Bangladesh' policy and institutional development today (Planning Commission, 2018).

Figure 2 Map of Bangladesh indicating Khulna (Skok, n.d.)

The importance of developing capacity from an institutional perspective in the water sector is illustrated by the interventions going on in Bangladesh and in the Ganges Delta specifically. Currently an intervention is taking place in the urbanizing delta region of Khulna, called 'Capacity for Participatory Institutional Analysis' (CPIA). The project aims develop capacity for the use of an institutional and game-based approach (Gomes, 2019; Hossain, 2019). The approach helps local professionals from local governments, NGOs and universities to get more insights in the institutional context of their water issue. During the period of one-and-a-half year, professionals receive training, workshops and learning support to develop institutional focussed capacity. The local professionals are concerned with four different rural and urban water management issues in areas in and around Khulna (Hossain, 2019). An elaborate explanation of the CPIA project can be found in Appendix E.

The intervention focuses on developing the analytic capacity among local stakeholders to analyse the institutional dimensions visible in their specific local water management issues. By doing so, eventually capacity for effective coordination and collective action to tackle water management challenges will be

increased, acknowledging that coordinated action is a key challenge in both planning and implementing effective water and delta management interventions.

1.1.4 Societal Relevance

In order to assess the success of these kind of institutional focussed capacity development projects, a thorough evaluation of the intervention is required. Gomes (2019) offers a way to evaluate the effects of the institutional and game-based approach. However, this method is more focussed on evaluation of the developed method and its application in the field and is less suitable to evaluate the impact of institutional capacity development initiatives.

This study aims to find, apply and test a framework to evaluate if and how institutional focussed capacity development occurred. This will help in adapting the current CPIA project to achieve the desired result of capacity development and brings value to the local professionals responsible for water management in Khulna, Bangladesh. Moreover, the framework could also be used to evaluate future projects concerned with capacity development from an institutional perspective and thereby learning lessons for improvement of future capacity development projects. Ultimately, the method could be used to evaluate capacity development in current projects in Bangladesh, such as the Bangladesh Delta Plan (Planning Commission, 2018).

1.2 Introducing the Scientific Need

In Section 1.2, the scientific need for evaluation of institutional capacity development projects in the water sector is expressed. The currents gaps will be introduced which results in a statement on the scientific relevance of this study.

1.2.1 The Current Gap in Evaluating Capacity Development Initiatives for Institutional Change

Evaluating institutional focussed capacity development is useful for at least two reasons. In the first place, evaluating can help to see if the intervention actually developed capacity. This is interesting for future replications of the study, but also to prove or disprove the impact of capacity development and thereby informing donors and potentially opening investments for future initiatives. Secondly, it helps to see how such capacity is developed and if this can improve institutional understanding and possibly support institutional change. In order to assess if, under what conditions and why capacity development has taken place, a thorough evaluation is required. This can help in drawing lessons learned for future interventions.

As capacity development is becoming a more popular concept in the international development world, the need for such a framework is increasing. This makes it valuable to look into design of such an evaluation framework (Kaspersma & Alaerts, 2020). Until now, literature does not seem to offer a framework for evaluating institutional focussed capacity development interventions. A robust framework for monitoring and evaluation of capacity development activities is found to be challenging (Da Silva Wells et al., 2013; Linnelll, 2003; Marjanovic et al., 2017; Mvulirwenande et al., 2017; Simister & Smith, 2010; Vallejo & Wehn, 2016). Partly because capacity development is very case specific, with location and time being a specific feature. Mostly, because of the complex nature of (institutional) capacity development. As the concept is hard to define in the first place, finding appropriate indicators to assess and evaluate institutional capacity development is even more difficult.

On a first look, the current frameworks used to evaluate capacity development seem to fall short on either their ability to identify capacity development different levels, or their ability to capture the dynamics and behaviour patterns in the process of capacity development. Moreover, a scientific gap can be observed regarding the institutional perspective of capacity development. Although capacity development is suggested to be useful for establishing institutional change, manners to assess capacity development from an institutional perspective are found to be even more rare (Mvulirwenande et al., 2017). This indicates that an in-depth literature study into the concepts of institutional capacity development and evaluation is required (see Chapter 2).

1.2.2 Scientific Relevance

This study aims to develop an evaluation framework based on the concept of institutional focussed capacity development applied to the water sector (see Figure 3). Developing such a framework helps in measuring the impact of institutional capacity development activities, but also in understanding the process underlying this development. Assessing the impact of capacity development activities remains essential for determining the success of the CPIA project in terms of applying the institutional and game-based approach independently. From a methodological viewpoint, the introduction of such a framework can contribute to filling the gap of a robust approach for monitoring and evaluation of capacity development with an institutional angle. Furthermore, the application to the water sector supports the current research of monitoring and evaluation of capacity development in the water sector (Kaspersma & Alaerts, 2020).

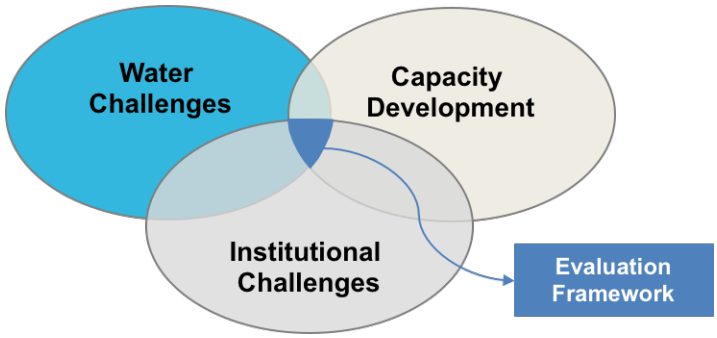


Figure 3 Boundaries of the Research

The research contributes scientifically through posing a methodology on the evaluation of capacity development among local professionals with an institutional angle. A contribution to current scientific research will be made by integrating the complexity of capacity development and its institutional angle into an evaluation framework, and by applying this framework to the water sector.

1.3 Research Questions

The objective of this thesis is to develop a framework which can be used to evaluate institutional focussed capacity development in the water sector. Through designing, testing and validation, this thesis will deliver a 'proof-of-concept' framework for evaluation of institutional focussed capacity development. Moreover, recommendations for the second version of the framework and institutional focussed capacity development in the water sector, such as the CPIA project, will be provided.

In order to fill the scientific gap of evaluating institutional capacity development and to meet the societal needs indicated, this study focusses on the evaluation of institutional capacity development among local professionals in the water sector. The following main research question is proposed:

How can institutional focussed capacity development among local professionals in the water sector be evaluated?

The proposed main research question will be answered with the help of five sub questions (SQs):

1. What does the current literature tell us about evaluating institutional focussed capacity development?
2. What does an evaluation framework for institutional focussed capacity development look like?
3. Based on the application of this framework, what can be concluded about institutional focused capacity development among local professionals in the water sector of Bangladesh?
4. How can the developed evaluation framework be improved?
5. To what extent is the developed framework suitable for evaluating institutional focussed capacity development?

1.4 Research Approach

Table 1 provides an overview of the research methods used to answer the sub questions. These research methods will be explained in the belonging chapters. Moreover, the data collection tools are described. The answers on the sub questions together will provide an answer to the main research question.

Table 1 Overview of research components

Sub Question	Part	Chapter	Research Methods	Data Collection
1. What does the current literature tell us about evaluating institutional focussed capacity development?	I	2	Literature Study	Books, journal papers, reports, "6th International Symposium on Knowledge and Capacity for the Water Sector" by IHE Delft
2. What does an evaluation framework for institutional focussed capacity development look like?	II	3	Designing framework	Books, journal papers, reports, "6th International Symposium on Knowledge and Capacity for the Water Sector" by IHE Delft
3. Based on the application of this framework, what can be concluded about institutional focused capacity development among local professionals in the water sector of Bangladesh?	III	5, 6	Case Study: desk research Case Study: interviews, evaluation survey Analysis	Evaluation surveys, semi-structured interviews conservations, project proposal, reports, project materials
4. How can the developed evaluation framework be improved?	IV	7	Expert validation	Semi-structured interviews
5. To what extent is the developed framework suitable for evaluating institutional focussed capacity development?	IV	8	Aggregation of results	-

This thesis can be divided into four different parts, referred to as I Introduction, II Conceptualization, III Operationalization, IV Reflection. Within each part, activities are performed based on the result of the previous step. As shown in Table 1, specific research methods are used for each of the sub questions. Figure 4 combines these parts to portray the flows of the research and improving the understanding of the reader for this research.

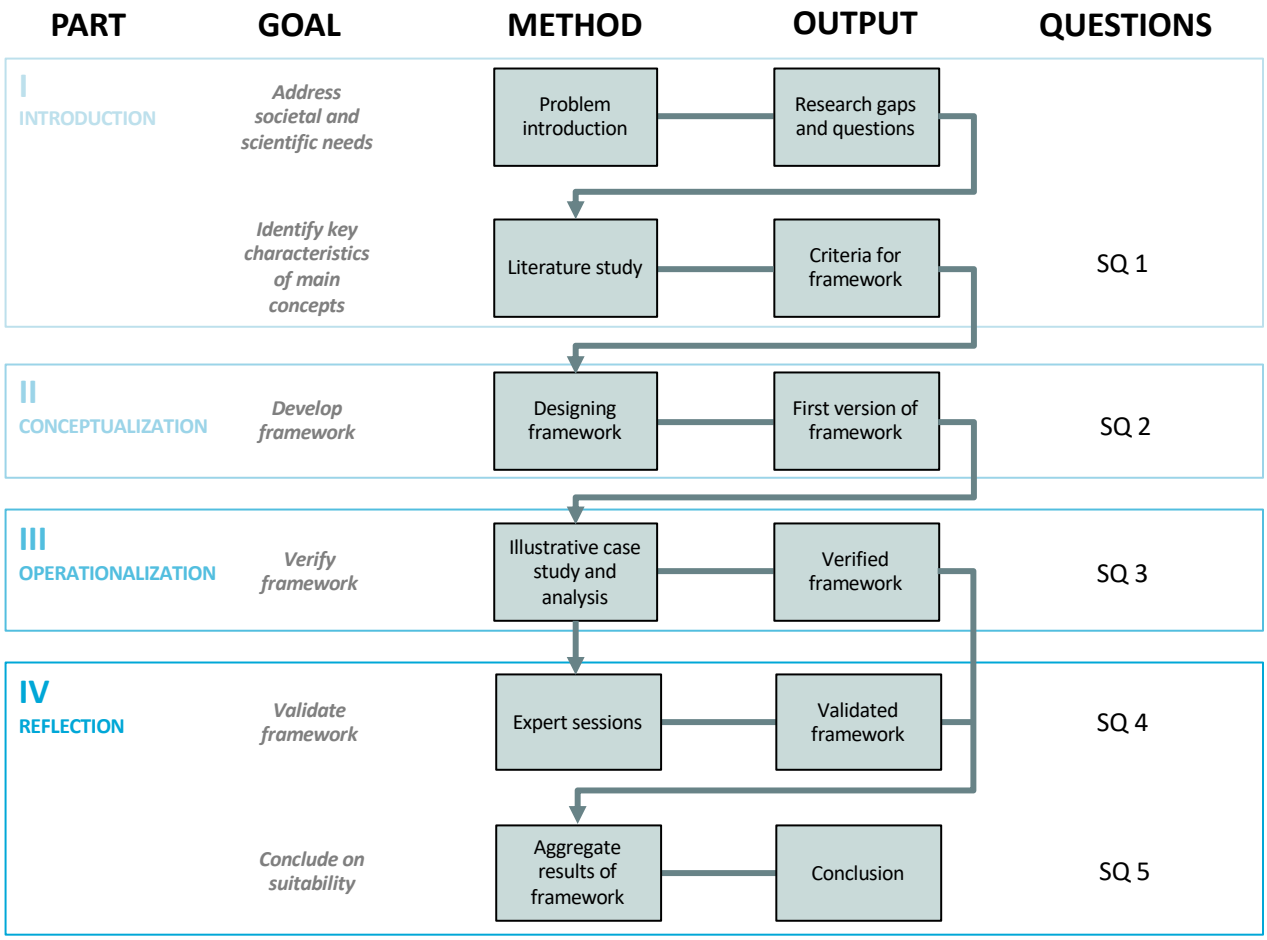


Figure 4 Research Flow Diagram

1.5 Reading Guide

This thesis comprises the main basis for conducting research on capacity development in the water sector and ways to evaluate this through an institutional angle. In order to meet this objective, the thesis is divided into four different parts with each containing belonging chapters (see Figure 5).

First of all, the problem triggering this thesis is introduced in part I *Introduction*.

Secondly, a solution for the problem is aimed to be found through literature research in Chapter 2. By studying the main concepts of institutional capacity development and evaluation, independently and in relation to each other, the theoretical foundations and argumentation for a general evaluation framework is found. Accordingly, Chapter 3 presents a framework for evaluating capacity development from an institutional perspective. This will wrap-up part II, *Conceptualization*.

The third part of the research, *Operationalizatio*n will be used to perform an illustrative case study. Chapter 4 will introduce the case study, gathering information on the role of institutions in water challenges, the approach for participatory institutional analysis (APIA) and its application in the Capacity for Participatory Institutional Analysis (CPIA) project. The framework as developed in part II will be mapped to the capacity development activities of the CPIA project. Chapter 5 will apply the evaluation framework on the case. This is followed by a synthesis of the application in Chapter 6.

Finally, a reflection on the developed evaluation framework will be provided in part IV *Reflection*. In the first place, the evaluation framework as applied in part III will be validated in Chapter 7 with help of four experts. Chapter 8 will interpret the results and discuss relevant and interesting findings of the research. Moreover,

limitations of this research and contribution of the research will be addressed. In Chapter 9 the research question will be answered and recommendations for future research are provided.

For each of the chapters, a reading guide is provided at the start of the chapter. If applicable, an explanation on the use of a particular approach per chapter is presented as well.

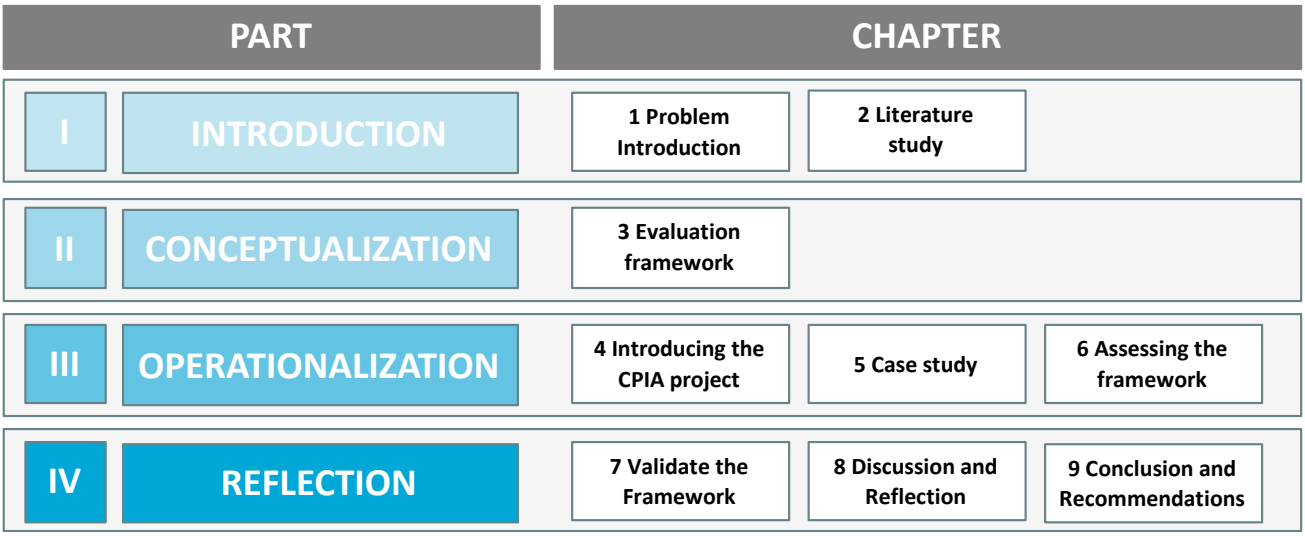


Figure 5 Reading Guide

2 Defining the Key Concepts: Institutional Capacity Development and Evaluations

Chapter 2 seeks to identify the key concepts that need to be considered when evaluating institutional capacity development. The chapter will reflect on the literature currently available and thereby provides an answer to the sub question: *What does the current literature tell us about evaluating institutional focussed capacity development?* First of all, an explanation on the approach for literature research is presented in **Section 2.1**. Secondly, the concept of capacity development is defined in more detail in **Section 2.2**. Thereafter, **Section 2.3** provides an explanation of the institutional approach towards capacity development. Thirdly, possible frameworks for the evaluation of institutional focussed capacity development are discussed in **Section 2.4**. Ultimately, the chapter concludes by highlighting the implications for evaluating institutional capacity development in **Section 2.5**.

2.1 Approach for this Literature Research

In order to gain a better understanding on capacity development, capacity development in relation to institutional development and the evaluation of institutional focussed capacity development, a literature research is conducted. As described by Creswell (2009), a literature research can share the results of other studies on the concept being studied. Within this thesis, the literature research will explore the existing theories and frameworks on evaluating capacity development from an institutional perspective. To take the societal relevance of this study into account, the research will focus on literature related to the water sector. Based on these findings, the gaps between current evaluation frameworks and the key characteristics of institutional focussed capacity development will be identified.

Different sources and data collection methods are used to conduct the literature research. Search engines such as 'Scopus', 'Science Direct' and 'Google Scholar' are used to find the appropriate literature. Focus keywords for this research include "International Development" AND "Capacity Development" OR "Capacity Building", "monitoring and evaluation" AND "Capacity Building" OR "Capacity Development", "Capacity Development" OR "Capacity Building" AND "Institutional Change", "Evaluation" AND "Capacity Development" OR "Capacity Building" and "Capacity Development" AND "Water Management". This resulted in the key literature on the concepts of and the relation between capacity development, institutional development, evaluation and water challenges. Thereafter, backward snowballing was applied in which citations in a paper are used to discover other relevant papers (Wee & Banister, 2016). Moreover, the library of TU Delft was consulted for books on evaluation frameworks and qualitative literature studies. Additional to these documents, the "6th International Symposium on Knowledge and Capacity for the Water Sector" by IHE Delft is attended to gain more practical knowledge by experts and academics from the field on capacity development in the water sector.

One of the challenges in doing literature research is keeping an efficient approach and making decisions on where to spend time on. This is done with help of a structured approach which is elaborated upon in Appendix A. Moreover, the mind mapping technique and the programme 'Mendeley' are used to match literature with different concepts and structure them in relation to each other.

2.2 Theoretical Background on Capacity Development

To clarify the concept of capacity development, the theoretical background of capacity development is summarized. This starts by defining capacity development and is followed by a discussion on the characteristics of capacity development. Thereafter, the process of capacity development is investigated. Ultimately, the section wraps up by presenting the most important aspects of capacity development that should be taken into consideration.

2.2.1 Defining Capacity Development

The concept of capacity development is broadly used among many different fields and has developed over the years. This results in different definitions amongst scholars. In order to define capacity development, the different definitions on capacity are investigated. To provide a definition on capacity development, the position of the concept in historical context of the international development sector is used. This leads to our current understanding of capacity development. Some more detailed background information on the concept is provided in Appendix B.

A definition of capacity

Capacity is a term nowadays broadly used with many definitions. When used in the context of societal challenges such as delta and water management challenges, the following definitions can be recognized.

Oxfam recognizes capacity as the key to development and defines capacity as the people's capability to determine their own values and priorities and to act on these (Eade, 1997). Underlying this definition are three implications: (1) capacity should be seen as embedded in a social, economic and political environment, (2) although not always visible from the outside, all people have capabilities, and (3) individual capacities and their development depends on contextual factors.

Another often used definition, which aligns with capacity as defined by the FAO, is the one formulated by Morgan (1993): "*the ability of individuals, groups, institutions and organizations to identify and solve development problems over time*" (FAO, 2019; Morgan, 1993)(p.5).

UNDP (2015) defined the concept of capacity by differentiating between functional capacities and technical capacities. Functional capacities are capacities needed for a sustainable change such as management, leadership, budgeting, information and soft skills like communication (UNDP, 2015). On the other hand, technical capacities are defined as tasks that often show direct and tangible effect, and are thus easily to transfer through for example training. According to the UNDP, functional capacities support technical capacities in the way that they allow actors to effectively apply their gained knowhow, increase the impact of the intervention and thereby contribute to sustainable change.

Alaerts and Kaspersma (2009) developed a definition from within the water sector and formulate capacity as "the capability of a society or a community to identify and understand its development issues, to act to address these, and to learn from experience and accumulate knowledge for the future" (Alaerts & Kaspersma, 2009).

Generally, one could define capacity is an ability to do something (determine, act, manage, identify and understand) within a limit of time given a certain context. Given this definition, some see capacity as the knowledge, skills and the right education of an individual, a group or even a society.

The Concept of Capacity Development in Historical Perspective

The first signs of international development were mainly focussed on delivering foreign development aid. This process of development evolved around the idea that aid coming from developed countries, for example technological or economical solutions, could improve the situation and conditions of developing countries (UNDP, 2015). The idea assumed developing countries to be in need of money. Researchers such as Jeffrey Sachs highlight this need for available funds as key to eliminate poverty (Sachs, 2005). However, in practise this approach resulted in a dependence on foreign aid, inefficient or not useful spending of money, and incomplete projects due to limited money.

Over time, the ideas about international development evolved into using foreign expertise as technical assistance to 'copy paste' the western approach (UNDP, 2015). Instead of solely focussing on money distribution, expertise was used to improve the local situation through development projects. The projects aimed to build means, with help from the outside, on which development could take place. This process, referred to as capacity building, was used to target differences, absence and constraints in resources, skills and knowledge, organizations, politics

and power, and incentives (Brinkerhoff & Morgan, 2010). Although the number of projects successfully finished increased, this process did not take local resources, local context or local goals into consideration. Moreover, capacity building did not always result in transformation of expertise to local actors. Consequently, the dependence on foreign expertise remained.

The last couple of years, the international development sector moved to an approach of technical cooperation based on transformation of knowledge (UNDP, 2015). Development projects aim to empower endogenous capabilities by applying an inclusive tailored and demand driven approach to establish sustainable transformation (UNDP, 2015; Vallejo & Wehn, 2016). The development process requires the usage of local resources. Economists like William Easterly point out this different view towards international development by emphasizing a bottom-up approach in which local stakeholders raise their own problems and needs (Easterly, 2008; Easterly et al., 2016). Rather than using foreign expertise, developing countries should be responsible of the entire development process themselves. By doing so, dependency on foreign expertise could be avoided. This change of focus resulted in the appearance of the concept of capacity development.

Nowadays, the concept of capacity development is highly related to knowledge development. The development of knowledge and skills can be recognized as an important way to develop capacity.

The Capability Approach by Sen (1993) illustrates this link. The approach suggests that considering what people are able to be and do is the most important for sustainable development. By making a distinction between capabilities (a set of valuable functions a person has effective access to) and functioning (the states of being and doing of a person), the quality of life of people can be assessed (Sen, 1993). The functioning of individuals is determined by the context in which an individual acts. By enhancing capabilities and functioning of individuals, the freedom of individuals to choose will be improved leading to sustainable human development.

During the 6th International Water Symposium, the relation between knowledge development and capacity development was extended beyond developing individuals. Alaerts described the importance of knowledge dissemination for developing the right capacities of individuals, organizations and the wider society (Alaerts, 2020b). This can be illustrated by theorists who specify knowledge development for each of the indicated levels of capacity development (Bloom et al., 1956; Nonaka & Takeuchi, 1995). An elaborate overview of these theories is provided in Appendix B.

Our Current Understanding of Capacity Development

Although the concepts of capacity building and capacity development are by some still used interchangeably, we argue the concept of capacity development to be more suitable and appropriate (Kwaak et al., 2012).

Instead of directly aiming development activities on individuals, capacity development focusses on the demand for development tailored to its specific context. De Montalvo & Alaerts (2013) stress this as well by arguing that every social system in which knowledge gets transferred or capacity development occurs, a certain reservoir of existing knowledge, rules and practises is in place.

Moreover, capacity development requires an endogenous actor-led process, but can be assisted in developing and reinforcing capacity by outsiders (Brinkerhoff & Morgan, 2010). This is supported by the aforementioned Capability Approach in which the need for both capabilities and functioning is emphasized. As such, capacity development is acknowledged to be the engine behind human development. It generates, guides and sustains change among predefined beneficiaries (UNDP, 2015).

This study defines the terminology of capacity development as an ongoing process of enabling people to do something given a certain context and time, and could be supported through external influence.

2.2.2 Discussion on Capacity Development Characteristics

Capacity development activities are found to be unique and content dependent. Nevertheless, the following general characteristics of capacity development can be observed which are discussed below.

Actor-led process

Firstly, capacity development is an endogenous actor-led process in which the actors from developing countries should take the lead (Brinkerhoff & Morgan, 2010). This characteristic can be seen as a logical consequence of

the emergence of capacity development in its historical perspective and the current definition on capacity development (see **Section 2.2.1**). Capacity development is strongly dependent on the actors involved and the context within capacity is being built. Therefore, the development process should focus on the capacities needed by people living, acting or working in the same environment with a common goal (Eade, 1997). As a consequence, this will create ownership among the local actors.

Latent phenomenon

Secondly, capacity development can be characterized as a latent phenomenon. This can best be explained when looking at the aforementioned link between development of knowledge and skills and capacity development.

When developing and transferring knowledge and/or skills, in which a distinction between explicit and implicit or tacit knowledge should be made (Alaerts, 2020b). Explicit knowledge is referred to as knowledge that we know and can tell, stated and be written down (Nonaka & Takeuchi, 1995). Most of us are familiar with explicit knowledge, for example formalized knowledge in texts. Tacit knowledge can be understood as the knowledge we do not easily tell, that is highly personal and context specific, and embedded in our individual experiences, cultures and values (Nonaka & Takeuchi, 1995; Polanyi, 1966). However, unconsciously knowledge transfer can take place as well as part habits or wisdom.

Moreover, development of knowledge and skills can be executed directly through many different channels, such as education, learning by doing, and learning from peers (Alaerts & Kaspersma, 2009). Besides these methods, transformation also occurs through indirect methods which retain and improve knowledge and capacity (Alaerts & Kaspersma, 2009). These methods however are more difficult to capture.

Complex concept

Although capacity development is recognized in both academic literature as well as by NGOs and international organizations, consensus exists about its complexity (Ramalingam et al., 2014).

Capacity Development is a complex process with many elements that are often inter-connected. The unplanned effects are often caused by emergent behaviour within the different levels of capacity development, resulting in changes that can be hard to measure (Vallejo & Wehn, 2016). Due to the interconnectedness of these effects, interaction takes place which possibly results in the final outcome being more than the summation of the outputs of the individual effects (Alaerts & Kaspersma, 2009). Feedbacks loops between these different effects occur. Moreover, uncertainty is brought into the system through these new interactions.

These features being identified, one can argue that the complexity of capacity development ranges far (Alford & Head, 2017; Waldorp, 1992). Therefore, a linear system will no longer be in place, but is replaced by a dynamic system in which capacity development is happening through many interconnections over a period of time. This complicates predicting and assessing outcomes of capacity development activities. Iterative approaches, in which feedback effects are measured, might serve as a solution.

Nested levels of capacity development

As described by Whittle (2012), capacity development can be conceptualized in three different levels: individual level, organisational level or even to a whole system. The individual level of capacity development refers to the skills, experience and knowledge that allow each person to perform (UNDP, 2015). On organizational level, capacity development can be recognized as an organisation's ability to achieve its mission effectively, to make the organisation sustainable and the ability to adapt to change (Linnelll, 2003). On a system level, capacity development refers to the enabling environment (politics and policies) in which individuals and organizations operate and interact with the external environment (Brinkerhoff & Morgan, 2010). Trained individuals need an appropriate environment, and the proper mix of opportunities and incentives to apply their acquired knowledge (Alaerts & Kaspersma, 2009).

In reality, interventions for capacity development result in impact on all three different levels, as all levels are intertwined and nested (FAO, 2019). Capacity development often starts off with enhancing knowledge and skills of individuals, through for example training. The work of individuals is generally closely related to the organization they work in, thereby relying on the organization's performance. This in turn is influenced by the effectiveness of the environment in which the organisations work. Some theorists also add the so called ‘communities and society’ level as a fourth level of capacity development (Alaerts, 2020b). This can be

recognized as the area in which all three levels operate, and which has certain cultures, rules and behaviours. Other theorists assume this area to be part of the environment, as these factors enable or constrain the environment to develop.

In this study, we follow the latter and conceptualize capacity development on three nested levels (see Figure 6). Although looking at all levels of capacity development is advised, in practise this strongly depends on the specific context, the planning and the state of the project.

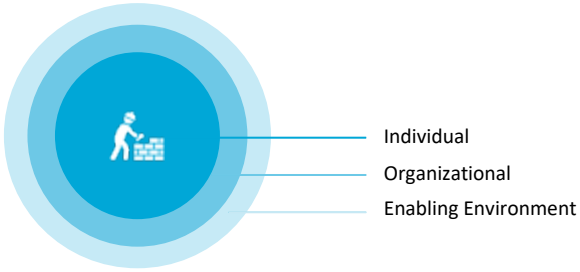


Figure 6 Nested levels of Capacity development, based on (Brinkerhoff & Morgan, 2010; Whittle, 2012)

The coherence between the different levels of capacity development points out the importance of an integrated system perspective when implying interventions for capacity development. Elements associated with capacity development, such as the capability to adapt, carry out tasks and commit, are found to be complex and interconnected and should therefore be reviewed together (de Koning et al., 2006). Evaluating all three levels of capacity development is said to be useful to reach sustainable change. However, should this be impossible, at least the interconnections and synergies between the different levels should be considered (FAO, 2019). This makes assessment and measurement of capacity development difficult.

2.2.3 The process of Capacity Development

Capacity development usually takes place through an intervening process in a specific moment and place. This process of capacity development can be approached from different perspectives, which will be elaborated upon below.

Different stages of capacity development

The UNDP has come up with a five stages capacity development process, which helps in understanding the different stages of capacity development in an international development context (see Figure 7). This cycle is used to organizes programming work and should be adopted to the specific situation in which capacity is being built (FAO, 2019). The following steps can be recognized:

1. Engage stakeholders on capacity development - in which ownership and accountability are being established to create engagement to the capacity development project;

2. Assess capacity assets and needs – in which the indicators for measuring progress are defined and a baseline of capacity assets is taken into account;

3. Formulate a capacity development program; in which the gaps between the current capacity assets, usually the strengths, and the determined capacity assets are identified;

4. Implement a capacity development response; in which an intervention for capacity development is executed ideally with help of and whilst investing in national systems;

5. Evaluate capacity development; in which the change efficiency and effectiveness is aimed to be measured.

Figure 7 UNDP Capacity development Process, adapted from (FAO, 2019)

Capacity development interventions

As indicated in the capacity the development cycle, interventions can be noted to be at the core the capacity development process. Interventions are actions undertaken by these external actors aimed to enhance the capacities of individuals, organisations and societies over time in order to support existing capabilities and transferring knowledge and skills (Kühl, 2009). Interventions can take place on event, project, programme, policy, strategy or organizational level (Gangloff, 2007). Interventions are planned on the basis of assumptions, behavioural change, development theories and experience, and lead to both planned and emergent changes of which the latter are often found hard to be measured (Vallejo & Wehn, 2016). In practise, indicators of achievement are predetermined and used as a basis of evaluation.

Different approaches of capacity development

Besides the difference stages that can be recognized in the process, capacity development can also be approached from different perspectives. These approaches each put emphasis on a different purpose of capacity development and should be seen as ways to complement capacity development goals (Angeles & Gurstein, 2000). An important foundation for capacity development lies within the research of public administration (Shafritz, 1985). Over the years, other disciplines such as sociology, economy, psychology, educational sciences and political sciences developed thoughts on transferring knowledge to build capacity as well. This results in many different approaches towards capacity development. One should be aware that these categories are not mutually exclusive or collectively exhaustive; many capacity development projects touch upon more than one approach and some approaches might have not been discovered yet. Previous research concluded that these approaches can be summarized in four main categories (Vallejo & Wehn, 2016) (see Figure 8).

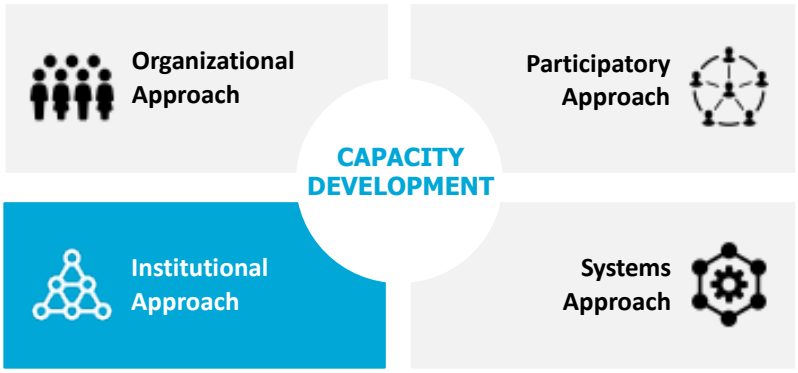


Figure 8 Approaches for Capacity Development, based on (Vallejo & Wehn, 2016)

1. **The organizational approach** focuses on organisations as key to development and is closely related to the field or organization theory and change, and development (de Koning et al., 2006; Whittle, 2012). This means that the unit of change is relatively demarcated and clear. On the other hand, an organizational approach will be insufficient to solely develop capacity.

2. **The institutional approach** highlights the importance of institutions in capacity development to establish sustainable change, in which institutions are referred to as "the formal and informal 'rules'

that offer guidelines to actors during decision making and interactions" (North, 1992). The institutional approach should be considered as much of the work of capacity development requires knowledge of and access to "the rules of the game" (Lusthaus et al., 1999). This approach finds its foundation as a predecessor of capacity development, where in the 1960s development programmes were targeted at institutional strengthening and development.

3. **The systems approach** refers to capacity development as a complex intervention with multiple levels and actors, with among them different power relations (de Koning et al., 2006). Capacity development is seen as a dynamic phenomenon with complex interconnections that change over time (Alaerts & Kaspersma, 2009). These interactions between the parts contributes to the complexity, as together these parts are more than its whole. Moreover, these interaction come with increasing uncertainties (Alaerts & Kaspersma, 2009). In line with the system approach, capacity development is perceived to be an endogenous process of self-organization, adaptation and emergence (Brinkerhoff & Morgan, 2010). The approach is holistic and comprehensive, making it challenging to determine what is a capacity development activity.

4. **The participatory approach** emphasizes local ownership of the beneficiaries to the capacity development intervention, meaning that they must feel benefitted and are motivated and empowered to change (Angeles & Gurstein, 2000; de Koning et al., 2006). Emphasis is put on the means to achieve capacity development (Vallejo & Wehn, 2016).

Though it can be acknowledged that capacity development interventions often feature a mix of these approaches, the institutional approach of capacity development is central as the dominant approach in this study. Therefore, an elaborative analysis of the institutional approach is provided in **Section 2.3**.

2.2.4 Wrap-up: Important Aspects of Capacity Development

Section 2.2 illustrated that capacity development is a key part of international development. Although having many definitions, capacity development is defined in this thesis as the process in which the ability of individuals, organisations and the environment to perform activities and meet objectives is *directly* or *indirectly* developed. This definition highlights the *complex* and *multi-level* features of capacity development, as well as the strong influence of the *context* in which the process is taking place. Interactions among different parts of capacity development occurring over time result in feedback loops and a higher level of uncertainty within the system in which capacity development takes place. Therefore, capturing the *relation between cause and effect* is necessary.
In addition to these aspects of capacity development, the section also characterized four approaches towards capacity development. The institutional approach is of interest to this study and is elaborated in the next section.

2.3 Institutional focussed Capacity Development

In this study, special attention is drawn to the institutional perspective of capacity development. In order to understand this approach, background information on institutions and the relations between institutional development and capacity development needs to be studied. This will provide us insights on the important aspects of institutional focused capacity development.

2.3.1 Defining Institutions

In daily practice, institutions are often defined in different ways which might cause confusion. Some define institutions as organizations, often public organizations. Others view institutions in light of organizations that initiate rules that 'guide' society. Vallejo & Wehn (2016) illustrate this differentiation as well in light of capacity development, where organizational capacity development is focusing on capacity within an organization and institutional capacity development is aimed at the process and rules that govern society.

In this study, a distinction is made between the concepts of institutions and organizations. Institutions are defined using North's (1992) theory, meaning that institutions are "formal and informal 'rules' that offer guidelines to actors during decision making and interactions". By formal rules this refers to laws, regulations,

and constitutions. Informal rules are defined as customs, norms and beliefs (North, 1992). Institutions serve as guidelines and create structure to navigate social dilemmas and thereby play an important role in decision making (Gomes, 2019). In contrast, organizations can be considered as actors that are guided by and interact with these institutions.

2.3.2 Understanding Institutional Change

Defining institutions as 'rules of the game' allows for understanding the concept of institutional development and change. When a situation is not desirable, actors can use a change in institutions to get to a more favourable outcome of the situation. This process is called institutional change. One of the frameworks developed to explain this process is the 'Institutional Analysis and Development' (IAD) framework of Ostrom (2011) (see Appendix C).

The IAD framework identifies the structural elements and relationships present in institutional arrangements, but whose values differ depended on the situation. By doing so, the framework helps in understanding complex societal situations in which different actors interact and different rules are in place. The IAD framework shows that the perception of actors acting within a situation on society could change. This change is caused by adjustments in the context (e.g. change in physical environment) and interactions with other actors. A changed perception possibly results in adaption of the context, which might transform the actors' perception again and so on. This process of feedback, called learning, causes actors to evaluate the outcome of a situation differently. When the outcomes are evaluated negatively, strategies of actors will be adapted to the situation resulting in institutional change (Ostrom, 2005). As such, institutional change can be caused by evaluations of the outcomes of a situation and can be activated by actors when not content with a favorable solution within a societal context.

2.3.3 Institutional Development and Capacity Development

Previous research shows that it remains difficult to make a clear distinction between capacity development and institutional change (Kühl, 2009; Lusthaus et al., 1999; Vallejo & Wehn, 2016). Although institutional development and capacity development are related, the concepts should not be viewed as synonymous. Instead, the institutional approach towards capacity development can be considered an addition to the institutional development theory (Lusthaus et al., 1999).

The relation between institutional development and capacity development becomes clear when looking at the level of enabling environment. Institutional capacity development plays a role in creating the enabling environment which forms the basis upon which individuals and organizations interact. Within the enabling environment, rules of the game are in place which either enable or constrain actions of actors. Capacity development on the enabling environment can cause these rules to be changed resulting in institutional development.

As indicated by North (1996), the process of learning and knowledge development results in an evolvement of institutions over time. The evolvement of institutions can help tackling societal problems and mediate conflicting interests (see Figure 9). Ostrom et al. (2014) remark that societies labelled as 'wealthy' often tend to generate more robust institutions which support individuals in solving collective action problems. This can be stimulated and maintained through development aid. An example of this kind of institutional capacity development can be found in the Bangladesh Delta Water Plan 2100, in which effective governance and robust institutions are important to ensure successful implementation (Planning Commission, 2018).

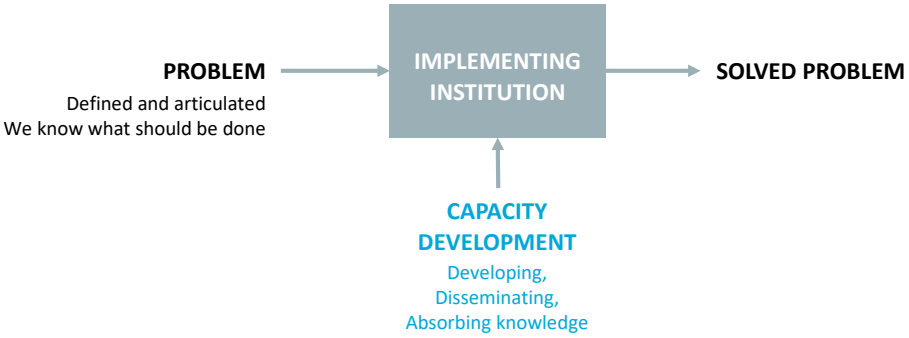


Figure 9 Capacity development and Problem Solving, based on (Alaerts IHE Symposium, 2020)

Institutional development, as explained by the IAD framework, occurs based on the perception and reflection of actors towards the context and interactions in place. Institutional capacity development can influence this perception by providing tools, methods, and skills to improve the understanding on the current 'rules of the game' that create the context. By developing institutional capacity, the analysis of the action situation could be improved and the ability to reflect on the action situation including the current rules is supported. On the long term, this might lead to improvement of the institutions that are currently conditioning the actions in the water management context. This perspective of institutional capacity development can be illustrated in the urbanizing delta of Khulna in Bangladesh, where the capacity for local actors is developed to reflect on the rules that are currently conditioning their water management actions and support them in discovering ways to improve these rules.

