

# ***The Impact of Public Participation in DFPP Collaborative Projects***

*The inclusion of public participation in decision-making processes*



*Figure 1: IJsseldijk Zwolle-Olst (Drents Overijsselse Delta, 2020)*

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## Foreword

This thesis completes the master's program Cities, Water and Climate Change. It has been executed for the faculty Spatial Planning at Radboud University in Nijmegen. More specifically, this thesis is an enlargement of a Ph.D. research in the commission of the All-Risk Program, a part of the Dutch Flood Protection Program (DFPP). Because of my interest and prior background (bachelor's degree) in flood risk management, writing a thesis about the DFPP collaborative projects has been a delightful and interesting experience. After approximately a year of searching, brainstorming, and writing, involving multiple discussions and feedback, I am incredibly pleased with the result.

I want to express my gratitude to several people who helped me during the thesis period. First, Sander Meijerink, my thesis supervisor from Radboud University who challenged me multiple times to critically consider, discuss and think about my thesis. Further, in my experience, he always responded rapidly to emails (most of them on the same day) concerning my thesis. I would therefore like to appreciate Sander Meijerink for his feedback and contribution to this master thesis. I am also very grateful to Emma Avoyan, Ph.D. student from Radboud University. Since her Ph.D. research and my master thesis are intertwined, she supervised me during this period. Emma has substantial knowledge about the DFPP collaborative projects and could thus thoroughly discuss and provide feedback for my thesis. I thank Emma Avoyan for her supervision and contribution to this thesis. Finally, I would like to thank all the interviewees I spoke to who provided me with much information about the dike reinforcement project IJsseldijk Zwolle-Olst.

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## Summary

In 2017, the new water safety norms were changed. Therefore, the water safety manuals needed to be rewritten and are now based on flood risk. In practice, this resulted in a new goal of the Dutch Flood Protection Program (DFPP), which comprises strengthening dikes at a rate of 50 km per year, with a maximum financial investment of 360 million euros annually (Jorissen et al., 2016). Consistent with this, public participation in decision-making has become more relevant and essential. Hence, the government's physical interventions in the living environment may require legitimization. As these dike reinforcement projects affect the public space, it is reasonable to at least consult and inform public participants of their possible consequences.

Although much is written within the academic literature about the reasons for involving public participants, it remains unclear how to measure the effectiveness of their involvement in decision-making. Therefore, this research investigated which characteristics of public participation influenced the preferred alternative during the dike reinforcement projects. This research answers the following main research question:

*"Which characteristics of public participation impact the preferred alternative in DFPP collaborative projects?"*

The first step of this research was to conduct a literature study. This aimed to develop a method of measuring which characteristics of public participation impacted the preferred alternative. This resulted in combining Emerson et al.'s (2012) and Newig et al.'s (2018) theories to create a conceptual model. The conceptual model comprises four clusters, and each of them has its unique variables, representing the characteristics of public participation: (1) representation of views, ideas and concerns, including the variables "discovery" and "opening Up DMP to (environmental) concerns"; (2) incorporation of knowledge, including the variables "lay & local Knowledge" and "knowledge"; (3) deliberation, including the variables "communication and bargaining," "deliberative process," "definition" and "commitment"; and (4) internal legitimacy, including the variables "negotiation, mutual gains and conflict resolution for acceptance," "procedural fairness," "trust" and "mutual understanding." Consequently, these variables are predicting the dependent variable (preferred alternative).

Based on this, a quantitative analysis was conducted. This was performed using an existing survey SPSS dataset comprising multiple DFPP collaborative projects. Hence, the conceptual model was included and tested within the SPSS program using multiple regression analysis, in which the variables were linked to the survey questions from the dataset to process. Consequently, two results were relevant. These related to whether public participants mutually respected each other during the decision-making process and whether appointed internal experts substantially impacted the preferred alternative. After determining that appointed internal experts have an influence, the research further investigated how this might be expressed. This was explored by performing a case study. Before the case study, a case study selection was conducted. This was achieved by testing multiple DFPP projects in four different rounds. These included (1) selecting DFPP projects from the SPSS dataset, (2) selecting DFPP project based on the two survey questions, (3) the diversity of public participants based on their institutional backgrounds and (4) their willingness to be interviewed (practical issue). Consequently, the IJsseldijk Zwolle-Olst dike reinforcement project was selected as a case study.

In the IJsseldijk Zwolle-Olst dike reinforcement project case study, the conceptual model was used again to identify how appointed internal experts influenced the characteristics of public participation.

Consequently, most of the variables (characteristics) were indicated through appointed internal experts, also called environmental managers, by sharing their views and ideas with the public participants and vice versa during walk-in meetings (Cluster I). These internal experts organized masterclasses about water safety and environmental assessment (m.e.r), imparted local knowledge from additional involved public participants (Cluster II) and mobilized and enabled public participants with divergent backgrounds in different roles, such as dijkdenkers, property owners and the environmental platform (representatives of different interest organizations), into structured and deliberative meetings (Cluster III). Finally, the environmental managers may exert influence by gaining the public participants' trust through relieving their concerns about what would eventually happen to their private property or other valuable environmental features close to or on the dike body (nature, cultural heritage, and recreation; Cluster IV).

In line with this, four other additions are also conditional and may determine whether the characteristics of public participation have a positive or negative impact on the preferred alternative, such as the level of expertise of a public participant, being a member of an interest organization and personal attachment of the public participant's property (residence or other nature and cultural heritage values) to the dike. Expertized public participants can better follow the decision-making process, allowing them to be more committed during the meetings and perceive the waterboard as more predictable. Consequently, this leads to more mutual understanding and respect by multiple parties (e.g. public participants, specialists and government representatives). Being part of an interest organization is a way to gather and represent views, ideas, and concerns of public participants and coordinate and process the information available to the public (from the decision-making process) as an official representative body. Furthermore, the more personal attachments (e.g., private property or residence) are located closer to the dike body, the less room for certainty can be assured with public participants, leading to a less predictable process and decreased mutual understanding and trust. Factors influencing this might be the uncertainties at the early project stage, also called the exploration phase, and the DFPP's scope and budget, which aims to find a balance in the most effective and less expensive option for the dike reinforcement.

Finally, the case study findings, except for the variables "communication and bargaining" (Cluster III) and "procedural fairness" (Cluster IV)), are corroborated with the results from the quantitative analysis, as environmental managers (appointed internal experts) from the waterboard play a key role in influencing the characteristics of public participation impacting the preferred alternative. It was possible to answer the main research question by applying the conceptual model to both the case study and multi regression analysis. Finally, recommendations for practice are also given to conduct more interviews with other kinds of participants, such as Dijkdenkers and board members, and successful meetings with property owners of the dike reinforcement project IJsseldijk Zwolle-Olst. Moreover, recommendations for further research are given to further explore the management of expectations and the influence of interest organizations in these DFPP collaborative projects.



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## List of abbreviations

- ABG: Official Guiding Group*  
*BBG: Administrative Guiding Group*  
*CGR: Collaborative governance regime*  
*DFPP: Dutch Flood Protection Program*  
*DMP: Decision-making process*  
*HWBP: Hoogwaterbeschermingsprogramma*

# 1. Introduction

## 1.1 Background

The foundation of the Dutch flood protection standards was laid by Van Dantzig and Kriens. Their work contributed to the report of the first Delta Committee (1956–1960). This Delta Committee was installed by the Minister of Public Works and Water Management after the disastrous flood of 1953 in the south-western part of the Netherlands (1,836 casualties and an economic loss of approximately 10% of the GDP; Jorissen et al., 2016).

Based on the safety standards, large flood protection projects were conducted during the decades after the 1953 flood. In 1996, the Flood Protection Act marked a conclusion to this period. The technical safety standards became statutory, and all flood protection structures were required to be tested against these standards every five (later six) years (Jorissen et al., 2016).

The first assessment was a test round; however, the second assessment yielded a significant reconstruction program of 370 km (roughly 10% of the total). Most of these reconstruction projects were caused by increased hydraulic loads and new insights into technical criteria. The evaluation of this program and earlier reconstruction projects showed that considerable improvements in effectiveness and efficiency were necessary. A task force led by Ten Heuvelhof recommended that the authorities change the financial arrangements for reconstruction projects to share responsibility for the program to improve project preparation (including an exploration phase). It also recommended that the regional water authorities invest in technical and project management skills (Jorissen et al., 2016). The regional water authorities accepted their responsibility, and a Government Agreement on Water was reached in 2011. For flood protection, the regional water authorities committed themselves to co-financing (50%) the reconstruction works and improving effectiveness and efficiency. With this agreement, the regional water authorities and the Ministry of Infrastructure and Environment laid the foundation for a joint program, the Dutch Flood Protection Program (DFPP), or in Dutch, the “Hoogwaterbeschermingsprogramma” (HWBP). The goal of the DFPP was to improve flood protection structures that did not meet the required safety standards. The initial scope of the DFPP was 748 km, determined by the third safety assessment (completed in 2011–2013; Jorissen et al., 2016).

In September 2008, the Delta Programme was announced. The Netherlands needed to prepare for the consequences of the rising sea level, land subsidence and rising temperatures. The Delta Programme was designed to prevent disasters and provide sufficient freshwater supplies, now and in the future. However, this not only concerns the future. Flood protection is currently also insufficient in some other areas. The government is conducting several projects to remedy this. These projects are included in the annual Delta Programme. The yearly financial volume of the Delta Programme is 1,100 million euros. This budget covers only the costs for operation, maintenance and reconstruction in (primary) flood protection, national water management and fresh water supply (Jorissen et al., 2016).

In September 2014, the Dutch Delta Commissioner advised the government to decide on the following five aspects of the Delta Programme:

- Flood risk management
- Freshwater
- Spatial adaptation
- The IJsselake region
- The Rhine-Meuse delta

The Delta decision on flood risk management was focused on the new flood protection standards. These new standards were established using a risk-based approach. The first step in deriving the new standards was introducing a basic safety level of  $10^{-5}$  per year for the acceptable probability of a fatality due to flooding. This is the so-called local individual risk. The second step was to determine whether a higher level of protection could apply to areas where flooding could lead to large groups of casualties or significant economic losses. A higher protection level could also apply if vital functions, such as a nuclear power plant, were present. The flood protection standards were derived using the cost-benefit analysis and recently developed insights into flood risk assessment. Especially, the spatial variations in flooding patterns depending on the location of breaches in the flood protection structures significantly influenced the risks. The analyses resulted in economically efficient flood protection standards for different parts of the Netherlands that significantly differed from the present standards. Especially in the river area, the new standards are stricter than the present standards. These resulted in a program improving safety against flooding, linked to a societally acceptable risk level (Rijkswaterstaat, n.d.-a). Thus, the optimization may also lead to different standards for flood protection structures surrounding the same dike ring area (if the consequences of flooding differ). The concept of multi-layered protection has been applied in deriving the safety standard:

- **Layer 1:** *Measures to prevent flooding (dikes, dams and dunes, as well as creating additional space for the rivers)*
- **Layer 2:** *Counteracting the consequences of flooding through spatial planning*
- **Layer 3:** *Counteracting the consequences of flooding through emergency management*

Layer 3 has been considered using an evacuation rate, depending on the type of flooding and dike ring area. Level 2 has been included by anticipating the spatial planning situations in 2050. The final result is the flood protection standards expressed as the acceptable yearly probability of flooding due to a failed flood protection section. The dimensions of these uniform sections range from 10–14 km. These new standards were established in a law starting from January 1, 2017, and are to be met in 2050 (Rijkswaterstaat, n.d.-a). The new safety standards range from 1/300 per year to 1/10,000 per year. The interval between safety assessments has been increased from six to 12 years. Following the Delta decision, the focus of the Delta Programme is shifting toward delivering the policy decisions in practice by adapting water management strategies and executing reconstruction projects (Jorissen et al., 2016).

The reconstruction projects include coastal and beach nourishment to preserve the required width and height of the dunes, creating additional space for the rivers to accommodate increased river discharges and reinforcing the primary flood protection structures. Rijkswaterstaat and the regional water authorities are responsible for delivering the new safety standards focusing on measures in Layer 1. Additionally, to measure Layer 1, Rijkswaterstaat and the regional water authorities cooperate with other authorities (province, municipalities) to increase performance in Layers 2 and 3. However, no binding agreements exist between them (Jorissen et al., 2016).

The initial scope of the DFPP is 748 km, determined by the third safety assessment (completed in 2011–2013). However, the new and generally stricter safety standards must also be considered. It is expected that the scope will expand to roughly 1,500 km of dikes and approximately 500 sluices and pumping stations (*gemalen*) to reach these new standards (Rijkswaterstaat, n.d.-a). This massive scope is organized using risk assessments at various levels. At the national level, the necessary projects are ranked based on the actual flooding risk (probability multiplied by the expected damages) and fitted within the budget constraints. Additional goals of the DFPP are to improve performance in project management, enhance the quality of more integral solutions and increase cooperation between all authorities involved (Jorissen et al., 2016).

In 2014, the DFPP initiated a preliminary design guide for the dike reinforcement projects. After four years, the DFPP produced its fourth program for 2017–2022. In addition to realizing flood protection projects, the DFPP aims to achieve the following comprehensive goals:

- Increase the production rate (effectiveness) of flood protection projects
- Improve the efficiency of flood management by reducing the costs per km
- Enhance the societal value of flood protection projects
- Improve cooperation between the authorities involved
- Assure the quality and control of both the program and projects

From 2014–2020, the budget was shared with the earlier reinforcement program initiated by the second safety assessment. Fitting the scope within the budget required a prioritization method. Thus, it was decided that all proposed reinforcement projects would be ranked on the actual risk due to flooding (probability x consequences). However, due to the digital nature of the assessment procedure, estimating the probability of flooding required an additional step. The program process is relatively straightforward: fitting the projects within the budget constraints. The initial planning and estimation of costs per project are based on experience and simplified models. In 2013, the first program was prepared for 2014–2019 with over 40 projects (with mainly exploration phases) and a total financial volume of 300 million euros (Jorissen et al., 2016).

Reinforcement projects may significantly impact the environment (nature, urban and societal). Minimizing the environmental impact of reinforcement projects is insufficient. The successful program, Room for the River, was aimed at both flood protection and the enhanced spatial quality of the flood plains. However, spatial quality is not a formal goal of the DFPP, flood protection solutions can be designed to maximize societal value, and innovations are not limited to technical innovations. The DFPP also stimulates innovations in contracting, stakeholder participation and decision-making (Jorissen et al., 2016).

Elaborating on this, increasing stakeholder participation (specifically public participants) in decisions may also be an essential condition for maximizing societal values. The literature suggests that it might be useful to gain more insight into the relevance of this phenomenon. Fung (2015) argued that more public participation can be considered a potent means of achieving key democratic values, such as legitimacy, justice and effectiveness in governance. Moreover, Smith (1973) argued that local individuals and communities are more intertwined with their environment, which changes over time. Thus, allowing them to participate could deliver greater immediacy and accuracy of information.

Another reason this development might be relevant is due to the forthcoming Environmental Act (*Omgevingswet*), which is expected to be initiated by June 2022. This law will require the local authorities to involve public participants earlier in the decision-making process of DFPP projects. This further emphasizes local authorities creating explicit documents regarding who participates, the decision-making processes and the results of these projects (Fliervoet et al., 2019).