We should however be aware that training individuals and organizations, and strengthening institutions can only succeed on the long term if this is consistent with existing institutions or if it helps transform these institutions, so that actions are based on rules, processes and practices that can be sustained through time (Willems & Baumert, 2003). Therefore, both the relevant rules that are of concern and the process of how to get there should be identified (Skoog, 2005).

2.3.4 Wrap up: Institutional Aspects of Capacity Development

This section showed that an institutional perspective towards capacity development is crucial in dealing with issues underlying development problems, such as cultural norms, beliefs and rules in place. On one hand, institutional capacity development could support the evolvement of institutions on the enabling environment level. On the other hand, the process also refers to the development of capacity of actors, such as individuals and organizations, to learn from existing rules which helps to reflect on the current action situation. In this study, this broader understanding of institutional capacity development is maintained. However, the focus is on institutional capacity interventions that develop the ability of individuals or organizations to learn from existing rules and support reflection on the situation. Taking this into account, we can conclude that similar to general capacity development, institutional capacity development is a complex process as well, characterized by its *nested levels* and importance of *considering the context*.

2.4 Evaluating Institutional focussed Capacity Development

Now that the most important aspects of institutional focussed capacity development have been identified, the possibilities for evaluating this concept should be studied. To do so, an introduction to evaluating institutional capacity development is required. This is followed by a discussion on the most relevant frameworks currently available for evaluation of institutional focussed capacity development. Ultimately, this section wraps up by highlighting the key take-aways of the frameworks presented.

2.4.1 Introduction to Evaluating Institutional Capacity Development

The evaluation of capacity development can be recognized as one of the five stages described in the capacity development cycle (UNDP, 2015)(see **Section 2.2**). Together with monitoring activities during the implementation, this phase can be considered crucial to success (Eade, 1997).

Evaluating can be defined as a periodic process in which project's relevance, performance, efficiency, and impact in relation to objectives stated beforehand are assessed (OED, 1996). Church & Rogers (2006) describe evaluation as a systematic assessment of information gathered, which can be used to provide useful feedback on an individual, organization, project or programme. An evaluation is looking for changes that occurred over a given period of time. The impact can be both expected and unexpected, direct and indirect.

Evaluation of interventions is often combined with monitoring referred to as monitoring and evaluation (M&E). Though having the similar purpose of assessing the intervention's or project's impact, monitoring can be distinguished as being an ongoing assessment providing stakeholders with continuous feedback during the project's timeline (Church & Rogers, 2006; OED, 1996). Monitoring and evaluation of capacity development can be very effective in identifying weaknesses of an intervention (Alaerts, 2020b). A thorough monitoring and evaluation of capacity development activities can help in developing implementation capacity and thereby ensure delivery of outcomes. Moreover, an increase in capacity development projects underlines the importance of comprehensive evaluations (Vallejo & Wehn, 2016). However, the evaluation of capacity development is recognized to be complex.

Evaluating institutional focused capacity development is understood to be the most challenging step in the capacity development process due to a number of reasons.

- First of all, being a demand-driven, complex and long-term process motivated by local stakeholders, quantifying capacity development is hard (see **Section 2.2**)(Kaspersma & Alaerts, 2020). Institutional capacity development interventions can be seen as 'wicked' policy implementation and require the sequence of an intervention to be more adaptive and resilient (Alaerts, 2020b; Kaspersma & Alaerts, 2020). This is also illustrated by Van Ongevalle et al. (2014) who mention that working with complexity in dynamic environments asks for specific monitoring and evaluation approaches and practises. This makes evaluation challenging, as elements of complexity need to be incorporated to provide a complete and useful often qualitative evaluation of capacity development.

- Secondly, measuring effectiveness and efficiency stirs people to focus on outputs. However measuring outputs does not necessarily say anything on the impact of capacity development (Mayne, 2012). Therefore, it is suggested to differentiate the outputs of an intervention from the indicators of capacity development.

- Thirdly, similar to other evaluations, the contribution problem also plays a role when evaluating capacity development. If the effects of an intervention can be measured, it is often hard to distinguish whether this could be attributed to the cause (intervention) or if other intervening variables contribute to the effect. This process is called contribution analysis and is visualized in Figure 10. To assess the impact of the intervention and make credible causal claims, one needs to be able to distinguish to what extent and in what way that specific intervention caused the observed outcomes (Patton, 2012). This requires taking key contextual factors such as the physical, institutional and political features of a situation into account.

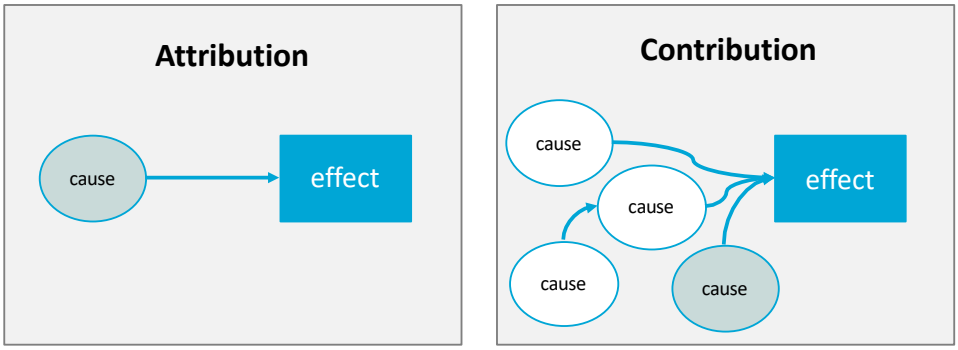


Figure 10 Infographic on Attribution and Contribution, based on (Mayne, 2012)

- Fourthly, institutional capacity development takes place on different levels that are nested. Changes happening in one of the levels might also affect the other levels, which should be evaluated as well. This is especially important when evaluating institutional focussed capacity development, as institutional capacity is interdependent on the different levels (see **Section 2.3**).

2.4.2 Discussing the Relevant Frameworks for Assessing Institutional Capacity Development

Although considered a challenging task, monitoring and evaluation of institutional capacity development is recognized to be important for understanding any implemented project, programme or policy. Evaluation framework can help in assessing institutional capacity development.

When looking at capacity development evaluation frameworks, two schools of thought can be distinguished each comprising different evaluation frameworks. A summary of the relevant frameworks selected for the evaluation of institutional capacity development is presented in Table 2. A discussion on these schools of thoughts, the belonging evaluation frameworks and its strengths and limitations is presented below.

Table 2 Overview of frameworks suitable for evaluating Capacity development

School of Thought	Evaluation framework	Level(s) of Capacity development	Strength	Limitation	Reference
Result Based Management	Logic Model	Unspecified	Structured	Linear approach	(Hummelbrunner, 2010; Perrin, 2012)
	UNDP, FAO and OECD Framework	Individual, organisations, enabling environment	Structures, considering all three levels	Linear approach	(FAO, 2019; OED, 1996; UNDP, 2008)
	Theory of Change	Unspecified	Recognizing causal relations, attempt to capture dynamics	Assumptions, influence of contextual factors, nestedness of levels	(Mayne, 2012, 2015)
Complex Adaptive Systems	5Cs Framework	Organisational, enabling environment	Clear distinction of capabilities	Focus on organisation level, abstract formulation of capabilities	(Brinkerhoff & Morgan, 2010; Keijzer et al., 2011), also mentioned in (Kaspersma, 2013)
	Most Significant Change Approach	Individual, organisational	No predictions but valid basis on stories	Requires empirical data and lot of time	(Davies, 2015), also mentioned in (Kaspersma, 2013)
	CMOc	Focus on organisational, could be used for nested other levels	Contextual factors, mechanisms and causal relations	Capturing causal relations, nestedness	(Pawson & Tilley, 1997)
	Outcome Mapping	Organisational	Focus on behavioural change and other stakeholders	Solely focussed on organisational level	(Earl et al., 2001) also mentioned in (Kaspersma, 2013)
	KCD	Individual, organisations, enabling environment	Knowledge and capacity specific, nesting of levels	Causal relations and contextual factors	(Alaerts & Kaspersma, 2009; Kaspersma, 2013)

Results Based Management frameworks

The first school of thought on capacity development comprises monitoring and evaluation based on results-based-management (RBM). The results-based management approach focusses on an evidence-oriented evaluation (Alaerts & Kaspersma, 2009). The approach follows a predictable and linear set of reasoning, in which cause-effect relationships are single and one-way and the main emphasize lies on measuring the effects (outcomes and impacts) (Alaerts & Kaspersma, 2009; Kusek & Rist, 2004; Van Ongevalle et al., 2014). This approach has a strong emphasize on outputs as effects of input. The area in between input and output is often reflected to as a 'black box'. With its stress on effect, this approach makes it more difficult to take the intangible results into account (Van Ongevalle et al., 2014). The results-based approach is found to be an useful way for international donors to measure the effect of their funding (Vallejo & Wehn, 2016). The RBM approach of evaluating comprises the logic model, the UNDP, FAO and OECD frameworks, and to some extent the Theory of Change can be considered part of the approach as well.

Logic Model

One of the most used frameworks in results-based evaluation is a logic model or the deviated Logical framework Analysis (LFA). The logic models is a widely used and well known tool to plan, manage and evaluate development projects (Hummelbrunner, 2010). The logic model can be recognized to be at the basis of many development intervention and therefore deserves some elaborate explanation.

Originally, the logic model was used as a tool for intra-managerial planning and implementation in military and business contexts in the 1960s (Hummelbrunner, 2010). Yin (2014) described the logic model as 'a tool that stipulates and operationalizes a complex chain of occurrences or events over an extended period of time' (p.155).

The logic model aims to provide and structure information about the nature of the intervention, the context and the suspected impact (Perrin, 2012). By combining the different stages of an intervention, the logic model provides stakeholders with a road map containing sequenced events that eventually aim to lead to the desired result (W.K Kellogg Foundation, 2004). The model puts emphasis on the indicators used to measure this result. In literature, a logic model is also referred to as a results chain, impact pathway or program theory. Although named differently, the following stages can be recognized (Gangloff, 2007; Mayne, 2015; Perrin, 2012):

- **Input**: The (financial, human, and/or material) resources used in a policy/programme/policy, such as training materials.
- **Activities**: Actions that are undertaken as part of the intervention by those involved, such as training sessions.
- **Output**: The immediate (often direct) effects, products, goods or deliverables of activities, such as number of people trained.
- **Outcome**: The effects that are likely to be achieved or are achieved on a short- or medium term of the intervention's output, such as change in key behaviours among trained people.
- **Impact**: Long-term effects produced (in)directly and (un)intended by an intervention. These can be positive as well as negative.

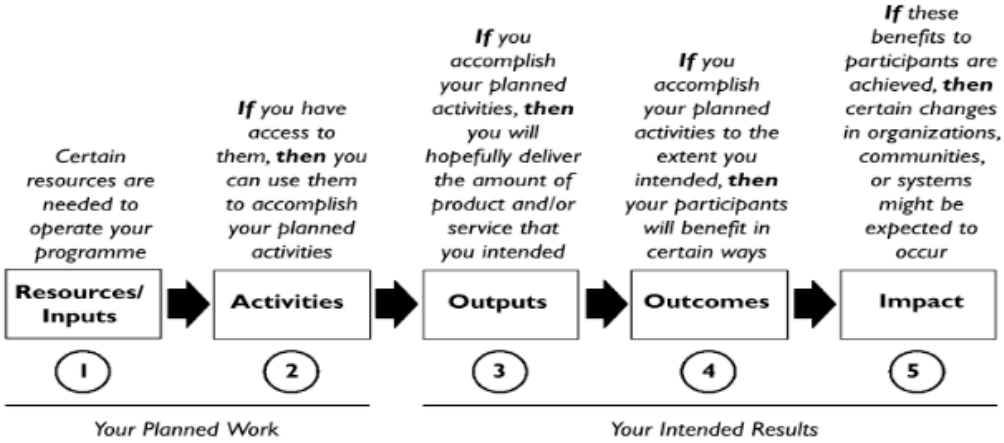


Figure 11 How to read a logic model (W.K Kellogg Foundation, 2004)

The outputs, outcomes and impacts together are sometimes referred to as the result of an intervention, whilst the input and resources can be recognized as the planned work (Mayne, 2015; Ramalingam et al., 2014). The relation between these stages provides conditions for the following stages and thus provides a sequential approach to interventions and change (Ramalingam et al., 2014). This can be seen when looking at Figure 11 in which the stages are connected through "if, then" statements.

UNDP, FAO and OECD frameworks

Guides for developing capacity and assessing capacity development have been published by organisations such as the Asian Development Bank (ADB), EuropeAid, UNDP and OECD. The guidelines make use of the linear chain of activity-output-outcome-impact to assess capacity development. Moreover these guides incorporate capacity development on individual, organisation and network/systems level (FAO, 2019; OED, 1996; UNDP, 2008). The assessments aim to capture both technical as well as functional capacities. Overall, the guidelines can be noted to be practical in nature but also relatively time-consuming.

Theory of Change (ToC)

The Theory of Change (ToC) is a model developed to gain insights on how an intervention is expected to lead to intended or observed impacts (Mayne, 2015; Perrin, 2012). It can be designed ex-ante and ex-post and serve for different purposes (Mayne, 2015).

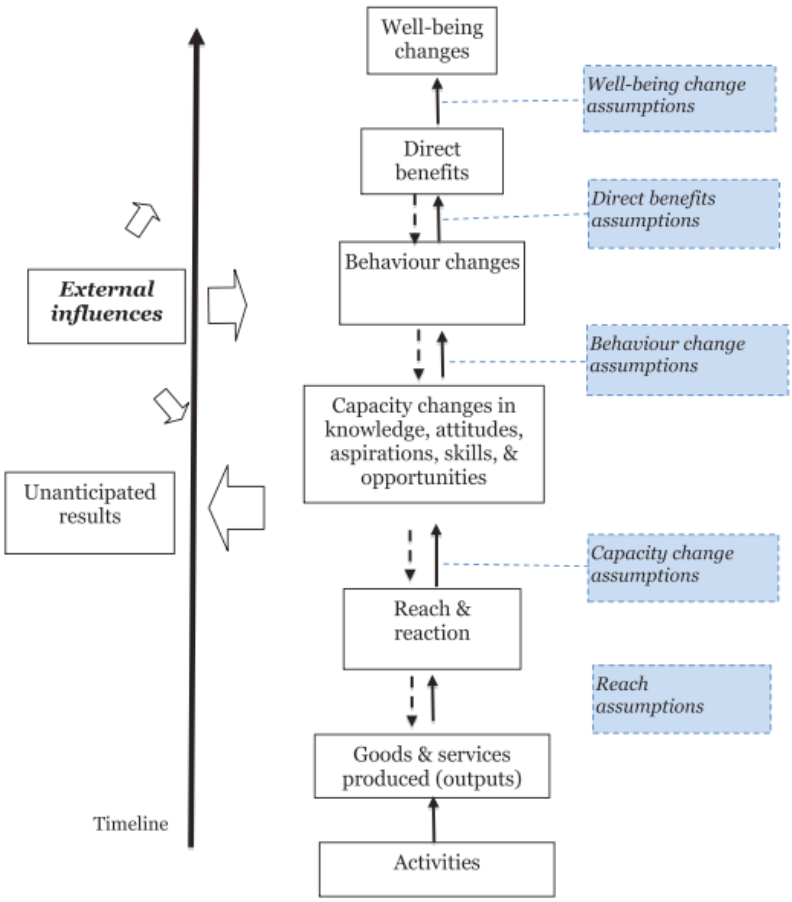


Figure 12 Visualization of a Theory of Change (Mayne, 2015)

Although derived from the logic model, the ToC differs as it adds causal links, mechanisms and assumptions to the five components (activities, input, output, outcome, and impact) (Patton, 2008; Vaca & Dhillon, 2018; Vogel, 2012). Figure 12 visualizes this by portraying the timeline and the belonging elements vertically instead of horizontally (see Appendix D for a detailed explanation). The ToC includes non-linearities due to feedback mechanisms between the stages (Mayne, 2015). Moreover, the ToC provides assumptions on which causal relationships are based (see blue boxes in Figure 12). This forces one to understand how the activities might

lead to the desired results and if so, why and under which conditions this causal assumption can be established (Mayne, 2015). This dependence on cause and effect is also endorsed by the contribution analysis, which aims to make sure that the affects occurring can actually be ascribed to the intervention. Besides, an extra element is added by taking into external influences (see box on the left of the timeline in Figure 12).

The ToC can be used to identify the needs and opportunities of the current state and what needs to be done to reach the intended situation (Gangloff, 2007). This helps in setting realistic goals, clarifying accountability and have a common understanding on means to achieve these goals. Gangloff (2007) points out that the ToC can also be used during an intervention to identify which indicators must be monitored and to update the stakeholders on how the intervention is doing (Ramalingam et al., 2014). These indicators can be used in monitoring and evaluation to improve effectiveness during the intervention. Moreover, when used during an impact evaluation, a ToC can be useful to revise an original plan in order to understand what kind of data needs to be collected, how this should be analysed, and how this could be reported. The ToC will thus help shape the evaluation in the future.

Strengths and limitations of the RBM approach
Based on the discussion of the logic model, the UNDP, FAO and OECD frameworks, and the ToC, some strengths and limitations of the RBM approach can be drawn.

On one hand, the RBM approach follows a very structured analysis, which stimulates systematic thinking and planning. This is also supported by the logical visual representations. Moreover, authors highlight the usefulness of RBM to show the outcomes of a case study and its ability to test many different scenarios and be adapted quickly.

On the other hand, the RBM approaches seem to fall short on capturing complexity and dealing with contribution challenges (Fujita, 2018; Ramalingam et al., 2014; W.K Kellogg Foundation, 2004). This is mainly caused by the simplistic, linear cause-effect thinking and the absence of contextual factors (Prinsen & Nijhof, 2015). Moreover, the approach emphasizes the outcomes and results, which might lead to those indicators becoming the objective themselves instead of serving as a proxy for the impact (Vallejo & Wehn, 2016). Finally, some criticist argue that this focus on outcome and result enables donor agencies to influence and control an intervention over aid recipients (Prinsen & Nijhof, 2015).

As mentioned earlier, the ToC can be viewed as an exception to some of these limitations. When dealing with very complex problems, the theory of change can serve as a basis of understanding. As explained by Mayne (2015), the ToC allows for a more detailed study into causal links and assumptions, and a revisions of the ToC when dealing with complexities, uncertainties and emergent behaviour. Moreover, the ToC takes contextual factors into account.

Complex Adaptive Systems Frameworks

The second school finds its ground for monitoring and evaluation of capacity development activities in the complex-systems theory and participatory approach. The complex adaptive systems (CAS) approach focusses on developing capacity by learning from experience. The approach aims to assess the cause and effect relations between input, output, outcome and impact and includes contextual factors that influence or might be influenced by the aforementioned factors. Complex adaptive systems theory is built upon the facts that wicked problems occur at several levels simultaneously, dynamics and adaptability of a system, and institutional dynamics and interactive governance (Hospes, 2008). The CAS approach is situated within the theory of systems: complex systems have a tendency towards self-organisation. At the same time, elements within a system interact continuously (Keijzer et al., 2011). This causes emergent behaviour to appear and results in intended and unintended outcomes. The CAS approach reflects this system perspective on capacity development.

5Cs Framework
The 5C Framework aims to study to what extent the performance in organisations and systems in developing countries has improved (Keijzer et al., 2011). The framework relies on the concepts of capacity (overall ability of an organisation or system to create value for others), capabilities (collective ability of a group or system to

do something either inside or outside the system), and competencies (energies, skills, and abilities of individuals) (Keijzer et al., 2011). Capabilities together can contribute in developing the capacity of an organisation or a system. According to Keijzer et al. (2011), five capabilities (5Cs) lie at the core of any organisation or system which together contribute to an organisation's capacity to accomplish social change. These are the capabilities (1) to commit and act, (2) to relate, (3) to adapt and self-renew, (4) to deliver on development objectives, and (5) to maintain coherence (Brinkerhoff & Morgan, 2010; Keijzer et al., 2011). Some users of the framework experience difficulties with the abstract formulation of capabilities and rather specify these in a set of indicators (Keijzer et al., 2011). Using the 5Cs framework requires stable relations between key stakeholders, collective interests and commitment among the stakeholders and sufficient resources.

Most Significant Change Approach (MSC)
The Most Significant Change (MSC) approach is an evaluation methodology which is using so called 'stories of change' to measure change on individual, organisation or societal level (Simister & Smith, 2010). The MSC approach argues that human change is often complex and rich. These changes are impossible to predict beforehand. Therefore, indicators to measure change cannot be defined beforehand. Instead, realistic stories of change are gathered and analysed to measure significant changes through development interventions (Davies, 2015).

Context-Mechanism-Outcome configuration (CMOc)
The Context-Mechanism-Outcome configuration (CMOc) determines the outcome of an intervention by looking at the mechanism and the context in which it takes place (de Souza, 2013). The mechanisms can be seen as measures that lead to a particular outcome in a given context, a change of regularity (Pawson & Tilley, 2000). Both the actors responding to change and the external factors play a role significant role in the final outcome. An intervention can be used to trigger or stop such a mechanism and realize change. The context sets the conditions for this change to happen and can be categorized into four aspects, namely (institutional) structure, culture, agency and relations (de Souza, 2013; Pawson & Tilley, 2000).

An example of the CMOc is the launch of an awareness campaign about nutrition for parents. The outcomes are determined by the mechanisms behind this campaign such as advertisement, mouth-to-mouth marketing and radio commercials. Besides these mechanisms, the context also plays an important role as these mechanisms might work better with mothers then with fathers as fathers tend to spend more time listening to the radio when they for example commute to work by car. According to this CMO approach, the combination of mechanisms and context determines the final outcome of an intervention.

Outcome mapping
Outcome mapping uses people and relations to the environment as a focus point for evaluation (Earl et al., 2001). Instead of assessing the project, programme or intervention, the approach looks at changes in behaviour, relationships, actions, and activities. Stakeholders are asked to identify possible outcomes, thereby being encouraged to predict changes. The focus of outcome mapping is on behavioural change, meaning measuring changes in behaviour, relationships or actions of individuals and organisations (Simister & Smith, 2010). From there on the possibilities might arise that these outcomes contribute to development impact, but this is not the focus of the approach (Earl et al., 2001). This requires looking for boundary partners such as individuals, groups and organisations that can realize direct change and have influence.

Knowledge and Capacity Development (KCD)
Alaerts & Kaspersma (2009) developed a schematic framework specifically for capacity development on individual, organisation and enabling environment level, while recognizing the nested levels. Another level of 'civil society' is added, which aims to capture the external and contextual developments. The Knowledge and Capacity Development (KCD) framework is presented in Figure 13. For each of the three levels, the knowledge and capacity that could be build, the so called 'vehicles' or instrument that transfer these capacities and support the process, the outcomes and indicators are specified. Important to notice is the distinction the authors make between 'explicit knowledge' and 'tacit knowledge' on the individual level of capacity development, which has been mentioned in **Section 2.2**.

The framework can help in evaluating capacity development, as outcomes and indicators are proposed. Kaspersma (2013) presents the different outcomes that can be established for each level. The outcomes are all coupled to a foursome of indicators, that can be used on assess the outcomes on each of these levels. These are (1) technical, (2) managerial, (3) governance and (4) continues learning and innovation. The categorization of indicators that cover capacity development on individual and institutional level (so called 'categories of effort') are also recognized by Marjanovic et al. (2017). These are indicators to assess capacity development on all three levels inspired by the water sector, making the framework very useful as a starting point for assessing knowledge and capacity.

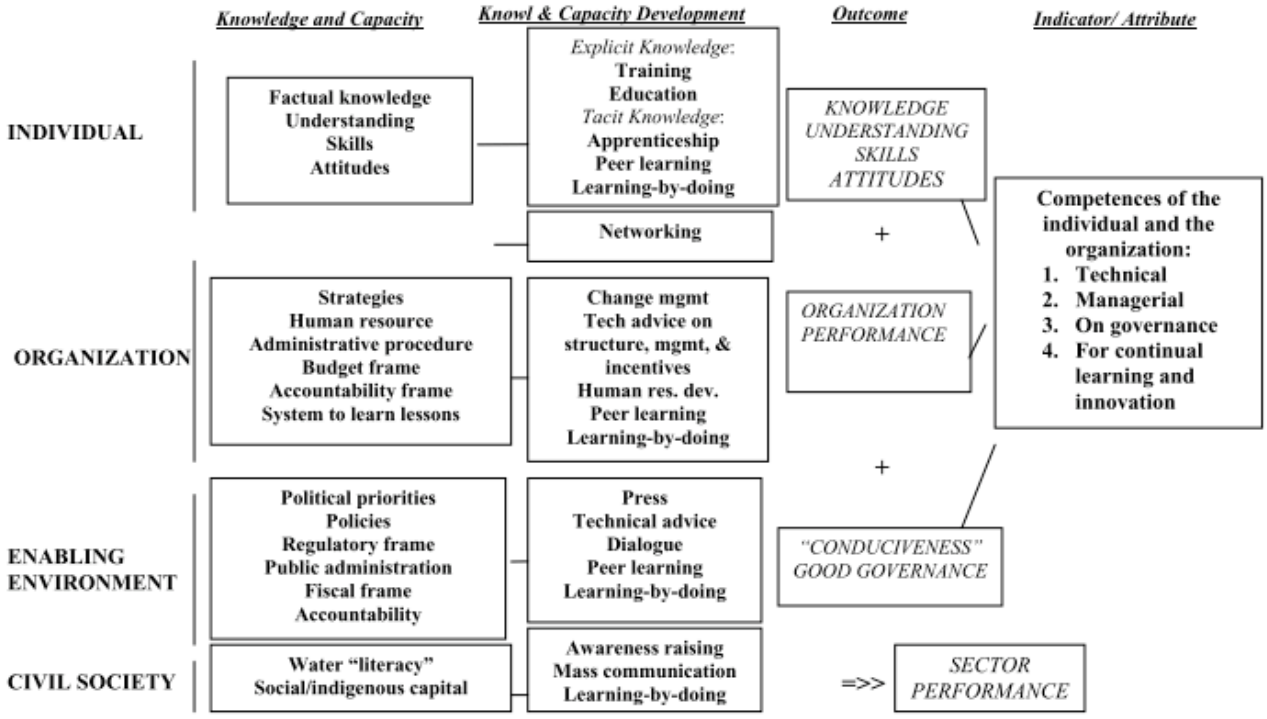


Figure 13 Knowledge and Capacity Development framework G. K. Alaerts & Kaspersma, 2009)

In a later version of the framework, the authors reversed the position of outcomes and indicators in the framework. Moreover, the outcome under enabling environment ("Conduciveness" good governance) was replaced by "Institutional capacity". By doing so, the framework becomes more useful as an evaluation framework for capacity development. As acknowledged by the author, the framework is designed primarily for the water sector. This is visible in the illustration of competences with clear examples for each level, which can be found in Appendix D.

Strengths and limitations of the CAS approach

The Complex Adaptive System school of thought comprises a variety of evaluation frameworks who all have specific characteristics. Overall, the following strengths and limitations of the CAS approach can be identified.

Almost all of the frameworks associated with the CAS approach recognize and seem to capture complexities, emergent behaviour and indirect outcomes (Keijzer et al., 2011; Simister & Smith, 2010). This makes evaluation of indirect capacity development possible. Furthermore, most frameworks address contextual factors in their evaluation. Especially the CMOc highlights the idea that an outcome cannot simply be caused by a certain mechanism but requires to take contextual factors into account as well. In order to understand the mechanisms of change, the conditions affecting the outcomes need to be identified.

Nonetheless, almost none of the framework seem able to evaluate capacity development on nested levels. An exception to this is the KCD framework in which the different levels are clearly mentioned. Moreover, almost all frameworks seem to have difficulties explaining how relations between components and outputs work. Mechanisms explaining the relation between contextual factors, components and outputs are yet absent.

2.4.3 Wrap-up: Existing Frameworks to Evaluate Institutional Capacity Development

Assessing institutional capacity development interventions is essential yet challenging due to its specific aspects (see **Section 2.2** and **Section 2.3**). When evaluating institutional capacity development, the following requirements should be met:

- Ability to capture complexity;
- Ability to cover individual, organisation and enabling environment levels;
- Ability to identify causal mechanisms underlying key assumptions;
- Ability to take contextual factors into account;
- Ability to recognize direct and indirect change.

Section 2.4 provided an overview on the most relevant frameworks currently available to evaluate institutional capacity development. Two families of evaluation frameworks can be distinguished, both offering strengths and limitations regarding the evaluation of capacity development. However, as shown in Table 3, none of the selected frameworks meets all requirements associated with institutional focussed capacity development.

Table 3 Comparison of requirements and existing evaluation frameworks

Ability to ..	**Logic Model**	**UNDP, FAO, OECD**	**ToC**	**5C's**	**Most Significant Change**	**CMOc**	**Outcome mapping**	**KCD**
Capture complexity	No	No	Yes	Yes	Yes	Yes	Yes	No
Cover individual, organisation and enabling environment levels	No	Yes	No	No	No	No	No	Yes
Identify causal mechanisms underlying key assumptions	No	No	Yes	No	Yes	Yes	No	No
Take contextual factors into account	No	No	Yes	No	Yes	Yes	Yes	No
Recognize direct and indirect change	No	Yes	No	No	No	Yes	Yes	Yes

Yet, the discussion showed that the following frameworks can be used as a basis for evaluating institutional capacity development:

- The Theory of Change (ToC) connects the different stages of an intervention in a structured way.

- The Context-Mechanism-Output configuration (CMOc) offers ways of capturing contextual factors and its relation to outcomes which helps in understanding mechanisms of change and supports a 'best fit' approach.

- The Knowledge and Capacity Development (KCD) framework provides the possibility to evaluate institutional capacity development on nested levels and offers specific indicators on capacity development in the water sector.

2.5 Conclusion: Gaps in Literature

Capacity development can be defined as the process of directly or indirectly developing knowledge, skills and appropriate education taking place on an individual, organizational and environment level. Capacity development turned out to be a complex phenomenon in which contextual factors play a big role. In order to understand the relations between capacity development components and contextual factors, causal relations need to be captured. Consequently, evaluating capacity development is challenging.

Capacity development can be seen as one of today's core components of international development, in which especially capacity for institutional development is acknowledged as a key method for development. This institutional perspective can be understood as developing capacity of actors to learn from and reflect upon the rules in use and possibly improve the institutional design. We consider the institutional approach towards capacity development to be especially important, as this could enhance collective action leading to sustainable change on the long term.

Based on a comparison of the aspects of institutional capacity development and the current evaluation frameworks available development, it can be concluded that none of these frameworks satisfy in evaluating institutional focussed capacity development. Therefore, new opportunities for evaluating institutional capacity development will be explored. As the Theory of Change, the Context-Mechanism-Output configuration, the Knowledge and Capacity Development Framework provide important elements, insights from these frameworks can be considered.

II Conceptualization

3 An Evaluation Framework for Institutional Capacity Development

The previous chapter elaborated upon the concepts of institutional capacity development and evaluating capacity development. Based on the literature review, gaps in literature can be recognized that could be covered with a more-encompassing evaluation framework. Chapter 3 aims to answer the sub question: *What does an evaluation framework for institutional focussed capacity development look like?* At first, the gaps identified in the previous chapter will be bridged. Secondly, the key characteristics of the framework will be set and the framework is presented. Thirdly, the accompanying step-by-step approach is introduced. Ultimately, the chapter concludes by highlighting the key take-aways of the theoretical evaluation framework.

3.1 Bridging the Gaps

The previous chapter identified the gaps between the most important aspects of institutional capacity development and the evaluation frameworks currently available in scientific literature. In this section the identified gaps will be bridged, thereby lying the foundations for developing a new framework to evaluate institutional focussed capacity development.

3.1.1 Capturing the Complexity of Capacity Development for Evaluation through Causal Relations

The classical frameworks used to evaluate capacity development are based on a linear chain of input, activity, output, outcome and impact. As the attention towards capacity development as core development theory has increased, so has the focus on providing an appropriate evaluation framework. Elements associated with capacity development are recognized to be complex and inter-connected (Brinkerhoff & Morgan, 2010). Capturing these relations is difficult yet needed to understand how factors help or hinder capacity development. Evaluation frameworks have moved away from the reductionist approach, in which complex problems become more easily understandable when they are cut up into isolated events that stand in "linear" cause-effect relationships to each other. However, the number of frameworks capturing cause and effect relations and emergent behaviour, and enabling feedback is still poor. Yet, capturing these relations in order to assess changes that result from capacity development initiatives is essential. One should also be aware that assessing these changes requires different methods than solely capturing direct products of an intervention (Gharesifard et al., 2019b). Comparing, analysing and extending these frameworks will improve the understanding of the relation between input and output, support and strengthen causal assumptions, and allows for thorough contribution analysis.

3.1.2 Evaluating Capacity Development through its Nested Levels

Capacity development in development projects is explained to take place in different levels, specifically on the individual, organisational level and the enabling environment. These levels are nested. An intervention in the form of a project or program can be seen as a stone which is thrown into the water, creating circles from the point of landing to the outside. The point of landing can be marked as the individual level, from which the other levels are influenced as well. These interactions and synergies between the different levels need to be reflected in an evaluation framework in order to determine the impact of an intervention and the process through which this impact is created. The majority of the current evaluation frameworks lacks in including these synergies. This can be seen as harmful, as capacity development is nested in the entire system and should therefore also be addressed on all levels during evaluation to determine the effect within the system. Moreover, the nested structure of levels helps us to understand the process of institutional capacity development.

3.1.3 From Best Practise to Best Fit: Considering the Context

Following the line of accepting and acknowledging the complexities of capacity development, the evaluation methods have moved from a 'best practise' approach towards a 'best fit' approach as a core guidance principle for development (Ramalingam et al., 2014). This transition marks the importance that is given to understanding the environment in order to identify who needs what capacities, why it is needed and why this matters given a specific context (Eade, 1997; Gharesifard et al., 2019a). The CMOc act from the perspective that both the context and mechanisms within a system determine the output and should therefore be studied in detail to understand why an intervention is succeeding or failing.

3.1.4 The Position of the Institutional Approach

Section 2.3 illustrated that the concept of capacity development is closely related and strongly connected to institutional development. As has been shown by Ostrom's IAD framework, the contextual factors have a significant influence in determining the action arena in which change might occur. The contextual factors are expected to play a big role in understanding and supporting mechanisms of change. Especially the factors underlying the 'rules in use' will set the boundaries of the situation in which capacity development takes place. As the framework is developed for institutional capacity, the institutional set up that could be taken as a starting point for a framework.
Moreover, the IAD framework analyses problems through different tiers (operational, collective and constitutional tier). One could recognize these different levels of institutional analysis as well in the extent to which capacity development occurs on different levels; the individual, organizational and enabling environment levels. However, compared to the IAD framework this framework will focus on studying relations between cause and effect instead of focusing on the positions of and interactions between actors.

3.1.5 Wrap-up: Towards a More-encompassing Framework

Section 3.1 provided the following four points that bridge the scientific gaps between capacity development aspects and current evaluation frameworks:

1. Capturing complexity using causal relations;
2. Including nested levels of (institutional) capacity development;
3. Find an appropriate place to consider the context;
4. Take the institutional setup as a starting point for analysis.

These points will be used as a basis for the design of an evaluation framework for institutional capacity development.

3.2 An Evaluation Framework for Capacity Development

Based on suggestions in the previous section, the Evaluating Institutional Capacity Development (EICD) framework is proposed (see Figure 14). The visualisation of the framework is presented in Figure 14. The framework is made up of different components, which will be explained in this section. Furthermore, the relationship between them will be discussed.

The aim of the framework is twofold: in the first place, the framework helps in understanding how an intervention aimed at institutional capacity development could bring change and secondly, the framework provides a set of indicators which can be used to evaluate if that change is brought about. Together, these insights allow us to conclude to what extent institutional capacity development has taken place.

The framework is founded on a combination of the classical Theory of Change (ToC), the more progressive Context-Mechanism-Outcome configuration (CMOc), and the specialized Knowledge Capacity Development (KCD) framework. Next to these evaluation methods, the framework is inspired by the system diagram method and the IAD framework (Enserink et al., 2010; Ostrom & Polski, 1999). By drawing causal relations between the elements, relations and assumptions are clarified.

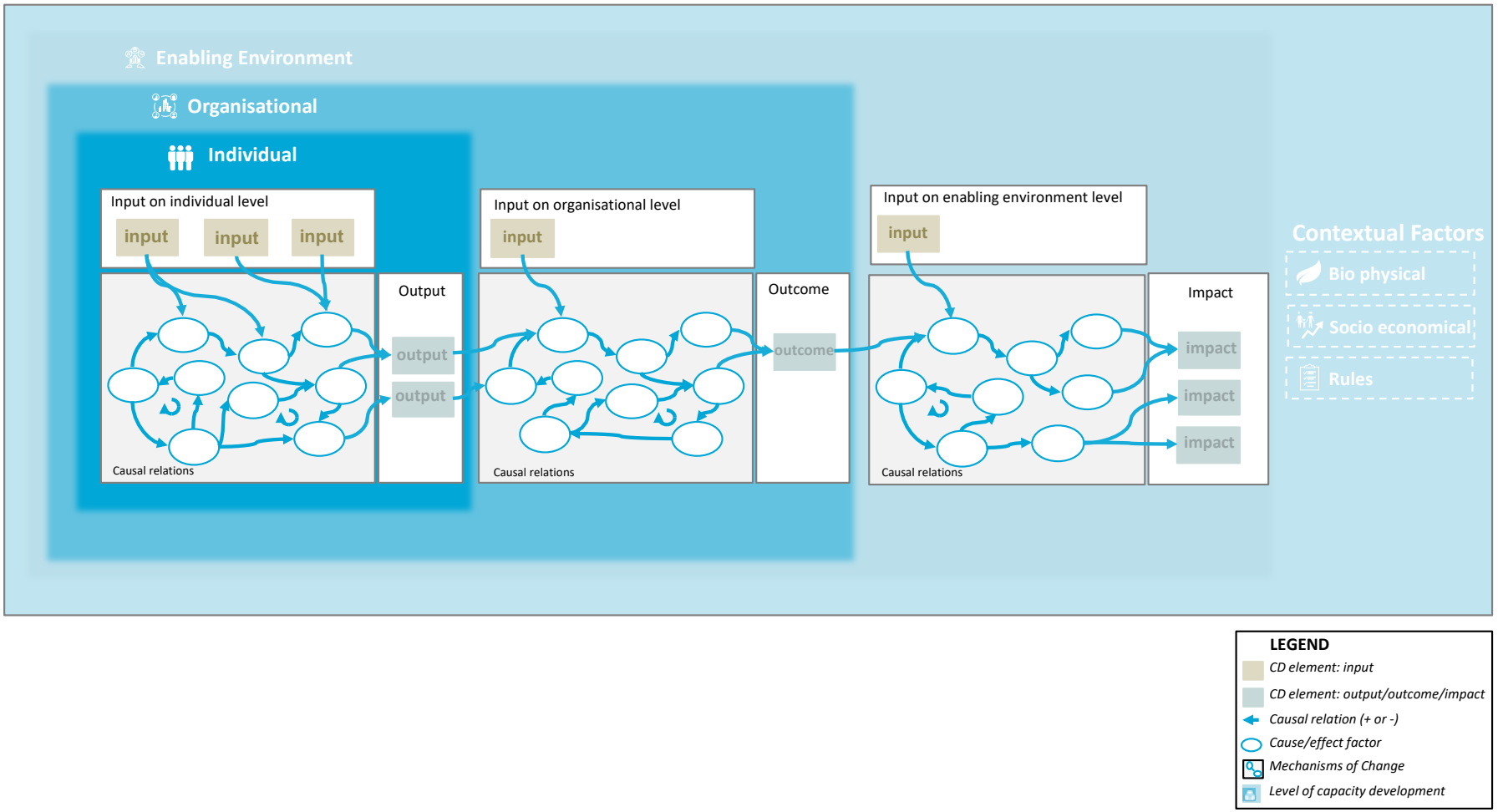


Figure 14 Evaluation Framework for Institutional Capacity Development

3.2.1 Nestedness of the Intervention

The first function of the framework is to understand the logic of the intervention. The logic provides us with the sequence of events undertaken in and the milestones of the intervention that eventually lead to a desired result. The logic of an intervention can be designed based on a program theory in which the input, output, outcome and impact of an intervention are mentioned. In our framework, these components can be referred to as 'Elements of Capacity Development'. As the evaluation framework is focussed on institutional capacity development, these elements are divided into the nested levels on which capacity development can occur. The output is specified on an individual level, the outcome on the level of organisations, and the final impact will be assessed on the level of enabling environment. The relation between these levels is indicated by different shades of blue, which fade into each other (see Figure 14). The input for each of these levels is not solely determined by the previous level but also leaves space for new input (see yellow box on top).
As pointed out by (DFID, 2012), a paradox exists between the level of detail when evaluating and the intensity of causal interference. With a scoped project, the evaluation becomes more detailed and the likelihood that a strong causal interference will be found is higher. Contrarily, one can expect it to be more difficult to find a strong causal interference for a widely scoped project and evaluation. Cutting projects in different parts however brings the risks that synergy between the parts is forgotten and the analysis is incomplete. To overcome this risk, all three nested levels are considered.