One study illuminating this development is a five-year investigation of the All-Risk Program (from 2017 until the end of 2021) initiated along with the DFPP. In this program, the following question is asked: “How can we support the reinforcement of flood defenses at an increased pace and decreased cost while considering the implementation’s governance and legal aspects?” The program’s goal is to investigate, with the reinforcement of the flood defense, the benefits for the landscape and ecology along with adequate legal, institutional and societal contexts for the implementation (All-Risk, 2020).

In one of these projects, the focus is on understanding the challenges and benefits of cross-sector collaboration. This emphasizes investigating how and to what extent these collaborations lead to integrative, innovative and legitimate solutions in the scope of flood safety, nature, recreation, spatial quality and sustainability. These projects may comprise intensive collaborations lasting three to four years between the actors. It is argued that the chosen collaborative approach is likely to make a difference. However, it is stated that in both the Netherlands and abroad, the causal relationship between how collaboration occurs and the quality of the final decision or preferred alternative remains in question (Avoyan, 2021).

This research builds on the All-Risk Program’s governance components to further explore the role of public participation in the context of dike reinforcement projects.

## 1.2 Problem Statement

Measuring the effectiveness of public participation in decision-making appears too blurred and wide in (scientific) scope. O’Faircheallaigh (2010) stated that the benefits of public participation are often assumed, and the underlying rationale for greater public participation is sometimes poorly articulated, making it even more difficult to determine how to pursue it effectively.

Another study by Fliervoet et al. (2019), *Een dijkwaterschap of omgevingspartner*, explores which criteria may influence selecting suitable forms of public participation in decision-making. Therefore, an inquiry was conducted to gain insight into the experience of Rivierenland Water Board members and public participants involved in the DFPP projects. This resulted in in-depth interviews with eight environmental managers and five board members of Rivierenland. Additionally, 34 interviews with public participants involved in the three DFPP projects and surveys of 88 participants from an online platform were collected. Consequently, an assessment framework was created based on the experiences of all the interviewees (Fliervoet et al., 2019).

However, the method to measure the involvement of public participants during the decision-making process remains ambiguous. Although the Fliervoet assessment framework was built after the research, it did not create a theoretical lens in advance. The researchers may have intended to focus on exploring this phenomenon rather than determining how to effectively pursue public participation. An example of this limitation was highlighted by Burton (2009). He argued that based on a systematic review of studies of community engagement in area-based initiatives, most studies reported evidence of negative impacts or that it was difficult to determine what the objectives of the interventions were, let alone their impact. Moreover, he highlighted that limited attention is given to the potential interaction between different forms and degrees of public participation for public decision-making (Burton, 2009).

Furthermore, researchers and other experts have different definitions and methodologies for including public participation in decision-making. Consequently, this results in mixed findings, as definitions vary in public involvement or engagement. With regard to methodology, it may be perceived as a survey or organized conferences for these public participants (Rowe & Frewer, 2005).

## 1.3 Research Aim

The primary research aim is to understand the challenges and benefits of including public participation during decision-making processes. Consequently, recommendations shall be given to improve the inclusion and efficiency of public participation in the DFPP collaborative projects.

## 1.4 Research Question(s)

The following are the main research question and sub-questions:

**Main Research Question:**

*Which characteristics of public participation impact the preferred alternative in DFPP collaborative projects?*

**Sub-Question 1:**

*According to the literature, how can the impact of public participation be measured in decision-making?*

**Sub-Question 2:**

*Based on the literature, which factors might be indicated for public participants impacting the preferred alternatives in DFPP collaborative projects?*

**Sub-Question 3:**

*How do these factors influence public participants impacting the preferred alternative in the IJsseldijk Zwolle-Olst DFPP collaborative project?*

## 1.5 Scientific and Societal Relevance

It is expected that, around 2050, more than two-thirds of the Dutch population will live in the delta areas (C40Cities, 2022). Thus, the desire to maintain and strengthen the dikes will increase over time. This can be explained by the continuously increasing sea level, which is expected to rise by around 0.80 m by the end of this century (Kraaijevanger, 2015). Moreover, more people living within the delta areas will require larger cities with more exposure to vulnerabilities such as people's lives, vital infrastructure and provisions at risk (Kaufmann & Wiering, 2017). Elaborating on this, in 2017, the water safety norms for flood defenses were revised and are now also based (besides flood risk) on group risk, economic value, and vital infrastructure. Therefore, a need is apparent for the expertise of other parties specializing in these fields to discuss this matter. Thus, the (delta) cities might be prepared for mitigation and adaptation against future flood events from the sea, as well as threats induced by rivers and (extreme) rainfall (Hegger et al., 2016).

Simultaneously, across western societies, the popularity of public participation has also increased during this era. According to Burton (2009), among parliamentary democracies and other representative systems of government, a widespread belief exists that in addition to the occasional opportunity to vote for national, regional, and local governments, citizens should be allowed and encouraged to participate more directly in decisions affecting them. It is argued that deliberative democracies promise citizens opportunities to exercise their voices and more responsive, citizen-centered government by embedding "governance systems and institutions with greater levels of transparency, accountability and legitimacy" (Henton et al., 2005, p.5). Thus, key democratic values, such as legitimacy, justice, and effectiveness in governance, can be achieved. This already takes many shapes, such as co-production with other agencies and citizens through partnerships and community involvement (Fung, 2015).

In the scientific literature, the concept of increasing the involvement of public participants in decision-making is becoming more popular, especially in environmental fields. According to Newig et al. (2018), scholars and public administrators are increasingly engaging in participatory modes of governance to improve the environmental outcomes of public decision-making. This might be considered due to pragmatic reasons, such as integrating local knowledge, including the perspectives from various actors, and promoting acceptance and implementation of decisions (Newig et al., 2018).

## 1.6 Structure of the Research

This research begins with an introduction to the topic and focuses on the emerging problem (research gap) by formulating the main research question and sub-questions in Chapter 1. Subsequently, Chapter 2 highlights the relevant and existing literature related to this research and constructs the information required for the conceptual model.

Next, Chapter 3 discusses the applied methods, data collection, and analysis for this research (*Chapter 3*). Subsequently, the statistical results are presented in Chapter 4. The research then progresses to a case study to further elaborate on the statistical results in Chapter 5. Finally, Chapter 6 provides the conclusions and recommendations.



## 2. Literature Study

This chapter explores which characteristics of public participation might impact decision-making, specifically regarding the preferred alternative during the DFPP collaborative projects. Additionally, the method of measuring the characteristics of public participation is identified.

Two theories are selected for this research. The first theory of Emerson et al. (2012) suggests examining their theoretical framework further by specifying it for a certain situation and indicating which relationships and components matter, depending on the context of a project. Another theory of Newig et al. (2018) argues for testing the framework in sectors beyond the environmental field. These two theories may be consistent with the research goal, as they both suggest further exploration and adaptation to other research areas. In the following sections, both the theories of Emerson et al. (2012) and Newig et al. (2018) are further described.

### 2.1 The Integrative Framework for Collaborative Governance

Emerson et al. (2012) proposed a framework created from various frameworks as a theoretical lens to analyze collaborative cross-sector conditions during decision-making. This theory might be useful to use since this research is related to Ph.D. research in cross-sector collaboration, specifically for dike reinforcement projects (all-risk projects). Moreover, Emerson et al.'s (2012) theory served as a fundamental theory in exploring the cross-collaboration settings between the government, market, and civil society parties in this Ph.D. research. Elaborating on this, this research emphasizes further exploration of the specific effects of civil society parties (public participants) on the preferred alternative as an extension of this Ph.D. research. Therefore, it might be logical to use Emerson et al.'s (2012) theory to complement this.

This framework, the integrative framework for collaborative governance, has multiple layers. The first layer is the system context, which functions as the host of political, legal, socioeconomic, and environmental influences that affect and can be affected by the collaborative governance regime (CGR). This entails the resource conditions that require improving, increasing, or limiting their policy and legal framework, including administrative, regulatory, or judicial; prior failure to address the issue through conventional channels and authorities; political dynamics and power relations within communities and among or across levels of governments; and socioeconomic and cultural health and diversity (Emerson et al., 2012).

#### Drivers

Based on this system context, the drivers emerge and help initiate and set the direction for a CGR. These drivers are leadership, consequential incentives, interdependence, and uncertainty (Emerson et al., 2012).

The driver leadership suggests the presence of an identified leader who can initiate and help secure resources and support for a CGR. They should possess a commitment to collaborative problem-solving, a willingness to advance a particular solution, and impartiality concerning participants' preferences (Emerson et al., 2012).

Another driver is consequential incentives and relates to either internal or external drivers for collaborative actions. Such incentives are consequential because the presenting issues are salient to

participants, the pressure for solutions is high, and the absence of attention to the incentives may have negative impacts (Emerson et al., 2012).

The third important driver is interdependence, meaning that individuals and organizations cannot accomplish something independently. The final driver is uncertainty and comprises challenges for managing challenging societal problems (Emerson et al., 2012).

### *Collaborative Dynamics*

The CGR is further provided with collaborative dynamics and actions, which form the quality and extent to which a CGR is created and effective. The collaborative dynamics are built on three smaller collaborative dynamics: principled engagement, shared motivation, and capacity for joint action (Emerson et al., 2012).

#### *Principle Engagement*

Principle engagement occurs over time. It may influence different stakeholders at different points and occur in face-to-face or virtual formats, cross-organizational networks, or private and public meetings, among other settings. Through principled engagement, people with differing content, relational, and identity goals work across their respective institutional, sectoral, or jurisdictional boundaries to solve problems, resolve conflicts, or create value. Four elements are central to this dynamic:

1. **Discovery** relates to the revelation of individual and shared interests, concerns, and values, as well as the identification and analysis of relevant and significant information and its implications (Emerson et al., 2012).
2. **Definition** features the continuous effort to build shared meaning by articulating a common purpose and objectives (Emerson et al., 2012).
3. **Determination** includes procedural decisions (setting agendas, assigning a work group) and substantive determinations (reaching agreements on action items or final recommendations; Emerson et al., 2012).
4. **Deliberation** is broadly celebrated as a hallmark and essential ingredient of successful engagement. The quality of deliberation, especially when participants have differing interests and perspectives, depends on the skillful advocacy of individual and represented interests and the effectiveness of conflict resolution strategies and interventions (Emerson et al., 2012).

#### *Shared Motivation*

Emerson et al. (2012) defined shared motivation as a self-reinforcing cycle comprising four elements: trust, mutual understanding, internal legitimacy, and commitment. Shared motivation highlights the interpersonal and relational elements of the collaborative dynamics and is sometimes referred to as social capital. The four elements are further described:

1. **Trust** occurs over time as parties work together, become acquainted with each other, and prove to each other that they are reasonable, predictable, and dependable (Emerson et al., 2012).
2. After gaining trust, **mutual understanding** may emerge. Trust enables people to see and appreciate differences in others. It enables people to reveal themselves to others and hence be seen and appreciated by them. Mutual understanding specifically relates to the ability to

understand and respect others' positions and interests even when one might not agree with them (Emerson et al., 2012).

3. **Legitimacy** is defined as the confirmation that participants in a collective endeavor are trustworthy and credible, with compatible and interdependent interests, legitimizing and motivating ongoing collaboration (Emerson et al., 2012).
4. **Commitment** enables participants to cross the organizational, sectoral, and jurisdictional boundaries that previously separated them and commit to a shared path (Emerson et al., 2012).

#### *Capacity for Joint Action*

Collaboration aims to generate desired outcomes together that could not be accomplished separately. Emerson et al. (2012) illustrated the collaborative dynamic, capacity for joint action, as “a collection of cross-functional elements that come together to create the potential for taking effective action” and serve “as the link between strategy and performance” (p. 14). Four different elements are included in this dynamic:

1. **Procedural and institutional engagement** encompasses the range of process protocols and organizational structures necessary to manage repeated interactions over time. Specifically, larger, more complex, and long-lived collaborative networks require more explicit structures and protocols for the administration and management of work. These procedural and institutional arrangements must be defined at both the intra-organizational (i.e., how a single group or organization will govern) and inter-organizational (i.e., how groups of organizations will govern management together) levels. The protocol governing collaborative endeavors may be informal “norms of reciprocity” or more formal rules of network interactions (Emerson et al., 2012,p.15).
2. **Leadership** can be an external driver, an essential ingredient of collaborative governance itself, and a significant outgrowth of collaboration. Moreover, collaborative governance demands and cultivates multiple opportunities and roles for leadership. Certain leadership roles are essential (Emerson et al., 2012).
3. **Knowledge** fuels collaborative governance. Once guarded, this is shared with other participants. The ability to transmit high-quality knowledge effectively within and across organizations is the essence of “conductivity” in high-performance organizations and networks. Knowledge is also the central element in adaptive resource management models, where conditions of scientific or resource uncertainty lead parties to cooperate in management experiments to test and build better and more enduring management (Emerson et al., 2012).
4. **Resources** can be considered a benefit of collaboration due to its potential for sharing and leveraging scarce resources (Emerson et al., 2012).

These dynamics work interactively and iteratively to create collaborative action. Eventually, the collaborative actions lead to the outcome within the CGR or the system context. Consequently, they impact and adapt the system context or potentially adapt the CGR itself (Emerson et al., 2012).

### Collaborative Actions

Collaborative actions may be conducted simultaneously by all partners or their agents, by individual partners conducting tasks agreed through the CGR, or by external entities responding to recommendations or directions from the CGR. Researchers suggest that several factors affect the likelihood that collaborative action will be taken or implemented, including many elements integrated with collaborative dynamics, such as leadership, diverse representation, and power (Emerson et al., 2012).

### Impacts

Emerson et al. (2012) focused the definition of impact on “results on the ground” (p.18). Impacts result from action spurred by collaborative dynamics. Impacts are intentional changes of state within the system context. They are alterations in a pre-existing or projected condition deemed undesirable or in need of change. Impacts can be expressed in terms of physical, environmental, social, economic, and political influences (Emerson et al., 2012).

### Adaptation

Collaborative governance is frequently advocated due to its potential to transform a complex situation or issue. One of the “most important consequences may be to change the direction of a complex, uncertain, evolving situation, and to help move a community toward higher levels of social and environmental importance ”(Emerson et al., 2012,p.18). Emerson et al. (2012) proposed in their framework the potential for adaptation in the CGR itself. This may occur indirectly due to changes in the system context or directly in response to the perceived effectiveness of actions and impacts (Emerson et al., 2012).

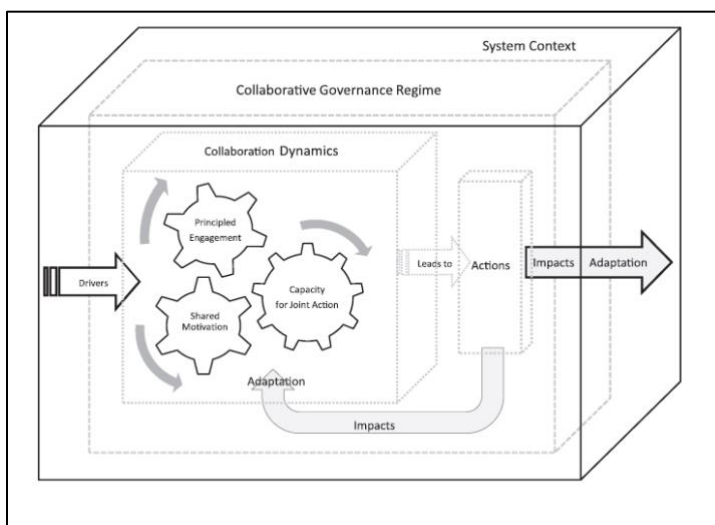


Figure 9: The Integrative Framework for Collaborative Governance

## 2.2A Framework of Causal Mechanisms

Using Emerson et al.'s (2012) theory, this research may have identified certain characteristics of public participation. Nonetheless, some elements might still be absent concerning measuring the effectiveness of these characteristics. Therefore, the following theory of Newig et al. (2018) might be useful.