3.2.2 Contextual Factors

The framework allows contextual factors to be included. These factors play a key role in explaining the assumptions under which the causal relations are predicted. Moreover, the contextual factors have shown to be an important aspect of the institutional approach to capacity development.

The contextual factors are based on the contextual factors of the IAD framework as referred to by (Ostrom, 2011). A division of the contextual factors is made into bio physical, socio economic, and rules. Although the selection and use of contextual factors is inspired by the work of Ostrom (2011), it should be acknowledged that the use of the contextual factors is rather unconventional and the interpretation is broad-minded and focussed on capacity development.

The bio physical conditions include the physical and material conditions that are of influence to a policy action situation (Ostrom & Polski, 1999). The bio physical or material conditions might influence the situation in which the intervention take place and thus enable or constrain the processes of capacity development.

The socio economic conditions have been described by Ostrom & Polski (1999) as the community attributes. These attributes consider the historical background, cultural aspects, beliefs, prior knowledge and other socioeconomic features of a community (Andersson, 2006). However, as capacity development intervention do not always target communities but also professionals or organisations, these conditions are referred to as socio economic conditions of the target group of the intervention.

The rules can be described as the shared understanding among actors about what is permitted, required and prohibited, in a specific situation. They describe the institutional context in which the intervention is embedded. These can be both formal rules as well as informal rules of behaviour. The rules as contextual factors can be distinguished from the institutional perspective of capacity development to the extent that they are not intended to change. Yet they can experience change as more insights are gained on institutions in place which might lead to improvement of these rules. However, as indicated in **Section 2.3** this process of change might occur only on the long term.

One of the most important elements of this framework are the assumptions made which underlie the predicted relations between the input, output, outcome, and impact elements. Together with the influence of contextual factors, these assumptions cause certain mechanisms to start working that could lead to change. A more in-depth study of the assumptions is required to understand what causes a mechanism to work and will be elaborated below.

3.2.3 Explaining the Causal Relations and Context-Mechanism Output with help of a Systems Diagram

One of the core elements of an evaluation framework is the relation between the underlying assumptions that cause change. By looking at these relations, dynamics between factors can be captured as well as emergent behaviour patterns. Moreover, this allows for contribution analysis. Figure 14 shows the causal assumptions in the grey box with help of blue balloons and arrows. The assumptions are made up of different factors that together form a network of cause and effect relations. As described by Enserink et al. (2010), "mapping these relations helps in understanding how changes in one factor result in changes in another factor" (p.70). They are thus considered relevant in understanding how mechanisms might lead to change.

The combination of these assumptions, the capacity development elements and the influence of contextual factors can be determined with help of a systems diagram. A systems diagram helps in structuring complex policy fields by providing, amongst others, 'means', 'external factors' and 'criteria' within a system (Enserink et al., 2010). Referring this to the evaluation of interventions, specifically capacity development, one can conclude that a similar structure of mapping the important factors can be used.

The assumptions made between each of the elements are specified in a separate system or level of capacity development, having its own 'means' or 'inputs', and criteria or 'outputs'. The same contextual factors will play a role in each of the systems, as these are not expected and intended to change in between. The input and output for each system are determined by the changes that happened for each of the elements. This change is determined by the underlying mechanisms (assumptions) and context factors. Looking at the framework in Figure 14, the input of one level is determined by the output on the previous level. By separating the systems like this, one is able to evaluate capacity development for each level separately through a set of indicators. Moreover, each of the levels experiences influence from contextual factors.

Ultimately, a set of indicators is used to determine change for each of the capacity development levels. These indicators provide overarching information on capacity development and are thus considered applicable on all three levels. However, these indicators should be made context specific when applying the framework to a capacity development intervention.

3.2.4 Wrap up: the Evaluation Framework

With help of the framework as sketched above, mechanisms and contextual factors that cause capacity development to emerge can be explained. This explanation can be used to understand how an intervention through input can activate a certain mechanism to react, leading to a certain change in the system. These changes in terms of capacity development can be measured with help indicators.
The framework allows for an evaluation from a top down as well as a bottom up approach. As input is provided in each of the separate systems, the mechanisms of change can be activated by an intervention at every level. Moreover, the framework provides a closed loop. The bottom up approach allows evaluation from input, to outcomes, to impact. As the impact as measured connects back to the context factors, an evaluation top down is possible as well. In reality this might be the case when an intervention leads to institutional change thereby possibly changing the context in which individuals and organisations act. This is reflected in the framework through the nested levels connecting the impact, context and the system.
The framework can be used at the start of an intervention to get overview of the essential components of institutional capacity development, but can also be used iteratively to evaluate. To do so, the next section provides a step-by-step approach.

3.3 Step-by-step Approach for Application of the Framework

In order to apply the evaluation framework for capacity development from an institutional perspective, a step-by-step approach is advised. Using this step-by-step approach allows for thorough analysis of the data collected on the CPIA project and enables us to apply the developed evaluation framework. The step-by-step approach has been divided into three phases and a total of seven steps (see Figure 15). This section explains the different phases of the approach and its belonging steps below.

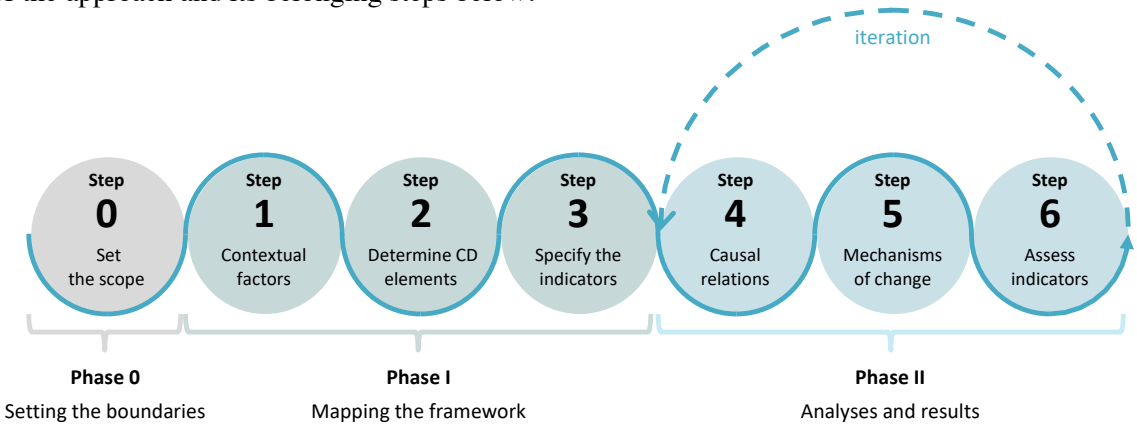


Figure 15 Step-by-Step approach for the developed evaluation framework

3.3.1 Phase 0: Setting the Boundaries

Phase 0 is called 'Setting the boundaries' and uses step 0 to set the scope the evaluation. This can be done by looking at the moment of evaluation, the critical actors in place and the levels of capacity development. As an intervention often results in many direct and indirect effects over time, setting the scope is essential to address the important changes of interest.

3.3.2 Phase I: Mapping the Framework

Phase I of the approach is referred to as 'Mapping the framework' can be used at the start of an intervention. The first phase is used to map the key components of the framework to the intervention. This helps one to get a snapshot on the intended capacity development objectives of the intervention and the situation in which the interventions are taking place. Phase I comprises the following three steps.

Step 1: Contextual factors

The first step in applying the framework is mapping the context. When starting an intervention, one should be aware of the context in which the intervention takes place. Capacity development projects are embedded in and influence by contextual factors, such as social, political, institutional, environmental and technological settings. As explained above, the classification of contextual factors is inspired by Ostrom's IAD framework (2011) in bio physical, socio economical, and institutional arrangements. By doing so, the current rules of the game in place determined by culture, formal rules, laws and behavioural rules are considered as well. This touches upon the institutional perspective of capacity development.

Capturing contextual factors at the start of an intervention is essential for at least two reasons. Firstly, context mapping could deliver useful insights needed to support the development of sustainable capacity. Secondly, as mentioned by Gharesifard et al. (2019a), contextual analysis can also be used as a benchmark for assessing subsequent outcomes and impacts.

When mapping the context, a distinction should be made between the contextual factors and internal factors that can be assessed in for example a baseline study. As indicated in **Section 2.3**, this is especially complex when evaluating institutional focussed capacity development due to the thin line between institutional development and capacity development. In this study, the contextual factors are part of the context in which the intervention is embedded. The internal factors are intended to change and thus should be assessed during the intervention.

In order to measure change, it is recommended to this at the start of the intervention as a kind of baseline measurement, during the intervention, and in the final stages as an end line measurement.

Step 2: Determining the capacity development elements
Secondly, the capacity development elements referred to as the input, output, outcome and impact needs to be identified. The input can be considered as the activities that are implemented during the intervention, and which strive to establish a certain output, outcome or impact. These activities can also happen on all three levels of capacity development. However, usually only one of the levels is targeted such as training workshops to employees aimed to develop capacity on an institutional level.

The capacity development elements might change as the capacity development intervention is ongoing and unintended outputs, outcomes, and impacts might occur. To adjust for these, data during the intervention and at the end of the intervention is required.

Step 3: Specifying the indicators
In order to assess if capacity development took place, indicators for change can be specified. Indicators can be understood as a sort of metric for change and apply to all three levels of capacity development (Van Es et al., 2015). Most capacity development interventions are still using a program logic in order to explain the intended effects of the intervention to the donor organisation. In here, they are often referred to as the output, outcome and impact of an intervention.

Kaspersma (2013) provides four categories of knowledge and capacity development indicators, referred to as technical, managerial, institutional and learning capacities. These categories have been specified for capacity development, and thus seem to be appropriate to use as overarching categories of indicators. Moreover, they have been retrieved based on studies in the water sector and are therefore considered useful for our capacity development intervention in Bangladesh. The specific indicators depend on the intervention and should be determined within a certain context. However, several scholars have suggested indicators for capacity development that can be used to assess capacity development (Kaspersma, 2013; Quan et al., 2019; Roberts & Ling, 2012; Sadik et al., 2020).

3.3.3 Phase II: Analysis and Results

Ultimately, Phase II is referred to as 'Analyses and results' and can be used iteratively at the start (baseline), during (midterm) and at the end (end line) of the intervention. This phase focusses on the assessment of capacity development activities through capturing causal relations and measuring indicators. When performed thoroughly, phase two should be executed on a frequent basis in order to keep track of the change in capacity development and adapt if needed. As explained by Mayne (2015), revision and adaption of the framework is advised for complex interventions. Phase II comprises steps 4, 5 and 6 which will be explained below.

Step 4: Mapping the causal relations
When the context, capacity development elements and indicators are mapped, the first phase of the approach is completed. The analysis and results phase of the approach can begin, starting with the fourth step of the approach. Step 4 aims to map the causal relations that capture the change processes of the intervention. These causal relations can be identified with help of empirical data such as interviews and/or Focus Group Discussions (FGDs) with the beneficiaries and project partners, observations and surveys, and secondary data such as review of the relevant documentation. In order to make sure these relations are established and are context based and valid, empirical data is required.
Causal relation mapping aims to capture relations that are relevant to the intervention in order to understand how the mechanism of change is supposed to work. The relations can indicate whether a positive (+) or a negative (-) correlation takes place (Enserink et al., 2010). For example, when the relation between X and Y is positive, an increase in X will cause an increase in Y. However, when visualizing these it is important to keep the readability of the framework in mind. Mapping causal relations might result in other unintended effects to occur, which should be mapped as well.

Underlying these relations are assumptions which can be developed when collecting empirical data. Finding the appropriate data can be challenging.

Step 5: Understanding the mechanisms of change
The final step in this approach brings us back to the core understanding of capacity development initiatives; understanding the mechanisms of change. When the causal relations have been identified, the pathways of change can be established. This allows us to answer the following questions:

- Which mechanisms of change can be identified?
- To what extent did these mechanisms of change lead to a certain output?
- What other effects have occurred?

Understanding these mechanisms of change enables us to make possible changes to the input of the intervention, thereby influencing causal relations in place.

Step 6: Assessment of indicators
The final step of the approach comprises measuring the indicators in order to assess if change occurred. By doing so, a conclusion can be drawn to what extent institutional capacity development occurred. As capacity development is a complex phenomenon, assigning values to the indicators can be challenging. To overcome this, the indicators will be assessed based on the causal relations and the mechanisms of change identified in the step 4 and 5.

3.3.4 Overview of the Phases and Steps

The step-by-step approach is summarized in Table 4. These seven steps could be best applied in sequence from 0 to 6, followed by a couple of iterations in steps 4 to 6. These iterations can take place at the beginning (baseline), during the intervention (midterm) and at the end of the intervention. The number of iterations is often depended on the information and budget available to conduct these.

Table 4 Step-by-Step approach

	Phase 0	**Phase I**			**Phase II**		
	Step 0 Scope	**Step 1 Context mapping**	**Step 2 Determining indicators**	**Step 3 CD elements**	**Step 4 Causal relations**	**Step 5 Mechanisms of change**	**Step 6 Assessment of indicators**
Essence	Set the boundaries needed to evaluate institutional developed capacity.	Understand the context in which the intervention is happening.	Clarify how the intervention can be assessed.	Understand why the intervention takes place and what is aimed to be achieved.	Map causalities between factors of the intervention and underlying assumptions.	Understand how and why change is (not) established through the intervention.	Asses to what extent change is (not) established.
Core question	What is the moment of evaluation and which levels are concerned?	How does the context in which the intervention take place look like?	How can we assess if change has occurred?	What is the intended input, output, outcome and impact of the intervention?	What causal relations can be distinguished?	What mechanisms of change can be identified, leading to a certain output?	To what extent did institutional focussed capacity development take place?
Output	Scoped intervention	Contextual factors, categorized in bio physical, social economical and institutional factors	Indicators on change for appropriate levels of capacity development, categorized in technical, managerial, institutional and learning capacity	Clarified input, output, outcome and impact of the intervention.	Causal relations capturing underlying assumptions of change	Explanation on mechanisms of change	Assessed indicators for appropriate levels of capacity development

3.4 Conclusion: Proposing the Evaluation Framework

The proposed framework for evaluating capacity development and the complementary steps offer an approach to capture the complex features of the phenomenon while being able to evaluate capacity development to its full extent. The proposed framework aims to help in assessing to what extent capacity development has taken place, but foremost aims to understand how and under what conditions this was successful or not. Instead of measuring solely the products of an intervention, this framework allows one to assess the changes that might have contributed to achieving these products.
The framework does this by mapping the logic of the intervention including the contextual factors as intended by including capacity development in individual, organisational and enabling environmental level. This is complemented by focussing on the assumptions to discover cause and effect relations that help understand the mechanisms leading to change. This helps on in analysing the context mechanisms that have been activated by the intervention to cause change. By incorporating the indicators within the categories technical, managerial, institutional and learning and innovation as proposed by Kaspersma (2013), one can assess to what extent capacity development has taken place. The framework is supported by six steps which can be used to apply the framework in the right sequence.

Considering these two goals, the framework can be understood to be built upon the foundations of impact evaluation and realistic evaluation, and can be observed to fit in the category of a complex adaptive systems approach to evaluation. With this complex adaptive systems approach, the framework touches upon the institutional and systems approach towards capacity development. The institutional approach is further emphasized by acknowledging the importance of contextual factors and using the distinction as proposed by Ostrom (2009a). The framework contributes to the existing literature by making use of the logic reasoning from the classic evaluation school of thought and integrating this with the complexities of capacity development. Moreover, the framework adds the systems diagram perspective to help capture causal relations and contextual factors. This integrated approach for evaluating capacity development recognises the added values of impact focused RBM tools, whilst incorporating that with a more institutional and systems approach towards capacity development interventions emphasizing the context, dynamics and adaptability.

The framework developed can be identified as a 'theoretical' framework based on the findings of previous scholars on the evaluation of capacity development and our understanding of institutional capacity development. The developed evaluation framework is founded on theories of capacity development and institutional challenges (see Chapter 2). The literature used was mainly focussed on the water sector to take the societal relevance of this study into consideration. The evaluation framework can therefore be concluded to lie at the intersection of capacity development, institutional challenges and water challenges as indicated in Figure 16.

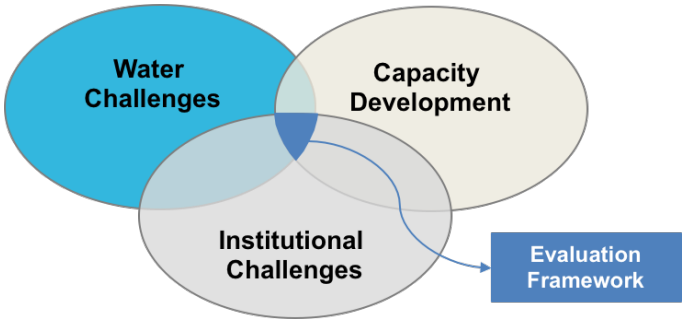


Figure 16 Intersection of the framework

The next step is to test if this framework turns out to be suitable for a real-world case study and how the framework is observed by experts in the field of evaluating capacity development.

III Operationalization

4 Introducing the CPIA Case Study

As pointed out in the previous chapter, capacity development is strongly related to the context in which it is being build. Moreover, an evaluation will always be adapted to the circumstances of the intervention. Chapter 4 outlines the case in which capacity development is aimed to be achieved by providing information on the intervention. This case study serves as an illustration for applying the developed evaluation framework. **Section 4.1** reports the case study methodology. **Section 4.2** provides background information on the geographical location of the case; the urbanizing delta around Khulna. **Section 4.3** introduces the intervention, which is the 'CPIA' project. The section informs on who are involved in the intervention and aims to explain the organisational and environmental setting as well as the overall purpose of the intervention. **Section 4.4** concludes with the key aspects of the case study.

4.1 Approach for Case Study Research

The case study approach was used for the research is the CPIA project, in which institutional challenges concerning water challenges in the urbanizing delta of Khulna are faced. The case study approach is described by Yin (2014) as "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context" (p.16). A case study focusses on a contemporary and ongoing uncontrolled phenomenon and is bounded geographically and by time. Reflecting this on the thesis, this translates to the phenomenon of evaluating capacity development in the context of the water management in Khulna through an institutional perspective. Case studies are especially useful for evaluation as they can be used to capture contextual conditions of a phenomenon (Hollweck, 1996). Yin (2014) described the case study research as an integral method for program evaluation and notes that the case study can be seen as the primary evaluation method in which the initiative that is being evaluated becomes the main case. An application of the evaluation framework on a case is useful, as evaluations that use first-hand data collection within country case studies are valued (Marra, 2004).
In this thesis, the developed evaluation framework is applied to the CPIA project, which can be viewed as the overall case. The case study approach allows the CPIA-project to be studied while still ongoing and takes all contextual factors into account. Considering all these arguments, the case study method can be concluded as an appropriate research method for this thesis.

4.1.1 Selection of case

(Yin, 1994) described the advantage of a multiple-case design over a single-case design as the evidence being more relevant and therefore considering the overall study to be more robust. When conducting a multiple case study, replication logic should be taken into account and applied to all cases. In this thesis, the context of the case study was determined by the CPIA project. The conditions and boundaries of the case were regulated by the geographical boundary of Khulna and the water challenges taking place. Four different water challenges are addressed within the CPIA project. Though differing slightly in problem addressed, stakeholders involved and geographical boundaries, some of the elements such as the location where the study takes place are similar. One can therefore argue these are not fully meeting the criteria of a multiple case study. Moreover, the different water cases are all part of the same intervention, referred to as the CPIA project. Therefore, all water cases were considered to be one case study.

4.1.2 Data collection

Data for the case is collected through studying documents, having interviews and the results of an evaluation survey (see Figure 17). Data collection concerning the case was based on triangulation. Triangulation uses a combination of methods or data to strengthen a study (Patton, 2001). In this thesis, both primary and secondary data was used. Triangulation has the advantages of producing valid and reliable data findings and minimizes inadequacies of individual methods (Creswell, 2009).

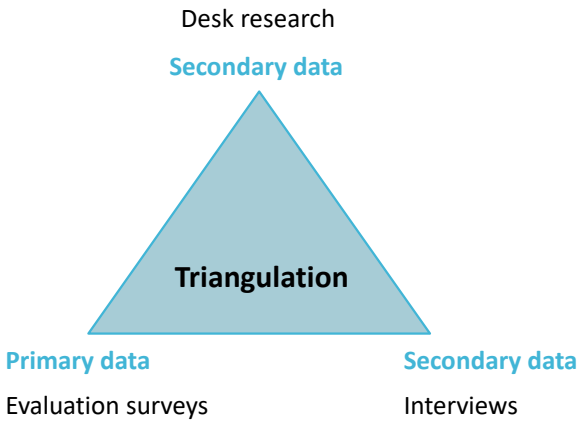


Figure 17 Triangulation of Data, based on (Creswell, 2009)

Secondary data collection: Desk Research

The desk research involved studying documents available on the CPIA project. These include the workshop report compiled based on the CPIA workshops of January 2020, the impressions of that workshop, progress reports on the project published in May 2020 and August 2020, the initial project application form and material developed along the way such as developed games and notes on team meetings. The progress reports indicate the potential challenges and bottlenecks but also potential accelerations and benefits of the project.
The aim of this desk research as twofold. In the first place, insights on the fit of the evaluation framework as developed on the case should appear (sub question 2). Secondly, the data provided preliminary findings on the extent to which capacity development in the CPIA project has taken place (sub question 3).

Primary data collection: Evaluation Survey

Primary data was collected at the start and end of the training workshop in January. The survey results were collected in advance of and during that same workshop. Some of them were anonymous, others are anonymized. The respondents of this survey are the local professionals participating in the training workshop in January.
The first survey was spread at the start of the workshop can be marked as a kind of baseline data on understanding of institutions by participants. The second survey can be marked as monitoring data on the first milestone of the project. The statements used for the survey can be found in Appendix G.
As the number of respondents of the survey was rather limited to provide a solid and valid basis for argumentation, the results were mainly used to support the arguments made through the other data collected.

Primary data collection: Interviews

The interviews were conducted among the stakeholders of all the four cases that are participating in the CPIA project and the project partners. As mentioned by Creswell (2009), this is useful when direct observation is not possible. A detailed overview of the interviewees can be found in Appendix F.

Interviews with participants of the CPIA project

First, interviews with the participants of the CPIA project were conducted. These interviews aimed to collect insights on the attitudes and opinions towards the capacity development initiatives in the project, and the extent to which capacity development has taken place. The interviews took place in July/August and have been conducted over the phone or through Skype. Due to the COVID-19 pandemic, the situation did not allow to physically meet. Given these circumstances, the interviews had a semi-structured format. Before sending out the calendar invite, a letter of support was shared with the interviewees to increase willingness to participate. Thereafter, the interviews were scheduled and the questionnaire was shared with the interviewees beforehand. Moreover, the consent of the interviewees were asked verbally as well as the possibilities for recording of the interview. As the interviewees are very busy and have to work from home, the time of the interview was limited up to 45 minutes.

As some of the interviewees were not comfortable with using English, these interviews are conducted with help of two employees Bangladeshi project partner involved in the CPIA project, JJS. As this increases bias, the interviews were aimed to be conducted as much as possible in English and by the researcher herself. In order to reduce possible bias, the first two interviews have been conducted by the researcher among the two employees of the local partners, whom also participated in the training. Afterwards, the interview set-up and questions were evaluated together so improvements could be made to the script. Moreover, testing the interviews allowed the project partners' employees to see how the questions and possible probes should be asked according to the researcher.

One of the risks of interviewing is the information being filtered through the eyes of an interviewee (Creswell, 2009). With the extra step of a translator in the information chain, this risk is becoming even larger. To overcome this risk, the interviews were transcribed in English by the local partner JJS. This enabled the researcher to interpret the answers as 'raw' data. The transcripts of the interviews were summarized by the researcher and shared with the interviewees afterwards to check for correct understanding of the content and thereby improving validity of the research. These summaries are available upon request of the reader.

Interviews with project partners
Besides the interviews with project participants, interviews had been conducted with the partners of the CPIA project. One stakeholder of each involved partner organisation was interviewed. These interviews were semi-structured as well, and were adapted based on the role of the project partner within the CPIA project. An overview of the interview questions can be found in Appendix F.

The interviews were conducted directly. The topics discussed were shared with the interviewees beforehand. At the start of the interview, their consent is asked as well as their permission to record the interview. Three of the interviews were conducted over Skype, and one of them in person. The duration of the interviews was estimated to be 1 hour. The interviews were anonymized, transcribed and summarized.

Table 5 Overview of data for case study

Kind of data	Type of Data	Documents
Primary data	Evaluation surveys	Evaluation survey pre workshop January 2020 (N=19)
		Evaluation survey post workshop January 2020 (N=15)
	Interviews	Interview transcripts participants July/August 2020 (N=11)
		Interview transcripts project partners July/August 2020 (N=4)
	Conservation	Personal conservation of researcher with project partners Apr-Aug 2020
Secondary data	Project proposal	Public proposal CPIA project for NWO October 2019
	Reports	Workshop report training workshop January 2020
		Progress reports on CPIA project May and August 2020 (N=2)
	Materials	APIA manual by S.L. Gomes January 2020
		Game design urban pond conservation April-August 2020 (N=3)
		Game design wastewater April-August 2020 (N=3)
		Request for proposal KCC Faecal Sludge Management Nov 2019
	Notes	Meeting notes on CPIA project meetings (N=8)

4.2 The Urbanizing Delta of Khulna

The illustrative case study takes place in Khulna City and the urbanizing delta round Khulna. Before analysing the case through application of the EICD framework, this section provides background information on the case.

4.2.1 Introduction to Khulna

Bangladesh comprises a rather detailed administrative structure that deserves some explanation in order to understand the case study. The administrative set-up and different layers of the country can be found in Figure 18.

Bangladesh is surrounded for a large part by India and is bordering Myanmar (former Birma) on the South East. The country has 162.7 million inhabitants in 2017 and is one of the most densely populated countries in the world with about 1200 people per km^2. Bangladesh consists of eight divisions, one of them being the Khulna division (Bangladesh Bureau of Statistics, 2018). The Khulna division is located at the South West of the country and consists of 10 *zila's*, or districts (see Figure 18). Within Khulna division, Khulna district or zila can be found which comprises of the sub-districts Khulna, Bagerhat and Satkhira. Khulna zila consists of nine *upazilas* and five *thanas*. These nine upazilas consist of 74 unions, 759 populated *mauzas* and 1123 villages (Bangladesh Bureau of Statistics, 2015). The five thanas consist of one city corporation (Khulna City Corporation) having 31 city wards. Besides the division into wards, another division can be made into *mahallas* (Islamic congregation, often supported by a single mosque). Khulna city corporation houses 200 city mahallas.

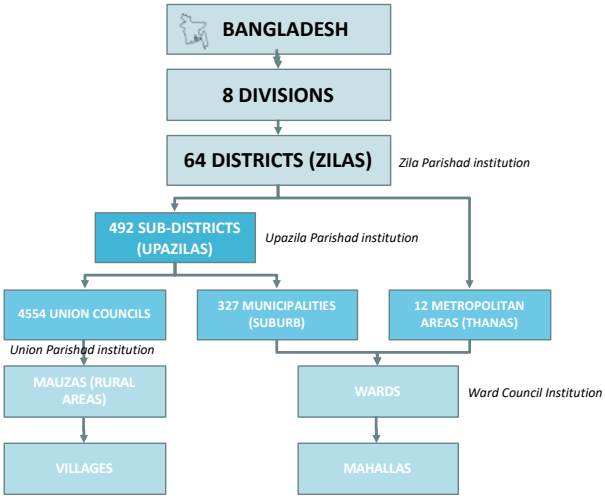


Figure 18 Administrative structure of Bangladesh

Figure 19 Mapping of Khulna division and city (through (Amcharts, n.d.))

Khulna City is the third largest city in Bangladesh after Chittagong and Dhaka, and administrative seat of the Khulna District (see Figure 19, area marked in blue). Khulna City is located in the South West of Bangladesh, close to the Bengal Bay, and is part of the Ganges Delta (see Figure 19). The city covers an area of 45.65 km^2 (Khulna City Corporation, 2020). Moreover, it is bordering the Sundarbans, the largest mangrove forest in the world, and benefits economically from the nearby second largest harbour of Bangladesh, Mongla. Khulna city has 1,500,689 inhabitants (Khulna City Corporation, 2020).

The population of Khulna in increasing rapidly due to urbanization from the rural areas into the cities due to good infrastructure, attractive universities and educational institutes, and expanding shrimp export (Islam et al., 2010). Moreover, the Padma-bridge crossing the Padma River and thereby significantly improving the connection between the Khulna division with the rest of the country, will finish in the near future. This will result in a significant reduction in travel time between Dhaka and Khulna, thereby making urbanization in Khulna even more attractive (Defacto, 2019). However, the progress of the city's infrastructure concerning water does not always develop at the same speed as these peri-urban developments.

4.2.2 Water Challenges in Khulna

Due to its geographical location in the Ganges Delta, climate change and the location of its rivers, Bangladesh is ranked as the sixth most vulnerable country in the world in terms of risks from hazards (Planning Commission, 2018). Khulna is marked as one of the most vulnerable cities towards climate change today (Asian Development Bank & Bank, 2011). Due to its geographical location, Khulna is vulnerable to saltation. With the rising sea levels, this is expected to increase in the future as well. Moreover, the increasing rainfall and lack of proper sewage systems causes risks of flooding of contaminated waste water (Planning Commission, 2018). Besides, the urbanization process puts large pressure on the area's resources, in particular ground water. Not only do communities rely on groundwater as the major sources of drinking water, also industries use the same water for agricultural and industrial activities (Gomes, 2019). This results in over-exploitation of natural resources such as water. An elaborate description of the water challenges in Khulna can be found in Appendix E.

Due to its vulnerability and importance as home for the growing population, Khulna has been integrated in plans and strategies for the Bangladesh delta such as the Bangladesh Delta Plan 2100 and the Water as Leverage Program. Besides, several national and local governmental organisations are concerned with water management in the urbanizing delta around Khulna.

4.2.3 Governmental Organisations concerned with water problems in Khulna

In order to tackle the water challenges occurring in Khulna, many organisations are concerned with or involved in different water cases around Khulna. Most of them are organisations linked to or part of the Government of Bangladesh (GOB). An overview of these organisations is provided below and mapped in Figure 20.

- Khulna City is governed by the *Khulna City Corporation*, in short *KCC*. The KCC is formed under the local government administration of Bangladesh to regulate the city area of Khulna. The KCC operates under the national government through the Ministry of Local Government & Rural Development (LGRD). Within the LGRD, two divisions operate: the Local Government Division and the Rural Development and Co-operatives Division. Besides the KCC, the Local Government division also houses the Khulna Water Supply and Sewage Authority (KWASA) and the Local Government Engineering Department (van der Zee, 2020b).

- *KWASA* is responsible for the water supply in Khulna City. KWASA is established from KCC but operates independently today and parallel to KCC. KWASA's mission is "to be the pioneer agency in the water supply and sewerage sector in Bangladesh ensuring safe and sustainable water supply and environment friendly sewerage management for Khulna City according to the satisfaction of its' consumers" (KWASA, 2020).

- The *Khulna Development Authority (KDA)* is a governmental organ within Khulna responsible for the city's planning and urbanization. KDA is involved in coordinating and executing urbanization projects (KDA, 2019)

- The *Bangladesh Water Development Board (BWDB)* is a governmental engineering agency of Bangladesh functioning under the Ministry of Water Resources (MoWR) (Climate Technology Centre and Network, n.d.). The BWDB is responsible for the implementation of public projects related to the water resources sector of Bangladesh.

- The *Center for Environmental and Geographic Information Services (CEGIS)* is a non-profit organization established under and owned by the Ministry of Water Resources. CEGIS aims to provide independent research and environmental analysis and thereby contribute to sustainable management of natural resources (CEGIS, n.d.).

- The *Institute of Water Modelling (IWM)* serves as a public trust under the Ministry of Water Resources. The agency uses computational hydraulics to improve water resource management. The IWM tools are

being used in a wide range of water management issues such as flood control, salinity, and infrastructures challenges (IWM, n.d.).

The water challenges as indicated require coordination and collective action among KCC, KWASA, and other stakeholders involved. This is only possible with functioning institutions that guide the interaction of stakeholders.

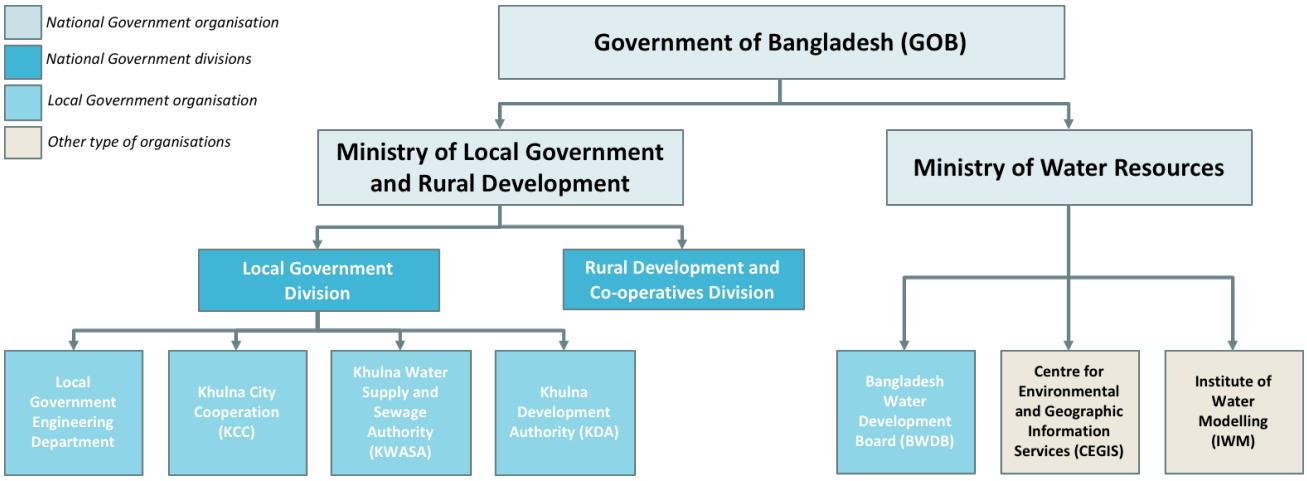


Figure 20 Simplified organogram governmental organizations involved in water challenges in Bangladesh

4.3 The CPIA Project

As the background information on Khulna is provided, an introduction on the specific intervention is provided. The intervention comprises the Capacity for Participatory Institutional Analysis project, in short CPIA project. Based on documents about the CPIA project such as project proposal, progress reports, workshop documents and notes on the project team meetings, the most important aspects of the intervention are summarized below.

Background of the project

The Capacity for Participatory Institutional Analysis (CPIA) project aims to help local professionals in understanding how institutions constrain or enable more sustainable solutions for sustainable management of delta areas (Hossain, 2019). The CPIA project is a follow-up project from the Urbanizing Delta's of the World (UDW) Shifting Grounds Project. In this project, a participatory method, referred to as the Approach for Participatory Institutional Analysis (APIA), has been developed and tested as a basis for smart interventions in institutional design (Gomes, 2019).

The APIA has been developed as a method to gain a better understanding of institutional designs among local stakeholders. The APIA can serve as a basis for smart interventions in institutional designs. The approach aims to involve local stakeholders to participate in the examination of institutions and thereby support decision making (Gomes, 2019).
The foundations for the APIA lie within the IAD framework of Ostrom (2011), in which more insights are gained in the actions and interactions of actors (see Appendix C). The APIA consists of the application of four different steps by local stakeholders, referred to as *problem identification*, *institutional mapping*, *strategic analysis* and *strategy exploration* (Gomes, 2020)(see Figure 21). The APIA was developed, tested and evaluated in the peri-urban area of Hoglanda Village, Khulna, Bangladesh, between 2014 and 2018 by an academic researcher (Gomes, 2019). In January 2020, an APIA manual was designed to enable applying the APIA independently (Gomes, 2020).

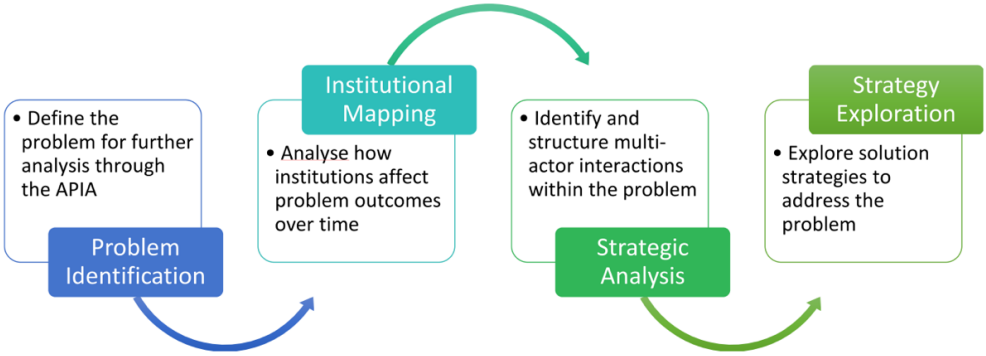


Figure 21 Overview of APIA steps (Gomes, 2020)

Purpose of the CPIA project

The CPIA project aims to develop capacity for standalone usage of this APIA among local professionals in the southwest delta and Khulna Jessore region. Scholars pointed out that knowledge disseminates more slowly in organizations of developing economies compared to developed economies, due to weaker communication systems and education levels in place (Alaerts, 2020a; Grindle, 2007). The CPIA project aims to tackle this challenge of knowledge dissemination by training-the-trainers.

The train-the-trainers concept aims to involve 'lead teachers' in some form of central workshops, in which specific knowledge and skills are developed by specialized trainers. The 'lead teachers', in this case the local their colleagues in their own organization on the developed knowledge and demonstrated their obtained skills (Mormina & Pinder, 2018). Although the train-the-trainers model sounds relatively efficient and easy to prepare, the model is also vulnerable to risks due to absence of deep understanding and appropriate application of the concepts and skills learned in the workshop (Pancucci, 2008).

In the case of the CPIA project, the 'lead teachers' are referred to as the local professionals. Through central workshops, specialized trainers (project partners) train the participants (local professionals) by letting them develop their own initial models and game designs to conduct their own institutional analyses. A guide developed on the APIA is used as guidance tool for the creation of workshop and training materials (Gomes, 2020). Appendix E provides a more elaborate description of the activities taking place.

The intervention trains the local professionals on using the different steps of the APIA and applying them to their specific water management challenge faced in Khulna. Instead of the APIA being applied by an international researcher with facilitation of a local project team, the projects' focus is on the ability of local professionals to work with and execute the approach standalone.

Actors involved

The CPIA project is a collaborative initiative from the Bangladeshi NGO Jagrata Juba Shangha (JJS), Khulna University of Engineering and Technology (KUET), Delft University of Technology (TU Delft), and the Dutch research institute Deltares (Hossain, 2019). The project is funded by the Dutch Research Council NWO. JJS is leading the collaboration and is thus the project leader in this consortium. Together with KUET, JJS is in close contact with the participants taking part in the CPIA project. Technical assistance is provided by the Dutch partners Deltares and TU Delft (van der Zee, 2020a).

Application areas

The CPIA project is applied to four different water cases, referred to as:

- Waste Water Management
- Urban Pond Conservation
- Participatory Water Management in Polder Areas
- Tidal River Management

All four specific cases are related to sustainable water management in the delta area. These cases all phase institutional challenges and have therefore considered to be appropriate for the CPIA project. An overview summarizing the four cases is provided in Appendix E. Based on these four water issues, professionals are selected from relevant organizations in the delta and water management sector of Bangladesh to participate in the project. These local professionals can be considered the target group of the intervention.

Timeline of the project

The project started in September 2019 and is divided in the following five phases (see Appendix E):

Table 6 Phases of the CPIA project based on project documents (Hossain, 2019, 2020b, 2020c)

Phase	Purpose	Actors involved	Status
Phase 1: Training preparations	Select the water issues and prepare the training based on APIA manual	JJS, KUET, TU Delft, Deltares	Finished
Phase 2: Training in Khulna	Three-day training on APIA methods and first version of game-based workshop	JJS, KUET, TU Delft, Deltares, Local Professionals	Finished
Phase 3: Further development of game-based workshops by trainees with on-sight support from Bangladesh project partners	Refine and elaborate the first version of materials developed in the training workshop and develop workshop design and materials for implementation	JJS, KUET, with distance support from TU Delft and Deltares, Local Professionals	Ongoing
Phase 4: Delivering the game-based workshops to the problem-relevant stakeholders	Run test workshop and two full workshops with local stakeholders with the material developed	JJS, KUET, TU Delft, Deltares, Local Professionals, Local Stakeholders	Not started
Phase 5: Evaluation of experiences and future perspectives	Concluding one-day workshop to discuss the experiences and disseminate lessons	JJS, KUET, TU Delft, Deltares, Local Professionals, Local Stakeholders	Not started

The original duration of the CPIA project was supposed to be from September 2019 until September 2020 (Hossain, 2019). However, due to the current situation regarding the COVID-19 pandemic some activities have slowed down and traveling is impossible. This causes the project to be extended. As international travel is prohibited, unless strictly necessary, field visits from the TU Delft and Deltares to Khulna are impossible until at least September 2020. In Khulna, Bangladesh, the CPIA project still continues with the local professionals although at a slower pace than planned.

All four of these cases have been discussed in the first and second phase of the project. However, due to the COVID-19 situation only two games are currently further developed and played (phase 3). These are the games on waste water management and urban pond conservation. Currently[1], the project is concerned with improving these two games based on the test plays. This can be marked as the final stages of phase 3. The other two cases, participatory water management in polder areas and tidal river management, are still at the start of phase 3 of the project. An elaborate overview of the projects will be provided below.

Figure 22 shows the timeline of the CPIA project and the thesis planning. As can be seen, the duration of the thesis does not capture the entire duration of the CPIA project. Nevertheless, data about the progress of the project has been captured. This makes it doable for the thesis to apply the monitoring and evaluation framework as developed to the project period of January until August, when the first three phases and a part of phase 4 have taken place.

[1] September 2020

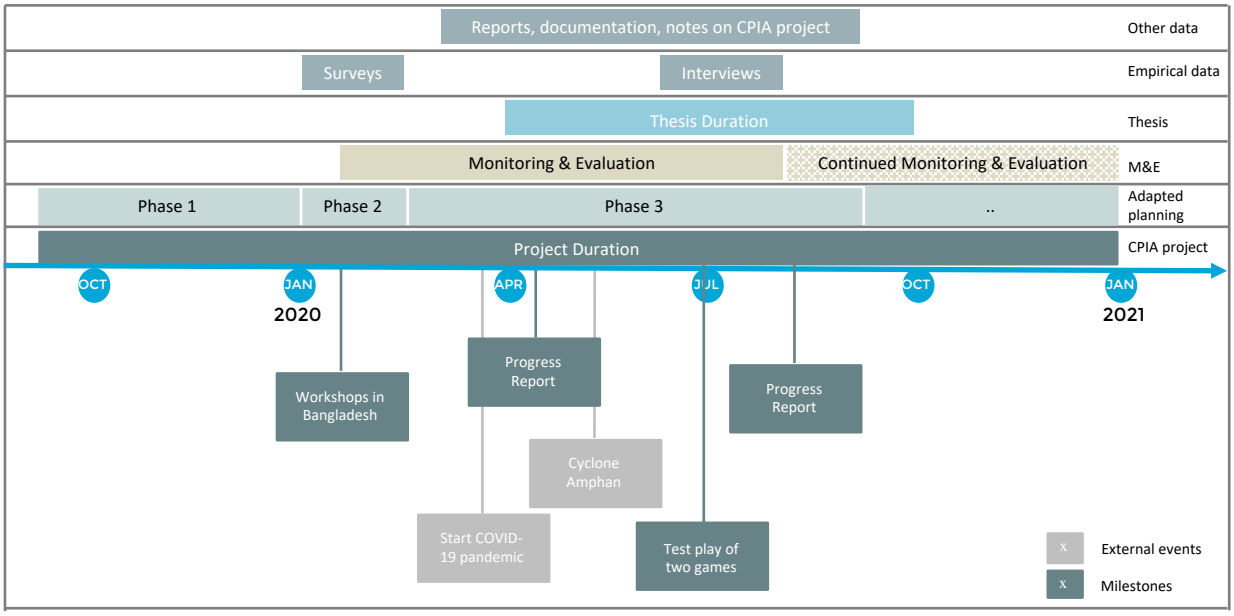


Figure 22 Timeline of the CPIA project, based on (Hossain, 2019)

4.4 Conclusion: the CPIA Project as an Illustrative Case Study

Khulna city and its surrounding delta are concerned with water problems caused by climate change, peri-urbanization and a current lack of functioning institutions. These challenges are addressed in the Capacity for Participatory Institutional Analysis project, in short CPIA. A consortium of both Dutch and Bangladesh partners aims to develop capacity among local professionals in Khulna to improve understanding on the effect of institutions for more sustainable solutions for sustainable management of delta areas. With a step-by-step game-based approach, the APIA approach, this is being tackled (Gomes, 2019). The CPIA project thus forms an interesting case to illustrate an application of the developed framework and step-by-step approach as presented in Chapter 3. However, as the framework is very context specific, a proper selection of boundaries should be made before analysing the CPIA project on capacity development initiatives.

5 Analysis of Institutional Capacity Development in Khulna, Bangladesh

Chapter 5 aims to map the developed evaluation framework to the CPIA project with help of an illustrative case study approach, thus providing an answer to the sub question: *Based on the application of this framework, what can be concluded about institutional focussed capacity development among local professionals in the water sector of Bangladesh?* Using desk research on CPIA project documents such as project proposal, workshop reports, and progress reports, and empirical data such as interviews with project participants and project partners, evaluation survey results and conservations the necessary information is gathered. **Section 5.1** describes the approach for data analysis. This is followed by an application of the step-by-step approach (see Figure 23).

In **Section 5.2**, Phase 0 of the approach is applied. **Section 5.3** is used to apply Phase I of the approach, mapping the framework. Thereafter, **Section 5.4** uses the empirical data for the final Phase II of the project, analysis and results. The final sections, **Section 5.5** and **Section 5.6** provide a conclusion on the analysis of the illustrative case study and recommendations for the CPIA project.

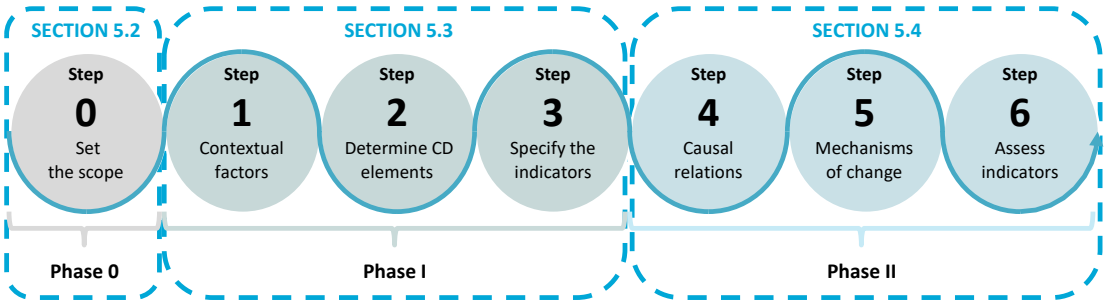


Figure 23 Operationalization of the step-by-step approach

5.1 Approach for Data Analysis

This research uses qualitative data analysis to illustrate the use of the developed framework. The data collected provides information on assumptions, causalities, and contextual factors. The interviews were designed around the components of the EICD framework, but also left options for additional information through its semi-structured format. The interview questions can be found in Appendix F. Together with the other data, the interviews were collected to prepare for analysis. This is done through the first three steps described in (Creswell, 2009) as (1) organizing and preparing data, (2) reading through all the data, (3) Coding the data. The data will be anonymized so the respondents will be referred to as Respondent 1, Respondent 2, etc. The data does contain the occupation, organization and water case the respondent was working. The analysis will be done with help of the program Microsoft Excel. Coding of the data will be done around the components of the framework through the step-by-step approach and takes place manually within the Excel file. Hereby, we made use of a combination of predetermined codes (based on the step-by-step approach) and the emerging codes (interesting information observed during scanning of the data).

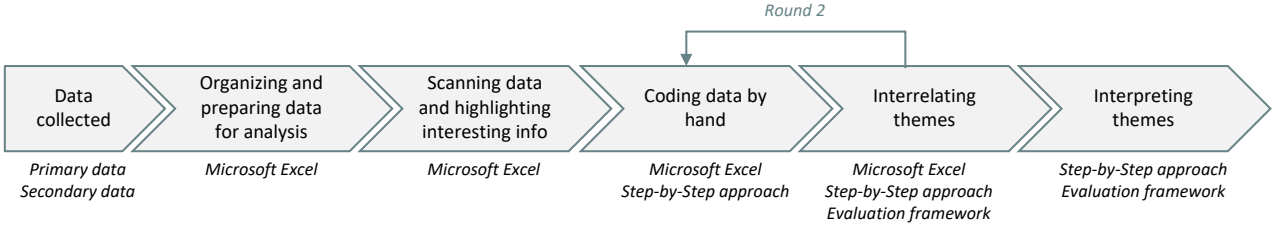


Figure 24 Data analysis process (based on (Creswell, 2009)

The data analysis process is visualized in Figure 24. First, the data available on the CPIA case (see Table 5) was organized and prepared in two Excel files: one covering the primary data and one covering the secondary data. Secondly, all the data was scanned, and important or relevant information was highlighted. This followed by a first round of coding, in which the scope (step 0), the contextual factors (step 1), the capacity development elements (step 2), plausible indicators (step 3) and the possible causal relations (step 4) were mapped. As the interview questions were designed around the components of the framework, coding the interviews was very efficient. The second round of coding comprised a check on the important and relevant information to look for any not captured information. This information is coded either by relating to the defined codes or by preparing a new code. Moreover, the second round of coding payed more attention to Phase II of the step-by-step approach.

After these two rounds of coding, the themes were interpreted with help of the developed evaluation framework and the step-by-step approach. Once the data analysis process was finished, the important causal relations (step 4) and mechanisms of change (step 5) could be identified. Based on these results, the indicators of institutional capacity development could be assessed (step 6).

5.2 Phase 0: Setting the Boundaries

In order to provide a thorough evaluation on capacity development, Phase 0 needs to be executed to get an appropriate scope of the intervention (step 0). Therefore, the moment of evaluation, the critical actors involved and the levels of capacity development should be determined.

Moment of evaluation

In order to assess and understand mechanisms of change in an intervention, we should consider the process of the intervention and its current state. Since the effects of an intervention occur over time and the process of change might be adapted over time, being transparent on the moment of evaluation is necessary.
As indicated in **Section 4.3**, the CPIA project started in September 2019 and was supposed to last until September 2020. Unfortunately, the COVID-19 crisis caused the project to be extended. The final date of the project is yet undecided, as the COVID-19 pandemic is still very active. The moment of evaluation however, was not adjusted. This means that the evaluation takes place while the project is still ongoing. Documents and information on the project until date will be collected and used to evaluate the capacity development imitative. Based on this, one can conclude that the results and relations that are captured during the project will be preliminary. A solid impact assessment requires the project to be evaluated once more at the end of the project. Therefore, this case study should be viewed as an way of illustrating possible use of the developed evaluation framework. However, the mechanisms of change identified provide opportunities for the project to make possible adaptions along the way.

Capture the critical actors

Secondly, it is important to map the stakeholders involved in the project in order to understand who plays a role in causing, maintaining or prohibiting the situation that is aimed to be changed. As we are interested in the actors that cause change, the critical actors in this project will be identified (see Table 7).

Based on the overview of critical actors, we can conclude that the target group of this intervention are the local professionals and the Bangladesh project partner JJS. For these actors, capacity is aimed to be developed for applying the APIA method standalone. The direct end beneficiaries of the intervention on an individual level are the local professionals, as the CPIA project aims to improve their understanding on institutional issues and participatory water management challenges. These actors can also be recognized to be the participants of the project. Moreover, by sharing this the project aims to develop capacity on the organizations they are working in as well thereby making these organizations beneficiaries on an organizational level. This is where the train-the-trainers concept comes in. Ultimately, other local stakeholders such as local communities can be seen as the indirect beneficiaries of the project. Although their capacity is not developed directly, they play a role in the practise sessions of the game theory models and are supposed to attend the final dissemination workshop.
A complete overview of the project phases and their relations with the critical actors is provided in Figure 25.

Table 7 Critical Actor overview of CPIA project

Actors	Role in the CPIA project	Intended needs	Power to establish change	Interests to establish change
Dutch project partners	Project partner; Assisting on theory from a distance; Facilitating capacity development in training workshop	Share knowledge and skills on APIA methods	Medium, as the influence of these partners is from a distance	High, as capacity development aims to allows the developing country to establish larger change standalone in the future
JJS (NGO)	Initiator of the project; Finding project participants; Identifying relevant cases; target group to learn from the approach for future application	Gather important stakeholders on water issues; Capacity development for institutional analysis; Ability to apply the APIA standalone; Solutions for water challenges	Medium to high, as they play an important role in capacity development in Bangladesh and have a large network among influential organizations	High, as the lack of institutional knowhow affects their main target group, being local communities
KUET	Project partner; Assisting in developing and reviewing the game designs; Facilitate in the training workshop; Mediate input from Dutch partners; target group to learn from the approach for future application	Capacity development for institutional analysis; Improved understanding on participatory water management processes; Ability to apply the APIA standalone; Sharing knowhow on APIA	Medium, as knowledge and research institutes can stimulate but not initiate change	Medium to high, as learning more on the APIA is interesting but establishing change is of less concern
Local professionals of governmental organizations, knowledge institutes and NGOs	Target group; Participants in the workshops; End beneficiary on individual level	Improved understanding on institutional issues; Improved understanding on participatory water management processes Ability to apply the APIA standalone; Sharing knowhow on APIA	High, as these professionals can share influence with their organization whom have the power to change something	Medium to High, as concerns on water challenges is there but they have many other issues to be solved
Local stakeholders (consisting of local communities and other stakeholders)	Indirect beneficiaries of the hypothetical change, take part in the practise sessions of the game theory models and attend final dissemination workshop	Improved understanding on participatory water management processes; Improved understanding on institutional issues;	Medium, due to top-down implementation of change	High, as the water challenges affect the communities in their everyday life
Local organizations	Indirect beneficiaries on organizational level	Using the APIA within the organization to improve institutional understanding	High, as these organizations can influence the institutional design of water issues and have formal power	Unknown

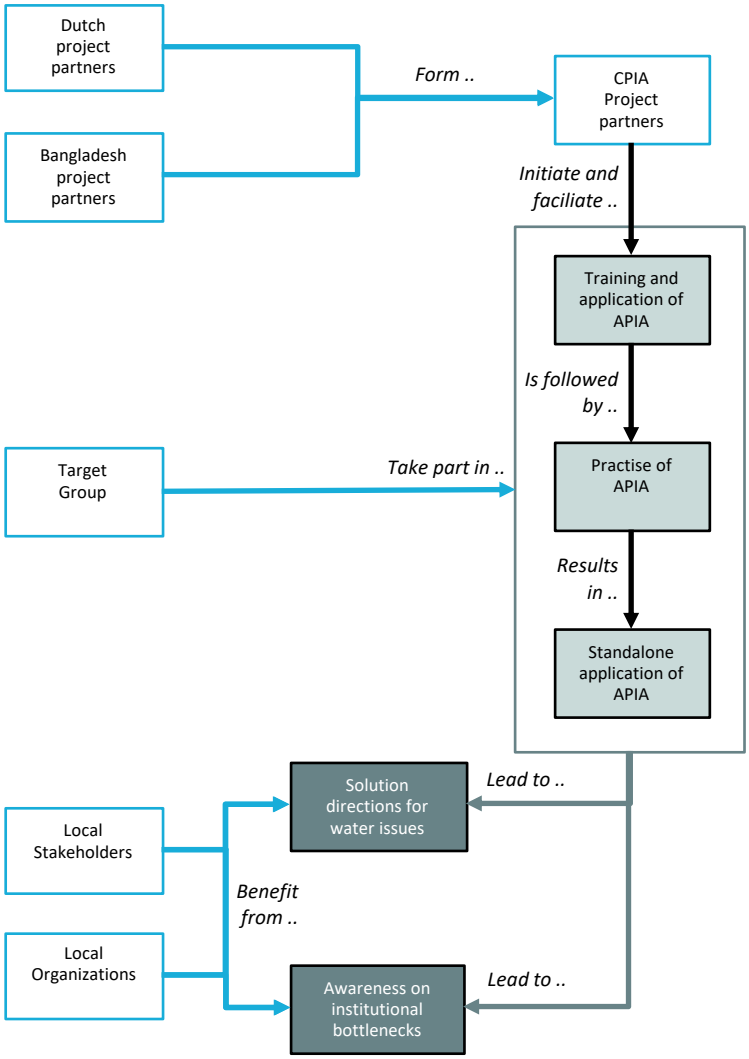


Figure 25 Relations between critical actors in the CPIA project

Levels of capacity development

As described in **Section 2.2**, capacity development could take place at three different levels which are nested. Therefore, determining the levels at which the CPIA project aims to develop capacity on is useful. This can be found in Table 8.

Table 8 Levels of capacity development for the CPIA project

Level of Capacity Development	**CPIA project description**
Individual	Improved understanding of institutional problems among participants.
	Improved understanding of participatory water planning processes among participants.
	Train the trainers: Improved capacity with project partners and participants to support participatory water management and especially its negotiated and institutional components.
Organizational	Better understanding of institutional problems and participatory water planning processes in the organisations involved, through the effort of the individuals participating in the project.
	Improved capacity with project partners to support participatory water management and especially its negotiated and institutional components.
Enabling Environment	More effective coordination
	More collective action

The intervention aims to target capacity development for institutional understanding among local professionals. Therefore, one can conclude that the target group of the intervention are the local professionals and thus capacity development on an individual level is intended to take place. By initiating capacity development on an individual level, transformation could be expected on organizational level and in the end in the enabling environment.
For application of the framework, the individual level of capacity development will be the main focus point. Reasons for this are the timeline of the CPIA project and its current phase as outlined in **Section 4.3**. Moreover, (Simister & Smith, 2010) highlight the usefulness of starting off with assessing individual capacity development. The evaluation framework will also be used to touch upon capacity development on the organizational level whenever possible.

5.3 Phase I: Mapping the Framework

To apply the developed evaluation framework to the CPIA project, the components of the framework as indicated in **Section 3.3** are mapped. This is done by executing Phase I of the step-by-step-approach which comprises mapping of the contextual factors (step 1), determining the capacity development elements (step 2), and specifying the indicators required to asses institutional capacity development (step 3).

5.3.1 Step 1: Contextual factors

In the first step, the context in which the intervention takes place will be assessed. Because capacity is developed from an institutional perspective, analysing the contextual setting will be done with help of an institutional analysis framework; the IAD framework. As explained previously, the IAD framework allows for a detailed examination of components per analytical needs. According to the IAD framework, the variables appearing in the contextual setting consist of bio physical conditions, socio-economic conditions and institutional arrangements, or the current rules. The context provides the initial conditions of an action situation, in this case the intervention (Ostrom et al., 2014). Although the context in which this is happening is dependent on the case, the intervention evolved around one goal to develop capacity among local professionals. Therefore, context mapping will take a higher level of aggregation by mapping the contextual factors relevant to the entire project. The contextual factors relevant to the project will be mapped below. An explanation on their influence based on interviews, progress reports, notes and conservations is provided.

Bio-physical conditions

Looking at the CPIA project, we can determine the following biophysical conditions:

- **COVID-19 pandemic**
  The COVID-19 pandemic influenced capacity development among local professionals extensively. Due to the pandemic, regulations have put in place and participants have become hesitant of physically meeting to develop and practise the games, share thoughts and learn from and about each other. Additionally, the pandemic has shifted the attention of the local professionals to other topics. Due to working from home, priorities and capacity of local professional have been changes. This makes the CPIA project less important resulting in a decreased practical application of the knowledge and skills and a decreased motivation among participants.
  Moreover, the pandemic influences the support that can be provided by the Dutch Project Partners for developing the knowledge and skills of the participants.

- **Health risks**
  Health risks caused by low water quality or poor hygienic conditions could play an influence on the extent to which participants are motivated to develop capacity. An example could be found in the case of waste water management, where improper faecal sludge and waste management causes serious health risks to communities. This influences the motivation of responsible people, among the participants of the project, to develop capacity and overcome these issues.

- **Environmental risks**
  Cyclones, monsoons and tropical storms constrain participants from applying the knowledge and skills developed during the January training. Direct physical influence was limited, but indirectly professionals were concerned with other issues that served higher priority. This influenced the process of capacity development among them.

Socio economic conditions

Secondly, the socio-economic conditions will be mapped. These conditions are person-specific but will be aggregated to the level of Bangladeshi local professionals in this case.

- **The prior level of knowledge, education and experience**
  The prior level of knowledge and education of the target group plays an important role to what extent capacity development can take place. As indicated in the previous chapter, the target group of this intervention are local professionals and will thus have some kind of higher education level. However, some of the professionals have more experience with working in the field (e.g. government officials and NGO workers) whilst others are more affiliated with research (e.g. lecturers). This might influence the extent to which capacity is developed. It is important to differentiate these inherent levels of knowledge and education from the knowledge and skills that are being developed in the intervention, which will be focussed on the understanding of institutional structures and analysis and water challenges.

- **Communication language**
  Understanding of the knowledge and skills being developed also had to do with the language spoken. The training workshop in January used English, but some clarification were needed in Bangla in order for the participants to fully understand the context (Hossain, 2020a)(interview project partners). As some of the participants indicated, learning from the training workshop in January and developing the games was more difficult due to their struggle with the language used for communication; English.

- **Mandate to develop capacity**
  Mandates for who is developing capacity are important to consider, as they influence the openness and thus motivation of participants to learn something. Moreover, they influence to what extent people accept the capacity developed. This has to do with the relation present between the different actors participating in the intervention, both participants and partners. As mentioned by the project partners, previous experiences and current ongoing projects help to build mandate for the trainers to develop capacity among the local professionals. Moreover, a solid relation between project partners and participants helps in motivating for participation.

- **Incentive to act**
  Incentives, in terms of awarding for attending the training, also plays a role in the motivation for professionals. For example, when a certificate is awarded after the training, the motivation to attend and to pay attention is expected to be larger. For this intervention, a certificate giving ceremony was organized with chief guest, respected Mayor Talukder Abdul Khalek.

- **Mandate to act**
  Public interest is influential in practising the knowledge and skills of participants. When societies and communities see the added value of these kind of tools, it will be easier for the professionals to practise due to their informal support. Additionally, public interest might also support capacity development formally as certain professionals depend on the public for staying in their position. Professionals can thus be mandated to act from the organization they are working in or from their constituents, if this concerns elected professionals such as ward officers).

Rules

Ultimately, the rules present will be identified. Although these rules highly depend on the case to which it is portrayed, this analysis uses a higher level of aggregation by taking the rules into account that are of influence in all cases and are not aimed to be influenced directly through the intervention.

- **Governance structure: top down or bottom up**
  Based on how governance takes place, capacity development might be influenced. Whenever a top-down system of governance is in place, participants might be less motivated to develop capacity as changing the rules-in-use is hard. Whilst with bottom-up governance, participants might be more motivated to develop capacity for understanding, as institutional change might be more likely to occur. Moreover, some participants highlighted that change in the environment might only occur if capacity is being developed in the national government, as the country is serving under a top down governance and policy making will happen at the national level. In Khulna, currently a top down governance structure is visible within the water sector (interviews with project partners) (interviews with participants).

- **Political power**
  As explained by one of the respondents, political power is also prohibiting or stimulating people to practise and apply the knowledge and skills learned in training and education programmes. When certain topics are for example raised higher on the political agenda, the likelihood that support is given to develop capacity on this topic and practise the gained knowledge and skills increases.

- **Rules-in-use**
  Dependent on the rules-in-use, the participants are influenced to what extent practising the knowledge and skills is possible. Due to certain rules, opportunities may arise to practise and apply the knowledge and skills. These rules should be distinguished from the institutions that are target of the intervention by the fact that they provide the enabling environment in which the intervention takes place.

5.3.2 Step 2: Determining the Capacity Development Elements

The second step aims to determine the capacity development elements of the intervention; the input, output, outcome and impact. The CPIA project drafted an impact pathway as part of the project proposal (Hossain, 2019). Together with the progress report and the interviews, this will be used to determine the capacity development components as determined in **Section 3.3**.

Input: the CPIA project activities

The input for capacity development in the CPIA project to date is determined by the following elements:

- **APIA training manual**
  The training manual on the Approach for Participatory Institutional Analysis (APIA) was made by the developer of the approach in January 2020 (Gomes, 2020). The manual serves as a practical guide for people to learn and apply the approach. This is done by providing the conditions under which the approach may be used, the four steps of the approach, and offers a guide to evaluate APIA interventions (so not necessarily capacity development activities). Within the CPIA project, the manual was used to develop material for the training workshop that took place in January 2020 in Khulna. Based on these experiences, the manual seems to be helpful in providing some first theory on the APIA and its foundations. However, the participants and project partners mention the materials developed and shared during the training workshop are currently quite abstract which complicates application of the APIA. Participants mentioned that illustration of the methods by providing examples would make the manual better suited for standalone application. Moreover, different examples would stimulate practising of the approach.

- **Training workshop**
  The training workshop which was facilitated in January 2020 can be marked as one of the key capacity development activities of the project (Hossain, 2020a). Through a three-day workshop, the participants of the project received theory on the APIA method and opportunities to practise the four steps of the APIA method on their related water case. Although simplified, the theoretical knowledge shared was reflected by both the project partners as well as the participants to be tough and difficult for some of the participants. Respondent 10 illustrated this by mentioning: "It provided us how to do analyse on scientific way". As one of the partners mentioned, the training was quite academic in nature. Participants felt that providing more examples related to water management issues might be helpful. Nonetheless, overall the survey pointed out that the participants were satisfied with the training workshop.
  The training workshop is recognized as part 2 of the CPIA project. The workshop was delivered by project partner of TU Delft and support was provided by the Bangladeshi partners. The activities performed were captures through a workshop report made by the Bangladesh partner organisation JJS (Hossain, 2020a).

- **Technical assistance from a distance**
  During phase 3 of the project, input is provided in the form of technical assistance from the Dutch project partners on development of the two games. Due to travel restrictions support, is provided from a distance with help of Skype calls and email approximately every 4 weeks (van der Zee, 2020a). Based on this assistance, the games are developed iteratively.

In the future, the following inputs are expected to take place. However, as their effect is hard to be captured, these inputs will only be mentioned and not taken into account for further analysis.

- **Institutional analysis and game-based workshop**
  Once the games are developed, a second workshop will take place with stakeholders involved in the water issues addressed. During these workshops, the developed models will be shared and the games are played. Based on these findings, stakeholders get a first experience with these methods and feedback for further refinement of the games can be provided.

- **Dissemination workshops**
  The last input is foreseen through two wrap-up workshops in Khulna and Dhaka. These workshops will offer a chance for trainees to share and reflect on their experiences and discuss future usage of the games and develop new applications. Moreover, the workshops will be used to disseminate knowledge to other relevant stakeholders.

Output on individual level

Section 2.2 indicated that output of capacity development occurs on an individual level. In the CPIA project, the intended beneficiaries for capacity development are the participants of the project. Based on the project proposal, one can conclude that the following output is aimed for:

- **Improved understanding of institutional structure among participants**
  First of all, the project aims to develop the capacity among its participants for institutional structure. This is reflected by Respondent 14, mentioning that "we need to have a good understanding about the role of government organizations and the existing institutional gaps that they have". Moreover, the project proposal prepared by the local partner stated that "*Understanding how institutions constrain or enable more sustainable solutions thus becomes a key part in a more sustainable management of delta areas*".

- **Improved understanding of solution directions for water management issues**
  Secondly, the project aims to improve the understanding on solution directions for specific water and delta management problems. These can be recognized as the four cases as presented in **Section 4.3**. As stated by one of the project partners: "the stakeholders like departments are realizing the mechanism of natural resource management more".

- **Improved capacity with project partners and participants to apply the APIA independently and thereby support participatory water management (train the trainers)**
  Thirdly, the project aims to train the trainers. In this case, the project aims to develop capacity among both the project partners and the participants for standalone application of the APIA method. This requires not only learning about the different methods underlying the APIA method such as the problem identification and game trees, but also having the capability to apply the APIA independently. As one of the project partners stated, not only thinking in and understanding institutions and actors when reflecting on one's situation, but also conceptually thinking about these institutions and actors is needed to achieve capacity development. Respondent 13 emphasized the demand for a systematic method to improve the understanding of institutions, by explaning that "for understanding something from depth, it's needed to have systematic or methodical knowledge".

Besides these intended outcomes, the following output can also be recognized to occur:

- **Improved understanding of institutions through game-based workshop among local communities**
  As stated by some of the project partners and participants, the ultimate beneficiary are the participants. Although the capacity development trajectory was originally aimed at local professionals, involvement of communities is visible as well. The workshops as developed in phase 3 of the project are tested with local communities. Moreover, their involvement is foreseen at the future stages of the project too. Although it is not expected local communities will be able to apply the APIA method standalone, the goal is to improve their understanding on institutions through playing the games in the workshops. This makes them aware of the (lack of) institutions and might strengthen them in negotiating about the water management issues.

Outcome on organisational level

The outcomes are specified for the organisational level of capacity development. For the CPIA project, the following outcome is recognized:

- **Better understanding of institutional problems and participatory water planning processes in the organisations involved, through the effort of the individuals participating in the project**
  Application of the APIA methods by local professionals will serve as an input on organisational level. Through disseminating knowledge, capacity is aimed to be developed among its organisation to get a better understanding of institutional problems and participatory water planning processes. The duration of the outcome effects to be visible is often quite long (FAO, 2019; Gharesifard et al., 2019b). However, the activities and phenomena leading to this outcome can start in parallel with the once happening on individual level. As an example, we can see the sharing of gained knowledge and theory form the January workshop by a professional among each colleagues. Although this not immediately achieved the outcomes of capacity development, this might enable them to be achieved.

Impact for the enabling environment

Impact for the CPIA project is formulated in the impact pathways as presented in the project proposal. Although achieving these impacts usually takes several years, they are worth mentioning to grasp an understanding of the larger goals of an intervention for enabling the environment.

- **More effective coordination to tackle water and delta management problems**
  The final impact aimed for in the CPIA project is twofold. In the first place, the project aims for more effective coordination to tackle water and delta management. Effective coordination implies that actions need to be organized in such a way that the goals aimed for are achieved as well as possible, in this case handling the water and delta management problems.

- **Collective action to tackle water and delta management problems**
  Besides having effective coordination, the project aims to establish collaboration among stakeholders for collecting action in tackling water and delta management problems. Collective action is a common goal for interventions in development cooperation, as this is often seen as the underlying of issues of less developed countries (Shirley, 2008). (Ostrom et al., 2014) define collective action as 'a situation that occurs when two or more individuals come together to produce something of value, when it would be difficult to produce it alone' (p.2). In the CPIA project, more effective coordination and collective action might be achieved when the relevant organisations and other stakeholders in each of the water cases work together.

5.3.3 Step 3: Specifying the Indicators

In order to measure if capacity development occurred, indicators must be set. It is important to notice the difference between the indicators and elements of the project; while the elements determine the actions and results of the project for each of the specified levels, the indicators allow us to determine of capacity development took place. Indicators can be similar to one of the elements of the project, but do not necessarily have to be. Specifying indicators helps in explaining and understanding the mechanisms and contextual factors that cause capacity development to emerge.

The indicators are selected based on several documents and knowledge on the project (FAO, 2019; Gomes, 2020; Hossain, 2019, 2020b; Kaspersma, 2013). The categories determined by Kaspersma (2013) are used as they provide a scientific basis for selecting indicators on capacity development. Moreover, these indicators are developed based on water challenges and align well with the content of this case study. Based on the scope, the indicators are only selected for the individual and organizational level of capacity development (see Table 9).

Table 9 Selection of indicators

	Indicator 1	**Indicator 2**	**Indicator 3**	**Indicator 4**	**Indicator 5**
Category	Technical	Technical	Governance	Management	Learning
Individual	Analytical competence to independently apply the knowledge and skills	Subject specific and technical knowledge on the issues addressed	Understanding on institutional structures of the situation	Social kills on collaboration, teamwork, networking and negotiation	Desire to keep on learning
Organizational	Merge of knowledge and skills with present methods used within the organization	-	Understanding on institutional structures of the situation	Ability to communicate and negotiate among stakeholders	Support to keep on learning

Indicators for the individual level

On the individual level, the following five indicators can be specified:

- **Technical: Analytical competence to independently apply the knowledge and skills**
  Capacity development occurred when the target group developed the analytical competence to apply the Approach for Participatory Institutional Analysis independently of any facilitators or trainers.

- **Technical: Subject specific and technical knowledge on issue addressed**
  Moreover, capacity development occurs when the target group gained subject specific knowledge on the water and delta management issues. In case of the CPIA project, these are specific to the four water cases addressed (see **Section 4.3**).

- **Governance: Understanding on institutional structures of the situation**
  Within the governance category, capacity development occurs when there is increased potential to learned from and possible reflected upon institutional structures. Concerning the CPIA project this indicates a good understanding on the concepts 'institutions' and 'institutional analysis' developed through the APIA method, and applying these newly generated knowledge and skills at their specific situation.

- **Management: Social kills on collaboration, teamwork, networking and negotiation**
  Within the management category, the target group is expected to develop skills on collaboration, teamwork, networking and negotiation. Although this might not be an output of the CPIA project, these are core concepts of capacity development and can be qualified as needed to meet the final impact of the project of effective coordination and collective action.

- **Learning: Desire to keep on learning**
  Ultimately, the desire of the target group the keep learning is one of the indicators for capacity development. This can be seen as a relative inherent indicator which can be expressed through the motivation and interest of people to learn, but also on their inherent knowledge and education.

Indicators for the organizational level

On the organizational level, the following four indicators can be specified:

- **Technical: Merge of knowledge and skills with present methods used within the organization**
  On an organizational level, capacity will be developed when the knowledge and skills obtained by individuals are accepted and merged with the current methods and procedures present at the organization.

- **Governance: Understanding on institutional structures of the situation**
  Similar to the indictor on individual level, capacity development within the governance occurs when there is an understanding on institutional structures of the situation. This is supported by a process of interaction and knowledge dissemination among professionals working in the organization.

- **Management: Ability to communicate and negotiate among stakeholders**
  On the management level, the ability of the organisation for communicate and negotiation among stakeholders within their organisations such as fellow colleagues but also staff in higher management positions indicate capacity development.

- **Learning: Support to keep on learning**
  Lastly, the organisations that show support for continuous learning can be indicated to develop capacity. This support can be established through many different manners, such as financial support, training support, or support from the management. Within the CPIA case, this could be visible through support of the management of an organization to apply the APIA method or facilitate sharing of experiences among other colleagues of the organization.

5.4 Phase II: Analysis and Results

As the scope of the framework has been determined the components of the framework have been identified, the intervention can be analysed, and results can be drawn. This helps to conclude how and to what extent institutional focussed capacity has been developed. As a result of the data analysis, the causal relations present will be mapped (step 4). An analysis of these relations leads to the understanding of certain mechanisms of change (step 5). Based on these relations and mechanisms, the indicators of institutional focussed capacity development as specified in step 3 can be assessed (step 6).

The previous section showed that the framework can be applied for evaluating capacity development on an individual level and indicate plausible factors for evaluation on an organizational level where possible. The assessment is performed while the project is ongoing and can thus be considered a midterm evaluation on institutional focussed capacity development in the CPIA project. Whenever possible, the baseline data will be compared to the midterm data in order to indicate change.

Phase II allows for iterations while the intervention is still ongoing and at the end of the intervention. It is advised to do so, in order to get a full understanding on the analysis and results of institutional capacity development.

5.4.1 Step 4: Mapping the Causal Relations

As the context and elements of the CPIA project are determined and the indicators are specified, the causal relations should be mapped. On the individual level, the causal relations could explain how the input leads to an output and possibly indicates if capacity development appeared. In order to map these relations, one should ask the target group of this intervention on their experiences. The surveys and interviews are used as a basis for mapping the causal relations. The materials on the games, meeting notes, reports and conservations provide additional information to fill out the gaps.
First, the causal relations on individual level will be mapped. Thereafter, an attempt is made to map the causal relations on organizational level.

Based on the interviews conducted, one respondent mentioned that causalities where hard to determine as could not specify exactly which of his improved knowledge on institutions could be caused by the training. However, for this respondent, prior knowledge and skills on institutional analysis were gained through other activities. All the other respondents did not have any issues with attributing the effects. However, their previous and additional experiences with institutional analysis was very limited.

Causal relations on the individual level

Concerning the individual level, the causal relations are mapped in Figure 26. In order to make the framework readable, the influence of contextual factors as explained in **Section 5.3.1** is summarized in the framework by using the belong categories, referred to as bio physical, socio economical and institutional arrangements. Moreover, the different types of causalities of the factors, (+ or o), have not been portrayed in the framework to guarantee readability. Nevertheless, the influences and types are motivated in the explanation below.

A couple of interesting causal relations occur, that have a significant effect on the outputs of the project. These will be specified below.

Importance of trust

Knowledge sharing, discussion and collaboration among participants of the project were recalled as one of the most important aspects of the project so far. Respondent 2 declares "*We need to have a good understanding on the role of other actors. Otherwise individual players would just understand their individual role*". Respondent 14 expressed this was done during the training workshop "*As for addressing particular issues, institutional participants described their own roles and how to collaborate to solve the problem*". By doing so, a certain trust is developed among the stakeholders, which leads to strengthened networks and thereby improved understanding on the institutional structure. This reinforcing effect of knowledge sharing and trust had a large influence on network sharing and knowledge generation of participants.

However, knowledge sharing among these participants in Bangladesh is sensitive to getting together and meeting people. Due to the COVID-19 pandemic, knowledge sharing is constrained and thereby, the ability

of people to share knowledge and build trust among each other is slowed down. Due to the reinforcing effects, the ability of participants to apply the APIA methods will decrease significantly.