Newig et al. (2018) presented a causal framework built on the concept that decision-making processes (DMPs) can be participatory and collaborative. Thus, according to this framework, decision-makers can decide to what extent DMPs are collaborative or participatory. This departs from Emerson et al. (2012), who perceived collaboration and participation as necessary rather than a choice. Their basic principle is that the causal framework provides reasoned assumptions on which modes of governance are likely to be effective (Newig et al., 2018).

This causal framework possesses five clusters of core mechanisms, including the relationship between participation and environmental outcomes. This can examine whether a certain relationship will be strengthened or weakened (Newig et al., 2018). The first three clusters focus on the representing role of environmental concerns, participants' environmental knowledge, and dialogical interaction during decision-making. The final two clusters entail the role of acceptance, conflict resolution, and collaborative networks for implementing decisions. A more detailed description of the clusters is discussed later.

### Cluster I: Opening Up Decision-Making to Environmental Outcomes

This cluster comprises two factors. The first is opening up and representation of environmental concerns. This states that opening up DMPs to non-state actors allows previously excluded groups (including environmental groups) to participate. This can increase or decrease the representation of environmental concerns in DMPs. Whether this results in an increase or decrease in this factor depends on the degree of stakeholders' environmental concerns, willingness to participate, stakeholders' capacity, and the openness versus inclusiveness of the process (Newig et al., 2018).

The second factor is the representation of environmental concerns and environmental quality of decisions. This suggests that an increasing representation of environmental concerns in DMPs fosters environmental advocacy, positively impacting the environmental quality of the output. However, increasing the representation of environmental concerns in DMPs may weaken the position of environmental groups due to, for instance, more powerful actors. This could negatively impact the environmental quality of the output. The form of impact depends on the process characteristics, degree of trust among participants, and participants' characteristics (Newig et al., 2018).

### Cluster II: Incorporation of Environmentally Relevant Knowledge

In this cluster, Newig et al. (2018) incorporated the relevance of lay and local knowledge. Here, lay and local knowledge in decision-making includes involving actors directly with current environmental issues in DMPs. This may increase environmentally relevant knowledge and make knowledge relevant to implementation available to DMPs. The degree of these factors depends on the knowledge deficit of decision-makers, knowledgeable stakeholders, and structured knowledge integration (Newig et al., 2018).

Another element in this factor is the education and empowerment of participants for more meaningful participation. This states that participation may improve participants' understanding of the current issue, increasing the likelihood of their providing constructive and environmentally relevant output. Again, this depends on conditions such as the degree of knowledge deficit, engaged participants, and understandable and unbiased information (Newig et al., 2018).

The third factor is knowledge and environmental outputs, which states that a higher degree of environmentally relevant knowledge made available to DMPs leads to higher environmental output standards (Newig et al., 2018).

The final factor is knowledge and implementation. This states that environmentally relevant and implementation-relevant knowledge included in DMPs makes implementing decision-making more likely (Newig et al., 2018).

#### Cluster III: Group Interaction, Learning, and Mutual Benefits

The third cluster explores the group interaction, learning, and mutual benefits more deeply. This includes negotiation and mutual gains of environmentally beneficial outputs, where DMPs with higher degrees of communication and bargaining are more likely to identify mutual gains than those with minimal or no communication and bargaining (Newig et al., 2018).

The open dialogue, innovation, and learning for environmentally beneficial outputs component states that participation in DMPs by open dialogue is more likely to lead to the development of creative and innovative solutions to environmental problems than DMPs without open dialogue (Newig et al., 2018).

Another component is deliberation and environmentally beneficial outputs, which suggests that deliberative participatory process setting is more likely to orient participants' views toward the common good. Therefore, this is more favorable in generating outputs for the environment compared to a non-deliberative DMP (Newig et al., 2018).

The final one is that the more veto players are involved in DMPs, the more likely the output will have lower environmental standards. This depends on the factor model of decision-making, degrees of conflicts, and participants' willingness and ability to cooperate (Newig et al., 2018).

#### Cluster IV: Acceptance and Conflict Resolution for Implementation

One of the final clusters is acceptance and conflict resolution for implementation. This comprises the component accommodation of interest, which suggests that a higher degree of participation leads to the accommodation of more diverse interests in the output, thus increasing acceptance by stakeholders (Newig et al., 2018).

Another component is procedural fairness, in which DMPs perceived as fair and legitimate can be accepted by participants, respective constituencies, and other stakeholders. This depends on several factors, such as early and meaningful involvement for those directly participating, mediation, and stakeholders outside the immediate process. The perception of fairness may rely on transparency, the levels of trust of the stakeholders in the intentions of the process organization and institutions, and communication that permits participants to express their views within the process (Newig et al., 2018).

Then, negotiation, mutual gains, and conflict resolution for acceptance states that mutual gains and conflict resolution resulting from negotiation may increase stakeholders' acceptance of the output (Newig et al., 2018).

An important component of this cluster is waking sleeping dogs. Raising stakeholders' awareness of issues and their involvement in decision-making leads them to consider possible negative effects of decisions and thus increases opposition to environmentally beneficial measures (Newig et al., 2018).

The final component is acceptance for implementation and compliance. This says that although the participatory process can lead to agreement goals and objectives, disagreement arising over implementation can ultimately lead to delays and stalling. This might result from DMPs excluding important actors, such as politicians, bureaucrats, and private sector actors. Therefore, implementation may be hindered by these groups. Furthermore, there may be a considerable time lag between decision-making and implementation, and circumstances may change so that the initially envisaged implementation becomes infeasible or undesirable (Newig et al., 2018).

#### Cluster V: Capacity Building for Implementation and Compliance

The final cluster is capacity building for implementation and compliance. This comprises informing policy addressees. The participation of policy addressees in decision-making improves implementation and compliance. Finally, networks of implementation, indicating participation, fosters the formation or strengthening of networks among participants and leads to implementation and compliance (Newig et al., 2018).

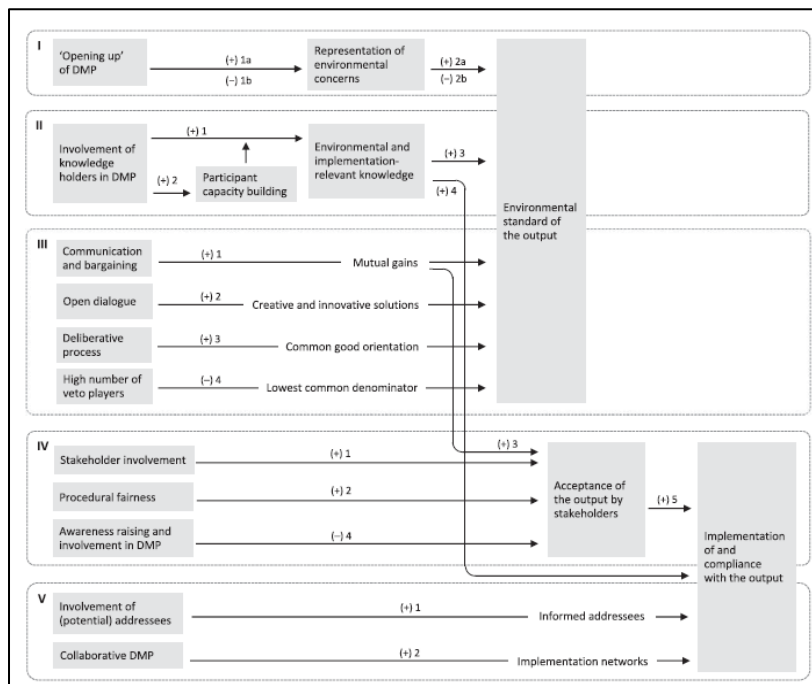


Figure 10: Framework of Causal Mechanisms

## 2.3 Conceptual Model

After discussing the relevant literature, the conceptual model (CM) was created. This research emphasizes which characteristics of public participation impact the preferred alternative to reveal which collaborative conditions might be efficient in the DFPP collaborative projects. In analyzing this, Newig et al.'s (2018) scheme was primarily used to identify whether certain relationships between the characteristics of public participation and the preferred alternative outcome were noticeable.

The Newig et al. (2018) framework of causal mechanisms was used in the five different clusters and their variables (independent variables) and the output (dependent variable). This CM includes only four clusters. The reasons for this consideration are further explained in the section on the CM operationalization. This CM was further complemented with some components (independent variables) from the collaborative dynamics, principal engagement, shared motivation, and capacity for joint action. Eventually, Newig et al.'s (2018) clusters were renamed based on the variables of Emerson et al. (2012) and Newig et al. (2018).

### Cluster I: Representation of Views, Ideas, and Concerns

This cluster is based on the variables from Emerson et al.'s (2012) "discovery" and Newig et al.'s (2018) "opening up DMPs to (environmental) concerns."

### Cluster II: Incorporation of Knowledge

The second cluster is the incorporation of knowledge by participants and is formed by the variables of Newig et al.'s (2018) "lay and local knowledge" and Emerson et al.'s (2012) "knowledge."

### Cluster III: Deliberation

This cluster is based on the following variables from Newig et al. (2018): "communication and bargaining" and "deliberative process." Variables included from Emerson et al. (2012) are "definition" and "commitment."

### Cluster IV: Internal Legitimacy

The cluster internal legitimacy incorporates the following variables from Newig et al. (2018): "negotiation, mutual gains, and conflict resolution for acceptance" and "procedural fairness." Emerson et al. (2012) included the following variables: "trust" and "mutual understanding."



Figure 4 illustrates the CM. This includes all the independent variables in the four different clusters.

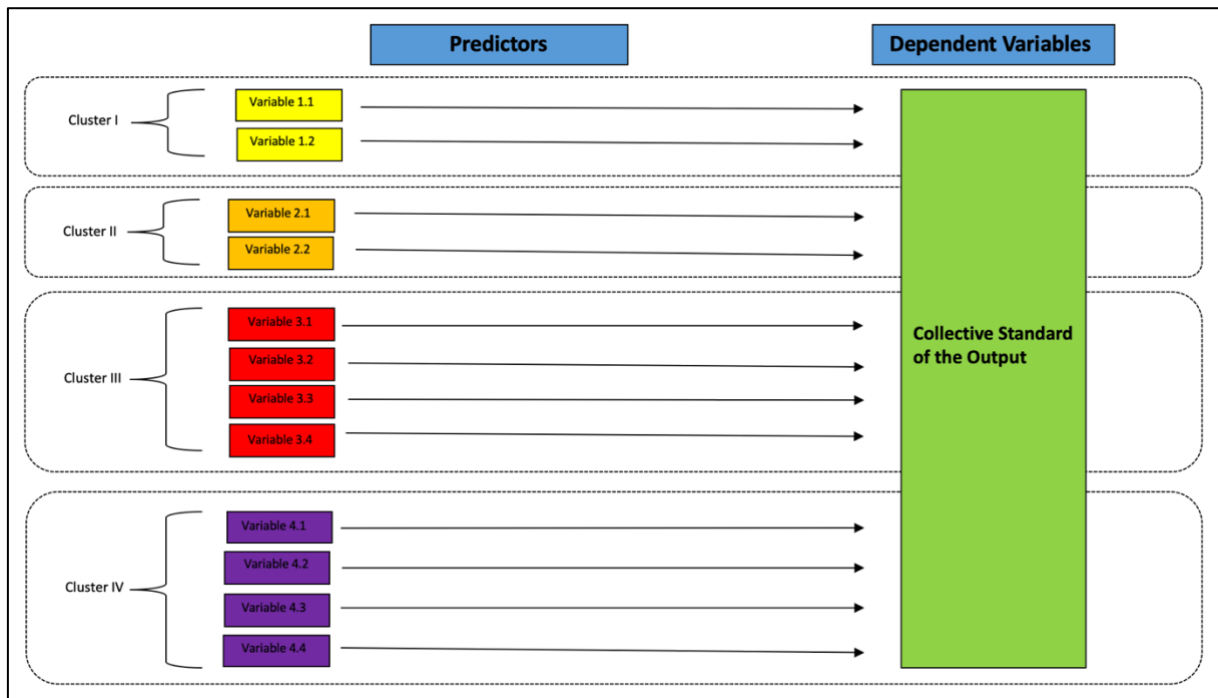


Figure 11: The Conceptual Model

Dependent Variable	Description
Dependent variable	Collective standard of the output
Prescription	Description
<i>Cluster I</i>	<i>Representation of views, ideas, and concerns</i>
Variable 1.1	Discovery
Variable 1.2	Opening up DMPs to (environmental) concerns
<i>Cluster II</i>	<i>Incorporation of knowledge</i>
Variable 2.1	Knowledge
Variable 2.2	Lay and local knowledge
<i>Cluster III</i>	<i>Deliberation</i>
Variable 3.1	Communication and bargaining
Variable 3.2	Definition
Variable 3.3	Deliberative process
Variable 3.4	Commitment
<i>Cluster IV</i>	<i>Internal legitimacy</i>

Variable 4.1	Negotiation, mutual gains, and conflict resolution for acceptance
Variable 4.2	Trust
Variable 4.3	Mutual understanding
Variable 4.4	Procedural fairness

*Table 1: Legend of the Conceptual Model*

### 3. Methodology

In this chapter the methodology will be further discussed. First of all, the research design will be described. Next, the data collection and analysis shall be explained and comprises the literature review, qualitative methods and quantitative methods for this research.

#### 3.1 Research Design

For this research, both quantitative and qualitative methods were used. Regarding the quantitative method, an existing survey dataset of the All-Risk Project was analyzed. The aim was to better understand which characteristics of public participation may affect the preferred alternative in the dike reinforcement project. Because this research used an existing survey dataset of the All-Risk Project, no quantitative data collection was required. However, data collection for both the qualitative analysis and literature study were necessary for this research.

This type of research can be categorized as descriptive research. According to Nassaji (2015), the goal of a descriptive research is to describe a phenomenon (public participation) and its characteristics (influences on the preferred alternative). The descriptive research mainly focused on the current knowledge of the public participants.

#### 3.2 Data Collection

##### 3.2.1 Literature Review

The main aim of a literature review is to integrate and generalize literature findings to develop debate within a specific field of science or bridge the language used across fields (Randolph, 2009). In this research, the academic literature, DFPP reports, and other policy documents were studied to better understand the concept of public participation in general. Furthermore, the aim was to explore which theories might help analyze the characteristics of public participants influencing the preferred alternative. The type of literature included public participation in politics, flood risk management, and the environment.

##### 3.2.2 Quantitative Methods

The survey for this research aimed to investigate the improvement in efficiency and effectiveness of collaboration between government, market, and civil society parties in the DFPP collaborative projects. This emphasized analyzing the effects of certain collaboration conditions (e.g., personal interaction, motivation, knowledge, and resources) on the preferred alternative in dike reinforcement projects. Therefore, various participants (project team, citizens, companies, and civil society organizations) were asked to participate in this survey. The specific scope of this research was to analyze which collaboration and behavior forms (influenced by experts, directors, or citizens) of public participants may influence the preferred alternative.