Awareness and ownership
Another reinforcing affect is visible at the awareness raised among participants and their feeling of ownership. Due to practising and implementing the APIA, awareness among participants is raised on how water issues can be solved and who are involved. Respondent 14 illustrated this by mentioning that "*without prior knowledge on institutional approach, different key institutions cannot play a role in solving water pollution problems"*. Moreover, Respondent 10 mentioned that "*participants got an idea of different stakeholders and their respective role, and now they have the necessity for collaborative planning and decision making"*. This might lead to a larger feeling of ownership among the participants to help in solving the issues.

An example can be recognized in case of the urban pond conservation, where an increased awareness among governmental officials has resulted in a higher feeling of ownership about conserving the ponds. As participants feel more responsible for the issue, attention and thus awareness will be more. A trigger from external institutional arrangements, for example more political attention towards the issue, can emphasis this reinforcing affect even further.

Awareness and motivation to learn
Ultimately, a reinforcing effect occurs based on the factors of awareness, motivation and knowledge gained. Raised awareness of issues can motivate people to learn more. By receiving more knowledge on the topics, the awareness for the risks is raised as well.

This reinforcing effect is visible in the CPIA project at the waste water case. Due to raised awareness of the health risks of dumping waste water, participants are motivated to keep in learning. This results in more knowledge on the topic of waste water management. The intervention triggers this effect by improving knowledge on case topics and motivating people to learn.

Technical assistance
A final note on the framework includes the effect of technical assistance on the motivation of participants. Technical assistance is aimed at supporting and motivating participant for implementing the knowledge and skills. However, as observed during the interviews, technical assistance could also demotivate the participants and make the reluctant to gain knowledge and implement the knowledge and skills learned. This might have an effect on the capacity of participants to apply the APIA standalone. Therefore, the direction of this relation is marked as unknown.

Causal relations on the organisational level
Besides mapping at an individual level, causal relations can be mapped on an organizational level as well (see Figure 27). Due to the timeline of the project, this is however limited.

Disseminating tacit knowledge
Based on the interviews with participants, we can see that most participants shared the theoretical knowledge on concepts like institutions, power interest grid, and game theories with their colleagues. Respondent 14 mentioned "*I have discussed with my colleagues for implication of game theory model, power-interest grid etc."*. However, due to the pandemic situation most participants are unable to apply the knowledge and skills learned among their colleagues in the field. This is illustrated by Respondent 13, mentioning that "*I shared my experience with my fellow colleagues but do not get scope to use the knowledge and skills in my work*". The lack of tacit knowledge transfer influences the extent to which capacity is being developed on an organizational level. As Respondent 4 highlighted, "*the knowledges are explored best and shared with other colleague when we do the actual planning*".

Influence of inherent knowledge and skills
Influence of prior knowledge and understanding of the tools also helps to convince colleagues for the use of the knowledge and skills, and therefore to embed them in the organization. Respondent 3 exposes: "*They* [colleagues] *are convinced, because the tools are not completely unknown as well*". Embedding the knowledge and skills in the organizations helps in generating support to apply the APIA methods in practise. This effect is

visible among one of the partners in the project, JJS, where constant support and feedback from staff helps to apply the APIA in practise. Ultimately this could lead to more insights in the understanding of institutional structures and water issues among the organization.

Developing organizational capacity in parallel

Moreover, the sharing of theoretical knowledge and skills is happening in parallel with some of the activities happening on individual level. Although most of the participants could not practise and implement their knowledge, information on their lessons learned and experiences have been shared.

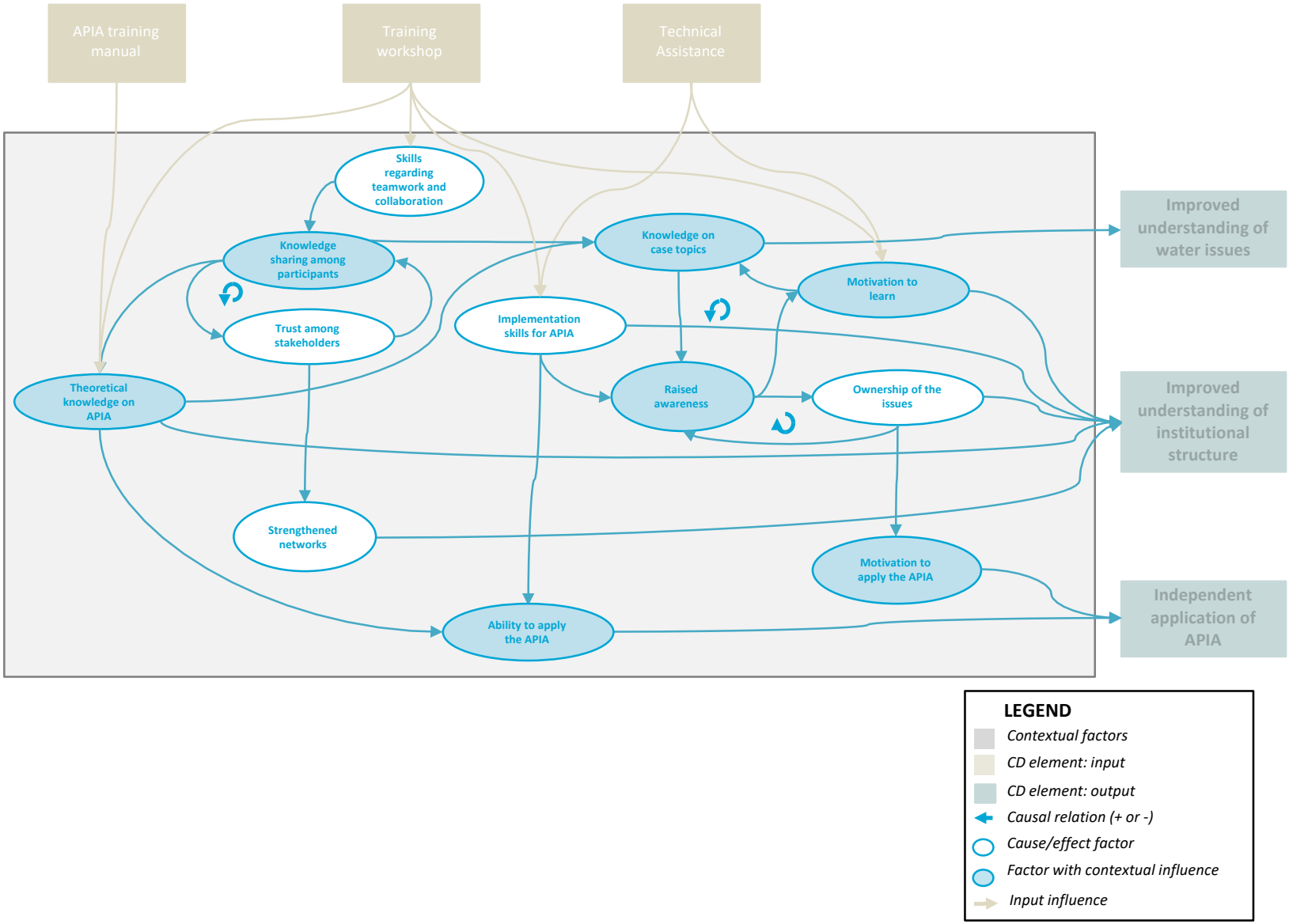


Figure 26 Application of ECD framework on CPIA project: individual level

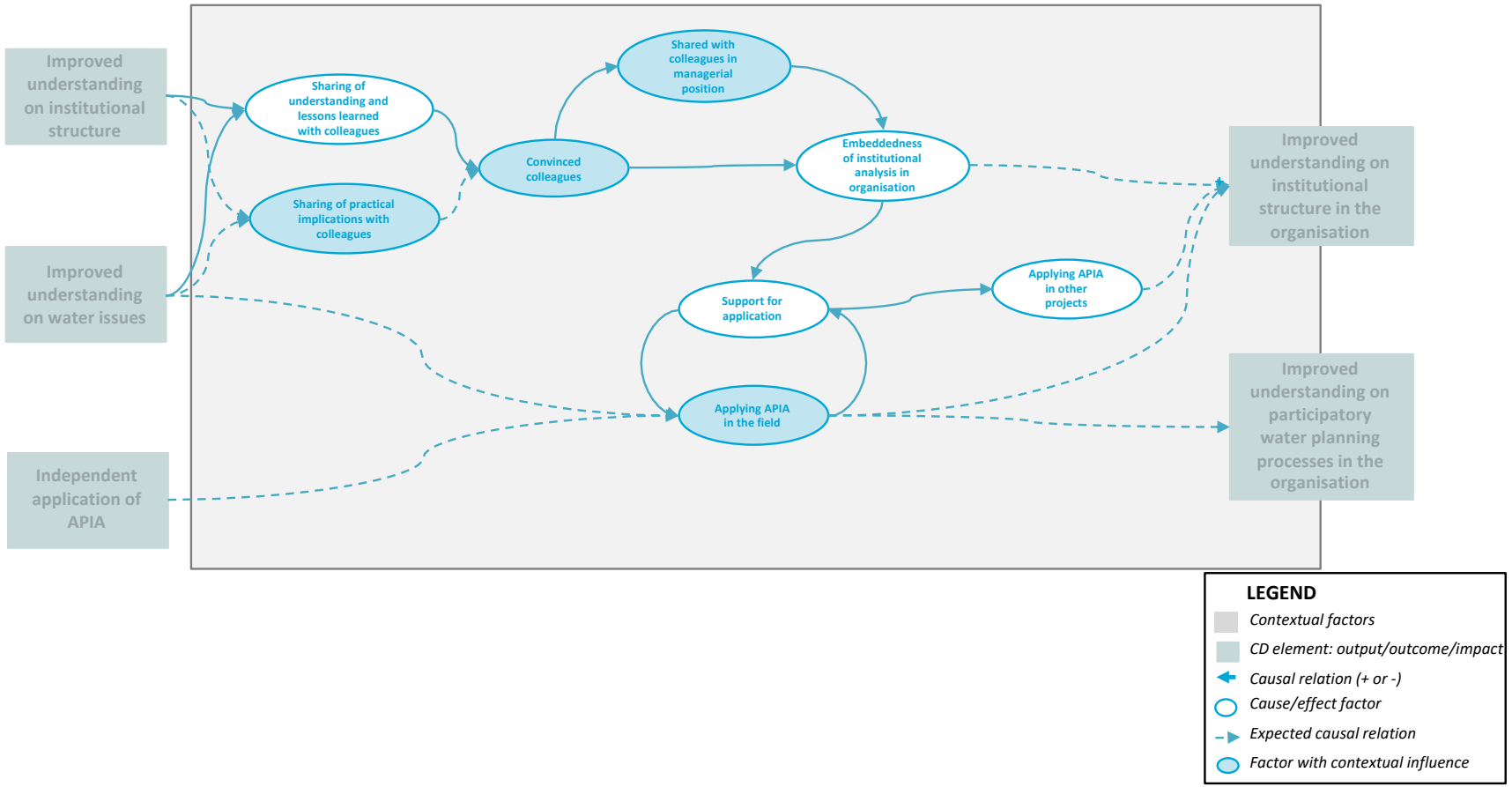


Figure 27 Application of EICD framework on CPIA project: organizational level

5.4.2 Step 5: Understanding the Mechanisms of Change

The last step of the approach aims to understand the mechanisms of change. Based on the contextual factors, the elements of capacity development and the causal relations, the mechanisms of change and possible other effects are identified. The effects that occurred most frequent in the interviews will be outlined. The mechanisms identified will be used as input for the discussion on case study results.

Mechanisms of change on the individual level

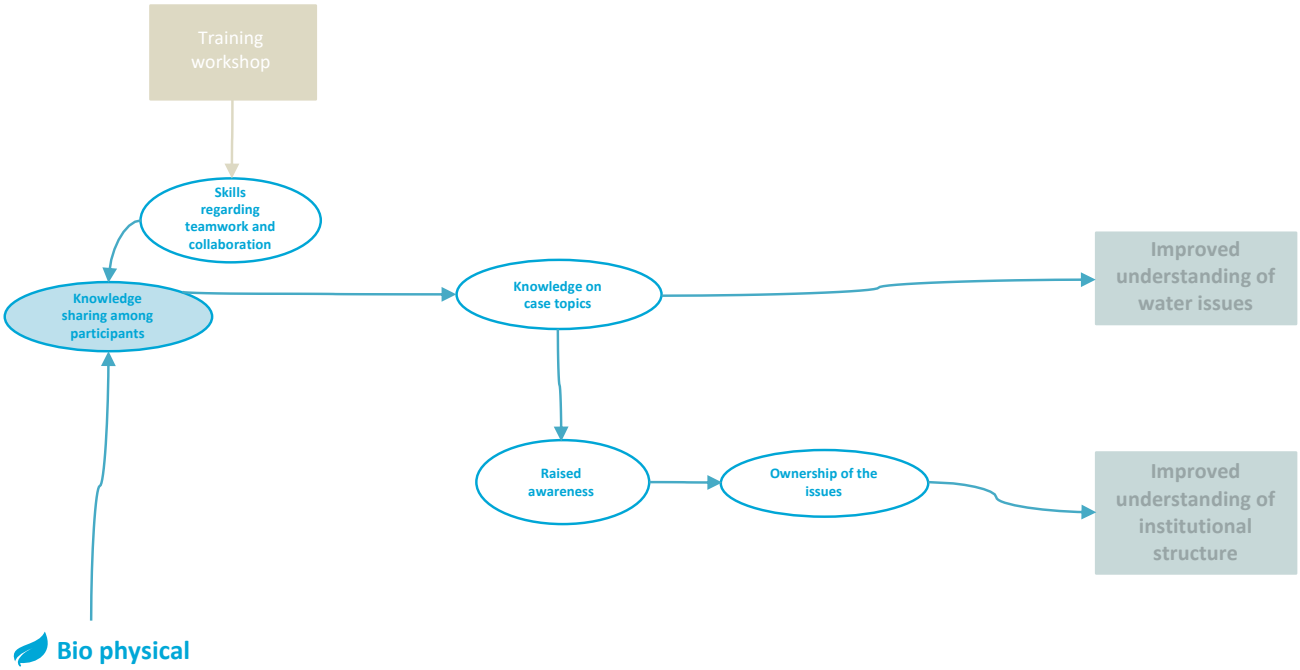


Figure 28 Mechanism of Change: importance of tacit knowledge

Mechanism 1: Importance of tacit knowledge

The first mechanism of change identified is presented in Figure 28. The figure shows the importance of developing tacit knowledge (knowledge difficult to communicate, often personal and context specific) in establishing change (see **Section 2.2**).

As presented in the figure, the training workshop developed skills regarding teamwork and collaboration among the participants. Knowledge and perspectives were shared, which allowed the participants to "*got to know many people*" (Respondent 3). Respondent 6 and 14 illustrated by recalling

"*.. before participating workshop, I had merely my own thoughts regarding TRM. But in time of workshop, I prioritize thinking of other people as well. Therefore, based on perspective of other stakeholders, I have got chance to reshape my knowledge*", and "*I think this workshop is a great platform to share and explore theoretical and practical thoughts*". This enabled them to learn more on the case topics they addressed. The participants group consisted of professionals from diverse organizational acting on different levels. According to the participants, this supported the knowledge development of the specific water issues and thereby contributed to the output of improved understanding of water issues. Respondent 3 illustrated this by mentioning that "*Some other interaction conservation provided more knowledge on water challenges*".

Moreover, the participants indicate that the government organizations tend to work independently from each other. These different silos of organizations complicate problem solving, as knowledge is not shared. The workshop contributed by facilitating contact and sharing knowledge and experiences, which stimulated these silos to be broken. Besides, by sharing this knowledge, awareness was created among the organizations about the responsibilities of this issue.

When acknowledging the importance of tacit knowledge, it should also be noted that the selection of participants is crucial to the success of capacity development. As illustrated by Respondent 6, "*if the participant's number was increased and full participation of all participants was ensured, it could give better outcome at the end of three days long training workshop*". As the dissemination of tacit knowledge often occurs through interaction of participants, having the right participants on board is crucial to share the relevant knowledge.

The value of sharing tacit knowledge also has its downside. As this knowledge is hard to tell, sharing of tacit knowledge relies on moments and/or places where this is possible. However, due to bio physical factors such as the COVID-19 pandemic and environmental factors, the dissemination of tacit knowledge is complicated. This is for example illustrated by one of the project partners, indicating that "*if there would not be a global pandemic, we would be more involved and encouraging the participatory aspect of the intervention in order to support the participants for taking part in the development of the games*". For this kind of situations, having a local partner is crucial in keeping the project ongoing. This was also valued by one of the project partners, who observed that in spite of the pandemic "*There is a lot of initiative from the local partners*".

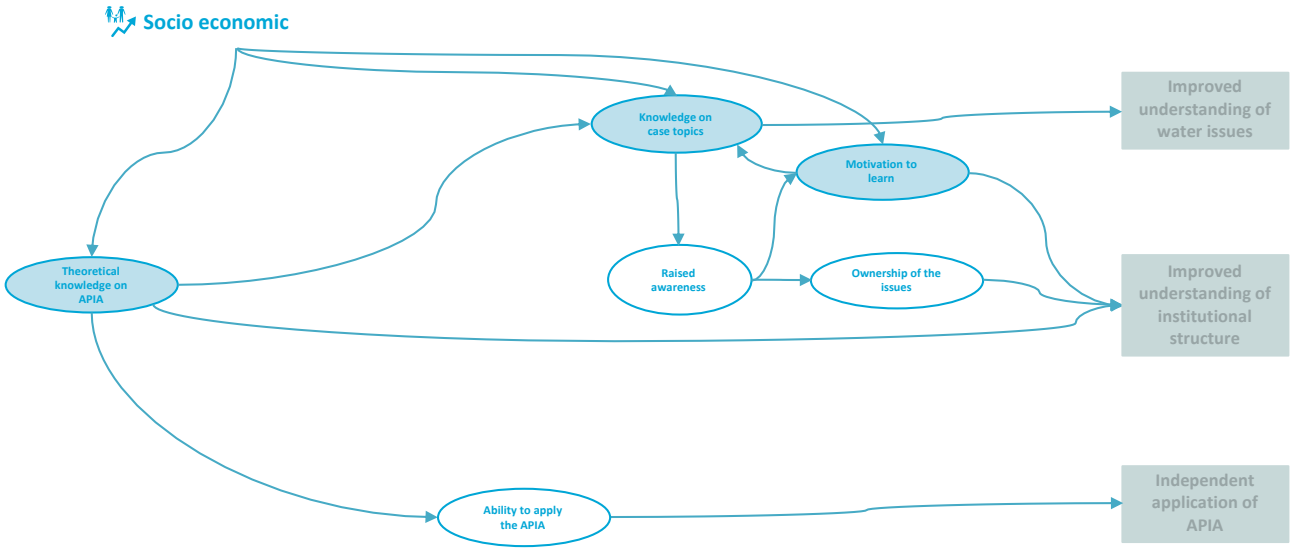


Figure 29 Mechanism of change: the influence of socio economic factors

Mechanism 2: the influence of socio economic factors

The second mechanism detected based on the formers steps is the influence of socio economic factors on enabling or constraining change (see Figure 29). **Section 5.3.1**, indicating the different socio economic factors, provides a first description on the influence of the contextual factors identified (prior level of knowledge, education and experience, the communication language, mandates for developing capacity/relations between actors, mandates as awarding, public interest) on the process of the CPIA project. When looking at the causal relations, it can be concluded that the influence of these factors is high.

First of all, prior level of inherent knowledge and experiences, and communication language play a large role on the development of theoretical knowledge on the APIA developed among participants. The approach and January training were noted to be quite academic and theoretical in nature. Consequently, it was easier for academics and lecturers to keep up with the training compared to government officials. The difference in background and experiences among the participants resulted in different progress during the training. Moreover, some participants had been involved in earlier projects in which problem identification methods were shared. These participants could already identify the problem through the first step of the APIA method. It could be said they started at a different level. Some of the participants noted that the knowledge on the APIA and the training in January where too complex to allow standalone application.

Secondly, the English concepts and terminology used were difficult for some of the participants to grasp. Respondent 4 mentioned that it would be easier for them in all communication would happen in Bangla: "*It*

could be much fruitful if presentation was given in Bangla so that all level people understood the topics". Others mentioned that they might be able to apply the method, if sufficient time, training and assistance were provided. Furthermore, some other participants mentioned they were able to apply the APIA methods. However, these participants felt comfortable in English and enjoyed multiple moments of practising the games. These differences in inherent knowledge both on theoretical concepts of the APIA and on water issues influenced to what extent participants are able to apply the APIA and improve their understanding on both water issues as well as institutional structures.

Thirdly, the project partners noticed that recognition of participation in this project motivates learning. This is partly caused by the mandate the Dutch project partners have to develop capacity. Not only previous positive experiences contributed to their mandate, also their presence in other relevant projects for Bangladesh enables them to develop capacity. A strong mandate for capacity development can thus be recognized to encourage motivation among participants to learn.

Fourthly, governance structure turned out to be of influence on the motivation to learn. An example can be found in the case of urban pond conservation. As mentioned during one of the interviews, the issue first had to reach the political agenda, in order for departments of the local governments to start working on it. This caused motivation among the professionals from local governments present to improve institutional understanding in the issue.

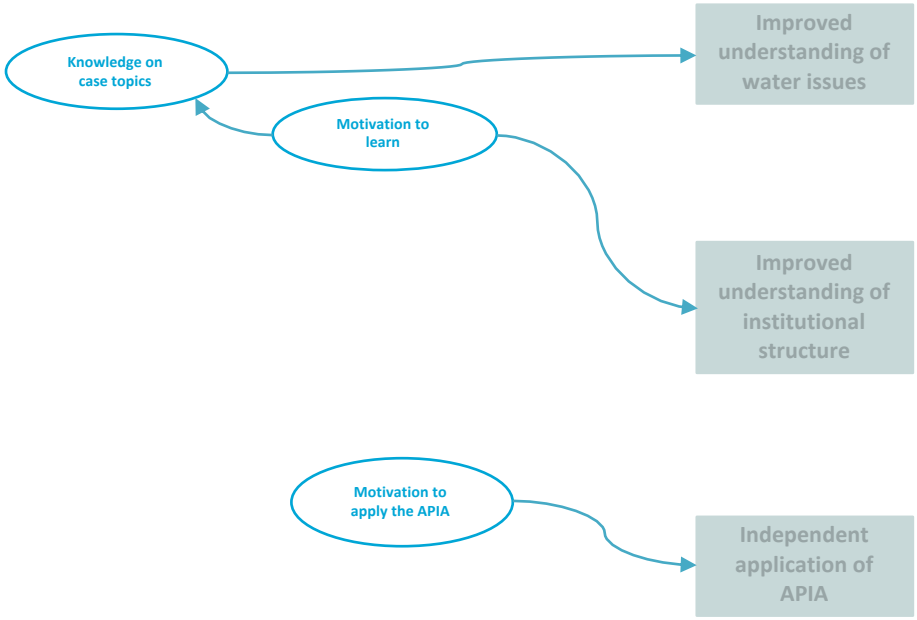


Figure 30 Mechanism of change: the influence of motivation

Mechanism 3: Importance of motivation

The last mechanism that could be recognized until date is the importance of motivation for establishing change. In case of the CPIA project, motivational aspects occur on two fronts. First, motivation to apply the APIA is very important to realize independent application of the APIA. Secondly, motivation to learn is needed to be able to learn new knowledge and skills and to improve understanding of institutional structure (see Figure 30). These factors can be concluded to be crucial in developing capacity. Respondent 6 mentioned "*if the interest and motivation to participate of one of the key stakeholders in his water management issue was higher, more and better outcomes on the water issue would be achieved*".

Mechanisms of change on the organisational level

Considering the organisational level, we are limited in identifying mechanisms of change. As the mechanisms of change are designed to tell us how change might have occurred, this requires us to identify some kind of change. However, **Section 5.4.1** showed us that some preliminary predictions about causal relations occurring on the organisational level can be identified. Yet, this is not sufficient to draw any valid conclusions on how capacity development has been developed.

5.4.3 Step 6: Assessing the Indicators

The final step to complete the evaluation is assessing the indicators of institutional focussed capacity development. The framework is solely applied on the individual and where possible the organisational level. The framework helps us in capturing all the relevant components of the capacity development intervention. This resulted in insights into the mechanisms of change underlying capacity development. Based on these insights, the indicators which have been specified in step 3 can be assessed.

The individual level: conclusion on institutional focussed capacity development

In order to decide if institutional focussed capacity development occurred on the individual level, we use the indicators as specified in **Section 5.3.3**. Below, for each indicator an explanation is provided.

Indicator 1: Analytical competence to independently apply the knowledge and skills

When looking at the ultimate goal of the project to enable standalone application of the APIA methods by local professionals, we can conclude that analytical competences for independent application of knowledge and skills have been developed to a limited extent. To clarify, a distinction among the participants should be made to determine to what extent this occurred.

Firstly, we can conclude that analytical competences have been developed among the local project partners, the JJS staff and the partners from KUET. This can be proven by a statement of one of the participants, that "*The game-based methods learned in the CPIA projects were used in a proposal for Khulna City Cooperation and was awarded with funding*" (Respondent 1). Moreover, confidence about using the APIA method was expressed to involve local communities in the game: "*Now we are better skilled, so we can handle ourselves involving the local communities first and also the experts and stakeholders*" (Respondent 2). This was also recognized by one of the Dutch project partners, who stated to be "*Impressed by the documents developed by the JJS staff*".

When looking at the analytical competences of the other participants, the local professionals participating, we can observe some differences.

Although the local professionals are aware of these knowledge and skills learned, they do not seem to apply it due to a lack of practicing application of the knowledge and skills caused by contextual factors and complexities of the tool. As Respondent 3 mentioned, "*… the training is very effective to increase their interest, convince them about the tool*" and Respondent 2, "*More specifically, participation of the workshop in January introduced us on APIA tools and how to analyze institutions*". However, developing analytical competences requires practicing as well, which is difficult due to the current pandemic situation as shown in the first mechanism of change.

Moreover, the second mechanism of change illustrated that the complexities of the topics plays a role. Respondent 3 has some prior training on institutional understanding "*if I did not have that course before it would be really difficult for me to completely understand the game theory through this training*". One of the project partners observed that the APIA method might be too complex as well: "*.. I would rethink which of the elements of the method to keep and which ones to leave for now*".

On the other hand, analytical competences were developed among the local professionals regarding problem solving. Not only was this skill appreciated highly among professionals, it also made them realize that analyzing the problem first by sharing perspectives and thoughts among each other contributed to finding solutions.

Considering the local communities as indirect beneficiaries, we can conclude that awareness among the communities has been raised about using more scientifically grounded analytical methods to solve institutional

problems. However, there is not full understanding. As recognized by Respondent 9: "*I feel like the tools and game method is not something easy for the community people to cope with and work with*".

Contextual factors such as the prior knowledge and education of this group can be recognized as influential. However, according to one of the project partners, simplification and significant time and effort for practising might improve this and enable the communities to develop some kind of analytical competences. Although communities were never intended to be the target group of the intervention, participants recognize they should play a key role when developing solutions to the water issues addressed.

Indicator 2: Subject specific and technical knowledge on the issues addressed

We can observe that competence regarding subject specific and technical knowledge about water issues have been partially developed.

Based on the analysis, we can conclude that the knowledge on water issues has been developed through the sharing of stakeholder's perspectives during the workshop. As shown by the causal relations, this was reinforced by the development of trust amongst stakeholders. Respondent 8 recognized the importance of gaining subject specific competences: "*I think, first it is crucial to gain knowledge on water challenges and it is the most important thing for which the training was provided*".

However, this also emphasizes the importance of selecting the appropriate target group for capacity development and knowledge sharing. As illustrated by the causal relations, participation could lead to more awareness and thus a greater feeling of ownership among stakeholders. Various Respondents provided the feedback that the selected participants of the workshop could be more and perhaps different people with interest to learn and solve problems. According to the respondents, this might increase the outcome. Respondent 2 mentioned that:

"*Participation of all the beneficiaries and stakeholders would be necessary. It is obviously important, because .. every role of the individual actors would be shared. So, the understandability of different actors would be reached.*"

Having a local partner present can be considered crucial to ensure selecting appropriate participants.

Moreover, the inherent knowledge of stakeholders also plays a role in their perspective on knowledge development which was shown at the second mechanism of change. For example, one of the participants mentioned that

"*In relative consideration, I will say that I gained more about institutional procedures and their interaction to get a particular solution, rather than discussion of water challenges as I had better indigenous knowledge on that as I am working on the coastal district and always have to face water management challenges*". Respondent 10 declared this as well: "*Discussion of water challenges as I had better indigenous knowledge on that as I am working on the coastal district and always has to face water management challenges*." On the other hand, subject specific and technical knowledge were gained by the community people. This was visible in the urban pond game, where during the practise workshop one of the pond owners learned how they and the system could benefit from conserving their ponds (interview project partner).

Indicator 3: Understanding on institutional structures of the situation

The competence to understand on institutional structures of the situation has been developed among the local professionals. Respondent 2 mentioned:

"*This workshop and therefore project will help you to understand it (institutions and institutional analysis) closely. Without the participation of this game we cannot do it fully. The workshop had facilitated us to know it from different kinds of analysis like power-interest grid, institutional mapping, game theory modelling etc. so I can now relate institutional components in lights of different APIA tools*".

Respondent 10 declared that "*The training has provided a strong basis on Institution Analysis. Participants from different background understood how to analyse and capacitate different institutions*". Besides these direct contribution to improved understanding of institutional structures, the causal relations showed that attending the January workshop increased awareness and ownership amongst the participants were of influence as well. Furthermore, Respondent 4 illustrated this by mentioning that "*the participants get a better idea on how KCC regulates faecal sludge management*".

For this indicator, a comparison between baseline data and midterm data could be made. Based on the data obtained at the start of the January workshop and the data obtained in July, one can conclude that the understanding of institutional analysis has improved among participants based on the following two findings.

In the first place, the rate on institutional understanding among participants improved. Whereas at the start participants would rate their understanding on institutions a 5.5 on average, after the workshop the average rate on understanding of institutional analysis was 7.8 on average. When asked in July, the participants indicated their overall understanding of institutional analysis 7.3 on average. Participants who had not been involved in development of the games the last few months noted a decrease in concepts and knowledge learned at the project in comparison to their knowledge after the workshop in January. Reasons for this provided by the participants where the lack of practising with the games developed and applying the knowledge and skills in practise, which was illustrated by the first mechanism of change.

Secondly, the definition of institutions provided by the participants changed. At the start of the capacity development activities, about half of the participants indicated to have some kind of experiences with institutional analysis, whilst the other half did not have any. Most of the ones who had some understanding, referred to institutions as actors or organisational bodies. When asking in July, most participants referred to institutions by mentioning the concepts of formal and informal rules. This indicates the participants to think of institutions not only as organisations, but also as formal and informal rules that guide societal behaviour. As mentioned by one of the project partners, thinking 'in' institutions as rules that guide behaviour and shape society is a first step in improving the learning from and reflection of the institutional structures of the institutions.

A difference should be identified between the respondents involved in the development of the games and the respondents solely involved at the training workshop. The latter has reached the competence to understand institutional structures of the situation and thus create awareness on the institutions in place, whilst the former is also able to integrate these in game designing.

Indicator 4: Social skills on collaboration, teamwork, networking and negotiation

The fourth indicator, competences regarding social skills, can be marked to be developed. Respondent 2 declares that "*project facilitates experience to share the roles and capacitates individuals through interactive participation*". Moreover, Respondent 14 acknowledge that "*I can relate knowledge on perspectives of stakeholders in a methodological way which helps to understand everyone*". Also, the project partner mentioned this competence to be a crucial learning point:

"*They can share that information. Biggest learning for them. Usually they think, whatever I or my department is thinking, is better or the case. Now they know if they can distribute their knowledge, talk about a problem in a group, then the solution is much easier, much more feasible. Share the information with other institutes, come up with the solution*".

Furthermore, a possible collaborative initiative between one of the respondents and the JJS staff was initiated. One of the possible explanations for the development of this competence lies at the heart of the method. As described, the Approach for *Participatory* Institutional Analysis contains participatory components (Gomes, 2020). An example is the role play method used. This is a very useful method for developing competences regarding collaborating and teamwork, as it required to practise the knowledge and skills learned and forces tacit knowledge dissemination. However, as the role play provides participants on each other's perspectives, selection of the appropriate and useful participants also become important.

Indicator 5: Desire to keep on learning

The last indicator is more difficult to draw conclusions on, as the causal relations mapping and mechanisms of change showed the desire to keep on learning to be depended on contextual factors. For example, the third mechanism of change illustrated the importance of motivation but also the dependence on socio economic factors. Moreover, this fifth indicator is hard to assess with the data collection methods available in this study.

Overall, we can conclude that based on the causal relations identified, awareness and interest have been created among the local professionals and the direct benefits from improved understanding on institutions are

recognized. The participants ranked the usefulness of institutions at the start of the January workshop on average 7.1, while at the end of the workshop this increased to a 7.5. When asked in July, the overall importance of institutions was even ranked at 8.5 on average. Moreover, the professionals indicate a desire to keep on learning by showing interest to attend future workshops and game playing sessions.

The organizational level: preliminary conclusions

Besides the individual level, the organizational level can also be assessed. Application of the step-by-step approach showed us full analysis on the organisational is yet not possible. Therefore, preliminary conclusions on the indicators of capacity development from an institutional perspective are drawn below.

Indicator 1: Merge of knowledge and skills with present methods used within the organization

The first indicator suggest that the knowledge and skills learned should be integrated among the current methods present within an organization. Within the organization of the project partner JJS, we can state this merge is visible to some extent. As indicated by the project partner in the interview, the game-based approach part of the APIA methods has been proposed as tool in a project proposal.

Moreover, the Respondents 1 and 2 showed signs of this competence by notifying that "the approach could be applied in any project" and "could be incorporated this kind of thinking into solving different problems". Based on the causal relations identified, we can state that this is yet too early to decide on for the local professionals participating in the training. As mentioned by Respondent 14, *"I share my overall training experience with my colleagues. But I cannot share my tool by tool experience with them*", tool by tool experience is not yet shared amongst colleagues within the organization.

Indicator 2: Understanding on institutional structures of the situation

As knowledge dissemination amongst colleagues is shown to be limited and interaction amongst the professionals within an organization is minimal, we cannot draw any conclusion whether institutional structures are understood. Yet, some respondents mentioned that the organization and some colleagues had some prior understanding on institutional structures and design. This showed that colleagues are convinced of the importance of institutions. Nonetheless, this is too little to argument for definite conclusions.

Indicator 3: Ability to communicate and negotiate with stakeholders

The third indicator for capacity development suggests competences for communication and negotiation with fellow colleagues within the organisation. The causal relations indicate this to be a crucial for capacity development on an organisational level, but also indicate its sensitivity to contextual factors. The current pandemic constraints the participants to practise the gained knowledge and skills within the organisation. This makes indication of ability to communicate and negotiate difficult.

Besides the pandemic, we can also foresee that contextual factors evolving around governance and administrative structure might play a role in developing competences regarding communication and negotiation. As indicated by several participants in the interviews, the top-down governance structures might restrict effective communication and negotiation within organisation. Especially in government organisations, the hierarchical structure might be influencing the ability to communicate and negotiate with fellow colleagues.

Indicator 4: Support to keep on learning

Ultimately, the support to keep on learning is marked as the learning competence on the organizational level. As shown in the causal relations, this support can be stimulated through sharing of experiences. Amongst the local professionals, sharing of tacit knowledge and skills is minimal. As a result, no support to keep on learning is yet established from the management of organizations. We do see a difference among professionals for which colleagues are involved and working on institutional analysis as well compared to professionals whose colleagues have not shown interest in institutional analysis. Although it might be too soon to draw conclusions on this, the project can try to support a sustained learning through sharing of simple materials to gain interest of the organization.

Enabling environment: an interpretation of institutional capacity development

In **Section 5.2**, the application of the framework was scoped to the individual level and allowed some early findings on capacity development of the organizational level. Unexpectedly, the data did provide us with some insights on possible mechanisms of change underlying the capacity development process on the enabling environment level as well.

In the first place, the analysis showed that considering the governance structure is important when developing capacity on the level of the enabling environment. A significant number of participants mentioned that interest for coordinated action and accountability amongst all relevant actors is crucial for success. Although organisations such as local government organisations, NGO and research institutes developed a better understanding on institutions and institutional analysis, an incentive for change is very much dependent on the administrative structure and interest from the people in place. Even though the project develops capacity among professionals of local governments, their mandate to use and implement these comes from the national government. This top-down approach of governance is thus crucial for developing capacity. One of the participants indicated that the administrative structure is currently organized in such a way that the national governments have decision making power. Gaps occur between the national and local government organisations and their departments, but also the NGOs who can assist these organisations with decision making. However, the national government organisations have the power to provide the necessary support to establish effective coordination and collaborative action. Real change in Bangladesh might occur if these national organisations understand and value institutional change as well. According to Respondent 14 "*the capacity developed with this project can help in assessing the gaps between these different departments through a methodological approach*".

Secondly, capacity development on the enabling environment could occur through the interaction of different organisations and collaboration. When looking at the project partner, we can conclude that some signs of future collaboration are already visible. This is illustrated by Respondent 3 who mentioned "*some contacts were made with JJS to discuss about collaboration"*. Moreover, during one of the interviews conducted, Respondent 15 mentioned some communication between the members of the participatory water management case is going on as a result of the project.

Besides these experiences, some communication has taken place during the role play session between NGOs and communities. However, as this appeared during one of the organized testing sessions as part of the project, we cannot contribute this as capacity development.

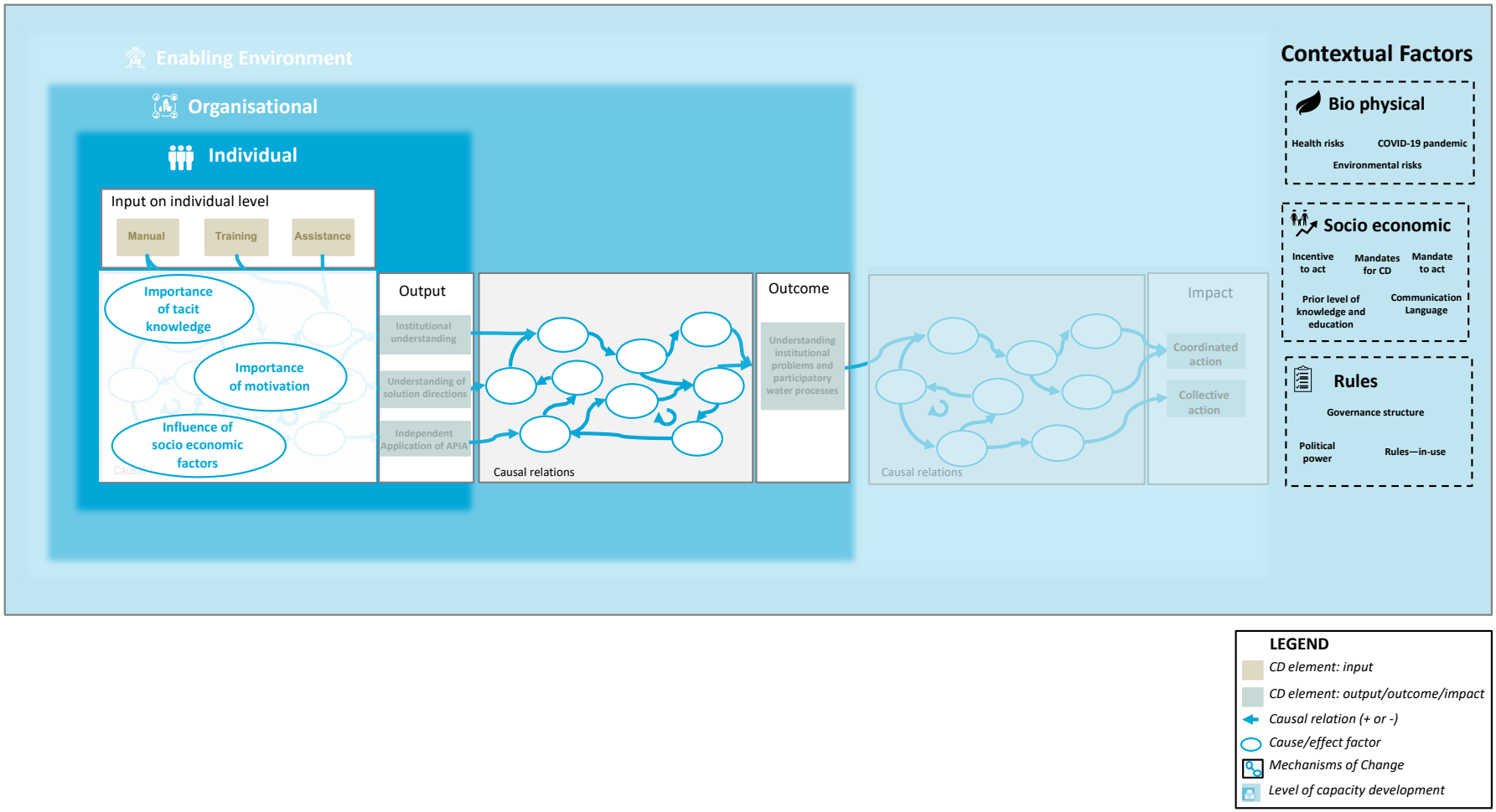


Figure 31 Application of the developed evaluation framework on the CPIA project

5.5 Conclusion: Institutional Capacity Development in the CPIA project

In order to illustrate the usefulness of the developed evaluation framework and the belonging step-by-step approach, a case study has been performed on the CPIA project in Khulna, Bangladesh. The illustrative case study helped us to draw some conclusions on the extent to which institutional focussed capacity has been developed among local professionals, thereby answering sub question 3. As the project is still ongoing, the framework allowed us to evaluate individual capacity development and where possible, explores signs of organizational capacity development. The analysis can therefore be considered as a midterm evaluation of the project.

A visual overview of the application of developed framework to the CPIA project is presented in Figure 31. The mechanisms of change that occur due to the causal relations are not presented in the overall figure to assure readability. However, they are occurring in the grey boxes of the individual and organisational level, as indicated with 'mechanisms of change'. The causal relations, mechanisms change and assessment of the indicators led to the following conclusions on institutional capacity development.

On the individual level, capacity is being developed in terms of understanding on institutional structures of the water issues present. Moreover, the participants gained skills on collaboration, teamwork and networking which enabled them to share their perspectives with other stakeholders and improve their understanding regarding the respective water issue. Development of analytical competences turned out to be dependent on the extent to which knowledge and skills retrieved have been practised. A significant difference could be observed between participants involved in the application of the tools and methods, and participants only exposed to dissemination of theoretical knowledge. Overall, we can conclude that capacity development on an individual level appeared among some participants, but did not occur among all local professionals.

When looking at the organizational level, a difference amongst participants for developed capacity is visible as well. Among one of the partner organizations, the knowledge and methods learned and the methods used are integrated within the organization. This could be attributed to involvement of a large part of the organization, amongst whom employers in managerial positions, and sufficient practising of the knowledge and skills. Concerning institutional competences, we see that the familiarity of organisation with institutions and institutional analysis, and the interest of the organization is influential. More conclusions are yet hard to be drawn. Based on this, we can speculate that organizational capacity is for a small extent developed among one of the project partners. However, these observations should be considered speculative and more time is required in order to draw firm conclusions.

5.6 Recommendations for the CPIA project

The CPIA project can be understood as a unique project in the concept of capacity development. The project comprises Dutch and local partners with the task to develop capacity among local professionals. At the same time, the capacity of the local partners themselves is developed, causing a somewhat 'incepted' capacity development within the individual level. This capacity development should be recognized by all project partners in order to align the project activities and results, and purchase the capacity development goals. Besides, more challenges on the definition of critical actors can be identified. The local communities are found to be an additional beneficiary during the project. Although not considered as the target group, they are identified of the key beneficiaries and are included in the project. Lastly, some participants mentioned that not all relevant actors to solve the water and delta issues were participating in the project. This influenced the knowledge development on water issues and ultimately the capacity developed. To account for these actor related challenges, it is advised to make a clear actor overview at the start of the project in which the target group and (in)direct beneficiaries are mapped.

For future practises of alike projects, it would be advised to specify the prior knowledge and education in advance. In the CPIA project, about half of the participants had prior knowledge on one of the key concepts of the training, in this case institutions. In turn, this influenced their understanding on institutions during the intervention, but also the extent to which the participants 'think institutionally'. Moreover, it is advised to ask the target group about their needs and wanted output of the capacity development at the start of the training. As

indicated by one of the experts, the aims and objectives of a project can differ among the project partners and the target group. Although in-depth research was performed to select the water issues by the local project partners, this does not necessarily capture the needs and ambitions of the target group. When being aware of these facts, the demand for the type of and the way knowledge dissemination takes place could be adapted. Looking at this process for the CPIA intervention, it might be better to limit the different theories, concepts and tools during the workshop and provide more focus on the remaining topics.

For future projects using the APIA manual as guidelines for training and capacity building, it is advised to revisit the manual. In its current state, the manual can be considered compact but also a bit abstract. To illustrate the purpose and intentions of every step, it might be useful to include example cases. Although not specifically designed for this project, the application of the CPIA project and the lessons learned could be integrated in the manual.

For the continuation of the project, a three recommendations are proposed.

Firstly, the project could try to see if more options for practising of the games can be established. Although meeting physically is yet impossible, there might be alternatives such as skype sessions to organize some knowledge sharing sessions with the local professionals. Currently, the involvement of the participants in the development of the waste water game and the urban pond has been limited to phone calls. For the two other games, it is therefore recommended to see if this can be expanded to other options to increase the involvement of participants. The case study illustrated that practising is essential in developing confidence and skills to apply APIA, but also to show the relevance and convince participants to use the methods. Moreover, the motivated and interest in the project can be expected to increase as well.

Secondly, it is recommended to support capacity development on an individual level by providing some kind of one pager or explanation on the project. Additionally, this could be used as an opening to invite fellow colleagues of the participants to the final dissemination workshop.

Thirdly, the project is currently not stating how capacity development will be secured once the project is finished. It is advised to state this before the project finishes, so that these plans could be taken into consideration during the intervention. A possible way to do this is by looking at the developed evaluation framework to study the mechanisms of change on all levels. To assess capacity development on an organizational level, it is recommended to include interviews within the organizations of the participants.

The project should keep in mind that the impact of more effective coordination and collaborative action could be achieved but are likely to occur on the long term. Developing capacity for institutional understanding in a developing country is complex: direct results are not always immediately visible. Reflecting to the CPIA project, we can explain this by looking at different levels of capacity development but also when looking at the contextual factors such as governance. In order to change coordination of actors, several participants indicated the need for change in administrative planning first.

6 Assessing the Framework: a Case Study Perspective

Chapter 6 aims to reflect upon usefulness of the developed evaluation framework on a real-world case and thereby making some generalizations of the case to provide a complete answer to sub question 3. This will be done by looking at the implications and limitations of applying the evaluation framework, from which a conclusion about the framework based on an illustrative case study can be drawn.

6.1 Implications of Applying the Evaluation Framework

Applying the developed framework on an illustrative case study provided us with some useful insights about the project. Moreover, it provided us with lessons learned about the application of the framework in practise.

Overview of the purpose of the intervention
Based on the case description in Chapter 4, the CPIA project can be understood to be an ambitious yet complex intervention. Although impact pathways specify when impact of an intervention will occur, capturing the impact of institutional capacity development interventions is more difficult due to the complexities associated with capacity development. The developed evaluation framework provided us with a clear overview of the different stages of capacity development by determining the impact of the intervention on different levels. As shown in the case study, this provides one with a clear overview of the intermediate goals of the capacity development intervention as well as the ultimate goal and purpose of the intervention.

Account for type of CD
When looking at the CPIA project, we can conclude that the participatory approach of the intervention triggered certain capacity mechanisms which occurred because the context allowed them to. The role-playing games forced involvement of all participants, which stimulated the sharing of perspectives and knowledge among participants. As the Bangladeshi culture can be marked as relatively open and direct, the role-playing game could be performed rather successful. However, should this be attempted in another country with a different culture, the effects that occurred might be different. For example, due to hesitation of people to share perspectives and knowledge, capacity development might already stop at an individual level and thereby never achieve collaborative action. Therefore, the framework shows that achievements of an intervention are not solely determined by the type or quality of the intervention, but also by the situation in which it takes place.

Interactions among specific actors
On the other hand, the illustrative case study showed that interactions among specific actors also determine why and how institutional change is (not) achieved. The interaction between participants resulted in sharing of perspectives and knowledge, creating trust. The importance of actors interaction was also mentioned by (P. Dasgupta, 2001) who described that by increasing trust amongst each other, individuals could create an important form of capital which helped to overcome social dilemmas. At the enabling environment level, the rules and governance in use determine potential of actors to act thereby enabling or preventing change from happening. These interactions between the specific actors are currently not captured in detail in the framework. Although these conclusions can be drawn based on the application of the framework on the case, the interactions that underlie these potentials to act are not included in the framework. As we conclude that these interactions are important to develop capacity, a more thorough actor analysis among the target group and the beneficiaries as part of the context mapping is advised.

Endogenous personal factors
Additionally, the personal factors of actors are not included in the framework as well. Although motivation and interest of the participants are mentioned as factors at play during capacity development interactions, the background underlying these factors are not incorporated. Sometimes these personal factors provide an explanation for certain lack of or explanation for motivation or interest. As example was given by Respondent

6 who mentioned his personal interests to learn certain things plays a role at his development of knowledge. As he had more interest in understanding the water challenges, his desire to learn improve institutional understanding was limited. This influenced the way he perceives the knowledge and skills shared.

6.2 Limitations to Application of the Evaluation fFamework

While applying the evaluation framework to the CPIA project, the following limitations occurred.

One of the most difficult aspects of evaluation can be notified as the 'attribution issue'. This issue is addressed in **Section 2.4** and is tried to be overcome by mapping causal relations through interview data. Despite these efforts, it remains hard to determine if the capacity developed can be attributed to the intervention or if this would have been developed despite the intervention. This classical challenge in evaluation asks for a control group which allows us to compare the situations in which the project would or would not have taken place. As the researcher was not involved at the start of the project, this was not possible. Moreover, organizing a control group requires a lot of effort.

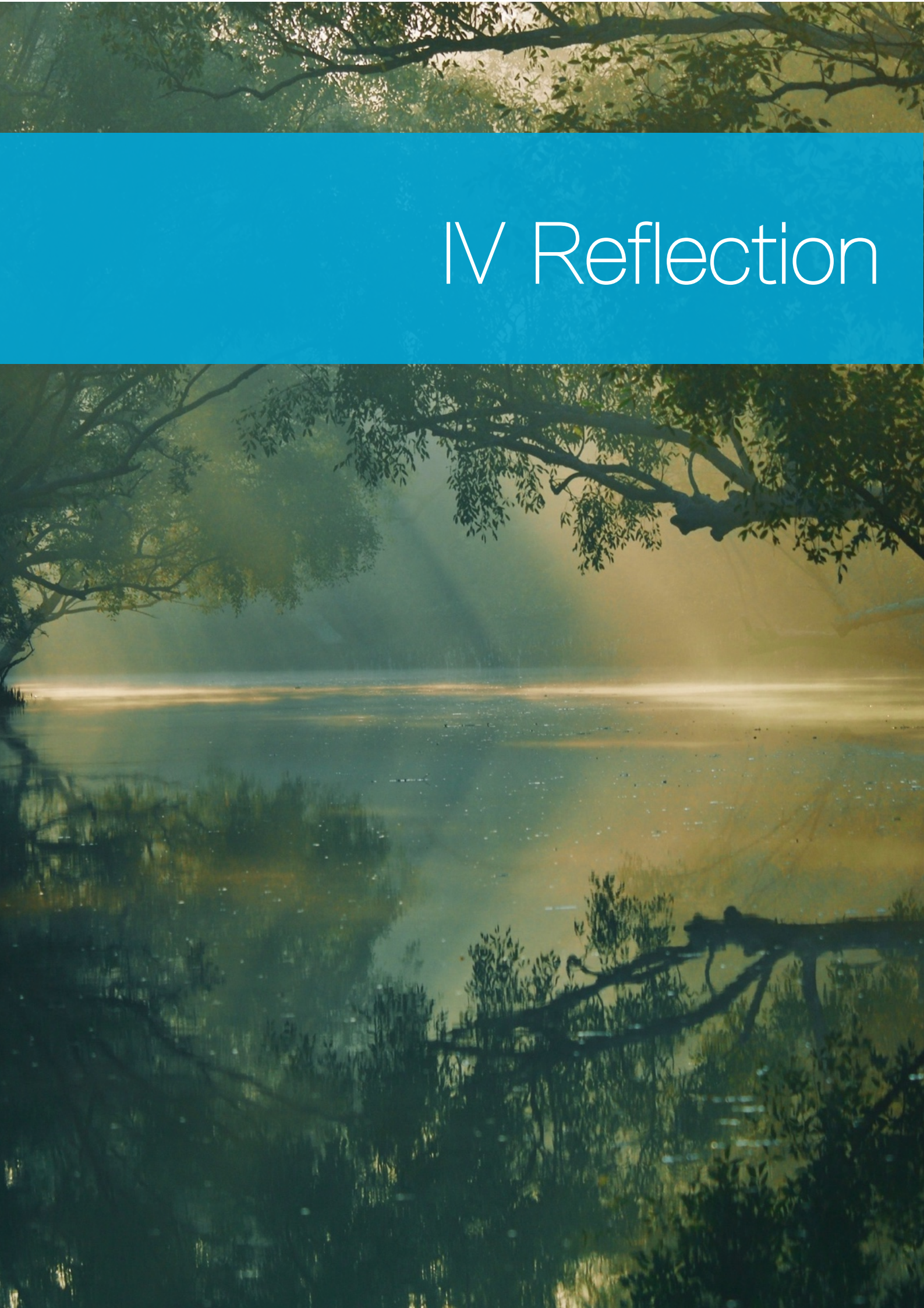
Furthermore, the evaluation is taking place whilst the intervention is still ongoing, which means the intervention is still very much subject to change. This hinders us in obtaining complete results and influences the way conclusions can be drawn. Yet this might also be of advantage to the project as initial plans could be adapted in an attempt to improve the final results and impact of the intervention. As described by Ostrom et al. (2014), better institutional solutions in developing countries sustain when they continue to be adaptive to the changing situation in which they are happening. Moreover, an initial survey was conducted among the participants at the start of the training workshop. Back then, the researcher was not yet involved in the research. Therefore, the survey conducted was not tailored to the subject of this study. Although we were able to detect how change would come about, this prohibited us from proving real change occurred compared to the beginning of the intervention. We can therefore state that the study is limited by the absence of some relevant baseline data.

Ultimately, the evaluation was limited due to certain bias occurred during the data collection methods. The main source of data were the interviews. These were conducted partly by the researcher, but also by the JJS staff who were also involved in the project. Therefore, bias might have occurred when asking the questions of the semi-structured interview and initiating follow-up questions. Bias in the interpretation of the answers is minimized by transcribing all interviews conducted. Besides the interviews, the other documents used were also developed by actors involved in the project. Even the researcher joined the projects skype meetings. Therefore, the documents used and observations made are also subject to some bias. This might influence how the causalities indicated are perceived.

6.3 Conclusion: Key Take-Aways of Application in Practise

Based on the application of the developed evaluation framework on the CPIA project, it can be concluded that the process of institutional capacity development on different levels could be captured and structured. Moreover, application of the framework proved to sufficiently take contextual factors into account which helped in explaining the mechanisms of change underlying the framework. The application also revealed that actor specific components, such as interactions, positions and personal factors, are important to consider when evaluating institutional capacity. Nevertheless, they are currently not captured in the framework. The limitations of the application stress the importance of considering the case study as an illustration of the developed evaluation framework and the accompanying approach.

IV Reflection



7 Expert Validation of the Framework

In order to assess whether the evaluation framework actually did what it aimed to achieve, this chapter will be used to reflect on the developed framework. Thereby the fourth sub question, *How could the developed evaluation framework be improved?*, can be answered. The frameworks aims to be improved by checking on accuracy through expert consultation. The approach for the expert validation is explained in **Section 7.1**. The expert session resulted in some valuable insights and suggestions for improvement of the framework (see **Section 7.2**). The interpretation and implications of these suggestions is discussed in **Section 7.3**, and a conclusion on the expert sessions is drawn in **Section 7.4**.

7.1 Approach for Expert Validation

In qualitative research, validation can be described as the process in which findings of the researcher are checked on accuracy (Creswell, 2009). In order to test if the developed framework as presented in Chapter 3 is accurate and reliable for other researchers to be used for evaluating capacity development projects, expert sessions are organized.

In these sessions, four experts are asked to share their thoughts and opinion on the framework developed (see Appendix H). At first, it was aimed to organize one validation session in which as discussion among actors could take place. However, due to the COVID-19 pandemic this was not feasible. Therefore, individual sessions with experts have been organized. The experts were selected with help of the network of the thesis committee. The experts were chosen based on their academic knowledge on and experience with capacity development, evaluation, the water sector, and Bangladesh. Based on these criteria, a mix of more academic-minded and practical-minded people were selected (see Table 10).

Table 10 Overview of respondents for expert sessions

Code	Type of organisation	Relevance
Expert 1	Knowledge and research organisation	Academic experience with evaluation of citizens initiatives
Expert 2	Financial service organisation	Practical experience with evaluating capacity development projects, amongst them in Bangladesh
Expert 3	Research and consultancy organisation	Practical experience with capacity development projects in Bangladesh, and to a less extent the evaluation aspect
Expert 4	Research and consultancy organisation	Academic experience with evaluation of capacity development in the water sector and practical experience in the water sector

The sessions were prepared in detailed beforehand. Information on the background of the research, the objective and outline of the session was shared with the experts in advance. Moreover, the slides used during the session were shared in order for the experts to get a first impression on the developed framework (see Appendix H). The sessions were aimed to last between one to one and a half hour and took place virtually. First, an in-depth interview with the expert took place in order to assess their field of expertise and interest. Secondly, some background information on the research was provided and the framework as developed was presented. This was followed by discussion on impression, usefulness, and other insights on the framework. The sessions were concluded by asking the experts for any other thoughts that needed to be shared.

At the start of each session, the experts were informed on the data handling and storage, before their consent was asked as well as their permission for recording. The sessions were recorded as this allowed the researcher to be fully engaged in the discussion. The recordings were used to write a summary on each of the sessions. These summaries are available upon request by the researcher.

7.2 Suggestions for Improving the Framework

Based on the input retrieved from the experts, the suggestions for improvement can be structured in five categories that are explained below.

7.2.1 Impression of the Overall Framework

In general, the experts independently agreed upon the importance of capturing capacity development factors and their relations. Today, capacity development initiatives are seen as a 'must' component of a development project, a ticking the box component on a proposal. Moreover, this lack of importance and interest to capacity development is further complicated by the way funding is provided by donor agencies. As capacity development is stated as less important, evaluating the effects becomes unnecessary as well. This required fundamental changes of the perspective towards capacity development to prevent a lack of effort and money on capacity development initiatives.

When discussing the overall impression of the framework, the link made with the context was highly appreciated. One of the experts stressed this by mentioning that if a framework does not fit the current conditions, it can never tell us anything about change or achieved impact. Another strength of the framework according to one of the experts, was its ability to not only cover processes, outputs and products, but also assess the impact in terms of change.

For some of the experts, the framework looked a bit complicated at the beginning. After an explanation of the rational of thinking, this was cleared. However, in order to make the framework useful in practice it was recommended to clearly state who could use the framework, when it could be used and how it could be used.

7.2.2 Step-by-Step Approach

During the in-depth interviews, the process of evaluation was discussed. One of the experts mentioned the use of an informal step-by-step approach that is often used in practise to start with designing an evaluation plan: 1) why are we doing this intervention, what are we aiming to achieve, 2) how could we assess which indicators are needed, 3) how could we asses this. These steps align the first three steps of the approach, in which context, elements and indicators are assessed.

Another comment discussed concerned the identification of capacity development elements. As observed by the expert, the outcomes, outcome and impact are currently assumed to be something desired. However, if one really wants to know the desired outcome of the target group, this should be asked directly at the start of an intervention. According to the expert, only then it is possible to claim that the intervention and thus the need for capacity development is developed from the demand sight.

7.2.3 Validation of Framework Components

Once the first impressions of the framework were collected, some more discussion took place based on the specific components of the framework. Three common themes could be identified which are discussed below.

In the first place, the importance of context assessment was addressed by all four experts and illustrated through different examples. One of the experts mentioned that the "*knowing the culture and the context are very important to consider before preparing a training. This influences the way you present and how the information will be perceived*". The expert also pointed out that clear methods or procedures for assessing the context are yet only informal, mostly through sharing of experiences among colleagues. Another expert mentioned that mapping the context is necessary to get an idea of what you want to achieve is feasible within the existing boundaries. These boundaries could be conceptualized into different factors that need to be considered. Another example mentioned was the aspect of mandate. The first expert illustrated this, "*we need to be realistic about what you can change and what is your own mandate*". This was acknowledged by the third experts, who mentioned some practical examples in which the value of foreign expertise was valued highly when giving a training in Bangladesh.

Secondly, two of the experts noticed that inherent factors about an individual might not be captured by the framework in its current state. Although one of the experts agreed this to be a factor on micro-level and difficult to capture, this might influence the way capacity is developed. An example was given based on innovation sciences, in which driving forces with specific skills and energy is needed to take the innovation to the next level. Moreover, the expert mentioned that taking into account their current capabilities and their position in the organisation is important for selecting the target group. The fourth expert also mentioned the possibilities of differentiation some kind of personality types. "*Taking different personality types into consideration might provide a better understanding on the concept of capacity development*". An example was provided by an individual with having diplomatic characteristics such as empathy, which might benefit when developing capacity and sharing knowledge and skills within an organization.

Thirdly, most experts addressed the necessity of understanding how change came about. The second expert described this as follows:

"*We want to know if change has occurred, but also how. The 'how' often provides the key to understanding how we can increase this type of impact. We want to know how and why. If we understand this, we can optimize the intervention and increase our impact. Moreover, we can identify the negative influences and make sure these are minimized*".

When asking how this could be done best, different answers came about. One of the experts mentioned that all factors possibly influencing the indicators must be captured. This is done by preparing a list of possible relations and try to test their influence. Another expert mentioned cause and effect relations need to be identified ex-ante, during the project, and ex-post. When doing that more often, possibly trends and emergent behaviour patterns can be observed, which will help in improving impact of interventions. However, identifying these requires making assumptions which brings uncertainty. According to the expert, it is thus crucial to be as confident as possible about these assumptions and assess possible risks. In order to map these assumptions underlying the causal relations, participation from target groups is required. Expert 3 suggested to capture these relations at different moments in time through asking the target group themselves. If possible, objective measurements might support the causalities.

7.2.4 Validation of Mechanisms of Change using the Experiences of Actors

Ultimately, the experts were asked on their opinion on mechanisms of change they have experienced in capacity development initiatives.

The first mechanism of change identified was the effect of practising and applying knowledge to activate the theoretical knowledge learned. Expert 3 shared her experience that training trajectories are nowadays consisting of lectures and passive knowledge and skills sharing. These initiatives lack the aspect of practising skills together with support of partner organisations. This influences the way capacity is developed among the participants. Sharing of experiences and thoughts helps in recognizing each other's values and supports collective action. Moreover, this builds trust. According to the expert, collaboration is a must for achieving collective action. However, currently this is limited among government organisations in Bangladesh due to a lack of motivation and recognized added value.

Another mechanism of change identified specifically in the water sector in Bangladesh evolves around institutional arrangements and communities. The expert observed that there are some community initiatives started in Bangladesh to develop capacity among communities and support them in decision making. However, the budget and financial measures needed to launch these initiatives comes from top-down and is often not aligned with the bottom-up demand and needs. As mentioned by the expert, closing this gap is hard and requires a total change in thinking.

The third mechanism of change which was mentioned by all experts were the influence of motivation and interest to develop capacity. Expert 2 mentioned that a capacity development project will only start when there is apparent motivation, interest and value recognized for the capacity development initiatives. This statement was supported by expert 1 who highlighted that a demand-driven approach, in which the demand for change among the target group is researched, is required to guarantee motivation and interest for developing capacity.

The third expert also mentioned another mechanism of change: the way knowledge is developed. Based on the cultural aspects of people and the discussion among people, a different kind or type of knowledge transfer might be more or less appropriate to use. Expert 3 shared that in Bangladesh, capacity development initiatives involving games and role play tend to work well as the Bangladeshi are relatively vocal and discussion is possible. However, this type of knowledge sharing would most likely not work in other countries such as Indonesia due to cultural differences.

7.2.5 Usefulness of the Framework

After studying and discussion of the framework, all experts considered the framework to be correct. Two of the experts thought of the framework as useful to apply also on other sectors than the water sector. One of the experts considered the framework useful to capture all the effects of capacity development but suggested for guidelines to make the framework more applicable in practice.

7.3 Interpretation and Implications of Suggestions

Based on **Section 7.2** we can state that a substantial part of the comments made by the experts can be used to improve the framework. Therefore, the following statements about the accuracy and reliability of the framework can be made.

Statement 1 The importance of context sketching with help of local partners
When assessing a capacity development intervention, the context should be studied in detail. Not only during or after the intervention, but especially before the intervention starts an analysis of the context is required. By doing so, the interventions will be more demand-driven which increases the likelihood of 'best-fit' capacity development. When studying these factors, local partners are necessary as they understand the local context and what is happening.
In this study, significant attention is drafted to the context in which the intervention is taking place. Not only is context mapping a significant step in the step-by-step approach, also the consultation and collaboration among local partners takes place to assess capacity development. Nonetheless, improvements could be made when more information on the context would be gathered for example through field work. However, if this is not possible due to certain circumstances the importance of having reliable local partners is emphasized even more.

Statement 2 Causal relations mapping for understanding the 'how'
In order to provide an accurate framework to asses institutional focussed capacity development, a solid identification of cause and effect is needed. The framework provides this through determining causal relations. Referring to the point made by Experts 1 and 3, involvement of the target group is necessary to have valid assumptions and ideally more objective data would support the assumptions. In the research, these causal relations are determined with help of the interviews with participants.

Statement 3 Provide a clear manual for applying this framework in practise
In order to make the framework fully reliable to be used in practise, a clear manual or guidelines are needed. This reflects the points made by expert three to clearly state who can use the framework, when the framework should be used and how the framework should be used. As stated in Chapter 3 the framework aims to identify the factors of institutional capacity development and their relations amongst each other. Although more guidelines could be provided, the framework does not aim to suggest methods for successful evaluating capacity development. Rather, it provides insights on the different factors that should be thought of when evaluating institutional focussed capacity development.

Statement 4 Consider taking into account personal characteristics
The final statement that could be drawn based on the expert session is taking into account the personal characteristics of the target group. This point was made by Experts 3 and 4, as the characteristics of the target group might play an influence in their own ability to develop capacity and also to transfer this into an organisation. This can be considered a remark that is currently not taken into account in the framework but would be helpful for improving the accuracy. However, this would also require sufficient study on the target group participating in an intervention. As the CIA project intervention targets local professionals, we assume

some kind of basic ability to develop capacity. An in-depth study into inherent characteristics did not seem possible as local data collection and field work were limited. Nevertheless, these might be useful extensions for the framework.

Limitation
Based on the sessions as conducted, we can see that there are different focusses of each of the validation sessions. This also had to do with the different experiences and fields of the experts. In order to improve the accuracy and reliability of the framework further, it is suggested to organize a collective session to facilitate discussion and share ideas and inputs.

7.4 Conclusion: Improvements for the Framework

Based on the sessions with four experts, we can state that the framework seems to be sufficiently accurate to be useful. Mapping the context and the causal relations was valued highly, as long as this was done with help of local partners and/or stakeholders. In order to make the framework more accurate, it is advised to consider different categories or classes of personalities. This is useful to determine the personal capability of someone to learn and thus develop capacity. In order to make the framework more reliable, it was advised to provide clear guidelines.

8 Discussion and Reflection

Chapter 8 provides a discussion based on the results of this research. The information retrieved from applying the EICD framework on a real-world intervention and through expert sessions allows us to start a more in-depth research and reflection on the framework developed. This is required to answer the final sub question: *To what extent is the developed framework suitable for evaluating institutional focussed capacity development?* **Section 8.1** starts by discussing the validation. Thereafter, a reflection is made on the evaluation of capacity development interventions through the EICD framework. The arguments made in **Section 8.2** should be seen in light of the illustrative case study as presented in the earlier chapter and the validation by experts. **Section 8.3** poses the limitations of the research. Thereafter the contribution of the research in scientific and societal manner is discussed in **Section 8.4**. Ultimately, the relation between this study and the EPA programme is highlighted in **Section 8.5**.

8.1 Discussion on Validation

Throughout the study different attempts have been for validation of the study. Taking all attempts into consideration, we can consider the study to be valid to a certain extent due to the following two reasons.

Firstly, the data collection is based on triangulation of different data sources (see **Section 4.1**). Creswell (2009) described that the use of different data sources attributed to a coherent justification of themes. Moreover, various perspectives of stakeholders are considered by interviewing both participants and project partners of the intervention. Unfortunately, the collection of primary data is not entirely performed by the researcher herself. As a consequence, certain bias might occur among the interpretation of the data thereby risking validity of the study. To overcome this, the interview summaries compiled are shared among the participants to check upon accuracy of the data. For future research it is advised to collect as much data as possible directly by the researcher and to include collection methods in the field.

Secondly, four experts are asked about their impression on the accuracy and reliability of the framework developed. The experts are all affiliated with either evaluation, capacity development, and the water sector. This allows a complete image on the impression of the framework. The sessions had to be organized individually, which allows us to ask specific questions based on the respondent's expertise. On the other hand, this makes discussion amongst experts impossible. The validity of the study could be increased by organizing session with multiple experts at the same time to stimulate discussion and retrieve in-depth insights. Moreover, more experts could be consulted.

8.2 Implications

This study aims to find an approach for evaluating capacity development interventions from an institutional perspective. Based on a thorough literature study, a first framework has been developed. The execution of an illustrative case study and consultation of experts have resulted in suggestions for refinement of the framework. Section 8.2 aims to discuss the key findings by discussing our current insights on the evaluation of institutional focussed capacity development.

8.2.1 Implications regarding the Important Aspects of Capacity Development

Based on the literature research conducted in Chapter 2, five important aspects of capacity development were highlighted. These important aspects provided the basis for developing an evaluation framework for institutional focussed capacity development. These aspects will be used to discuss the implications of the framework.

Managing complexity
Literature showed that institutional capacity development is a complex and dynamic process. The framework and its complementary step-by-step approach allowed us to analyse the intervention step-by-step and thereby reveal its complexity and simplify its application.

The framework as used in the case study can assist one when capturing and checking the assumptions that underlie the development of capacity. In the first place, this provides us with an explanation why "logical" interventions on paper turn out to be different in practise. Secondly, causal relations are drawn which help us to understand emergent behaviour patterns and the influence of contextual factors in place. As highlighted by the experts, understanding these causalities contributes to improved capacity development interventions in the future. When looking at the other frameworks proposed, we can state that the developed framework can be labelled as an evaluation framework belonging to the Complex Adaptive Systems school of thought.

Direct and indirect capacity development

Literature noted capacity development to be a latent phenomenon, in which explicit and tacit knowledge were developed directly and indirectly.

Based on the illustration of the developed framework on the CPIA project, we could conclude that both explicit and tacit knowledge and skills can be captured by the framework on at least the individual and organizational level of the framework.

Moreover, the framework allowed to assess the (lack of) direct capacity development through conducting interviews. However, as indicated by one of the experts as well, indirect capacity development turned out to be more challenging to asses. Especially the indicator expressing 'the desire to learn' was difficult to assess. This might be improved if more primary data would be collected. On top of that, the framework works with a set of indicators that have been adapted to the case but have been categorized based on the work of previous scholars. This helps in simplifying the process of evaluation, but also poses the framework to risks of not being aware of any indirect effects that might come up and are not captured by these indicators. In the second version of the framework, more attention could be payed to this aspect when performing Phase II of the step-by-step approach.

Mapping causal mechanisms

It can be concludes that a comprehensive evaluation of capacity development requires mapping the causalities that lead to change. In the framework, this is done through mapping the causal relations and thereby understanding the mechanisms of change. Mapping these relations however is only possible with involvement of local stakeholders. In this research, field research was impossible. However, we could imagine that mapping the causal relations could be even done more precisely if more primary data was collected. For example, focus group discussions or direct observations might have resulted in a more thorough mapping of these mechanisms and therefore also allowed us to better understand the mechanisms in place. As a result, the assessment of the indicators might have been more accurate as well.

Contextual factors

The framework encourages to take various contextual factors into account when evaluating capacity development. The factors are specified with help of the IAD framework to biophysical, socioeconomic and institutional factors. As explained by (Ostrom, 2009b), these factors play a role in analysing institutions and were thus also considered a good starting point for mapping contextual factors in institutional focussed capacity development interventions. Yet, the interpretation of these factors turned out to be rather unconventional compared to the interpretation of Ostrom (2011).

The study showed that factors from outside the control of the intervention are crucial to consider in capacity development projects. Categorizing the contextual factors according to the IAD framework allowed us to provide an exclusive overview of factors and helped us in understanding the mechanisms of change. This was also illustrated in the literature study, where the specific context, the state and timing of the project, and the stage of the situation were considered important.

In the CPIA project we have seen that the water issues addressed had been investigated before the start of the intervention. This leads to the understanding that capacity from an institutional perspective could be developed to solve water issues. Based on this assessment, the selection of participants was performed. Considering the context informs one on the needs for capacity development which allows for a demand-driven intervention. The case study showed us that involvement of a local partner is crucial for assessing the context and therefore to

establish successful capacity development. Assessing the context allows a "best fit" for the intervention and should consider involvement of local actors and intended target group.

Levels of Capacity Development

The case study showed us the benefits of defining the different levels of capacity development to improve our understanding of change mechanisms. When looking at these mechanisms change, knowledge dissemination relations could be identified. The literature study argued that the process of knowledge dissemination is specific to the level on which it is occurring. Theorists such as (Bloom, 1956) provide an explanation of knowledge dissemination on an individual level through his taxonomy of knowledge.

On the organizational level, (Nonaka & Takeuchi, 1995) presented the SECI-model to understand knowledge adoption and transfer within an organization. These theories and models could serve as explorative theories on the mechanisms of change as identified in the step-by-step approach of the framework. As illustrated in the hypothetical application of the SECI-model on the CPIA intervention (see Table 11), these general processes of knowledge dissemination could possibly serve as a complementary method to improve our understanding on the mechanisms of change.

For a second version of the framework, it could be interesting to investigate the different processes of knowledge dissemination per nested level. This might help in offering an explanation for the different scores among the target group on the indicators.

Table 11 Hypothetical application of the SECI model to the CPIA intervention

Mode of Knowledge Conversion	**Types of Knowledge**	**CD on organizational level in CPIA project**
Socialization	From tacit to tacit knowledge	Sharing of the experiences with new tacit knowledge on institutional understanding and water issues from training. Colleagues perceive this and value the benefits and disadvantages of this new knowledge.
Externalization	From tacit to explicit knowledge	When the new tacit knowledge is adopted by colleagues, it is transferred into explicit concepts that allow other colleagues to understand and use it. Transferring and making concepts like formal mapping, institutional analysis explicit.
Combination	From explicit to explicit knowledge	New explicit knowledge is combined with the current explicit knowledge on concepts. E.g. new procedure for pond conservation is proposed and combined with procedure in place.
Internalization	From explicit to tacit knowledge	New procedure is standardized and learned by doing, e.g. new pond conservation procedure is executed by organization. After a while, people get acquainted and the knowledge becomes embedded into their ideas and values.

8.2.2 Implications regarding the Institutional Perspective of Capacity Development

Besides these important aspects of institutional capacity development, the results in light of the institutional perspective towards capacity development will be discussed in more detail below.

Developing capacity among individuals, organization or the enabling environment aims to stimulate the potential to act within a situation. Besides the capacity and the resources available, the potential to act is also determined by the other actors present in a situation. Ostrom & Polski (1999) described this as the action arena,

in which the actors (re)act in a given situation but also interact with each other. This is partly determined by their position within the situation.

The phenomenon of actor interaction results in certain outcomes that change the situation. This phenomenon also occurred in the illustrative case study where participation and interaction amongst participants drive a certain output. The participants mention that the selection and role of these actors in the specific water issue is relevant to consider. Dependent on the role and position of the actor, capacity is developed differently. In the case study, we could identify several critical actors who were not all considered as the target group for the intervention but turned out to be beneficiaries. Their positions differed, resulting in specific actions and interaction with others, and different levels of capacity development.

Moreover, the case study illustrated that information on the background and position of the actors influences the effectiveness of the case study and helps in understanding on which level capacity development takes place. A thorough selection of the target group and beneficiaries is required when initiating capacity development interventions.

The framework tries to accommodate for this by scoping the critical actors of the intervention through an actor analysis and captures some of these interactions in capacity development interventions with help of causal relations. Moreover, the contextual factors are considered. Despite these efforts, it turned out to be difficult to capture the dynamics among the participants involved in the framework, and their personal characteristics underlying these actions.

Overall, we conclude that the framework captures causalities underlying capacity development properly, but this might be complemented with a thorough actor analysis in a second version of the framework. As illustrated by previous scholars, the line between institutional development and capacity development is narrow (see **Section 2.3**). Especially since this framework aims to evaluate institutional capacity development, understanding the actor perspectives and interactions is relevant. Doing so might influence the result to the extent that additional insights might have occurred supporting the mechanisms of change. However, we do not expect this to influence the extent to which capacity development occurred as the indicators are focussing on capacity development.

8.2.3 Implications Regarding Usefulness of the Framework

Ultimately, the results of this study will be discussed in light of the usefulness of the framework. This is based on the application of the framework to a real-world case and the expert validation.

Application in the water sector

The future application of the developed framework urges to discuss upon the application field of the framework. The evaluation framework is developed based on literature and schools of thought of evaluation studies, capacity development, and institutions. The literature study revealed that most capacity development evaluations find its application in the water sector. Although the framework is not necessarily developed for use in the water sector, the indicators used to assess capacity development are based on studies in the water sector. Based on our findings, we can conclude that the framework allows one to evaluate institutional focussed capacity development in the water sector but that generalisation to other domains such as health, transport and energy requires further testing. However, it might be interesting to take this application field of institutional capacity development more into account. This might change the indicators chosen to assess capacity development.

Using the framework in practise

The framework developed is operationalized using a step-by-step approach. As illustrated by the experts, these steps bring some challenges.

At step 3, specifying the indicators, one should be aware that both the intended and the unintended effects should be captured. The difference between CD elements as perceived from the project partners and the perception of the target group should be recognized as well. Moreover, the capacity developments are often specified in a program logic which is made by the project initiators. As discussed in the expert validation, when taking the program logic as a starting point for the indication of capacity development elements, it is important to find out whether these are demand driven from the local context or supply driven. Involvement of local stakeholders can help to overcome this risk.

Furthermore, the step-by-step approach is divided into three different phases, for which Phase II is advised to be iterated. Experts emphasized this iteration to be able to identify change. During the illustration of the framework on the CPIA project, the use of this iteration steps was used very limited. Whenever possible baseline data on the indicators or assumed causal relations was used, but the baseline data turned out to be rather limited. Would the step-by-step approach also be applied at the beginning of the intervention, we can expect the results to be quite different. Especially for Phase II, this would allow us to make the first iteration and thereby be able to capture the emerging causal relations and the change of indicators. Moreover, this would make the understanding of mechanisms of change more robust. It can be concluded that an application of the developed evaluation framework and the accompanying step-by-step approach at the beginning and iterate this over time are expected to improve the evaluation.

Ultimately, it is advised for the user of the evaluation framework to be present at the application of the framework and the step-by-step approach the entire way. During the application of the framework, some difficulties with differentiating the contextual factors from the baseline data were encountered. As this was not done together with the local partners, not in a local context, and not at the start of the intervention, the interpretation of these factors might be influenced. When applying the framework and the approach at another intervention, it is advised to evaluate from the start and locally in the field.