The survey is classified into the following themes:

Survey Theme	Description
<i>Theme 1: General information about the participant</i>	<ul style="list-style-type: none"> <li>• General and personal knowledge from the participants</li> <li>• This includes their current involvement and its duration, expertise, experience representing the institute, and their motive for being involved in this project.</li> </ul>
<i>Theme 2: Collaboration and behavior of participants in DFPP projects</i>	<ul style="list-style-type: none"> <li>• This theme focuses on the collaboration and behavior of all participants during the DFPP projects.</li> <li>• The questions cover the frequency of contact between participants, their commitment to the project, and respecting and appreciating each other's views during the process.</li> </ul>
<i>Theme 3: Collaboration and behavior of directors in DFPP projects</i>	<ul style="list-style-type: none"> <li>• The objective of the third theme is to understand the collaboration and behavior of directors during the DFPP projects.</li> <li>• This theme is not relevant to the research since the objective is to understand the characteristics of public participants regarding the preferred alternative and not those of directors.</li> </ul>
<i>Theme 4: Resources to stimulate collaboration in DFPP projects</i>	<ul style="list-style-type: none"> <li>• This theme concerns the resources necessary to fuel the collaboration during the DFPP projects.</li> <li>• The subthemes can be distinguished as organizational arrangements, leadership, knowledge, and resources of participants.</li> </ul>
<i>Theme 5: The course of collaboration in the DFPP project</i>	<ul style="list-style-type: none"> <li>• Focus on the course of the collaboration during the DFPP projects.</li> <li>• This comprises a question regarding whether their project has been changed or adapted during the exploration phase and, if so, why.</li> </ul>
<i>Theme 6: The characteristics of the preferred alternative</i>	<ul style="list-style-type: none"> <li>• This theme concerns a question about the characteristics of the preferred alternative.</li> <li>• These questions concern the incorporation of technological innovations, other functions, including public participants during the process, and whether the preferred alternative genuinely addresses the problem.</li> </ul>
<i>Theme 7: Juridical questions and bottlenecks in different groups in the HWBP projects</i>	<ul style="list-style-type: none"> <li>• The final theme explores which and to what degree juridical questions and bottlenecks affect different groups within the DFPP projects.</li> </ul>

Table 2: The Survey Themes

## Operationalization of the Conceptual Model

This section describes the CM operationalization. As mentioned earlier, the CM comprises four clusters (independent variables) and one output (dependent variable).

The final output first resulted in the collective standard of the output, stakeholders' acceptance of the output. Newig et al. (2018) also described the output implementation and compliance. However, after analyzing this survey, no survey questions appear to be related to acceptance of the output by stakeholders in the implementation and compliance of the output. Thus, these outputs from Newig et al. (2018) are omitted.

Hence, the following three survey questions served as the output for the collective output standard:

- **Survey Question 6.1.3:** Do you think the concerns of civilians and stakeholders were considered for the preferred alternative?
- **Survey Question 6.1.4:** Do you think the civilian and other stakeholders were able to participate actively during the process of the preferred alternative?
- **Survey Question 6.1.5:** Do you think that the involved civilians and other stakeholders made, in general, a noticeable contribution to the preferred alternative?

These three survey questions were combined to use for the analysis. It is later described how the selected survey questions may fit the cluster and their included variables.

### Cluster I: Representation of Views, Ideas, and Concerns

In this cluster, both variables feature the opportunities of other non-state actors to express themselves during the DMPs. Therefore, the following survey question is linked:

**Survey Question:** *Participants had the opportunity to express their views, concerns, and goals (Survey Question 2.1b).*

Like the variables "discovery" and "opening up DMPs to environmental concerns," it also describes the opportunity for all actors to share their views, ideas, and concerns, including the public participants.

### Cluster II: Incorporation of Knowledge

These variables share characteristics that include knowledge deriving from (expert) participants' scientific experience. Thus, the following survey questions might suit this cluster:

**Survey Question 4.1c:** *Knowledge, described as follows:*

- *High-quality scientific information*
- *Study results*

**Survey Question 4.2c:** *The internal appointed expert substantially impacted the development of the preferred alternative.*

**Survey Question 4.2d:** *The external appointed expert substantially impacted the development of the preferred alternative.*

The survey questions incorporate similar features to the variable “knowledge” as high-quality scientific information, such as study results. Moreover, besides high-quality knowledge, there may also be “lay and local knowledge” derived from appointed internal and external experts.

#### Cluster III: Deliberation

All the variables in this cluster appear to focus on the genuine effort of public participants to discuss the preferred alternative with other actors during the DMP. The following survey questions are linked to this cluster:

**Survey Question:** *Participants were able to identify their shared goals and needs and shared view of the preferred alternative (Survey Question 2.1i).*

Like the variables “definition” and “communication and bargaining,” this survey question also highlights the identification of shared goals by all participants by devoting their efforts to constant communication and all the participants’ needs.

**Survey Question:** *Participants in your project were, in general, committed to the process (Survey Question 2.3f).*

This survey question also indicates, like the variables “deliberative process” and “commitment,” that if participants are in a deliberative participatory process (e.g., form of assigning workgroups and reaching agreements on final recommendations), they are more likely to orient participants’ views toward the common good, while crossing the organizational, sectoral, and jurisdictional boundaries that previously separated them and thus committing to a shared path.

#### Cluster IV: Internal Legitimacy

These variables have in common that if one of these emerges, it may or may not lead to feeling justified and determines the acceptance by public participants for the preferred alternative. The following survey questions are related to this cluster:

**Survey Question:** *Participants could reach agreement on the plan of action to work toward the preferred alternative (Survey Question 2.1j).*

Here, the variable “negotiation, mutual gains, and conflict resolution for acceptance” is identified. The survey question relates to whether the participants reach agreement on the plan of action. Therefore, efforts regarding negotiation, mutual gains, and conflict resolution may increase stakeholders’ acceptance of the output.

**Survey Question:** *Participants could trust each other (Survey Question 2.3b).*

This survey question can be recognized in the variable “trust.” This occurs over time as parties work together, become acquainted with each other, and prove to each other that they are reasonable, predictable, and dependable.

**Survey Question:** *Participants appreciate and respect differences such as including the ambitions of the area in the project (Survey Question 2.3c).*

The variable “mutual understanding” can be linked to this survey question. This describes, like the survey question, the ability to understand and respect others’ positions and interests even when one might not agree.

**Survey Question:** *Participants can assume that the intentions of other participants are good (Survey Question 2.3d).*

This survey question can be identified in the variable “procedural fairness.” Here, the DMP is viewed as fair and legitimate and can be accepted by participants, respective constituencies, and other stakeholders.

Figure 5 illustrates the operationalization of the CM. The following section discusses the analysis and output from the SPSS program.

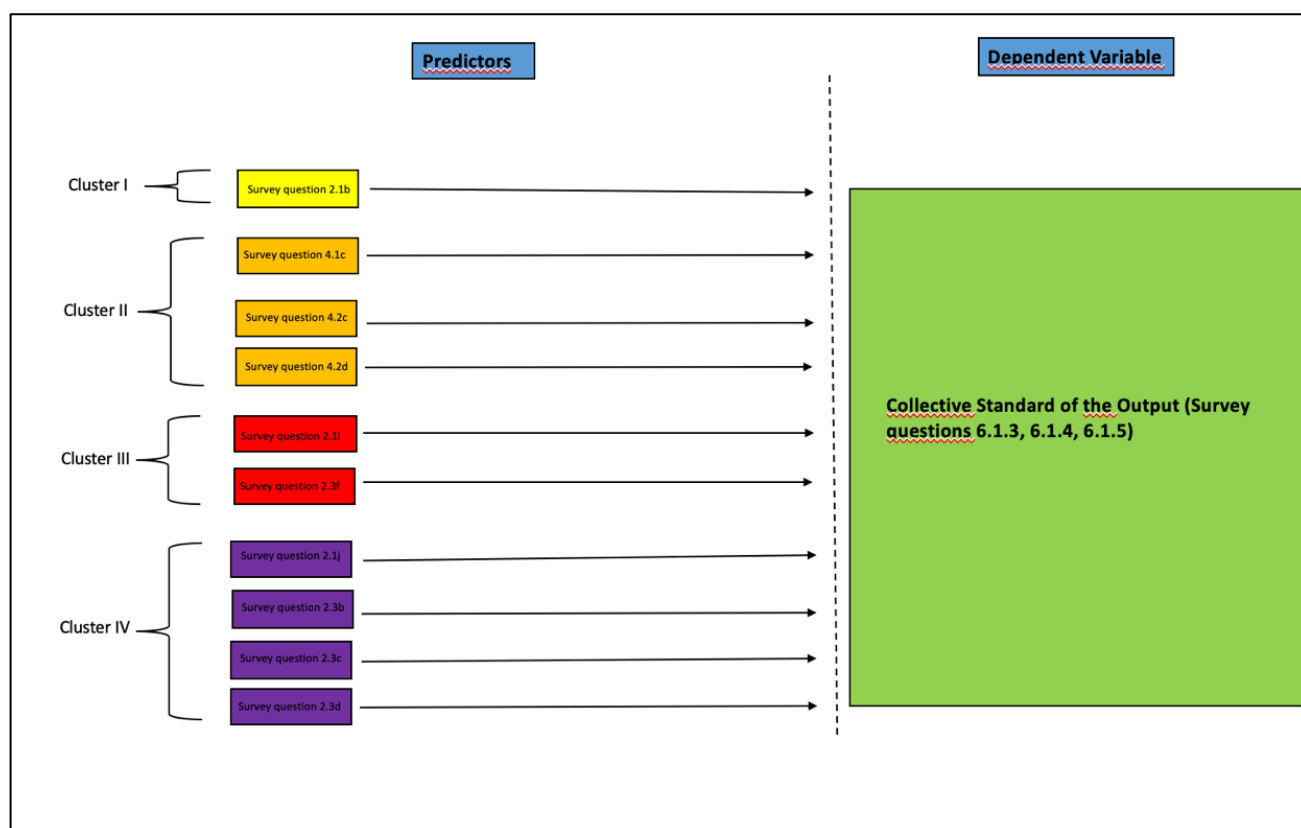


Figure 12: Operationalization of the Conceptual Model

Dependent Variable	Description
<b>Collective standard of the output</b> <ul style="list-style-type: none"> <li>Survey Question 6.1.3</li> <li>Survey Question 6.1.4</li> <li>Survey Question 6.1.5</li> </ul>	<ul style="list-style-type: none"> <li>Do you think that the involved civilians and other stakeholders, made in general, a noticeable contribution to the preferred alternative?</li> <li>Do you think the concerns of civilians and stakeholders were considered for the preferred alternative?</li> <li>Do you think the involved civilians and stakeholders had the opportunity to actively participate in the process of the preferred alternative?</li> </ul>
Prescription	Description
<i>Cluster I</i>	<i>Representation of views, ideas, and concerns</i>
<ul style="list-style-type: none"> <li>Survey Question 2.1b</li> <li>Variables: 1.1 &amp; 1.2</li> </ul>	Participants had the opportunity to express their views, concerns, and goals.
<i>Cluster II</i>	<i>Incorporation of knowledge</i>
<ul style="list-style-type: none"> <li>Survey Question 4.1c</li> <li>Variable: 2.2</li> </ul>	Knowledge, described as follows: <ul style="list-style-type: none"> <li>High-quality scientific information</li> <li>Study results</li> </ul>
<ul style="list-style-type: none"> <li>Survey Question 4.2c</li> <li>Variable: 2.2</li> </ul>	The internal appointed expert substantially impacted the development of the preferred alternative.
<ul style="list-style-type: none"> <li>Survey Question 4.2d</li> <li>Variable: 2.2</li> </ul>	The external appointed expert substantially impacted the development of the preferred alternative.
<i>Cluster III</i>	<i>Deliberation</i>
<ul style="list-style-type: none"> <li>Survey Question 2.1i</li> <li>Variables: 3.1 &amp; 3.2</li> </ul>	The internal appointed experts substantially impacted the development of the preferred alternative.
<ul style="list-style-type: none"> <li>Survey Question 2.3f</li> <li>Variables: 3.3 &amp; 3.4</li> </ul>	The external appointed experts substantially impacted the development of the preferred alternative.
<i>Cluster IV</i>	<i>Internal legitimacy</i>
<ul style="list-style-type: none"> <li>Survey Question 2.1j</li> <li>Variable: 4.1</li> </ul>	Participants could reach agreement on the plan of action to work toward the preferred alternative.
<ul style="list-style-type: none"> <li>Survey Question 2.3b</li> <li>Variable: 4.2</li> </ul>	Participants could trust each other.
<ul style="list-style-type: none"> <li>Survey Question 2.3c</li> <li>Variable: 4.3</li> </ul>	Participants appreciate and respect differences such as including ambitions of the area in the project.
<ul style="list-style-type: none"> <li>Survey Question 2.3d</li> <li>Variable: 4.4</li> </ul>	Participants can assume that the intentions of other participants are good.

Table 3: Legend of the Conceptual Model Operationalization



### Selection of the SPSS Analysis

Finally, a multiple regression analysis was selected for the analysis because more independent variables were used to predict the dependent variable. Several conditions must be met to use a multiple regression analysis (van Heijst, 2021b):

- The relationship between the explanatory and dependent variables must be linear.
- The data are obtained from an arbitrary experiment of the population.
- The explanatory variables included in the regression analysis do not have a linear relationship between them.
- There is exogeneity: The expected error term is zero.
- There is homoscedasticity: The variance of the error terms is equal to all the values of the explanatory variable.

### 3.2.3 Qualitative Methods

#### **Selecting a case for in-depth study**

The fundamental goal of case study research is to conduct an in-depth analysis of an issue, within its context, with a view to understanding the issue from the perspective of participants. A case study design can address a wide range of questions that ask the why, what, and how of an issue and assist researchers in exploring, explaining, describing, evaluating, and theorizing about the complex issue in context. The outcome can lead to an in-depth understanding of behaviors, processes, practices, and relationships in context (Miles et al., 2020).

Regarding this research, a project must be selected from the SPSS dataset. Before this selection, an SPSS analysis was conducted. Based on the results of appointed internal experts play a key role in this process, this was further investigated to understand how and why these findings appeared significant.

#### Round 1: Selecting the DFPP Projects From the SPSS Dataset

The first step was to select the preferable case study. Thus, the following conditions needed to be met to consider this:

- There must be at least one internal expert (i.e., area, technical, or process manager from the water board) participating in this survey.
- Other types of participants who have engaged with this appointed internal expert during the process must be included.

After meeting these criteria, the following projects were included for testing (Figure 6):

	Expertise	Background
<b>Grebbeijk</b>	1	Waterschap Vallei en Veluwe
	2 Omgevingsmanager, verbinder tussen stakeholders en projectteam.	Waterschap Vallei en Veluwe
	3 riolering en waterhuishouding, GWW, verkeerstechniek en participatie bewoners	Gemeente Wageningen
	4 Procesmanagement bij gebiedsontwikkeling	Waterschap Vallei en Veluwe
	5 Natuur, integrale ontwikkeling en omgaan met diverse belangen	Staatsbosbeheer
	6 Projectmanagement, omgevingsmanagement, subsidieregeling HWBP	Programmadirectie HWBP
	7 - plaatselijke kennis - juridische kennis - RO gerelateerde kennis	gemeente Rhenen
	8 Omgevingsmanagement	Waterschap Vallei en Veluwe
	9 projectbeheersing	waterschap
	10 Procesbegeleiding, verbinden en voorzitten	Voorzitten overleg belangenorganisaties en bewoners - waterschap
<b>Dijkversterking Gorinchem - Waardenburg</b>	1 omgevingsmanagement, specifiek participatieproces besluitvorming publieke sectoren	waterschap
	2 alle aspecten binnen het omgevingsmanagement	Ik vertegenwoordigde het waterschap
	3 Omgevingsmanagement	Aannemersbedrijven
	4 communicatie richting stakeholders op een toegankelijke manier	Waterschap Rivierenland
	5 watermanagement, omgevingsmanagement, governance, ecologie, besluitvormingsprocessen, ....	Wsch Rivierenland
<b>Dijkversterking Tiel-Waardenburg/Stad Tiel</b>	1 Ruimtelijke kwaliteit	Landschapsarchitect
	2 Landschapsarchitectuur, stedenbouw, ruimtelijke ontwikkeling en ruimtelijke kwaliteit	landschapsarchitectuur
	3 Aanneming en uitvoering. Praktische leidinggever.	Van Gelder BV
	4 Projectmanagement, inhoudelijke technische kennis GWW sector breed	Centerone group bv
	5 Omgevingsmanagement	Ingenieursbureau
<b>Dijkversterking Zwolle-Olst</b>	1 Voor mijn pensionering 40 jaar werkzaam bij ene waterschap, o.a. dijksverbeteringsplannen	IVN, afdelingen Wijhe-Olst en Zwolle en KNNV afdeling Zwolle
	2 beheer natuur, management, bestuurlijke ervaring	Staatsbosbeheer
	3 - procesvaardigheid ruimtelijke ontwikkelingen/MKK - ervaring in bestuurs- en besluitvormingsprocessen	aannemer
	4 veranderkunde en large scale interventies	buurtvereniging/ bewoners
	5 Omgevingsmanagement, in brede zin. Projectmanagement.	Waterschap
	6 publiek private kennis, Ruimte voor de Rivier. vertegenwoordiger van belangenvereniging	grondeigenaren en onroerend goed eigenaren buurtgemeenschap
	7 Ik werk bij een waterschap en volgende functies gehad, peilbeheerder, hoofdmachinist, handhaving op	Plaatselijk belang
	8 Omgevingsmanagement, bestuurlijke sensitiviteit, helicopterview, teambuilding	WDO DELTA
<b>Lauwersmeerdijk - Vierhuizen</b>	2 Technisch manager in IPM-team Noorderzijlvest	waterschap Noorderzijlvest
	2 Omgevingsmanagement	Waterschap
	3 overall technisch	waterschap Noorderzijlvest
	4 Sterkte van dijkbekledingen	Deltares
<b>Dijkversterking Koehoel - Lauwersmer</b>	1 project- en omgevingsmanagement	Waterschap - dijkbeheerder
	2 omgevingsmanagent vaardigheden, lokaal netwerk/gebiedskennis	Waterschap
	3 risicobeheersing, kennis subsidieregeling, gezond verstand	Waterschap
<b>Meanderende Maas</b>	1 bestuurs- en gebiedskennis	landbouw
	2 Gebiedskennis, beleidskennis irt meekoppelkansen	gemeente
	3 gebiedskennis, kennis van natuur, natuurbeleving en natuurbeheer, kennis van de omgeving/de mensen,	Natuurmonumenten
	4 Planprocedures, besluitvormingsproces, MER	Waterschap
	5 Ontwerp (als verbindende schakel); kennis van natuur, erfgoed, water	Provincie Noord-Brabant
	6 Manager planontwerp die als centrale taak heeft de driehoek inhoud, omgeving en besluitvorming aan	Ingenieursbureau
	7 Inhoudelijke kennis waterkeringen (techniek, beheer)	Waterschap
	8 Kennis van fusie- en samenwerkingsprocessen, overlegstructuren Gemeentelijke overheid en diversiteit	Dorpsraad. Adviesorgaan van College B en W
	9 rivierkunde, natuurontwikkeling, waterbouw, kennis van planuitwerking	Rivierkunde/uitwaardontwikkeling
<b>Sterke Lekdijk</b>	1 Procesmanagement, expertise op integraal waterveiligheidsontwerp	ingenieursbureau
	2 Technisch manager: Civiele techniek + Juridisch. Ervaring met Verkenning, Planuitwerking en Realisatie	Hoogheemraadschap De Stichtse Rijnlanden
	3 technisch management - projectmanagement - integraal ontwerp - omgevingsmanagement	Innovatiepartner
	4 Bestuurlijke ervaring.	Algemeen bestuur.
	5 samenwerking (opdrachtgever - opdrachtnemer, tussen adviesbureaus onderling etc.)	advies- / ingenieursbureau
	6 Technisch management, ontwerpmanagement	Waterschap

Figure 13: Round 1: The Selected DFPP Projects

### Round 2: Selecting the Preferable DFPP Collaborative Projects Based on Two Survey Questions

The next step was to consider one of these projects based on the following survey questions:

- **Survey Question:** Did the public participation and other stakeholders make, in general, a noticeable contribution to the preferred alternative?
- **Survey Question:** Did an internal expert significantly contribute to the process?

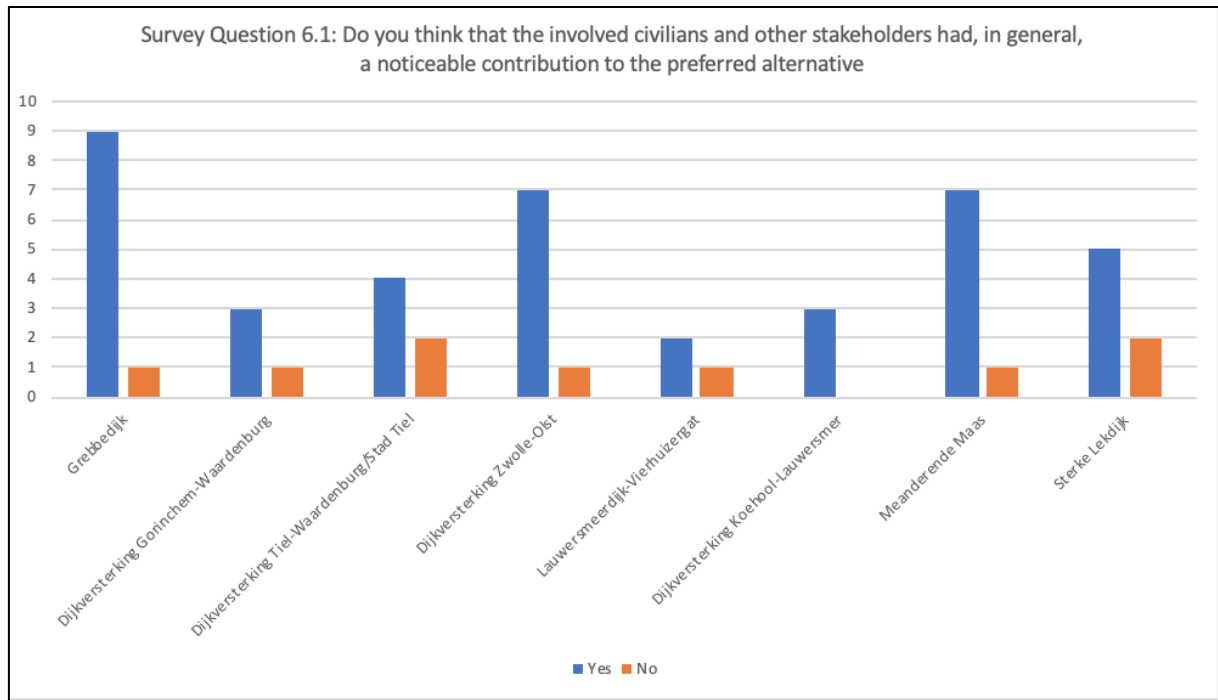


Figure 14: Round 2: Selecting the DFPP Collaborative Projects Based on Survey Question 6.1

Figure 7 shows that in all the projects, most of the participants responded with “Yes” to this survey question. It is noticeable that, except for one project, one or two participants responded with “No.” However, it appears difficult to select the preferable projects based on these results.

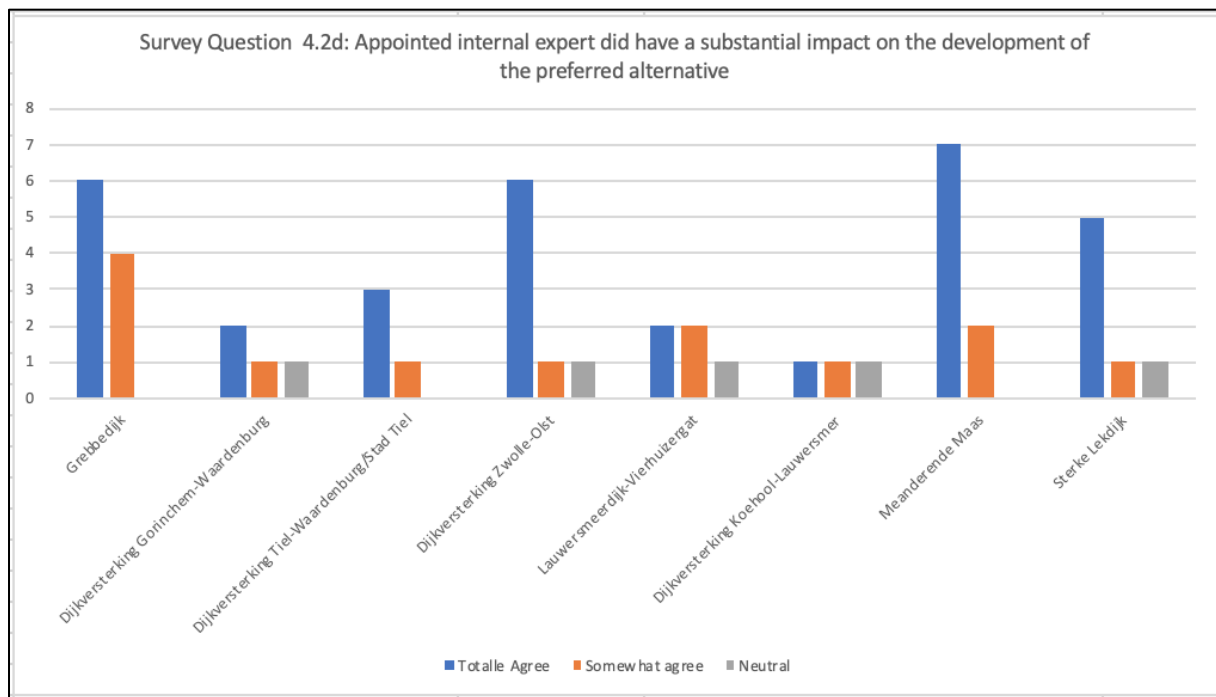


Figure 15: Round 2: DFPP Collaborative Projects Based on Survey Question 4.2d

Figure 8 shows that the results are mostly similar when comparing the projects. For the projects Grebbedijk, Gorinchem-Waardenburg, Tiel-Waardenburg, Meanderende Maas, Sterke Lekdijk, and IJsseldijk Zwolle-Olst, the majority response appears to be “Totally Agree” for this survey question. The others, Dijkversterking Gorinchem-Waardenburg, Lauwersmeerdijk-Vierhuizergat and Dijkversterking Koehool-Lauwersmer, majority response are more even between “Neutral”, “Somewhat Agree” and “Totally Agree”. Since the focus is on the substantial impact of internal experts, the chance might be statistically higher to find the response “Totally Agree” with projects.

### Round 3: Selection of the DFPP Collaborative Projects Based on the Participants' Institutional Backgrounds

Project	Expertise	Institutional background	They have a participants with three different institutional backgrounds
<b>Grebbeijk</b>	1 Unknown	Waterschap Vallei en Veluwe (G)	Yes
	2 Omgevingsmanager, verbindt tussen stakeholders en projectteam. Nee	Waterschap Vallei en Veluwe (G)	Yes
	3 Insluiter en waterhuishouding, GWW, verkeertechniek en participatie bewoners Ja	Gemeente Wageningen (G)	Yes
	4 Procesmanagement bij gebiedsontwikkeling Ja	Waterschap Vallei en Veluwe (G)	Yes
	5 Natuur, integrale ontwikkeling en omgaan met diverse belangen Ja	Staatsbosbeheer (G)	Yes
	6 Projectmanagement, omgevingsmanagement, subsidieregeling HWBP Ja	Programmadirectie HWBP (G)	Yes
	7 - plaatselijke kennis - juridische kennis - RO gerelateerde kennis	Gemeente Rhenen (G)	Yes
	8 Omgevingsmanagement Ja	Waterschap Vallei en Veluwe (G)	Yes
	9 projectbeheersing Nee	Waterschap (G)	Yes
	10 Procesbegeleiding, verbinden en voorzitten Ja	Voorzitten overleg belangenorganisaties en bewoners - waterschap (CS)	Yes
<b>Dijkversterking Tiel-Waardenburg/Stad Tiel</b>	1 Ruimtelijke kwaliteit	Landschaparchitect (M)	No
	2 Landschaparchitectuur, stedenbouw, ruimtelijke ontwikkeling en ruimtelijke kwaliteit	landschapsarchitectuur (M)	No
	3 Aanpak en uitvoering. Praktische leidinggever.	Van Gelder BV (M)	No
	4 Projectmanagement, inhoudelijke technische kennis GWW sector breed	Centerone group bv (M)	No
	5 Omgevingsmanagement	Ingenieursbureau (M)	No
<b>Dijkversterking Zwolle-Olst</b>	1 Voor mijn pensionering 40 jaar werkzaam bij ene waterschap, o.a. dijkverbeteringsplannen Ja	IVN, afdelingen Wijk-Olt en Zwolle en KNNV afdeling Zwolle (CS)	Yes
	2 beheer natuur, management, bestuurlijke ervaring Ja	Staatsbosbeheer (G)	Yes
	3 - procesmatigheid ruimtelijke ontwikkelingen MKK - ervaring in bestuurs- en besluitvormingsproces	Aannemer (M)	Yes
	4 veranderkunde en large scale interventies	Buurtvereniging/ bewoners (CS)	Yes
	5 Omgevingsmanagement, in brede zin. Projectmanagement.	Waterschap (G)	Yes
	6 publiek private kennis, Ruimte voor de Rivier, vertegenwoordiger van belangenvereniging	Grondeigenaren en omroerend goed eigenaren buurtgemeenschap (CS)	Yes
	7 Ik werk bij een waterschap en volgende functies gehad, peilbeheerder, hoofdtechnicus, handhaving op	Plaatselijk belang (CS)	Yes
	8 Omgevingsmanagement, bestuurlijke sensitiviteit, helicopterview, teambuilding	WIDDEL T.A. (G)	Yes
<b>Meanderende Maas</b>	1 Bestuurs- en gebiedskennis	Landbouw (M)	Yes
	2 Gebiedskennis, beleidskennis in meekoppelkansen	Gemeente (G)	Yes
	3 gebiedskennis, kennis van natuur, natuurbeleving en natuurbeheer, kennis van de omgeving/de mensen,	Natuurmonumenten (CS)	Yes
	4 Planprocedures, besluitvormingsproces, MER	Waterschap (G)	Yes
	5 Ontwerp (als verbindende schakel); kennis van natuur, erfgoed, water	Provincie Noord-Brabant (G)	Yes
	6 Manager planontwerp die als centrale taak heeft de driehoek inhoud, omgeving en besluitvorming aan	Ingenieursbureau (M)	Yes
	7 Inhoudelijke kennis waterkeringen (techniek, beheer)	Waterschap (G)	Yes
	8 Kennis van fusie- en samenwerkingsprocessen, overlegstructuren Gemeentelijke overheid en diversiteit	Dorpsraad, Adviesorgaan van College B en W (CS)	Yes
	9 rivierkunde, natuurontwikkeling, waterbouw, kennis van planuitwerking	Rivierkunde/ uiterwaardontwikkeling (M)	Yes
<b>Sterke Lekdijk</b>	1 Procesmanagement, expertise op integraal waterveiligheidsontwerp	Ingenieursbureau (M)	No
	2 Technisch manager: Civiele techniek + Juridisch. Ervaring met Verkenning, Planuitwerking en Realisatie	Hoogheemraadschap De Stichtse Rijnlanden (G)	No
	3 technisch management - projectmanagement - integraal ontwerp - omgevingsmanagement	Innovatiepartner (M)	No
	4 Bestuurlijke ervaring	Algemeen bestuur, (G)	No
	5 samenwerking (opdrachtgever - opdrachtnemer, tussen adviesbureaus onderling etc.)	Advies- / ingenieursbureau (M)	No
	6 Technisch management, ontwerpmanagement	Waterschap (G)	No
<b>Legend</b>			
G = Government			
M = Market			
CS = Civil Society			

Figure 16: Round 3: Selecting the DFPP Collaborative Projects Based on the Participants' Institutional Backgrounds

Figure 9 lists the remaining selected projects. In this test, a selection was made based on the diversity of the participants' institutional backgrounds. These institutional backgrounds are government (state), firms (market), and public participants (civil society). Hence, the Grebbedijk, Dijkversterking Zwolle-Olst, and Meanderende Maas projects were selected because they appear the most diverse, as opposed to the other projects that mainly comprise participants from government and firms. This may help obtain a multi-perspective view of this event and therefore minimize bias since not all the three institutional spheres are included during the projects.