The potential users of this framework could be researchers, project initiators or donor agencies of interventions. For researchers, a clear incentive is visible to use the framework as this might understand how the process of capacity development could work. For the latter, donor agencies, the framework could help in increasing the effectiveness of funds. As explained by one of the experts, a better understanding on the process of the intervention through evaluation is the key to forming a more effective strategy of change for future interventions. However, mapping these relations and indicating change might take long as changes especially on the organizational and enabling environment level are only visible on the medium or long term. This also illustrates the sometimes lack of incentives to use frameworks like the developed evaluation framework by project initiators, as the effects occur often on the medium and long term. A way to improve this would be to use the framework not only when evaluating the capacity development intervention, but also ex-ante of the intervention as a supportive tool for planning and design of interventions.

Using the framework for other approaches towards capacity development

Although not expected beforehand, the application of the developed evaluation framework showed us that besides the institutional approach, other approaches towards capacity development could be identified in the intervention.

The intervention studied during the case study was recognized as an institutional approach towards capacity development. By learning and applying the APIA methods, institutional understanding is aimed to be achieved. Consequently, capacity to understand and possibly change the current processes that govern society is developed, leading to solutions for water and delta management issues (Lusthaus et al., 1999).

However, by analysing the case study we could also identify the three other approaches for capacity development (see **Section 2.2**). Based on the application of the framework, we can recognize the organizational approach in the way capacity is developed in the organizations of the local professionals. The systems approach towards capacity development promotes capacity development in a holistic way emphasizing the consideration of all contextual elements and multilevel capacity development. As mentioned in the previous paragraph, the contextual factors play a key role in the developed framework and therefore can be considered suitable from a systems approach point of view of capacity development. Ultimately, scholars showed us that capacity can be developed from a participatory approach in which the importance of ownership and partnerships are highlighted. In the case study, the framework illustrates this through the mechanisms of change.

Despite the use of an illustrative case study to show an application of the framework, we foresee possible use of the framework to evaluate capacity development from different approaches such as the systems approach, the organizational approach and the participatory approach as well. This could be explored when applying the framework to evaluate capacity development interventions with a different approach.

8.3 Limitations

The limitations of this study are divided into limitations regarding the scope, the methods, the data collection and the research process. These are presented below.

8.3.1 Limitations of the Research Scope

This study is currently considering the APIA method as one tool. The case study introduction showed that the method consists of four clearly defined steps which have also been shared separately during the training workshop (see Chapter 4). A more in-depth evaluation of capacity development might be possible when one takes these different steps into account during evaluation. Not only will this provide more insights on the usefulness of the APIA method, this will also contribute to a more detailed understanding of the capacity developed by the participants.

Another limitation that should be mentioned is the decisions made on the scope of the case study. This study decided to evaluate the CPIA project as one intervention. However, as explained in Chapter 4, the intervention comprised four different water challenges that were considered as individual problems and were each separately addressed. The characteristics belonging to a specific problem might influence if and how change might come about. For example, a specific event happening in the waste water case might influence the process of institutional capacity development. Although general factors are taken into consideration into the framework, case specific characteristics have not been accounted for.

Finally, the scope of this research lies at the intersection of capacity development, institutional challenges, water challenges and evaluation frameworks. However, looking at the literature study conducted and the development of the evaluation framework, one can argue that the scientific basis of water challenges is relatively light. Although the indicators are clearly derived from literature on capacity development in the water sector, more emphasis on this topic might have influenced the way the evaluation framework was developed and thereby also the case study results.

8.3.2 Limitations of the Method

The research is limited by the possibilities for applying the framework on one case. The framework developed is tested with help of a single case study. This limits the research in drawing overall conclusions of the case. Moreover, the case selected serves as an illustration for applying the developed framework. Travelling is prohibited due to the pandemic situation, which has significant effects on the way data is collected. As a result of these limitations, careful argumentations had to be made when interpreting the results of the research. The reader should thus keep in mind that this study provides one with a proof of concept for evaluating institutional focussed capacity development.

The information retrieved is filtered based on the worldview of the researcher. In this study, the researcher is also taking part in the project. This makes it plausible to assume that there will be differences amongst the interpretation compares to a reviewer acting completely isolated from the project leading to bias. On the other hand, this also provided the research with additional insights on the progress of the project.

The study uses a single case study to illustrate application of the framework. This makes it unable for the study to conclude any general findings. As described by (Creswell, 2009; Yin, 1994), qualitative research can be generalized to some broader context when additional case studies are used and the findings are generalized to these case studies. It is therefore advised to search for other interventions aimed at institutional capacity development in the water sector. This allows cross case analysis and allows one to draw conclusions on generalized findings based on application of the framework. Moreover, an application of the framework to comparable interventions in other sectors allows one to draw additional conclusions about the generalizability of the framework as well.

The data analysis in this study was performed by a single researcher through coding by hand. This exposes us to bias as the analysis is not cross-checked by more researchers which possibly minimizes the bias. Moreover,

the coding was done by hand. On one hand, this makes the researcher aware of the information in the data present and forces the researcher to code effectively with the bigger goal of the study in mind. On the other hand, this process is very time consuming and exposes the risk of information being missed.

Ultimately, the data analysis was performed through the application of the framework on the case. Although very interesting, this process also brought some challenges as this was a first application of the framework. Along the way, I came across some hurdles within the framework that would ideally be adapted right away. However, as the case study was used to illustrate an application of the framework as developed, these adjustments were not made during the study but were noted down as implications in Chapter 6 and Chapter 8.

8.3.3 Limitations of the Data Collection

The data collection methods used in this research are limited due to the current global pandemic. As mentioned before, field work offers the possibility to place the retrieved information into the context in which it is happening. Moreover, the travel restrictions limited the possibilities to apply other methods of data collection such as focus group discussions, direct observations and conducting surveys. Although interviews are considered appropriate tool for data collection in this illustrative case study, an expansion of primary data would provide more information on the context and perspectives of the participants in the CPIA project.

Moreover, the data collected took place in the months July and August. Due to the shock among society caused by the global pandemic, a tropical cyclone and religious festivities in Bangladesh, collecting data during one period in time was difficult. To finish the research in time, the data analysis was happening more or less iterative. As more information through the interview was gathered, the analysis process would be repeated again. At the final stage, the largest progress in the analysis were made as connections could be perceived and common themes could be identified. We might argue that as the analysis of the data did not happen during one moment in time. Consequently, the analysis took place in different circumstances which might have resulted in some bias. For future research, it is advised to complete the data collection first before diving into the analysis.

When looking at the data collection, limitations should also be mentioned about the interviews. Many attempts to minimize the risks of interview bias have been made. Nevertheless, one can never be sure to have fully objective data when conducting interviews.

Some of the interviews were not conducted by the researcher due to language barriers. This creates a bias when interpreting the data, as the data crossed several critical points. In the first place, the questions as formulated on the questionnaire could have been asked in a slightly different way or with different emphasis. This risk has been minimized by conducting two elaborate testing interviews and a detailed script. Secondly, bias might have occurred at the interpretation of the answers by the interviewer. This risk has been minimized by recording the interviews.

Another critical point occurred during translation of the interviews from Bangla to English. We have tried to minimize these risks by transcribing the interviews. Fourthly, there is always a risk in interpretation of the data by the researcher. To overcome this, the researcher drafted summaries about the perspectives of participants. These summaries where shared for check among the participants.

Besides the quality of the interviews, another point worth mentioning is the selection of interviewees. All participants involved in the January workshop were asked for involvement in the interviews. Out of these 19 participants, 11 participants were willing to take part in the interviews. The participants were almost equally distributed among the four different water cases addressed. We consider these 11 respondents to be a representative selection of all participants in the project. However, difference amongst the perspectives of the participants on the intervention is always there as these perspectives are personal. The selection of interviewees can thus be considered a limitation to the study.

Ultimately, the interview script used to interview the local professionals in the training was similar for everyone. Along the way the researcher experienced that it might have been better if the interviews would have taken the background of the respondent and his or her characteristics into account when drafting the questions. Although the interviews were semi-structured, not all interviews were conducted by the researcher. Making adaption by

the researcher whilst doing the interview was therefore impossible. A more in-depth study on the interviewees in advance might have improved the level of detail of the information gathered.

8.3.4 Limitations of the Research Process

This study was conducted over the period from April 2020 until September 2020. The first ideas of this study included a three to four week field visit to the location of the intervention, Khulna Bangladesh. Unfortunately, the global COVID-19 pandemic caused travel restrictions which caused the research to be changed substantively. First, the scope of the research had to be adapted to a study in which being on-site was not possible. Secondly, the entire research process including supervision and interviews took place from a distance. Although it could be said that we managed these changes, it still resulted in some limitations. Visits on-site were not possible which can be argued a limitation as the understanding of the situation in Khulna is limited. Moreover, the virtual discussions to some extent limited the opportunities for brainstorming, discussion and direct observations and interpretation of the interviews, expert sessions and the supervision.

8.4 Contribution of the Study

This study aimed to deliver a framework which would be reviewed as complementary to the existing theories on the evaluation of capacity development, and would contribute both in improving capacity development initiatives as well as provide improvements for the CPIA project. A reflection on these goals for scientific and societal contribution are elaborated upon in this section.

8.4.1 Scientific Contribution

The study delivered a proof of concept of a framework to evaluate institutional focussed capacity development. As previous research showed, evaluating capacity development is argued to be difficult due to the complexities associated with the concept of capacity development. The framework developed in this study should be thought of as a way to relate the important components associated with capacity development from an institutional perspective. The framework adds to the existing methodology as it managed to map the most important components of capacity development and their relations amongst each other. In comparison with previous evaluation frameworks, we can say that the research to some extent opened the 'black box' by identifying how capacity development occurs. Moreover, the framework allows one to do this on individual, organization and environmental level and shows us how the nestedness of these levels influenced the capacity development process.

Besides filling this scientific gap, the framework can also be used as a start for theoretical analysis (see Figure 32). The framework as developed provides one with a general set of variables that need to be considered when analysing institutional focussed capacity development. As formulated by Ostrom (2011), a framework can be used to compare different theories relevant to the same kind of phenomena. In this case, the EICD framework helps in identifying universal elements on the evaluation of capacity development that would be included by any kind of theory on capacity development. The framework can thus be used to compare different theories such as organizational theories and knowledge dissemination theories. Additionally, the framework can be supportive in developing and using models. The framework helps in specifying the set of variables and parameters needed in a model, such as an agent based model. Based on theories, the combination and relation of these variables will be selected in detail.

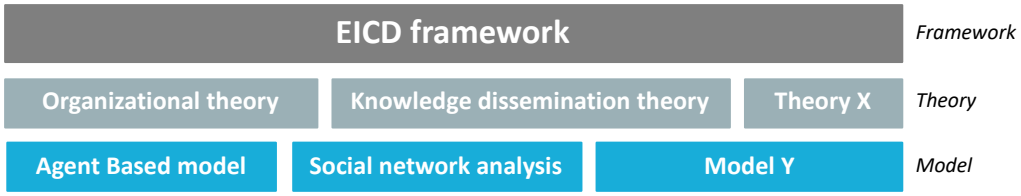


Figure 32 Scientific relevance of the research: theoretical analysis

8.4.2 Societal Contribution

The study shows that the EICD framework can be considered a relevant tool in providing insights why an intervention does or does not work. The framework can help in comparing cases of institutional focussed capacity development in different countries by looking at similar variables. By, doing so the framework can contribute to improving capacity development interventions. Looking at the societal challenges faced nowadays and the important role of capacity development in today's international development sector, improvement of these interventions can be of substantive influence and improve effective spending of development effort and resources.

Currently, the framework is applied to the water sector. Experts noted that it would most likely that the framework could also to other sectors where institutional focussed capacity development interventions take place. It is recommended to test this in future research.

The study sheds light on the framework as a tool for project initiators or managers to evaluate their intervention. However, the framework turned out to be useful prior to the intervention. The contextual factors present play a role when determining what kind of capacity is initiated and amongst whom this is being developed. The framework can therefore also be considered helpful for the planning stages of an intervention.

Ultimately, this research helps to explore the effects of the CPIA project. The intervention is used as an illustrative case study. The case study results showed that capacity development in the project is very dependent on the contextual factors, local partners, the motivation of the participants, and the ability to practise the gained knowledge and skills. These factors can be taken into consideration for the remaining duration of the intervention. A better fit of the intervention would increase the institutional and theoretical understanding, and benefit the society in solving the water and delta management issues present.

8.5 Relation to the EPA programme

This study addresses the challenges faced regarding capacity development for institutional understanding in the water sector. Similar to the EPA program, this study makes a connection between conceptual modelling and studying grand societal challenges by developing a conceptual model on evaluating institutional capacity development and applying this the water sector in Bangladesh. Specifically the study addresses SGD target 6.a stating that "By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies" (UN, n.d.).

9 Conclusion and Recommendations

The final chapter provides concise conclusions and presents recommendations for future research. First, the key insights of and lessons learned from this study will be provided in **Section 9.1** by answering the research questions as identified in Chapter 1. **Section 9.2** provides recommendations on future research and future application of the developed framework.

9.1 Answering the Research Questions

This study aimed to explore possibilities for the evaluation of institutional capacity development among local professionals in the water sector with the help of five sub questions. These are answered below:

1. **What does the current literature tell us about evaluating institutional focussed capacity development?**
   Capacity development is a complex phenomenon which can defined as the process of directly or indirectly developing knowledge, skills and other capabilities taking place on an individual, organization and environmental level. In this study, capacity development is approached from an institutional perspective. This approach highlights the multi-level aspect of capacity development and puts emphasis on including the context when assessing capacity development. Several attempts have been made to evaluate projects with a certain component of capacity development. To our understanding, none of the existing capacity development theories aim to capture the essential capacity development elements and the relations amongst them.

2. **What does an evaluation framework of capacity development from an institutional perspective look like?**
   This study developed an evaluation framework that enables to assess institutional capacity development on an individual, organizational and enabling environment level. For each of the levels, a capacity development input and result can be classified where the result of a nested level can serve as an input for the next level. The framework takes the influence of contextual factors into account when evaluating, which account for the institutional perspective of capacity development.

   The framework seems to be unique in its ability to capture the process of change happening between the input and result. This is done through mapping causal relations, which allow one to determine mechanisms of change. Moreover, the framework formulates indicators which can be used to evaluate the extent to which capacity development occurred.

3. **Based on the application of this framework, what can be concluded about institutional focused capacity development among local professionals in the water sector of Bangladesh?**
   Local professionals in Khulna, Bangladesh, developed capacities regarding the understanding of institutional mechanisms in place. By improving the ability to collaborate and network, and through sharing each other's perspectives on the current water issues, trust among the participants was developed and knowledge on the water issues was improved. The analytical capacities for use of the participatory institutional analysis methods turned out to be dependent on the extent to which practising the methods was possible and the prior knowledge and education of the participants. A clear difference could be observed in the development of explicit knowledge through the training workshops, and tacit knowledge, through practising and sufficient motivation and interest of the participants. This caused a significant difference of capacity among the participants.

   Besides capacity development on an individual level, some organizational capacity development was observed as well. Almost all participants acknowledged that explicit knowledge was shared within their organization. The professionals who seemed to have more individual capacity were observed to be more successful in developing organizational capacity as well. Although we could not clearly indicate to what extent this was developed, we observed that involvement of colleagues and managers, sufficient

practising and a certain embeddedness of institutional analysis seemed to contribute to organizational capacity development. Yet, these observations should be considered preliminary.

4. **How can the developed evaluation framework be improved?**
   Based on an expert validation session, it can be concluded that the framework is accurate to be used. Strengths of the framework included explicitly mapping the context of the intervention and its ability to map causal relations together with local partners and stakeholders.

   The framework could be improved by adding personal characteristics of the actors involved, as they might influence someone's capability to learn and disseminate knowledge. Moreover, the framework looks at interventions both from a demand-driven and a supply-driven perspective by incorporating perspectives of the local target group and project partners. Yet the framework does not emphasize this difference clearly. Ultimately, suggestions were made to improve the usefulness of the framework for practitioners in the field with help of a guideline or manual.

5. **To what extent is the developed framework suitable for evaluating institutional focussed capacity development?**
   The developed framework identifies the crucial elements and general relations that one needs to consider when evaluating institutional capacity development. The framework captures the input, causes and effect, and mechanisms of change underlying a capacity development intervention on all three relevant levels. These nested levels help us to understand the institutional perspective of capacity development. Moreover, the framework enables one to understand the situation by mapping the contextual factors present. By doing so, the framework provides us with insights how and to what extent capacity development has occurred.

Based on these answers, the main research question of this research can be answered:

How can institutional focussed capacity development among local professionals in the water sector be evaluated?

Institutional focussed capacity development is a complex phenomenon with many different aspects. This makes evaluation an important yet difficult process. In order to understand the relation between these different aspects and to be able to evaluate institutional focussed capacity development, a framework was constructed leading to the first conclusion of this study:

- Institutional focussed capacity development can be evaluated with help of a **framework**. As shown in this study, the developed framework allowed to systematically identify the different components and the relationship among them that need to be considered for evaluation. Consecutively, the framework can be used to identify to what extent and how institutional capacity was developed in the water sector. However, applying such a framework in practise requires a tailored approach and guidelines.

Based on the verification and validation, the study confirmed that a framework needs to consider the following factors when evaluating institutional capacity development among local professionals in the water sector:

- **Mapping contextual factors** is a must for evaluation of institutional capacity development. Especially when providing an explanation on how and when capacity development occurred, we can see that this is largely caused by mechanisms of change stimulated through contextual factors. Therefore, identification of contextual factors offers a way to address the well-known attribution problem of evaluations.

- Evaluation of institutional focussed capacity development requires **involvement of local stakeholders**. In order to get a good perspective on the development process and the mechanisms of change present, local stakeholders need to be involved when assessing institutional capacity development. Besides, this helps in making the intervention 'demand-driven' and adaptive to the local situation. Moreover,

involving local stakeholders will make the intervention more robust to contextual factors that might delay or constrain the capacity development activities.

Additionally, the following new lessons and insights should be included:

- **Causal relations** help to understand the underlying process of change. Reflecting on the state-of-the-art frameworks currently available to evaluate capacity development such as the ToC, the KCD and the OECD/FAO frameworks, this study contributes by mapping causal relations. It can be concluded that these causal relations help in capturing the dynamic and feedback loops of a capacity development intervention. The case study illustrated that mapping causal relations is an effective way to understand the processes of change underlying capacity development. Moreover, it can help to assess indicators of institutional capacity development, especially when quantifying these indicators is difficult. However, it should be noted that identifying these causal relations requires involvement of local stakeholder.

- The **nested levels** of institutional capacity development should be outlined in a structured manner. This can be done by combining the components of an intervention with its multi-level aspect. The framework matched the elements of the logic model referred to as the input, output, outcome and impact of the intervention, to the different levels of capacity development. This shows that output can be used to express capacity development on an individual level, outcome for the organizational level and impact for the enabling environment. By combining these reasoning, the institutional approach of capacity development interventions is better understood. Moreover, this helps to show how capacity development can result in sustainable change on the long term. Ultimately, matching the elements to the nested levels allows one to evaluate capacity development from a systems perspective.

- **Actor interaction and perspective** should also be considered when evaluating. The developed framework focussed on understanding and assessing capacity development through causal relations. However, verification and validation concluded that inclusion of the actor perspectives and interactions of the participants of an intervention seems to be important as well. This is expected to create value in the argumentation for and understanding of the mechanisms of change. Moreover, it helps to clarify the institutional perspective of capacity development.

Ultimately, two concluding remarks on the study should be made:

- Some of the supervisors of this thesis were also involved as stakeholders in the CPIA project, which was used for the case study. Although direct effects of this involvement might be hard to point out, we cannot exclude this to be of influence on the verification of this framework by the illustrative case study.

- The conclusions drawn are based on an illustrative case study in the water sector in Khulna and sessions with four experts. The answers should therefore be interpreted based on an ongoing institutional capacity development project. The framework needs to undergo additional rounds of application and validation to guarantee suitability and generalization to all institutional capacity development evaluations. We welcome other researchers to contribute in developing framework and bringing the evaluation of capacity development to the next level.

9.2 Recommendations

This study highlighted on the evaluation of capacity development among professionals in Khulna, Bangladesh. The limitations and conclusions drawn offer opportunities for future research directions and provide recommendations for interventions aimed at capacity development.

9.2.1 Recommendations for Future Research

The first recommendations for future research directions are based on the findings of the illustrative case study and the expert validation sessions. These are recommendations for a second iteration of the framework.

- Considering actor perspectives in the framework. The case study results indicated actor interactions and characteristics play a role in the development of capacity. Yet, the framework does not capture this. Future research directions could investigate the possibilities of incorporating this actor perspective of capacity development into the framework.

- Pay more attention to capturing indirect effects. Currently, the framework and especially the data collected methods are mainly focussed on capturing direct capacity developments. It is recommended to look into ways of capturing the indirect effects. A suggestion for this is to expand the amount and type of primary data collected, for example with direct observations and focus group discussions.

- Explore the knowledge dissemination theories that might underlie capacity development on different levels and include them as another dimension in the framework. This could for example be the taxonomy of knowledge by Bloom (1956), or organizational theories on knowledge dissemination theories by Nonaka & Takeuchi (1995).

- Adding a guideline or manual on the framework and the step-by-step approach. As suggested by experts, this would improve the usefulness of the framework by others.

The second suggestions for future research lie within the verification of the developed framework. To increase the scientific contribution of this research, it is advised to apply qualitative generalization. Yin (1994) proposes to study additional cases in order to generalize findings to the new cases. This process of generalization can lead to some broader theory. This thesis solely focussed on one case. Therefore, it is recommended to additionally apply the framework. This can be done in the following ways:

- Application on additional water cases in future as a start defining a broader theory on the evaluation of institutional capacity development. When doing so, it is recommended to collect primary data, have sufficient involvement of local stakeholders, and evaluate at the start, during and at the end of the intervention.

- Application within the water sector but for interventions with a different approach towards capacity development. This could for example be interventions focussed on participatory capacity development or organizational development.

- Application in other sectors. This could be done relatively easy by applying the framework to another area than the water sector (see Figure 33). It is recommended to pay special attention to the indicators to see if they are also applicable outside the water sector.

- Application outside the development context, for example use it as management tool to assess capacity development within employees of an organization. This might require an adaption of indicators, which could be based on organizational and management theories.

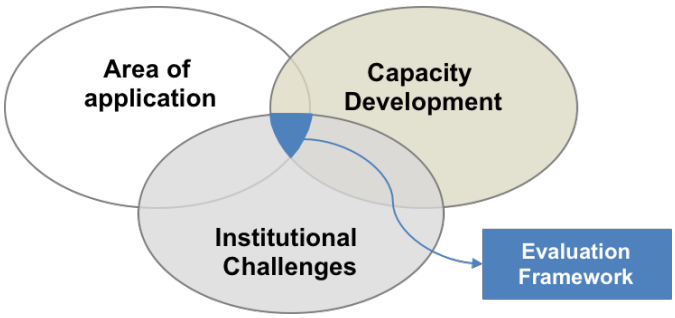


Figure 33 Other application areas of the framework

Another interesting research direction could be to use the developed evaluation framework as a starting point to develop models on capacity development. The framework presents a general set of variables on capacity development and indicates the relations between these variables. The input of the interventions can serve as parameters. Models can be used to map the causal relations and offer predictions on the outputs, outcomes, and impact. Agent-based modelling is described as suitable for modelling feedback-loops, path dependencies, and offers the opportunity to capture behaviour (Dam et al., 2012), and might therefore be interesting to explore.

9.2.2 Recommendations for Evaluating Institutional Capacity Development in Practise

Based on the illustration of the framework through the CPIA case study and the discussions with experts, four recommendations for evaluating institutional capacity development in practise can be made.

- The **value of evaluations** should not be underestimated. As shown by literature assessed in this study, capacity development is becoming an increasingly important aspect of development aid. Yet, assistance in the planning, monitoring and evaluation of capacity development has not developed at the same pace. The value of proper evaluations should not be misunderstood; evaluations form the key to recommendations on current and the forming of new effective strategies. Due to evaluations, we know what is going well and what can be improved.

- Evaluations benefit from sufficient **iterations**, which allow adaption of the intervention to changing circumstances. The framework in this study was scoped to evaluate intervention of institutional capacity development, which allowed one round of applying the framework. Yet, more iterations will improve the application as additional information will improve the ability to capture causal relations. Moreover, part of the impact of institutional capacity development would only be visible on the long term.
  We therefore recommend including this framework throughout the entire capacity development process and adjust it along the way. We make the suggestions to use this framework as an adaptive aid in capacity development interventions.

- Important to notice is that one should be **aware of the effort and time** an evaluation demands. The verification of the framework showed that evaluation in practise consumes a lot of time and thus money. Nonetheless, iterations are required in order to guarantee a high quality evaluation. On the long term, this investment is expected to benefit future interventions by increasing efficiency.

- An **active role of donor agencies** can help in successful evaluation of institutional capacity development. To guarantee proper use of the framework, create commitment and to clarify responsibilities, we recommend donor agencies to take an active role in promoting the use of the framework. This will benefit them in selecting capacity development projects in the future and provides opportunities for effective allocation of capacity development budgets. However, when doing so it remains important to clarify the usefulness and relevance of the framework to initiators and aid recipients to guarantee motivation and interest.

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Other References

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Front page picture	Front page	Derived from (Sunny, n.d.)
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III Operationalization	39	Derived from (Rump, n.d.)
IV Reflection	78	Derived from (Qay, n.d.)
Appendices	108	Derived from (Hasan, n.d.)

Appendices

A Literature Search Process

Appendix A presents the plan and steps used for conducting literature study. The literature search is conducted according to the steps as defined in (Creswell, 2009). These contain eight steps that guide the researcher through the most important literature on the topic in a structured way. The steps are presented below and were performed iteratively.

Step 1: Determining key words
The following key words for this literature research were determined:

- *Capacity building or Capacity development*
- *Capacity building interventions*
- *Capacity development interventions*
- *Institutional change*
- *Evaluation framework*
- *Evaluation methods*
- *Evaluating capacity building activities*
- *Capacity Building Participatory Institutional Analysis*

Step 2: Searching
The search process was conducted with help of the following terms:

- “International Development” AND “Capacity Development” OR “Capacity Building”
- "monitoring and evaluation" AND "Capacity Building" OR “Capacity Development”
- “Capacity Development” OR “Capacity Building” AND “Institutional Change”
- “Evaluation” AND “Capacity Development” OR “Capacity Building”
- “Capacity Development” AND “Water Management”

Step 3: Rough Selection
Based on the search, a rough selection of about 50 items was made.

Step 4: Skim through
The selected items were skimmed through to get a first impression. This was done by looking at the title, the abstract, the introduction and the conclusion.

Step 5: Design a literature map
The items were organized in a literature map, indicating the title, the authors and the most important message of the paper. This allowed us to make a selection on the most relevant articles.

Step 6: Draft summaries of most relevant articles
On the most relevant articles, a short summary was conducted which included the following points:

- Mention problem being addressed
- Central purpose/focus of the study
- Information on sample/population/subjects
- Review key results
- Point out technical/methodological flaws

Step 7: Structure summaries thematically (and make a mind map)
In order to structure the summaries thematically the mind map technique was used among the key concepts of the literature research: ‘capacity development’ and ‘evaluation frameworks’.

Step 8: Storyline
A storyline using bullet points and key message to be addressed was prepared.

B Background Information on Capacity Development

Appendix B provides some more theoretical information on the concept of capacity development. First, the precursor of the concept, capacity building, is defined in more detail. Thereafter, the differences between these concepts will be highlighted. Thereafter, some additional theories on knowledge dissemination are provided.

B.1 Defining Capacity Building

Capacity building is a theoretical concept focusing on creating and developing capabilities. The concept of capacity building was introduced in literature around the 1980s and has changed over the years in terms of broadness and ownership (Alaerts, 1999) . An early definition was made by the United Nations Development Program (UNDP) in 1997, in which capacity building is described as "the process by which individuals, groups, organizations, institutions and societies increase their ability to (1) Perform core functions, solve problems, define and achieve objectives and (2) Understand and deal with their development needs in a broad context and in a sustainable manner." (UNDP, 1997). Capacity building can be used to target differences, absence and constraints in resources, skills and knowledge, organizations, politics and power, and incentives (Brinkerhoff & Morgan, 2010). Although differing slightly, all definitions stress the importance of including contextual factors and taking a rather broad scope which allows focusing on the entire system. Moreover, capacity building is described as a dynamic ongoing inter-active process in which resources, skills and knowledge tend to influence, sometimes strengthen, each other.

B.2 Explaining the different between Capacity Building and Capacity Development

The last few years, a new terminology on capacity building has occurred in development policy: capacity development. Whereas capacity building can be seen as building something from the ground, capacity development is suggested to build on top of existing skills and knowledge (United Nations Development Program, 2008). The concept of capacity development has gained popularity as it is believed to better express an approach that is driving dynamic and flexible processes of change. Some refer to capacity building as a processes which starts developing capacity on non-existent capabilities, whilst capacity development activities are assumed to strengthen and maintain current capabilities and to set and achieve their own development objectives over time (Alley & Negretto, 1999) (UNDP, 2015). The FAO defined capacity development as “the process whereby people, organizations, and society as a whole unleash, strengthen, create, adapt and maintain capacity over time” (FAO, 2019)(p.5). Looking at the development context, capacity development will occur also without help of external actors, whereas capacity building is assumed to be based on creating means with help from the outside on which development can take place.

Brown et al. (2001) make a distinction between internal and external capacity building. Internal capacity building can be seen as an ongoing process of capacity building, which may be accelerated with help of outside groups. External capacity building reflects the assistance of external actors in the process, often through a planned intervention.

B.3 Theories explaining knowledge dissemination

Several theories are been developed that provide an explanation on the process of knowledge dissemination. An explorative study into this topic has been performed, resulting in an introduction into the following two theories

B.3.1 Bloom’s taxonomy of knowledge

Transferring knowledge and developing capacity on an individual level can be explained by looking at the taxonomy of knowledge developed by (Bloom et al., 1956). In the 1960s, Bloom classified the level of reasoning into six different levels, referred to as knowledge, comprehension, application, analysis, synthesis and evaluation. Knowledge was identified as the basic level in which student were solely asked whether they gained specific information from a lesson (Bloom et al., 1956). Relating this to capacity development, one should be aware of these different levels during the planning of capacity development interventions in order to formulate appropriate goals.

B.3.2 The SECI-model by Nonaka & Takeuchi

One of the underlying theories of transferring knowledge in an organizational setting is designed by (Nonaka & Takeuchi, 1995), the SECI-model. Nonaka & Takeuchi (1995) identified four modes of knowledge transfer based on the assumption that knowledge is created through the interaction of tacit and explicit knowledge. Based on these types of knowledge, conversion takes place as can be seen in Table 12. Although created for the corporate sector, the analysis shows that learning takes place mostly through informal processes of knowledge creation and sharing (De Montalvo & Alaerts, 2013; Nonaka & Takeuchi, 1995).

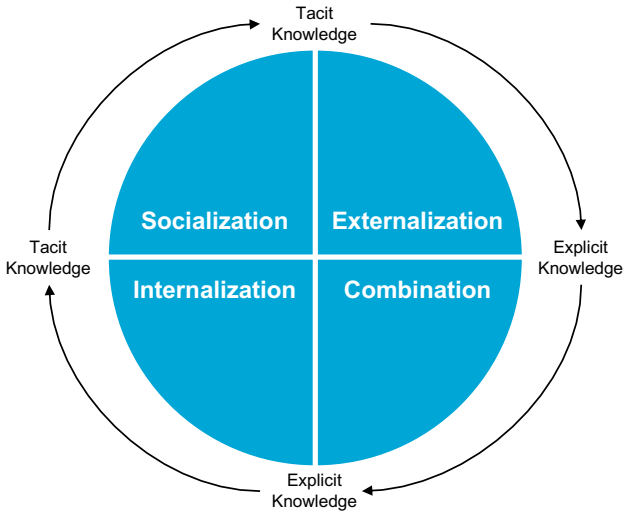


Figure 34 Visualization of the SECI-mode, based on (Nonaka & Takeuchi (1995)

Table 12 Applying the SECI-model, based on (De Montalvo & Alaerts, 2013; Nonaka & Takeuchi, 1995)

Mode of Knowledge Conversion	**Types of Knowledge**	**Examples**
Socialization	From tacit to tacit knowledge	Participants in a training share their different experiences with new tacit knowledge, which allows organizational members to determine the value of the new knowledge
Externalization	From tacit to explicit knowledge	Translation of tacit knowledge into explicit concepts for the whole organization to adopt the knowledge
Combination	From explicit to explicit knowledge	Combining new and existing explicit knowledge to develop a new product or procedure
Internalization	From explicit to tacit knowledge	Sharing of explicit knowledge which will be adapted by individuals and converted to tacit knowledge. Learning by doing

C IAD Framework

Appendix C provides background information on the IAD framework as designed by Ostrom (2011).

The Institutional Analysis and Development (IAD) framework by (Ostrom, 2011) can be useful as a problem analysis tool to gain insights in the actions and interactions of actors, based on its solutions. Actors are referred to by (Enserink et al., 2010) as 'social entity, person or organization, able to act on or exert influence on a decision' (p. 80). Actors perform actions and interact, and are thus participants of a so called 'action arena'. The framework helps in understanding in what way institutions influence the interactions within action arenas and their outcomes, and thus influence societal change. The Framework underlies the approach for participatory institutional analysis (APIA) and can be used to explain the role of institutions in the water sector.

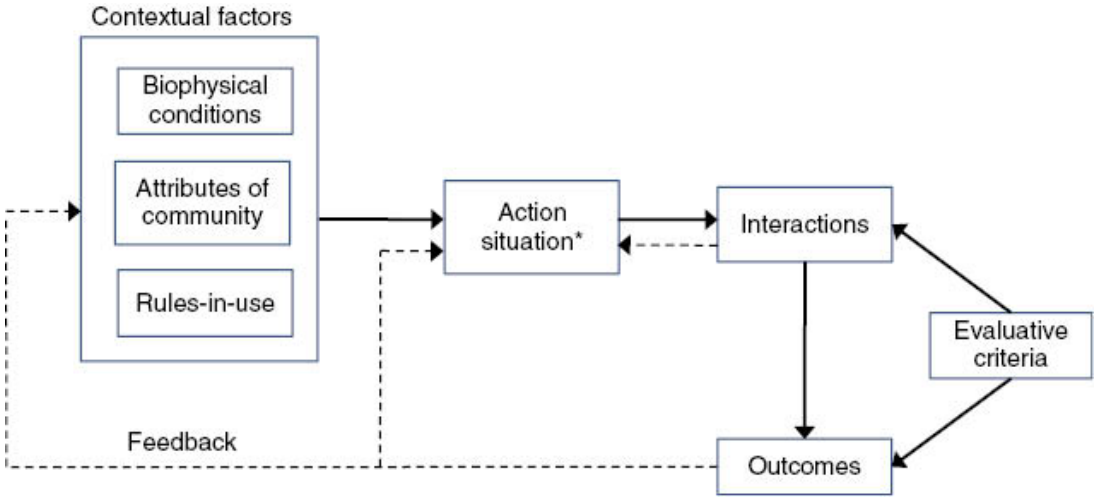


Figure 35 IAD Framework (Ostrom, 2011)

C.1 Brief explanation on the IAD framework

The IAD frame is presented in the figure above. The framework consists of the following key concepts: *contextual factors* (including the rules-in-use), *action situation*, *interactions*, and *outcomes*, and *evaluative criteria*. The action arena comprises the action situation and the interactions. In here, the actors *interact* to resolve societal problems emerging from the *action situation*. This action arena is in its turn influenced by institutional design and other contextual factors. In order to change the institutional design in which actors interact, the outcomes are key. The evaluative criteria are used to determine whether actors decide to change the institutions over time (feedback loops) or stick with their current situation and institutions. Ostrom (2011) highlights a number of criteria which can be used to assess the outcomes. These are (1) economic efficiency, (2) equity, (3) adaptability, resilience, and robustness, (4) accountability, and (5) conformance to general morality.

C.2 The IAD framework in relation to the APIA and institutional change

The IAD framework highlights that institutions within the action arena can appear at three different levels (Ostrom, 2011):

- Constitutional Choice level
  This metalevel of institutions involves decision making on a one's eligibility to participate in and the rules used for policy making.
- Collective Choice level
  When determined on a collective choice level, institutions determine who is obliged to change certain rules on an operational level.
- Operational Choice level
  Institutions on an operational level allow one to change day-to-day actions and management.

D Background information on evaluation studies

Appendix D presents background information on evaluation science.

D.1 Importance of evaluations

Evaluation is a core part of any project, programme or intervention and can thus be considered important for at least two reasons. First of all, evaluations can contribute to interventions by defining the success factors of an intervention in order to replicate these in another setting or to another group of beneficiaries (Perrin, 2012). This not only helps on improving future projects, but also to be transparent about project investments towards stakeholders and possibly donors and investors. Secondly, the process of monitoring and evaluation can be used for reporting and providing a basis for accountability (Jones, 2011) (OED, 1996). The relevance of M&E is illustrated in the OECD Water Governance Cycle, in which M&E are used to close the loop from implementing interventions to formulating policies and strategies (OECD, 2015).

D.2 Manners of evaluation

Evaluation can take place in various ways and through different frameworks. Evaluation frameworks have found to be a common and useful method to assess the work of interventions, improve its practise and ensure accountability (Mayne, 2015) (Jones, 2011).

Most framework stress the importance of using indicators to measure change and possibly detect whether an impact is made (Patton, 2008). Church & Rogers (2006) note that these indicators can be both quantitative (measures of amounts) and qualitative factors (people's judgements or perceptions), and are especially useful when the desired change is hard to measure and intangible as they help in estimating the change. Often, the indicators are measured at the start of an intervention to set the baseline, during the intervention to determine progress and at the end to determine the final result (Church & Rogers, 2006).

D.3 Standard for Evaluation

When evaluating, the following standards should be kept in mind (Patton, 2008):

- *Utility*: an evaluation must meet the practical needs as required by the intended user;
- *Feasibility*: an evaluation must be realistic, prudent, diplomatic, and frugal;
- *Propriety*: an evaluation must take the property rights of those involved and effected by the results into account;
- *Accuracy*: an evaluation must ensure that adequate information on the features of the programme evaluated are taken into account.

These standard can be helpful in reflecting on a performed evaluation.

D.4 Evaluation approaches

Evaluation can be performed in many different ways. In order to provide some background information on the purpose of evaluation, the key insight from the most important approaches are listed below.

Self-assessment

One of the most 'basic' and oldest types of evaluation is self-assessment. Self-assessment techniques focus on involving the target group of an intervention (those whose capacities are being developed) during the evaluation. Advantages of this method are the feeling of ownership for outcomes among the target group and willingness to succeed (Brown et al., 2001). In practise it turns out that often an external evaluator will participate as a facilitator of evaluation. Although self-assessment techniques enhance the role of ownership in capacity development, the perception of capacity development by the target group is measured which decreases the reliability of self-assessments as a tool for evaluation.

Program Evaluation

Program evaluation is described by (Patton, 2008) as "the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgement about the program, improve program effectiveness, and/or inform decision about future programming" (p. 23). The evaluation investigates whether a designed program is able to achieve its intended outcomes (Brousselle & Champagne, 2011). Compared to other evaluation types, program evaluation is less focused on including the intended users or participators of the program during the evaluation but rather investigating their perceptions and beliefs. This independence on stakeholders can be recognized as a weakness of program evaluation (Brousselle & Champagne, 2011) Program evaluations often require using a program theory to explain the transition from inputs and activities towards outcomes of a program and its effectiveness. A program theory includes assumptions made by the designer/implementer on why the inputs of the program will bring about the desired output (Prashanth et al., 2014).

Responsive evaluation: Interventions as designed and interventions as implemented

Responsive evaluation is an approach towards evaluation based on observation and reaction. (Stake, 1983) calls an evaluation responsive "if it orients more directly to program activities than to program intents, if it responds to audience requirements for information, and if the different value perspectives of people are referred to in reporting the success and failure of the program" (p. 292). Responsive evaluation often looks at the interventions as originally designed and the interventions as implemented in the end, and compares those. Observation and reaction are key to responsive evaluation (Stake, 1991). As can be observed in the name, the evaluation is continuously responding to the needs of and interacting with the applicant of the evaluation. This continuous interaction involves action-research and helps to improve the understanding, decisions and actions of stakeholders (Stufflebeam et al., 2002). These interactions and involvements also reveal the weaknesses, as the local stakeholders gain more control over the evaluation and consequently the independence of the evaluator is more vulnerable. Responsive evaluation is therefore recommended to use when local involvement and action-research are present, and the evaluator recognized added values in incorporating the experience of the intervention.