### Round 4: Recommending a DFPP Collaborative Project as a Case Study

In the final round, the goal was prioritizing these three final projects and nominating the final DFPP collaborative project as a case study. This depended on whether each participant was willing to be contacted. This step was considered for pragmatic reasons, such as the time limit of this research and other reasons of participants. Based on Table 4, a recommendation was made to select a case study:

Project	Yes	No
<i>Dijkversterking Zwolle-Olst</i>	8	1
<i>Grebbedijk</i>	6	4
<i>Meanderende Maas</i>	3	6

Table 4: The Top Three Selected DFPP Projects

Based on this, the project Dijkversterking Zwolle-Olst was recommended for selection as a case study.

## Document Analysis and Semi-Structured Interviews

As part of the case study, a document analysis was conducted, and interviews were held with different participants from the dike reinforcement project IJsseldijk Zwolle-Olst. The document analysis helped gain a better view of the (current) project area in general and the water safety issue. Moreover, this analysis helped create a set of questions for the interviewees involved during this project.

In the next phase, interviews were conducted with some participants. The goal of the interviews was to obtain in-depth knowledge on how the characteristics of public participation impacted the preferred alternative in this project. The qualitative information was mainly derived from semi-structured interviews. Semi-structured interviews are also called qualitative or in-depth interviews. In this case, questions were prepared in an interview guide before the interviews. However, it was also possible to use follow-up questions if an interviewee said something interesting or requested further clarification about an issue. Thus, more detailed information could be gained for the research Kirsten (Dingemanse & Merkus, 2021)

Specifically for this research, the interview questions were based on the document analysis and CM. As shown in Figure 6, the following participants were interviewed:

Background	Function	Relation to this Research	Date of the Interview
<b>Public participant (interviewee 1)</b>	Resident	<ul style="list-style-type: none"><li>• Member of interest group Schelle-Oldeneel</li><li>• Member Omgevingsplatform</li></ul>	November 22, 2021
<b>Public participant (interviewee 2)</b>	Resident	<ul style="list-style-type: none"><li>• Member of IVN Wijhe-Olst</li><li>• Member of KNNV section Zwolle</li></ul>	November 24, 2021
<b>Water board WDODelta (interviewee 3)</b>	Environmental manager	<ul style="list-style-type: none"><li>• Environmental management</li></ul>	November 29, 2021

Table 5: The Interviewed Participants

### 3.3 Data Analysis

#### 3.3.1 Literature Review

The first phase of this research comprised a literature study. This was used for a basic understanding of the research and to better understand the characteristics of public participation influencing DMPs. Theories are described as well as important subjects related to the research. The literature review led to selecting the theoretical frameworks and eventually creating the CM. This CM was further applied to analyze the SPSS dataset and case study.

#### 3.3.2 Quantitative Methods

Quantitative analysis takes the form of a survey. A survey is a research method used for collecting data from a predefined group of respondents to gain information and insights into various topics of interest (QuestionPro, n.d.-b). There are four types of surveys, according to Juneja (n.d.): Telephone interview, personal interview, mail interview, and electronic interview.

However, as mentioned previously, an existing survey dataset of the All-Risk Project was already available and was analyzed further using the SPSS program. The main concept behind using the SPSS survey dataset was to statistically examine which characteristics of public participants affected the preferred alternative. Based on the results of the analyzed SPSS survey dataset, the research proceeded with a case study to further establish the specific findings of public participants' characteristics influencing the preferred alternative in dike reinforcement projects.

Although a survey is useful for quantitative data collection, it also involves a high risk that respondents will not participate or even complete the survey entirely for various reasons. The respondents were pre-selected and filtered based on their preceding level of completing the survey to minimize this effect. A preceding level of 85% served as a minimum.

#### Survey

As previously indicated, the survey was already included in the SPSS dataset. The questions are closed-ended questions and dichotomous questions. Closed-ended questions can be multiple choice, ranking, or drop down (Marx, 2019). This allows respondents to give both detailed and descriptive information about a topic. Dichotomous questions are questions that can have two possible answers. They are mostly used in a survey that asks for Yes/No and True/False answers (QuestionPro, n.d.-a). The measurement level of this SPSS dataset is mostly interval, meaning that the data can be categorized; there is an order, and intervals between the categories are equal. Some of the survey questions are nominal, indicating that the data are also categorized and have an evident selection order (Bhandari, 2021).

### 3.3.3 Qualitative Methods

The case study approach is particularly useful when there is a need to obtain an in-depth appreciation of an issue, event, or phenomenon of interest, in real life (Crowe et al., 2011). The qualitative data collection started by selecting the DFPP project, suitable as a case study, depending on the results from the previous SPSS analyses. More specifically, the conditions of selecting a project were created and tested to select the favorable case study. After this part was finished, the case study proceeded by conducting interviews.

The interviews were held with different parties, including residents and internal experts from the water board. This method aimed to gain more in-depth knowledge and a multi-perspective view on this phenomenon. Eventually, these interviews were further transcribed and analyzed via coding.

There are three methods of coding (Dingemans, 2021):

- Open coding is used to discover ideas and establish concepts and theories.
- Axial coding is a technique that involves relating data from open coding to reveal categories.
- Selective coding is the actual analysis of the codes resulting from open and axial coding.

These three methods were used for this research.

## 3.4 Validity and Reliability of the Research

First, reliability is essential to research in general. This requires accuracy, which relates to the measurement instrument used; in this case, a survey. Furthermore, it is closely related to consistency and revolves around the repeatability of a study. Therefore, it is essential to create recordings of the conducted interviews and subsequently transcribe them to enable them to contribute to this research (van Thiel, 2022).

Regarding the validity of this research, there are two different types. One is the internal validity and concerns itself with the question, “has the researcher really measured the effect they intended to measure?” However, there is also external validity, relating to the extent to which a study can be generalized: “Do research results also hold for other persons and institutions?” This can be safeguarded by asking experts to comment on this research (van Thiel, 2022). In this case, the experts are primarily the two thesis supervisors.

Finally, reliability and validity can be enhanced through triangulation. This entails more than one method being used in a study. Thus, it at least double-checks the data collection and research results (van Thiel, 2022). For this research, multiple methods were used, including a literature study, survey data analysis, and interviews.



## 4. Results: Quantitative Analysis Using SPSS

This chapter focuses on which variables (characteristics) of the CM may significantly influence the output (preferred alternative). As discussed in the previous chapter, the CM was operationalized by linking the variables to the survey questions computed by the SPSS software program. Moreover, three survey questions were merged as a new dependent variable for this analysis. The results of the multiple regression analysis are further discussed using a stepwise approach.

### 4.1 Removing Irrelevant Participants

The first step was to prepare the data for the multiple regression analysis. Therefore, all the participants for whom progress was less than 85% were removed from the dataset to ensure a reliable test. This resulted in 94 removed participants and 126 remaining participants from the DFPP projects.

### 4.2 Reliability Analysis

Subsequently, Survey Questions 6.1.3 (Q43\_3), 6.1.4 (Q43\_4), and 6.1.5 (Q43\_5) were tested for internal consistency to create a new dependent variable (output).

This was performed through the following options: analyze → scale → reliability analysis. Figure 10 shows the output of the reliability analysis. The Cronbach's value is an important indicator of the internal consistency between these survey questions. This value is .714, which is sufficient to create a new variable since the minimal value must be .7 (van Heijst, 2021a).

<b>→ Reliability</b>			
<b>Scale: ALL VARIABLES</b>			
<b>Case Processing Summary</b>			
		<b>N</b>	<b>%</b>
<b>Cases</b>	<b>Valid</b>	107	84.9
	<b>Excluded<sup>a</sup></b>	19	15.1
	<b>Total</b>	126	100.0
a. Listwise deletion based on all variables in the procedure.			
<b>Reliability Statistics</b>			
<b>Cronbach's Alpha</b>		<b>N of Items</b>	
.714		3	

Figure 17: Reliability Test Output

### 4.3 Creating a New Dependent Variable

The survey questions were transformed into a new variable. This was achieved as follows: transform → compute variable. Figure 11 shows the input of the new output variable.

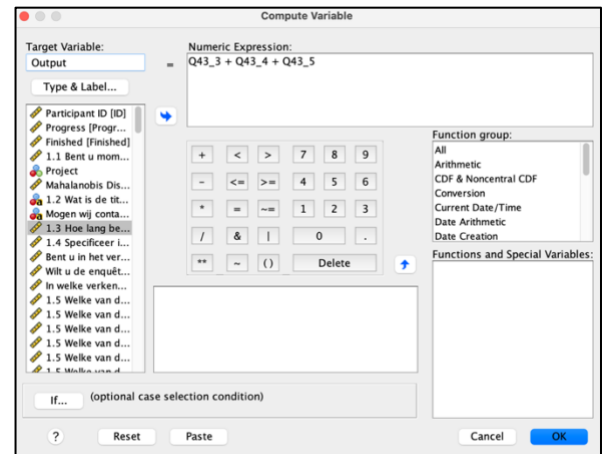


Figure 18: New Dependent Variable

### 4.4 The Multiple Regression Analysis

The two multiple regression analyses could then begin. Figure 12 shows the multiple regression analysis.

As Figure 12 illustrates, the selected survey questions served as the independent variables, aiming to predict the dependent variable. Therefore, the option analyze → regression → linear was executed to use the multiple regression analysis. Furthermore, the outcomes were interpreted through three different schemes: the model summary, ANOVA tests, and coefficient table.

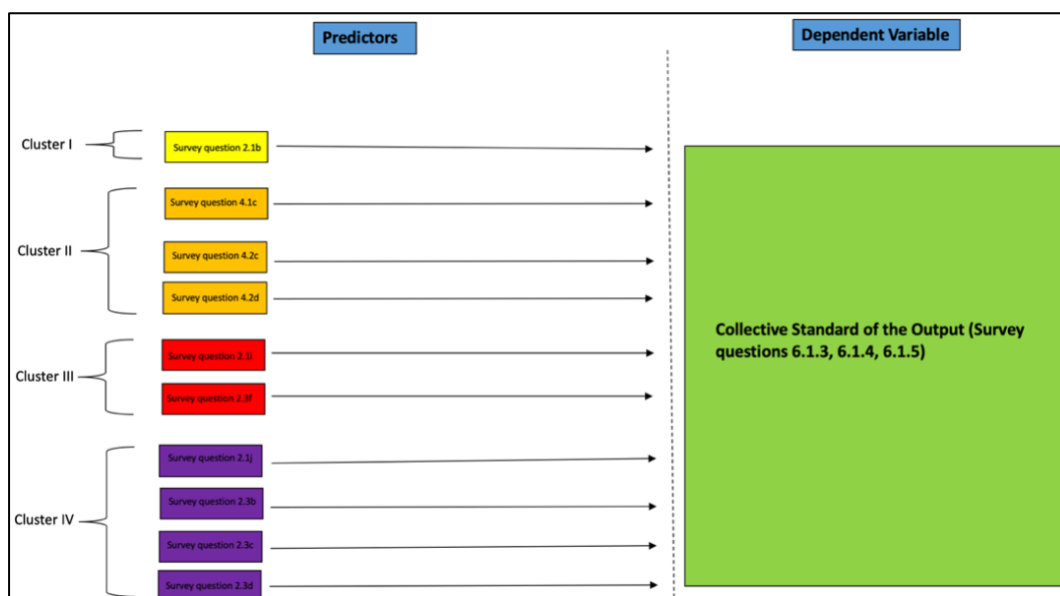


Figure 19: Multiple Regression Analysis

#### 4.4.1 Model Summary Output

Figure 20 reveals the results of the model summary. For a multiple regression analysis, the adjusted R-square rather than the R-square must be considered since more variables can explain the higher score. The model summary indicated that the adjusted R-square was .243. Thus, all the predictors together (independent variables) accounted for 23.40% of the variance in output (dependent variable).

Model Summary <sup>b</sup>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.493 <sup>a</sup>	.243	.162	.78643	.243	2.987	10	93	.003

a. Predictors: (Constant), 2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – d. Deelnemers in dit project mogen ervan uitgaan dat de bedoelingen van de andere deelnemers in principe goed zijn, 4.2 In hoeverre bent u het eens met de volgende stellingen? – c. Extern ingehuurd experts hebben / hadden een substantiële impact op de ontwikkeling van het VKA, c. Kennis – bijv. hoogwaardige wetenschappelijke informatie, studieresultaten, 2.1 Hoe beoordeelt u de kwaliteit van het volgende in uw project? – j. Deelnemers hebben overeenstemming bereikt over een plan van aanpak om samen een VKA op te stellen, 2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – f. Deelnemers binnen uw project waren over het algemeen toegewijd aan het proces (ononderbroken deelname, uitzonderd buitengewone omstandigheden zoals verkiezingen), 4.2 In hoeverre bent u het eens met de volgende stellingen? – b. Intern toegewezen experts hebben bijgedragen aan een transparant proces van VKA-ontwikkeling, 2.1 Hoe beoordeelt u de kwaliteit van het volgende in uw project? – b. Deelnemers hebben / hadden de mogelijkheid om hun opvattingen, doelstellingen en zorgen te uiten, 2.1 Hoe beoordeelt u de kwaliteit van het volgende in uw project? – i. Deelnemers zijn / waren in staat gedeelde doelen en gemeenschappelijke behoeften te identificeren en een gedeeld beeld over het VKA op te bouwen, 2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – c. Deelnemers waarderen en respecteren verschillen, zoals de verschillende gebiedsambities die in het project worden gebracht, 2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – b. Deelnemers in uw project vertrouwen elkaar

b. Dependent Variable: Output

Figure 20: Model Summary Output

#### 4.4.2 ANOVA Test Output

The ANOVA test examines the significance of the regression model.

Figure 14 indicates that the significance (Sig.) was .003. The *p*-value for a model to be significant must be less than .05. Therefore, the overall regression model was significant in this case. Thus, the combined predictors significantly impacted the dependent variable.

Model Summary <sup>b</sup>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.493 <sup>a</sup>	.243	.162	.78643	.243	2.987	10	93	.003

Figure 21: ANOVA test output

#### 4.4.3 Coefficient Output Table

The model summary and ANOVA test both provided the insight that the overall regression model was significant. Finally, the coefficient table showed whether each individual predictor was significant.

This highlights that two predictors were significant ( $p \leq .05$ ):

- **Survey Question 4.2b:** “The internal appointed experts substantially impacted the development of the preferred alternative” ( $p \leq .036$ ).
- **Survey Question 2.3c:** “Participants appreciate and respect differences such as including ambitions of the area in the project” ( $p \leq .029$ ).

Another value requiring consideration was the standardized beta coefficient. This value compares the strength of the effect of each individual independent variable on the dependent variable (Glen, 2016). For Survey Question 4.2b, the beta value was  $-.261$ . Thus, one change in the standard deviation resulted in a decrease of  $-.261$  in the dependent variable. The same applied to Survey Question 2.3c with a beta value of  $-.327$ .

Coefficients <sup>a</sup>											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.024	.604		8.319	<.001					
	2.1 Hoe beoordeelt u de kwaliteit van het volgende in uw project? – b. Deelnemers hebben / hadden de mogelijkheid om hun opvattingen, doelstellingen en zorgen te uiten	-.133	.126	-.132	-1.053	.295	-.284	-.109	-.095	.520	1.924
	c. Kennis – bijv. hoogwaardige wetenschappelijke informatie, studieresultaten	-.017	.122	-.016	-.138	.890	-.247	-.014	-.012	.593	1.686
	4.2 In hoeverre bent u het eens met de volgende stellingen? – b. Intern toegewezen experts hebben bijgedragen aan een transparant proces van VKA-ontwikkeling	-.239	.112	-.261	-2.127	.036	-.303	-.215	-.192	.539	1.857
	4.2 In hoeverre bent u het eens met de volgende stellingen? – c. Extern ingehuurde experts hebben / hadden een substantiele impact op de ontwikkeling van het VKA	.089	.097	.106	.916	.362	-.105	.095	.083	.613	1.632
	2.1 Hoe beoordeelt u de kwaliteit van het volgende in uw project? – l. Deelnemers zijn / waren in staat gedeelde doelen en gemeenschappelijke behoeften te identificeren en een gedeeld beeld over het VKA op te bouwen	-.038	.110	-.043	-.343	.732	-.274	-.036	-.031	.529	1.889
	2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – f. Deelnemers binnen uw project waren over het algemeen toegewijd aan het proces (ononderbroken deelname, uitgezonderd buitengewone omstandigheden zoals verkiezingen)	.156	.120	.157	1.300	.197	-.160	.134	.117	.556	1.800
	2.1 Hoe beoordeelt u de kwaliteit van het volgende in uw project? – j. Deelnemers hebben overeenstemming bereikt over een plan van aanpak om samen een VKA op te stellen	-.112	.086	-.157	-1.303	.196	-.237	-.134	-.118	.564	1.774

2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – b. Deelnemers in uw project vertrouwen elkaar	-.094	.121	-.117	-.778	.439	-.254	-.080	-.070	.358	2.792
2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – c. Deelnemers waarderen en respecteren verschillen, zoals de verschillende gebiedsambities die in het project worden gebracht	-.286	.129	-.327	-2.217	.029	-.380	-.224	-.200	.373	2.680
2.3 Geef hieronder aan in hoeverre u het eens bent met de volgende stelling – d. Deelnemers in dit project mogen ervan uitgaan dat de bedoelingen van de andere deelnemers in principe goed zijn	.279	.162	.253	1.722	.088	-.175	.176	.155	.376	2.660
a. Dependent Variable: Output										

Figure 22: The Coefficient Table

## 4.5 Environmental Managers

The quantitative analysis indicated that internal experts may have, for some reason(s), a significant effect on supporting public participants influencing the preferred alternative. In the context of the DFPP projects, these types of internal experts can be referred to as environmental managers (*omgevingsmanagers*).

The responsibility of an environmental manager can be described as being the linking factor between the area and project. However, the environmental managers appeared to have differing ideas about their responsibilities. One mentioned “the involvement of all stakeholders affecting the project” (e.g., internal colleges and directors). This may also mean searching the cables and pipes within the soil layer, being responsible for land acquisition, and coordinating with other governments about cultural history and archeology. Some area managers argue that their goal is to achieve acceptance by the citizens in the area (Fliervoet et al., 2019).

For the environmental managers, the relevance of involving public participants in the DMP might be the inclusion of concerns and interests for an integral design. However, one critical note might be that including public participants depends on the project and location. Moreover, not all environmental managers appear convinced about applying public participation to dike reinforcement projects. The strict conditions of dike reinforcement are challenging to combine with the public’s wishes when allowing increased involvement (Fliervoet et al., 2019).

Nonetheless, as mentioned earlier, the involvement of public participation became more popular over time. In the DFPP projects, some directors wanted to empower citizens more by co-deciding with them in the future: “We are going to a more collaborative style, but now it’s still a participative style.” However, this viewpoint was not shared by the environmental managers (Fliervoet et al., 2019). Nevertheless, the *Omgevingswet* (Environmental Act) will soon be initiated. Hence, whether experts, directors, and other stakeholders agree, it will become obligatory to involve citizens in the early stages of a DMP. Thus, the relevance of how to involve them is increasing.

This development is explained by Hurlbert and Gupta (2015), who argued that the problem is determining what can be achieved by participation. Problems can be categorized based on the degree of structuring (Hurlbert & Gupta, 2015).

First, there are structured problems, meaning that there is agreement about both value and knowledge. This can be, for instance, road maintenance; everyone considers it important, and sufficient knowledge is available to maintain it. Conversely, there are also unstructured problems, meaning that there is disagreement about both the values and available knowledge. An example might be climate adaptation. The chance to reach a consensus is small, and its values and norms can be debated (Hurlbert & Gupta, 2015). Finally, there are two types of semi-structured problems; there is disagreement about values or the available knowledge, but not both. An example is combatting diseases (the societal value is clear, but there is much scientific uncertainty). Another example is vaccines, about which there is much scientific knowledge but much societal debate. Where there is much societal division about a problem, participation and debate might be useful in reaching agreement (Hurlbert & Gupta, 2015).

Hurlbert and Gupta (2015) stated that the form of involving public participants can be distinguished in different forms. There is public communication, meaning that information is conveyed from the decision-maker to the public. However, the information flow is one-way, so there is no public involvement per se in the sense that public feedback is not required or specifically sought.

When the public aims to provide information, there are no specified a priori mechanisms to address this at any level beyond simply recording the information (Hurlbert & Gupta, 2015).

Another form is public consultation. Here, the information is transmitted from public participants to the decision-makers of the initiative. Significantly, there is no formal dialogue between the public participants and the decision-makers. The information gained from the public participants is believed to represent currently held opinions on the topic in question (Fliervoet et al., 2019).

In public participation, information is exchanged between public participants and decision-makers. There is some degree of dialogue that occurs in the process (usually in a group setting), which may involve representatives of both parties in different proportions (depending on the mechanisms concerned) or only representatives of the public who receive additional information from the sponsors before responding. The act of dialogue and negotiation transforms opinions within both parties (sponsors and public participants; Fliervoet et al., 2019).

One of the environmental managers argued that the method of working with public participants could be examined through two sets of criteria: (1) emotions or attachment to the area and (2) active clubs. Fliervoet et al. (2019) mentioned five forms of involving public participants. First, there are information meetings. The goal of these is to involve public participants in the process and distribute forms for subsequent meetings. The informal moments during these meetings appear to be appreciated by the environmental managers. These include the so-called kitchen conversations. These enable the environmental managers to have personal conversations, identify the specific bottlenecks, and determine whether space exists to adapt their plan. However, this process is considered extremely time-consuming and emotional (Fliervoet et al., 2019).

Another approach is the application of consultation boards in projects. These boards comprise various members, including decision-makers, experts, and public participants. However, area managers experienced this as complex: "Members need to see the whole picture, instead of directly looking at their own interests alone." According to the environmental managers, the motive for people to participate in this is that "they have a head start compared to the rest of the group" (Fliervoet et al., 2019, p.19).

Another option is *dike atelier* or sketch sessions. These gatherings aim for a higher level of participation, such as thinking along with the design. Environmental managers experience this with smaller groups, which may lead to the appropriate conversations. Finally, there are online platforms. The goal is to approach and expand the involvement of age groups between 25 and 50 years: "These target groups are very busy with private matters, e.g., sporting, children, and work. So, it is not possible to plan fixed moments; therefore, you need to create something more flexible." However, the challenge is to invite citizens to join the online platform. Therefore, these platforms must be actively promoted. The information must also be easy to read. If the text takes 10 minutes to read, people will drop out (Fliervoet et al., 2019).

Many possibilities exist where environmental managers might contribute to incorporating public participants' influence on the preferred alternative. One of these results might be to gain acceptance and therefore support from the public participants. However, this appears to be a time-consuming process for creating acceptance for the project. Another result is related to enlarging the involvement of public participants (e.g., to co-think) and mapping additional local knowledge of the area to gain a higher quality result (Fliervoet et al., 2019).

Next to the substantive goals, the process and relationship goals may also become outcomes. According to the environmental managers, this concerns the following: "Participation does not only

serve as the outcome but is also about being genuinely heard.” Another environmental manager mentioned “the sense that the water board is there for the citizens; that is the foundation” (Fliervoet et al., 2019, p.24).

The final outcome might be education and learning of participants or sponsors, as other methods of stating that participants and sponsors have effectively processed information, while obtaining public input equates to eliciting information from participants (Hurlbert & Gupta, 2015).



## 5. Case study: IJsseldijk Zwolle-Olst

In this chapter, the case study on IJsseldijk Zwolle-Olst is analyzed. First, a description of the research area follows. The exploration phase with its implications and motive to reinforce the IJsseldijk Zwolle-Olst, the features of the landscape between Zwolle and Olst, and how this phase was organized by the water board are then explained.

### 5.1 Introduction

The IJsseldijk Zwolle-Olst is located between the village of Olst (Haereweg) and Zwolle city (Spooldersluis). This dike trajectory comprises urban and rural areas, including many towns and local communities. Moreover, this area has a diverse range of ecological, landscape, and cultural elements (Linde et al., 2019). This dike trajectory may serve as the boundary between the outer dike area (floodplains and some land) and the inner dike area (land). The outer dike area is mainly located within the so-called “Natura 2000” sites. The Natura 2000 is a European network of protected nature areas. In these types of areas, certain species of animals, plants, and their habitats are under the protection of this organization (Ministerie van Landbouw, Natuur en Voedselkwaliteit, n.d.-a). However, the inner dike area features agricultural land with farms and villages. On the top of the Zwolle-Olst dike, the provincial road N337 from and to Zwolle covers half of the dike trajectory (Linde et al., 2019).

In 2011, the IJsseldijk between Zwolle and Olst was examined through a safety analysis. This resulted in the rejection of 28.4 km of dike trajectory (28.9 km in total). More specifically, the dike revetment (grass revetment) is not strong enough to withstand the hydraulic pressure of the IJssel river. It also appears that a large part of the dike is at risk due to a phenomenon called piping. During a high water level situation, the river water infiltrates the soil beneath the dike. This then flows through this soil toward the inner dike area. There are already some issues concerning this. Every year, at multiple locations, water from the river emerges within the inner dike area through this event (Linde et al., 2019).



Figure 23: IJsseldijk Zwolle-Olst (Linde et al., 2019)

Thus, the need arose to reinforce the IJsseldijk Zwolle-Olst. Therefore, this was included in the DFPP. It started with the exploration phase in 2017 (Linde et al., 2019). In this phase, the water board attempted to approach and involve the stakeholders (citizens, property owners, firms, and interest groups). These stakeholders were asked to formulate their own stakes, develop initiatives, and respond to the further plans and proposals originating from the water board. Their goal was to discover concerns and opportunities consistent with the project conditions and local knowledge contributing to the plan's qualities, making everyone aware of water safety and aiming to add societal value (Linde et al., 2019).

During the exploration phase, the following steps occurred (Linde et al., 2019):

- **A:** Explanation and conversation about the assignment (2017)
- **B:** Exploration of all the possible alternatives (2017)
- **C:** Shift from possible solutions to favorable alternatives (2018)
- **D:** Shift from favorable alternatives to concept alternatives (2018)
- **E:** Consultancy concept-preferred alternative (2019)

Eventually, the following types of parties were distinguished:

#### *The Wide Environment (brede omgeving)*

The wide environment comprises residents behind the dike and other interested participants from society. This group is involved in walk-in meetings, consultancy moments, and individual conversations (Linde et al., 2019).

#### *The Property Owners*

The property owners can be categorized as residents, tenants, and farmers with their own private parcels. They have an important role during this project since space interventions may occur due to the dike reinforcement (Linde et al., 2019).

#### *Dijkdenkers*

The Dijkdenkers are residents of the project area who want to be particularly involved during this project. This group participates based on their individual interests and stakes (Linde et al., 2019).

#### *Environmental Platform (Omgevingsplatform)*

The Environmental Platform is a group representing societal stakeholders (associations) who actively co-think during important (process) steps during the exploration phase. This platform serves as a consultative board for the water board to translate, store, and include the considerations during the project (Linde et al., 2019).

#### *The Administrative Guiding Group and Official Guiding Group*

Rijkswaterstaat, the municipalities of Zwolle and Olst-Wijhe, the Overijssel Province, and Staatsbosbeheer (together with the Administrative Guiding Group [BBG]) are the most important government partners in this project.

The BBG advises the water board regarding selecting the favorable and preferred alternatives. Additionally, the Official Guiding Group (ABG) is tasked with the substantive tuning between the organizations and the preparations concerning the linking opportunities (Linde et al., 2019).

After this exploration phase, the participating government (water board, municipalities, Rijkswaterstaat, and Staatsbosbeheer), consultancy firms, and public participants all worked together toward the concept-preferred alternative. As Figure 17 shows the preferred alternative is not merely

an overall solution for the entire dike trajectory but comprises many alternatives (solutions) to properly reinforce each part of the dike trajectory (Linde et al., 2019).