Using a responsive evaluation approach can be useful when action-research is done and the evaluator has close contacts with the local stakeholders. As the communication between the local stakeholders and the evaluator is intense, responsive evaluation might be suitable to evaluate capacity development on an individual level. However, due to this close connection the observation of indirect affects and emergent behaviour can be challenging.

Realist Evaluation

Realist evaluation was first introduced by Pawson & Tiley in 1997 (Pawson & Tilley, 1997). A realist evaluation aims to provide a context-specific explanation that is tested empirically on the outcome of a program or policy. Instead of solely assessing 'what works' through an evaluation, the realist evaluation also aims to include 'what works for whom, in what context and how' in this explanation and thereby placing change in the context and society (de Souza, 2013). This is often done by refining the original program theory as designed by the implementers of the intervention by taking into account the local conditions and contextual factors, and the causal mechanisms that might have led to the outcomes (Prashanth et al., 2014).

Impact Evaluation

Impact evaluation is defined as identifying the effects that result from an intervention in a systematic and empirical way (Perrin, 2012). Instead of solely looking at the activities that are performed during an intervention, an impact evaluation aims to assess what happens as a *result* of these activities and whether these will make a difference to the lives' of beneficiaries or the intended *cause* (DFID, 2012; Perrin, 2012). These effects can be positive and negative, primary and secondary, and/or direct and indirect. An impact evaluation can be performed by someone internally but often an independent (external) expert is involved. Compared to regular M&E practises, impact evaluations aim to look beyond the assessment of activities and effects by looking at the causality in-between. By doing so, an explanation for the contribution of an intervention to an effect is aimed to be found which can be used to draw lessons learned (DFID, 2012). Moreover, the change is often at long-term changes and is partly based on the M&Es performed (Perrin, 2012).

Utilization-focused evaluation

Utilized-focused evaluation is a kind of evaluation that is focussed on the use of evaluations by decision makers (Mackay & Horton, 2003). Patton (2014) argues that the primary intended users play a key role in designing and interpreting an evaluation. Its foundation lie in the observation that intended users are more likely to use evaluations if they feel ownership and are involved. This increases the utility of the evaluation along the evaluation process. Consequently, this type of evaluation can be seen as very personal and dependent on the context of the intervention (Hashimoto et al., 2010). Utilized-evaluation can be used to determine the degree of contribution in a contribution analysis. In order to assess to what extent and in what way a cause has contributed to the observed result, the primary intended users of the evaluation must decide on the evidence needed to draw conclusions (Patton, 2012). Patton (2012) described the role of the evaluator in this situation as 'an organizer of the evidence and as facilitator in the interpretation of contribution'.

D.4 Detailed information on evaluation frameworks

Some additional information on two of the evaluation frameworks used as input for the developed framework is provided below: Theory of Change and Knowledge Capacity Development framework.

Explanation on the Theory of Change

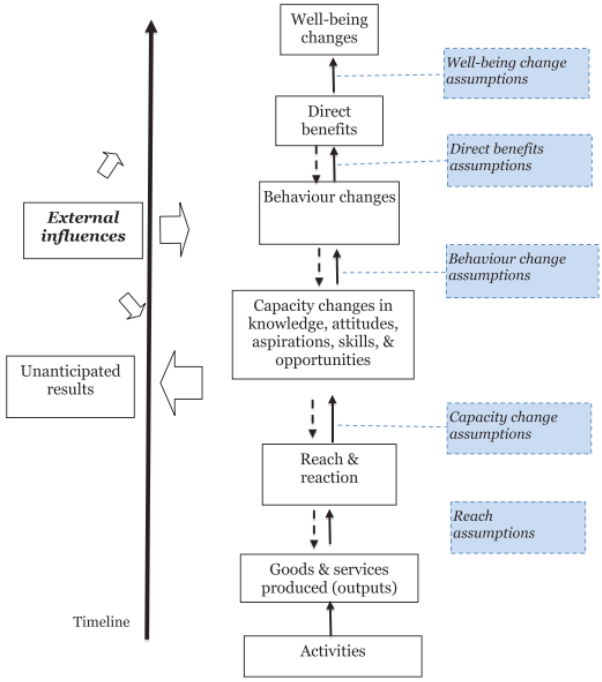


Figure 36 Theory of Change by (Mayne, 2015)

The figure above shows a basic generic Theory of Change as formulated by (Mayne, 2015). One can recognize components from the logic model, such as activities and outputs. On top of these, (Mayne, 2015) introduced the following components:

- **Reach and reaction**: represents the target group of the intervention and their initial reaction.
- **Capacity changes** (when simplified, included in the outputs): changes in knowledge and skills among the target group as a result of the intervention.
- **Behavioural changes**: changes that occur in the target reach group, often related to capacity changes such as acquiring capacity by doing.
- **Direct benefits**: improvement of states of individual benefits.
- **Well-being changes**: longer-term cumulative improvement in overall well-being of individual beneficiaries.
- **External influences**: factors unrelated to the intervention that could contribute to the realization of the intended results.

- **Unanticipated results**: effect that could be positive or negative, but are not intended to happen as a result of the intervention.
- **Reach assumptions**: assumptions that assume the outputs reach the right people (target group) and receive these positively.
- **Capacity change assumption**: assumptions that outputs reached to the target group are resulting in an improvement of knowledge and skills.
- **Behavioural change assumption**: assumptions that need to occur to transform capacity changes into actual changes implemented in practise.
- **Direct benefit assumptions**: assumptions that transform the behavioural changes in practise into direct benefits for the target group.
- **Well-being change assumption**: assumptions represented in events and conditions that allow the direct benefits from the intervention to be aggregated to the well-being of the target group.

The assumptions should be noted as being a complete explanation on the 'how' and the 'why' of the cause and effect. These causal assumptions are key in assessing the impact of an intervention. When assessing the cause and result of interventions through an impact evaluation, a discussion between attribution and contribution of the cause and effect is likely to occur. Attribution is looking to what extent the observed outcome can directly be attributed to the intervention (Patton, 2012). When the relations between variables and interdependencies increase, contribution should be assessed as well. Instead of solely looking at one cause and effect, many causal factors might have been contributing to the intended outcome (Mayne, 2012).

Knowledge and Capacity Development (KCD) Framework

The Knowledge and Capacity Development framework was developed by (Kaspersma, 2013). The framework comprises four competences that can be specified on the individual, organizational and institutional level. The figure below provides an elaborate explanation of the competence for each of the level of Capacity Development.

	Individual level	Organizational level	Institutional level
Technical competence	Regularly updated knowledge and skills. Understanding of the broader technical context.	Appropriate knowledge and skills mixes for the services that are delivered, such as engineering, legal, financial, institutional knowledge. Knowledge on procurement and investment procedures	Technical expertise and available skills mixes in a broader setting. Procedures for critical review and corroboration of knowledge and information.
Management competence	Project mgt skills. Financial mgt skills. Personnel and team mgmt skills. Mentoring skills. Understanding of political consensus building. Ability to 'deliver'. Leadership.	Leaders able to operate with goals and objectives as agreed with supervisory entities and main stakeholders. Ability to set goals, strategy. Financial management. People management. appropriate staff rotation; talent spotting, incentive systems, etc. Project management. Ability to 'deliver' timely.	Sound and workable task assignments of sector agencies. Minimal overlap between agencies, and size and task of agencies facilitate proper management and task execution. Sound financial, fiscal and budgeting systems. Facilitating proper management by organizations.
Governance competence	Understanding of procedures. Ability to engage with and listen to stakeholders. Ability to apply inclusiveness. Focus on results.	Transparent decision making processes. Procedures to consult with stakeholders, and provide empowerment to others. Procedures to be held accountable, including transparency in budgets and plans.	Distinction between 'operator' and 'regulator'. Procedures to ensure inclusiveness in particular regarding objectives, priorities and strategies. Procedures to ensure transparency and accountability.
Learning competence	Desire to 'keep learning', readiness to critically reflect on one's own performance. Availability for training and education in new skills and knowledge.	Readiness, and procedures, to critically review own's performance on a continuous basis, and revise if necessary. Goal, procedures and resources to support learning by staff, organization and if necessary other stakeholders. Support of 'communities of practice', and rewards for staff learning.	Procedures to promote open working atmosphere and critical reflection on performance. Openness to review sector performance on a continuous basis, and revise policies and arrangements if necessary. Foster inclusiveness.

Figure 37 Competences of the KCD framework (Kaspersma, 2013)

E Detailed CPIA Project Explanation

Appendix E provides an explanation on the CPIA project. First, an elaborative explanation on water challenges faced in Khulna is provided. Secondly, an elaborate description on the activities in the CPIA project is presented.

E.1 Water challenges in Khulna

Khulna city is the third largest city in Bangladesh. Khulna is located in the Ganges-Brahmaputra Delta, the largest delta in the world (see picture below). This makes Khulna vulnerable to natural disasters such as cyclones, sea level rise and floods. Moreover, the rapid peri-urbanization contributed to additional water issues such as salinity, groundwater depletion and pressure on the availability of fresh drinking water and water available for agricultural purposes. Together, this causes threats to the lives of many people. Characteristics of the key water challenges faced are explained in more detail below based on literature from (Defacto, 2019; Monowar Hossain, 2017).

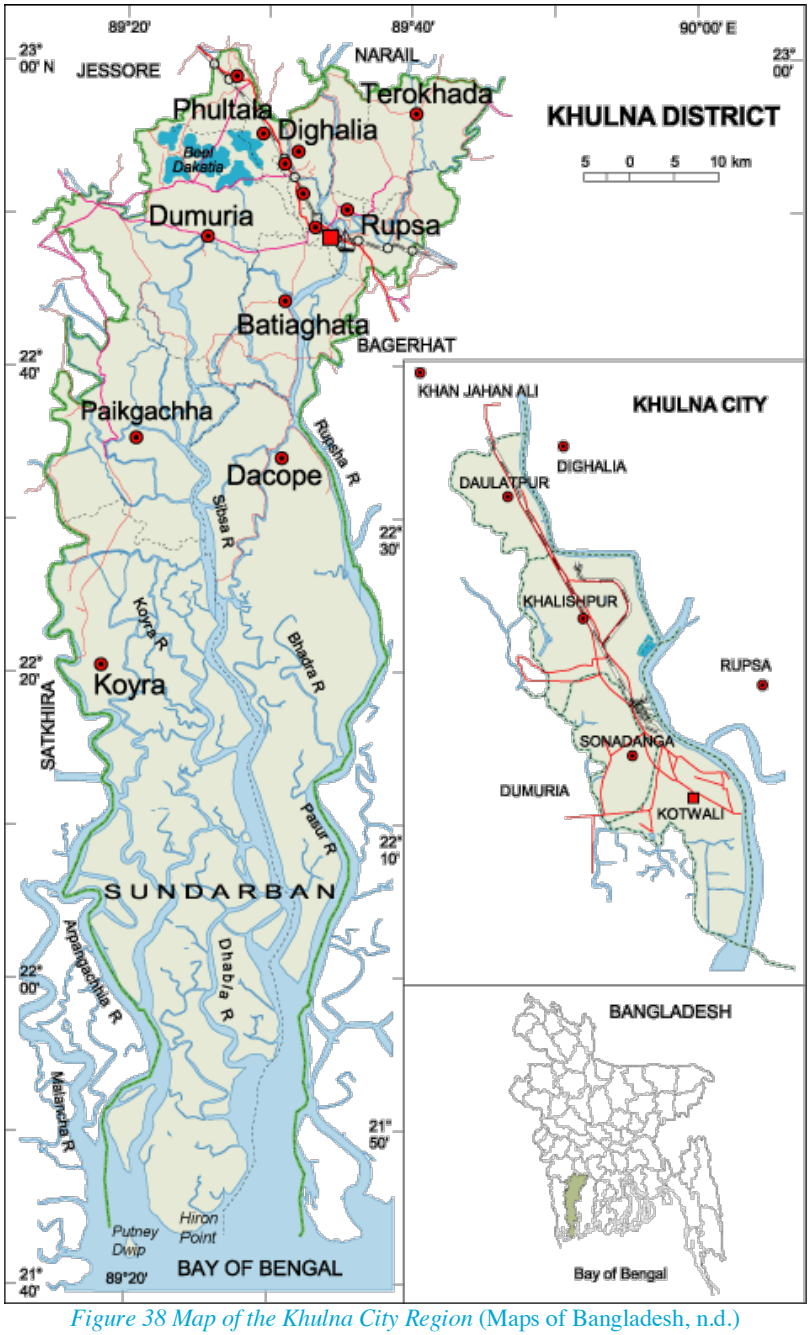


Figure 38 Map of the Khulna City Region (Maps of Bangladesh, n.d.)

River
The only fresh water that is reaching Khulna comes from the Himalayas through the Ganges river. The Ganges meets the Brahmaputra river, characterized by fluctuations in water levels, erosion and sedimentation. Construction of the Farakka barrage in the 1970's in India reduced this river flow and thus affected the availability of freshwater in the river surrounding Khulna. The flow of the Gorai river (or Madhumati river), a branch of the Ganges river and the only entrance of fresh water into the Khulna district area, is also blocked reducing the fresh water flow.

Salinity
Salinity depends on the fresh water coming from the North and the sea water intrusion coming from the South. The seawater enters from the Bay of Bengal and penetrates the Delta through the major rivers. When there is high tide in dry season, the water can get over 200km beyond Khulna (see Figure 39). Salinity causes the arable land to decrease, stimulating urbanization. Moreover, shrimp farming is resilient towards sanitation causing a shift from rice and vegetable farming to shrimp farming. This again further increases salinity of the soil and groundwater. Moreover, shrimp farming requires less manpower and more investments, worsening employment and incomes among poorer and unskilled farmers.

Monsoons
During the Monsoon season too much water is running from the rivers causing floods and erosion, whilst during non-monsoon season too little water causes river bed siltation, draught, pollution and salinity intrusion. Due to climate change, polders in South West Bangladesh are expected to be overtopped.

Coastal flood rick
The cyclonic winds will increasing, causing a rise in severe cyclones. The Sundarbans and the polder embarkments are supposed to serve as protection for coastal storms. However, the polders are not maintained well.

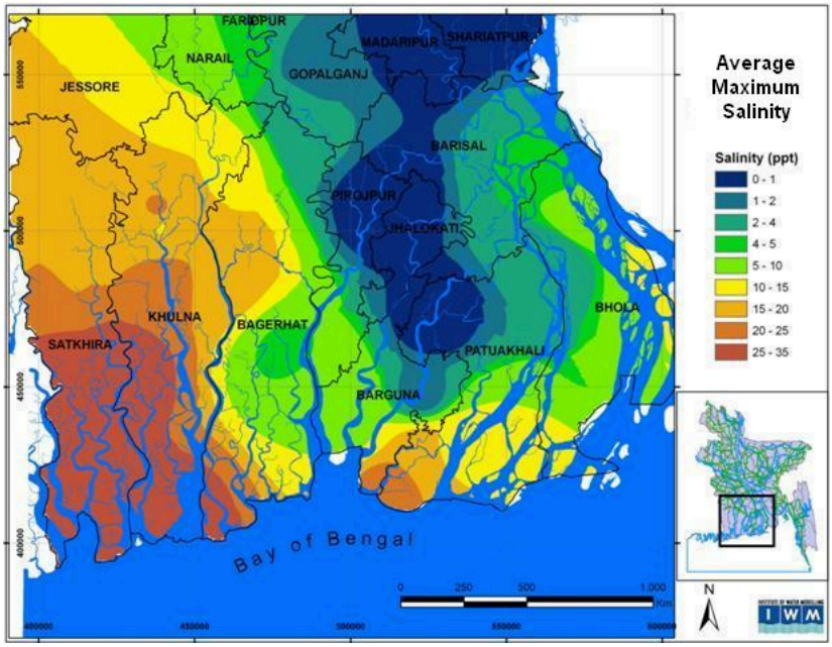


Figure 39 Average Maximum River Salinity Coastal Bangaldesh (S. Dasgupta et al., 2015)

E.2. Description of activities
The CPIA project was intended to last from October 2019 until September 2020 and involved the water challenges is presented in Table 13. The following activities would take place (Hossain, 2019):

Phase 1: Training preparations (Oct/Nov/Dec 2019)
Description: A one-week training on the use of the approach for participatory institutional analysis (APIA) will be prepared. This training will be based on the approach developed in the PhD research of Sharlene Gomes.

Training materials will be developed primarily by TU Delft and Deltares, in close consultation with JJS, KUET, and local participants.
Adaption: none.
Deliverables: Manual for the APIA approach / Training programme and materials / List of participants

Phase 2: Training in Khulna (late Jan/early Feb 2020)
Description: The project team members will delivered a three days training on-site in Khulna in which 10 – 15 training participants joined. The participants worked in 3 – 4 teams on water-related issues, being 1) urban pond conservation, 2) waste water management, 3) tidal river management and 4) participatory water management. In the training, the necessary analytical background to understand the institutional components in local water management problems is provided through short lectures. Furthermore, basic game theory skills needed to develop analytical models of institutional problems are taught and developed. Finally, these models are used as a basis for game-based workshop formats. As the participants are directly using their own water management problems hands-on experience is gained which will be a good basis to continue working on.
Adaption: The training was originally planned to take five days, but three days seemed to be more effective and sufficient for the training.
Deliverables: A three-day training on APIA methods in Khulna.

Phase 3: Further development of game-based workshops by trainees (Feb/Mar/Apr 2020)
Description: In the period after the training, each of the four teams further elaborates their analytical models and develops a workshop design and materials to implement it. JJS and KUET team members will support this on-site while distance-learning support is provided from TU Delft and Deltares. A TU Delft Master Thesis student would join the JJS and KUET team for some weeks to support on-site and conduct research.
Adaption: Due to the COVID-19 pandemic and cyclone Amphan, activities in phase 3 of the project expanded. As working from home was permitted, physical contact for learning support was not possible. These events resulted in a bit of delay on executing phase 3 of the project. Instead of focussing on 4 teams, only 2 teams further developed the game-based workshop. The work was mainly done by JJS staff (Respondents 1 and 2) and facilitated by the project partners. Input from other participants was gained by phone.
Deliverables: Finalized models of institutional problems and workshop designs by 2 trainee teams on waste water management and urban pond conservation. The other 2 might be further developed in a later stage of the project.

Phase 4: Delivering the game-based workshops to the problem-relevant stakeholders (May/Jun/Jul 2020)
Description: The trainee teams, supported by JJS and KUET, will run a test workshop followed two full workshops with stakeholders, around the issues for which they developed their models and a game-based workshops. Experiences will be captured and reported following predefined reporting formats. This should enable a future reference base of experiences, as well as further learning and development of the approach.
Adaption: A first practise workshop to test the 2 games developed took place in July. Due to the COVID-19 pandemic, the workshop was run with fellow JJS employees and some local stakeholders. Other professionals involved in the game design were not present.
Deliverables: Game-based workshops by 3-4 trainee teams

Phase 5: Evaluation of experiences and future perspectives (Aug/Sep 2020)
Description: A concluding one-day workshop in Khulna wraps up the capacity building activity. Here, the trainees and the project team members will share their experiences, reflect on them and discuss perspectives of using the developed game-based workshops, and of developing new applications in the future. Also, a smaller dissemination workshop in Dhaka is foreseen, to disseminate experiences and lessons to the wider water and delta management community in Bangladesh.
Adaption: As the project extends and the travel restrictions are not expected to be lifted before the end of this year, the concluding one-day workshop and session in Dhaka are expected to take place in January 2021 the soonest.
Deliverables: Concluding Workshop Khulna, Dissemination workshop Dhaka.

Table 13 Overview four cases of the CPIA project

	Waste Water Management	Urban Pond Conservation	Participatory Water Management in Polder Areas	Tidal River Management
Situation	Faecal sludge and household's waste are directly connected to KCC drains and ultimately discharged to Mayur, Rupsha and Bhairav River.	Over exploitation, contamination and ponds that are partially or even fully filled with waste due to increasing urbanization.	Lack of coordination, interest and motivation/capacity, their legal status and access to decision making.	Differences in opinion regarding the implementation, selection of basin area and consequences for dependent people.
Challenge	Establish solid waste management and raise public awareness.	Make the pond environmentally and economically beneficial.	Sustainability of Water Management Organizations.	Land acquisition and compensation.
Key Stakeholders	KCC, KWASA, city holding owners, KDA, local communities, district administration	Local residents, Pond owners, KCC planning division, Feasibility Evaluation Committee KCC	National governmental organisations like MoWR, BWDB, Development partners, NGOs, universities and research organisations, local government institutions, local communities	BWDB, District Commission, national and local governmental organisations, landowners and land leasers, and NGOs to small extent.
Formal Rules	Mostly national laws and acts in different sectors such as environmental, urban planning waste governance.	Wetland Filling Rules (created by KCC, but not practised in real), Standing order from Prime Minister (applicable to all of Bangladesh), KCC rules (in practise not really implemented).	Formal legislation from BWDB in cooperation with MoWR, agreements, emergency rules, water management mapping and responsibilities of water development projects. National Water Policy-1999	Land acquisition act 2017, temporary acquisition by local government institutions (upazilla level).
Informal Rules	Religious values, community practises, private water business and local NGO activities.	Not to drink Urban Pond Water, Religious belief to conserve Pond Water, Use of Pond water for Fire management, Community access prohibited in Jute Mill's pond	Bottom-up initiatives from communities to local governmental institutions towards zonal office and national governmental institutions. Informal agreements such as BWDB-WMO agreement	People's collective management.
Current stage	Phase 3 ongoing	Phase 3 ongoing	At the start of phase 3	At the start of phase 3

F Interview Approach

F.1 Interview set-up

The interviews have been conducted among project participants and project partners. In total, 15 interviews have been conducted. Out of these, 4 interviews have been conducted among the partners by the researcher herself. This was done either through Skype or in person. The other 11 interviews were conducted with the participants in Khulna, and were partly conducted by JJS staff (7) and partly by the researcher herself with support of the JJS staff (4). Reason for this were that some of the participants felt not confident in expressing their thoughts and opinions in English. Therefore, the interviews conducted by JJS staff took place in Bangla. This required translation of the transcripts by the JJS staff from Bangla to English.

Procedure interviews with participants

The interviewees received a letter of support in advance of the interview. This letter requested their participation in the interview and expressed the support of Deltares for participation in this interview. Once agreed, the JJS staff scheduled a moment for the interview and provided the questions in advance.

The interview set-up is semi-structured. This allowed the interviewer to ask the questions prepared, but also leave room for unforeseen topics or discussions and follow-up questions. The approach is especially useful, since the aim of the interview was to capture the perception and experiences of the participants towards the CPIA project. Besides open questions, survey like questions are used. Due to the current setting, the interviews are kept short to 45 minutes. Survey like questions allow the researcher to capture the experiences of the respondents in a relative fast way.

Before starting with the interview, the procedure of the interview and the manner in which the data retrieved would be used and stored where discussed. Moreover, permissions for recordings were asked. Should the interviewee decline the recording, detailed notes were made in order to capture as much information as possible. Thereafter, the interviewees were asked for any questions or clarification before a verbal informed consent was asked. All the interviewees provided their informed consent. This allowed the interview to start by asking some general background information on the interviewee.

All of the interviews were transcribed to omit bias of interpretation by other people then the researcher. The transcripts were transformed into summaries which are available upon request (contact details of the researcher are provided at the start of this thesis). The scripts used for the interviews are available upon request as well.

Procedure interviews with project partners

The project partners were relatively easy to reach and provided their full support for the interviews. The interview set-up of the interviews was semi-structured as well. Especially because each of the partners had a different role, involvement and thus perspective on the project, this allowed the researcher to
Furthermore, the interviews with project partners followed a similar structure as the interviews with participants. This means the interview summaries and interview scripts will also be available upon request by the researcher.

F.2 Interviewees

A summary on the interviewees is provided below.

Participants of the CPIA project

N=11

Respondent	Interviewee	Interviewer	Water topic	Organization	Type of organization	Occupation
Respondent 1	Interviewee 1	Author	Urban Pond	JJS	NGO	Research officer
Respondent 2	Interviewee 2	Author	Waste Water	JJS	NGO	Research officer
Respondent 3	Interviewee 3	Author and JJS staff	Part Water	CEGIS	Research institute	Postdoc Researcher
Respondent 4	Interviewee 4	JJS staff	Waste Water	KCC	Local Government	Conservancy officer
Respondent 6	Interviewee 5	JJS staff	TRM	Daily Kaler Kantho	Newspaper company	Journalist
Respondent 8	Interviewee 6	JJS staff	TRM	CEGIS	Research institute	Research associate
Respondent 10	Interviewee 7	JJS staff	TRM	Uttaran	NGO	Project Officer
Respondent 13	Interviewee 8	JJS staff	Urban Pond	JJS (former)	NGO	Development worker
Respondent 14	Interviewee 9	JJS staff	Waste Water	SNV	NGO	Sanitation Business Advisor
Respondent 15	Interview 10	Author and JJS staff	Part Water	BlueGold	Research Institute	Water Resource Management Engineer
Respondent 18	Interview 11	JJS staff	Part Water	Khulna University	University	Lecturer

Project partners

N=4

Respondent	Interviewee	Interviewer	Organization	Occupation
Respondent 33	Interviewee 12	Author	KUET	Lecturer
Respondent 32	Interviewee 13	Author	Deltares	Advisor
Respondent 9	Interviewee 14	Author	JJS	Director NGO
Respondent 31	Interviewee 15	Author	TU Delft	Associate Professor

F.3 Interview questions

The interview questions for participants and project partners are discussed below.

F.3.1 Interview questions participants

Below, the interview questions used for the semi-structured interview with participants of the CPIA project are presented.

1. What is your overall impression on participating in the January workshop of the CPIA project?
2. Do you consider participating in the project beneficial?
   - If yes, what do you consider the main benefits?
   - If not, why not?
3. Do you consider participating in the project necessary to gain more understanding on institutions?
   - If yes, why?
   - If no, in what other ways do gain more understanding on institutions?
4. What kind of knowledge did you learn most during the training? Please rank the following, from 1-learned most to 5-learned the least.
   A. Knowledge on perspectives of other stakeholders
   B. Knowledge on institutions and procedures
   C. Knowledge on resources needed to act, such as formal notice or legal action
   D. Knowledge on constraints to act, such as money
   E. Knowledge on water challenges
5. What kind of skills did you learn during the training? Please rank the following, from 1-learned most to 5-learned the least.
   A. Skills regarding communication and networking
   B. Skills regarding designing and playing games to understand the functioning of institutions
   C. Skills regarding team work and collaboration
   D. Skills regarding negotiation
   E. Skills regarding problem solving, such as ability to analyze and solve water problems
6. Did the project acquire you with any additional knowledge and/or skills that were not mentioned before?
7. To what extent do you consider institutional analysis to be important?
8. To what extent are you able to implement the APIA method learned in the January workshop standalone in order to understand institutional analysis?
9. How would you rate your current understanding of institutional analysis?
10. How would your participation in the training be beneficial in your work?
11. Do you currently use the knowledge and skills obtained by your participation in the training?
12. How do the following indicators influence your ability to use the knowledge and skills learned from the training? Please indicate on a scale from 1-5 and whether this enables or constraints you.
    - COVID-19 pandemic
    - Environmental factors (cyclones, floods)
    - Your current level of knowledge and education
    - Time
    - Budgets
    - Government's attention
    - Influence from society
    - Water related health issues
13. Do you see any other factors outside your (organisation's) control that might influence your knowledge and skills on institutions and water challenges? Which?
14. To what extent is institutional analysis embedded in the organization you are working in?
15. To what extent does the organization you are working understand the role of institutions? (please write 1-10)
16. Do you share information and lessons learned about applying the APIA and institutional analysis with your fellow colleagues?

17. Did involvement in the project contribute to more coordinated action regarding the water management challenges?
18. Did involvement in the project result in more collective (collaborative) action regarding the water management challenges?
19. Are there any final comments or suggestions that you would like to share regarding the CPIA project workshop and its capacity development results?

F.3.2 Interview questions project partners

Below, the interview questions used as a starting point for the semi-structured interview with project partners of the CPIA project are presented.

1. Could you describe your current role within the CPIA project?
2. What is your overall impression of the ongoing CPIA project?
3. How did selection of the participants take place?
4. Would you consider the participants to be motivated and committed for the CPIA project?
5. What kind of knowledge is developed during the CPIA project?
6. What kind of skills is aimed to be developed during the CPIA project?
7. Who do you consider the main beneficiaries of the project?
8. Do you consider the project useful for the beneficiaries?
9. What do you consider the main outputs of the project?
   - What could cause these outputs to be achieved? How are they achieved?
10. What do you consider the main outcomes of the project?
    - What could cause these outcomes to be achieved? How are they achieved?
11. What do you consider as the main impacts of the project? How are they achieved?
12. Did involvement in the project contribute to more coordinated action regarding the water management challenges?
13. Did involvement in the project result in more collective (collaborative) action regarding the water management challenges?
14. What other effects have occurred that could be contributed by the project?
15. Which contextual factors have influenced the ability to execute the CPIA project?
16. How are you currently monitoring the process of the CPIA project?

F.3.3 Summaries of the interviews

The summaries of the interviews conducted are available upon request. Please contact the author by sending an e-mail to **d.e.vanderzee@student.tudelft.nl**.

G Survey

Appendix G discusses the surveys conducted for the CPIA project in January 2020.

G.1 Survey set-ups

Two evaluation surveys have been spread among participants of the CPIA project in Khulna, Bangladesh. The first survey, was conducted at the start of the January workshop (pre evaluation). The second survey was conducted at the end of the January workshop (post evaluation). The surveys were spread hardcopy amongst the participants present, filled out and collected by the project partner. The questions were not yet framed to the developed evaluation framework of this study, but provide a more general overview of evaluation questions.

G.2 Respondents

A summary on the respondents of the pre-evaluation and post-evaluation is provided below.

Pre evaluation survey information on respondents
N=19

Respondent	**Water topic**	**Organization**	**Type of organization**	**Occupation**
Respondent 1	Urban Pond	JJS	NGO	Research officer
Respondent 2	Waste Water	JJS	NGO	Research officer
Respondent 3	Part Water	CEGIS	Research institute	Postdoc Researcher
Respondent 4	Waste Water	KCC	Local Government	Conservancy officer
Respondent 5	Urban Pond	KCC	Local Government	Unknown
Respondent 6	TRM	Daily Kaler Kantho	Newspaper company	Journalist
Respondent 7	Waste Water	KWASA	Local Government	Unknown
Respondent 8	TRM	CEGIS	Research institute	Research associate
Respondent 9	Unknown	JJS	NGO	Executive Director
Respondent 10	TRM	Uttaran	NGO	Project Officer
Respondent 11	Part Water	BUET, IWFM	University, Research institute	Unknown
Respondent 12	Part Water	JJS	NGO	Unknown
Respondent 13	Urban Pond	JJS (former)	NGO	Development worker
Respondent 14	Waste Water	SNV	NGO	Sanitation Business Advisor
Respondent 21	Unknown	Unknown	Unknown	Unknown
Respondent 22	Unknown	Unknown	Unknown	Unknown
Respondent 23	Unknown	Unknown	Unknown	Unknown
Respondent 24	Unknown	Unknown	Unknown	Unknown
Respondent 25	Unknown	Unknown	Unknown	Unknown
Respondent 26	Unknown	Unknown	Unknown	Unknown

P*ost evaluation survey information on respondents*
N=15

Respondent	**Water topic**	**Organization**	**Type of organization**	**Occupation**
Respondent 1	Urban Pond	JJS	NGO	Research officer
Respondent 2	Waste Water	JJS	NGO	Research officer
Respondent 4	Waste Water	KCC	Local Government	Conservancy officer
Respondent 5	Urban Pond	KCC	Local Government	Unknown
Respondent 6	TRM	Daily Kaler Kantho	Newspaper company	Journalist
Respondent 8	TRM	CEGIS	Research institute	Research associate
Respondent 10	TRM	Uttaran	NGO	Project Officer
Respondent 11	Part Water	BUET, IWFM	University, Research institute	Unknown
Respondent 12	Part Water	JJS	NGO	Unknown
Respondent 13	Urban Pond	JJS (former)	NGO	Development worker
Respondent 15	Part Water	BlueGold	Research Institute	Water Resource Management Engineer
Respondent 26	Unknown	Unknown	Unknown	Unknown
Respondent 27	Unknown	Unknown	Unknown	Unknown
Respondent 28	Unknown	Unknown	Unknown	Unknown
Respondent 29	Unknown	Unknown	Unknown	Unknown
Respondent 30	Unknown	Unknown	Unknown	Unknown

G.3 Survey Statements

The following statements have been asked in the pre- and post-evaluation surveys.

G.3.1 Survey statements pre-evaluation survey

Below, the statements and questions used for the pre-evaluation survey with participants of the CPIA project are presented.

- Have you ever been involved in institutional analyses before?
- Please give a short description of "institutions", based on your current knowledge of this term
- How would you rate your current understanding of institutional analysis (scale 1-10)
- Do you consider institutional analysis useful for your work (scale 1-10)
- Please give a short motivation of your prior score on usefulness of institutional analysis.

G.3.2 Survey statements post-evaluation survey

Below, the statements and questions used for the post-evaluation survey with participants of the CPIA project are presented.

- How satisfied are you overall with the training workshop on Participatory Institutional Analysis?
- How relevant and useful do you think this was for your work (scale 1-10). Please explain shortly
- Which parts of the workshop offered relevant support for our activities and work (scale not relevant, relevant, very relevant, did not attend)
    - Day 1: problem formulation and stakeholder grid
    - Day 1: Institutions mapping
    - Day 2: Game trees
    - Day 3: Serious Games
    - Team work on Days 1-2-3
    - Lectures by Leon on Days 1-2-3
    - Plenary Discussions of groups results on Days 1-2-3
- How do you rate the workshop facilities, room, location and food (scale 1-10)
- How do you rate the workshop facilitation? Were facilitators helpful, were their instructions clear (scale 1-10)
- What was the most important learning point in this training workshop for you?
- What was the most difficult part in this training workshop for you?
- Did you learn something new about the actors or institutions in your case topic?
- How would you rate your current understanding of institutional analysis (scale 1-10)
- Do you consider institutional analysis useful for your work (scale 1-10). Please motivate shortly
- Do you feel confident that your team can complete the steps in the APIA approach for your case topic in the coming months? Why?
- Are there any other comments you would like to share?

H Validation Sessions

Appendix H discusses the validation sessions conducted with experts.

H.1 Set-up validation sessions

In advance of the meeting, a short introduction document was shared including the research set-up, questions and purpose of the expert interview.

H.2 Overview of expert

The table below provides an overview of the experts that have participated in the validation sessions.

Table 14 Overview of expert sessions

#	Expert	Organization	Background	Status
1	Expert 1	Knowledge and research organisation	Research background in citizen monitoring initiatives	Performed on August 26th
2	Expert 2	Financial service organisation	Evaluation specialist for projects in developing countries	Performed on July 30th
3	Expert 4	Research and consultancy organisation	Experience with capacity development initiatives in Bangladesh	Performed on August 27th
4	Expert 5	Research and consultancy organisation	Research background in evaluation of capacity development	Performed on August 7th

H.3 Discussion questions

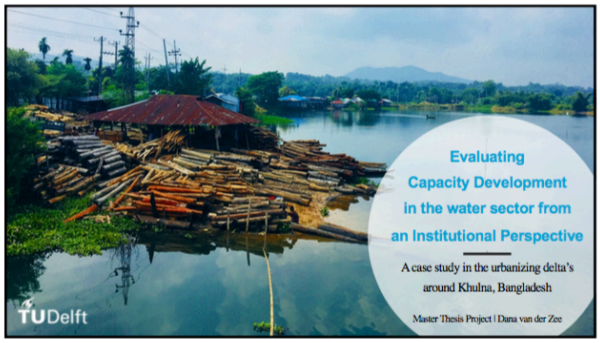
The validation session consists of three parts. For the first and the third part, standard question were prepared to guide the validation session. The second part consisted of a short introduction of the research and the developed framework.

1. Introduction and knowledge sharing
   - What is your background?
   - What is your current occupation and position?
   - How does evaluating capacity development play a role in your work?
   - How would you define capacity development?
   - What are your experiences with CD in Bangladesh?
   - How would you assess capacity development?
   - What do you consider the role of institutions, meaning formal and informal rules pf the game to guide the situation, in a capacity development process?
   - To what extent are you familiar with evaluation methods?
   - Do you currently use evaluations methods in your work?

2. Presentation on research: framework introduction

3. Discussion on framework for institutional focussed capacity development
   - What are your first impressions on the framework?
   - Would you consider the framework complete?
   - How do you envision the usefulness of this framework?
   - Do you have any additional comments or tips?
   - Do you recommend any other person within your network that would be useful to talk to?

The sessions was facilitated with help of a PowerPoint presentation, which can be viewed below.



Today's session is divided in the three different parts.

Part 1
Introduction and knowledge sharing on evaluation of capacity development through interview questions.

Part 2
Short presentation on thesis research and introduction of framework for capacity development.

Part 3
Discussion on framework for capacity development.

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The following topics will be discussed during the interview, serving as a starting point for discussion.

- Background information of interviewee
- Capacity Development
- Monitoring and Evaluation of capacity development projects

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The CPIA project aims to tackle water challenges by improving institutional understanding of professionals.

Key aspects

- **Water Challenges** in the urbanizing delta's of Khulna

- Lack on **institutional*** insights and understanding by local communities and professionals

CPIA project

Capacity for Participatory Institutional Analysis

The CPIA project aims to develop capacity of local professionals to use the game design method (called APIA method) in the urbanizing delta's of Khulna. This master thesis will use the project as a case study to apply the developed framework for evaluating capacity development.

TUDelft

*"Where institutions are "the formal and informal rules that offer guidelines to actors during decision making and interaction", (North, 1992)

This thesis aims to evaluate the capacity development (CD) of local professionals from an institutional angle.

Objective

To determine to what extent capacity development has taken place among local professionals, allowing them to use the APIA method standalone.

Deliverable

An evaluation framework on capacity development is introduced and implemented with an illustrative case study of Khulna.

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CD is a process which can take place at three different levels and is closely related to institutions.

Defining the concept

- Capacity development: *'an ongoing process of enabling people to do something given a certain context and time, which could be supported through external influence.'*
- The process could take place on different levels, which are nested.
- Capacity development can support institutional change.

Levels of Capacity Development

Role of CD in institutional problem solving context

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Evaluating CD from an institutional angle should take the following characteristics into account.

Capture complexity though causal relations

Capturing cause and effect relations in order to investigate what has attributed or contributed to the output, outcome and impact of an intervention.

Include nested levels of CD

Capturing cause and effect relations in order to investigate what has contributed to the output of an intervention.

Consider the context

Moving from a 'best-practise' method to a 'best-fit' method. Both the context and mechanisms occurring within a system determine the output and should be studied in detail to understand why an intervention is succeeding or failing.

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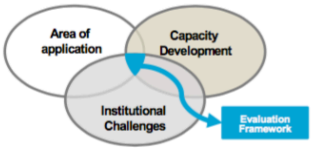
The framework lies at the interaction of institutional challenges and CD, and can be applied to different areas.



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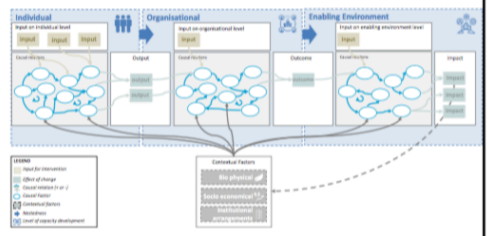
Within the framework causal relation diagrams are used to capture the mechanisms of change that might occur.



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The framework is accompanied by a step by step approach.

1 Context mapping
2 CD elements
3 Determining indicators
4 Causal relations
5 Mechanisms of change

The indicators for CD are based on the research of Kaspersma (2013)

- Technological competences
- Managerial competences
- Institutional competences
- Learning competences

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The following topics will be discussed during the interview, serving as a starting point for discussion.

- Thoughts on the framework
- Possible adjustments
- Usefulness of the framework
- Any additional comments

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