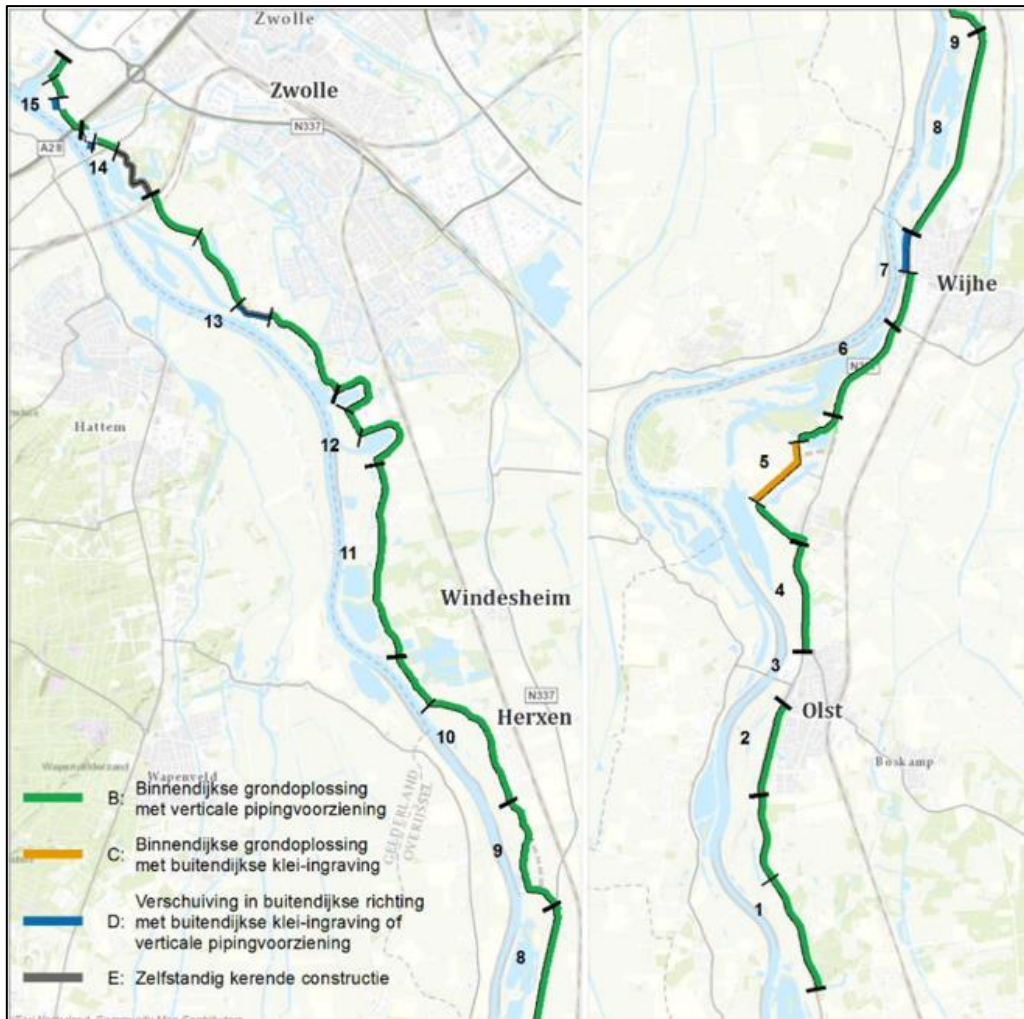


Figure 24: The Concept-Preferred Alternative

Type of Alternative	Description
<b>Alternative B</b>	Inner dike reinforcement with vertical piping supply
<b>Alternative C</b>	Inner dike reinforcement with outer dike clay burying
<b>Alternative D</b>	Repositioning toward outer dike direction with vertical piping supply or outer dike clay burying
<b>Alternative E</b>	Self-turning construction

Table 6: Legend of the Concept-Preferred Alternative

## 5.2 Results of the Case Study

The CM was applied to the case study. More specifically, the four clusters are as follows: (1) Representation of views, ideas, and concerns, (2) incorporation of knowledge, (3) deliberation, and (4) internal legitimacy are further explored in this section. This case study aimed to determine which variables might be identified as characteristics of public participants that impact the preferred alternative in the IJsseldijk Zwolle-Olst dike reinforcement project. However, not all the variables were indicated when the CM was tested in this case study. As mentioned earlier, this case study is an enlargement of the quantitative analysis and aimed to discover how internal experts might have influenced this phenomenon.

### Cluster 1: Representation of Views, Ideas, and Concerns

The first cluster argues the opportunity for non-state actors, such as public participants, to express their own views, ideas, and concerns during the dike reinforcement project. The variables included in this cluster are “opening up DMPs to environmental concerns” and “definition.”

#### ***Opening Up DMPs to Environmental Concerns***

Opening up DMPs to environmental concerns might be expressed in this dike reinforcement project. Therefore, the water board organized several walk-in meetings throughout 2017, 2018, and 2019. The first part of the dike reinforcement project occurred in January 2017. This was achieved through an initial meeting to which various participants were invited. However, specific attention from the water board went to the private property owners living within a radius of 100 m from the dike trajectory. Consequently, they received a personal invitation to attend this initial meeting (Linde et al., 2019).

This was the first step for the water board, as they also planned to enable these (non-state) participants to be particularly involved during this dike reinforcement project in their roles as Dijkdenkers. These Dijkdenkers are a group of people who want to co-think with the water board about the dike reinforcement. Almost half of the Dijkdenkers are property owners and resident on or nearby the dike. Most of the Dijkdenkers stated during the walk-in meeting in 2017 that they will co-think on an individual basis and not represent the collective stakes or values. The number of Dijkdenkers was around 100 during this exploration phase (Linde et al., 2019).

Interviewee 2 further specified that this invitation inviting public participants was included in an article in the local newspaper. This was a call for everyone who wanted to be involved and co-think as a Dijkdenker. Additionally, the water board asked the involved interest organizations (agricultural, nature, and neighborhood organizations) whether one of them would like to represent their organization as a member of the Environmental Platform.

## **Discovery**

This dike reinforcement project might identify and analyze relevant and significant information and the implications of the current IJsseldijk Zwolle-Olst.

The report by Linde et al. (2019) states that everyone with an interest or involvement in the dike reinforcement project was invited to this initial meeting at the start of the project. The goal of this first meeting was to explain the reason and need to reinforce the dike. At that time, the project planning was also presented (Linde et al., 2019).

During the interview, Interviewee 3 explained that during these walk-in meetings, the goal was to determine “what will happen?” and “what needs to be done and why?” Interviewee 2 noted that it was important to first explain the implications and the need to reinforce the dike and subsequently explore these topics more deeply. Interviewee 3 further added that environmental managers consistently started sharing relevant information by presenting “how far are we?” and “what are we going to do?”

Here, variable discovery might be revealed if the environmental managers share or reveal their views, ideas, and concerns. However, public participants appear to have different individual or shared interests, concerns, and views. In total, the IJsseldijk Zwolle-Olst is proliferated in 15 different dike trajectories. However, in five of 15, there were opposing views, ideas, and concerns among the public participants. For instance, in dike trajectory 10 (Herxen), the alternative Plan B for reinforcing the dike led to resistance by many residents due to space interventions concerning the inner dike private gardens. Conversely, the Dijkdenkers favored the same alternative since it preserved nature within the inner and outer dike areas (Linde et al., 2019). Another example concerns dike trajectory 11 (Windesheim Noord and Harculo), where the dike reinforcement resulted in an intervention in inner dike space, at the costs of Elezenbos, private gardens, and obstructed vision for some of the residents at the southern part of the dike (inner dike area). However, at the northern part of this dike trajectory (with no proposed dike elevation), all the residents accepted the alternative (Linde et al., 2019).

A final example occurred at dike trajectory 13 (Schellerdijk and Oldeneel), in which their alternative involved space intervention within the private parcels and nature (inner dike area). Additionally, the planned dike elevation at some residences would obstruct their views. Conversely, the Dijkdenkers from Zwolle-Zuid and the outer dike residence favored this alternative. The reason appears to be that the impact on the nature area and residents’ space was minimal (outer dike area; Linde et al., 2019).

Interviewee 3 illuminated this difference in views and concerns. When the water board and public participants discussed different themes during the meetings, Interviewee 3 noted that “if it is about recreation, then they are very involved”, and “people who are living close to the dike think differently than people living further away.”

This difference might be explained by the inhabitants’ properties being positioned next to and in the dike. Interviewee 1 stated, “one of my properties is located within the dike body”, and “it stands horribly in the way of the dike reinforcement project ... So, my property is also attached for juridical and economic reasons.” Interviewee 3 further revealed that “the inhabitants want the dike reinforcement going outwards and the participants with nature interest wish to go inwards to enlarge floodplains.” Despite that, it appears that within most of the dike trajectory, most public participants appeared to have views and ideas consistent with the water board since their private properties and other valued landscapes (nature, culture, and recreation) close to the dike were minimally or not affected.

## Cluster II: Incorporation of Knowledge

The second cluster focused on how knowledge is shared between the public participants and decision-makers. For this cluster, the variables “knowledge” and “lay and local knowledge” were incorporated.

### ***Knowledge***

Here, the variable “knowledge” can be identified, as the water board aims to transmit high-quality knowledge to the involved public participants during the dike reinforcement project. Specifically, the water board organized master classes about water safety and m.e.r. systematics on several occasions for the Dijkdenkers and other involved public participants.

The Dijkdenkers also had the opportunity to discuss the interim results of the environmental impact research and the alternative measures with the consultancy firm’s specialist concerning the approach to the research (November/December 2018). Around February 2019, the research results of the exploration phase about the theme’s environmental impact assessment (MER), costs, and technology were also discussed with the Dijkdenkers (Krol, 2019).

### ***Lay and Local Knowledge***

The above examples illustrate the variable “lay and local knowledge” due to the direct involvement of actors with (environmentally) relevant knowledge during DMPs. During the project, the Dijkdenkers and managing board brought their local knowledge about the project area for the *Ruimtelijke Kwaliteitskader* and *Hydrobiografie*. Additionally, they aimed to discover the possible linking opportunities with the management board (Krol, 2019).

Interviewee 3 added to this that “the Dijkdenkers were involved in the very beginning. They could bring their local knowledge and other input, the advantages and disadvantages of certain alternatives during that time.”

One of the goals of these meetings was to collect local knowledge. Interviewee 3 further argued that “these people certainly know something, especially the interest groups, but also the inhabitants ... in the end you may use their local knowledge for considering different interests ... To know what their stakes/interests are and what we are going to do with them.”

### Cluster III: Deliberation

Cluster III, “deliberation,” emphasizes the genuine effort taken by public participants to discuss the preferred alternative with other (non-state) actors. Variables integrated into this cluster are (1) communication and bargaining, (2) commitment, (3) deliberative process, and (4) definition.

#### ***Commitment***

This dike reinforcement project involves the variable “commitment.” During the exploration phase of the IJsseldijk Zwolle-Olst, actors with different backgrounds and organizations were involved in creating a concept-preferred alternative. As mentioned previously, the IJsseldijk Zwolle-Olst reinforcement project is part of the greater DFPP. Therefore, other government parties with different backgrounds (besides the water board) are part of the managing board, as well as Rijkswaterstaat, Staatsbosbeheer, Overijssel Province, and the municipalities of Zwolle and Olst-Wijhe. Interviewee 2 argued that in the past, only the engineering aspect, such as the river discharge norm to compute the dike body, was necessary to complete a dike reinforcement project. Elaborating on this, Interviewee 2 noted that the economic value of the land behind the dike is currently rising, and much participation accompanies this.

Moreover, many other groups are involved in this dike reinforcement project, ranging from interest organizations (nature, neighborhood, agriculture, and recreation), Dijkdenkers, and property owners to some firms within this project area (Linde et al., 2019). To summarize, these groups are crossing their own organizational, sectoral, and jurisdictional boundaries to create a concept-preferred alternative. Their reasons for crossing might vary, such as the rising economic value of the land, private properties hindering the project, and the desire to gain more transparency about the process.

#### ***Deliberative Process***

A variable that might apply to this dike reinforcement project is “deliberative process.” The overall organization of the exploration phase to categorize participants, such as the wide environment, property owners, Dijkdenkers, Environmental Platform, water board task team, and ABG and BBG, appears to consolidate different roles with their own rules, communicate in a reasoned manner, and exchange problem-solving information in a structured way.

During the interviews, Interviewee 3 stated that the water board is responsible for communicating and informing the public participants during the dike reinforcement project. In the exploration phase, the dike reinforcement project was organized in an overarching way. According to Interviewee 3, this meant that “there were meetings organized for the entire southern and northern area of the dike trajectory.”

The exploration phase has been structured and organized with a different set of rules, tasks, and responsibilities for each involved stakeholder party. These conditions result in the Dijkdenkers and property owners having the opportunity to co-think about the project. Nonetheless, the Dijkdenkers can co-work with it, whereas the property owners can only be informed about the dike reinforcement project. Although the Environmental Platform is tasked to co-think and co-work during the project, they may also advise the water board.

Interviewees 2 and 3 stated that the Dijkdenkers have no authority to decide. Interviewee 3 stated that “the most important game rule is that they are allowed to bring some input, but the water board will decide in the end.”

However, the BBG and ABG are boarding groups comprising members such as Staatsbosbeheer and Overijssel Province. Unlike the other parties, they have the task of co-deciding with the water board since this project is also under commission from the other government parties (Linde et al., 2019).

According to the research by Linde et al. (2019), this process may be distinguished by the following steps, in which all participants endeavor to communicate candidly and reasonably and exchange problem-solving information in a structured and oriented way:

#### *Step A/B Dialogue about the Assignment and Identification of Possible Solutions*

In April 2017, the Dijkdenkers had their first meeting to co-think about the utility and need for reinforcing the dike and the possible solutions. Around June 2017, the Dijkdenkers and managing partner brought in their local knowledge and stories for the *Ruimtelijke Kwaliteitskader* and the *Hydrobiografie* (Linde et al., 2019).

#### *Step C: From Possible Solutions to Favorable Alternatives*

In September 2017, the Dijkdenkers examined the possible alternatives for dike reinforcement and further discussed and complemented these. The proposed favorable alternatives were discussed with the Dijkdenkers and Environmental Platform (January 2018).

Around January/February 2018, the wide environment was informed about the proposed favorable alternatives through four walk-in meetings. During these meetings, the participants could ask whether they missed something in the proposal. Eventually, in February 2018, the Environmental Platform gave positive advice about the proposed favorable alternatives (Linde et al., 2019).

#### *Step D: From Favorable Alternatives to the Concept-Preferred Alternative*

In April 2018, the Dijkdenkers brought in their local knowledge again as an input to the alternative research. Furthermore, they designed and aimed to integrate the favorable alternatives into the landscape during three rounds of design ateliers. This was conducted with landscape architects, representatives of the Environmental Platform, Dijkdenkers, the managing board, and a consultancy firm. Moreover, both the water board and property owners organized additional meetings. In May 2018, a residence meeting was held in Spoolde about the reaction to the “Notitie Reikwijdte en Detailniveau” and the potential linking opportunities in Spoolde. Later in October 2018, there was a meeting with the property owners about the size (measurements) of the favorable alternatives. Property owners gave their feedback about the results of the preferred alternative (Linde et al., 2019).

#### *Step E: Advised Concept-Preferred Alternative (March to May 2019)*

From March to May 2019, everyone was invited by the water board to respond (read and react) to the concept-preferred alternative during the walk-in meetings. Eventually, the incoming reactions



were bundled and answered by the water board within the reaction note. After the consultancy period, the water board asked the Environmental Platform and the managing guidance board for advice about the concept-preferred alternative (Linde et al., 2019).

Since a deliberative process was identified in this case, the variable “communication and bargaining” was barely indicated. The entire exploration phase was organized to be relatively structured, with each group of public participants having their own role as Dijkdenker, property owner, or member of the Environmental Platform. Information appeared to be available stating that conditions were created in which public participants were involved as negotiating parties and therefore contributed to this (Linde et al., 2019).

Figure 18 depicts the organization of the dike reinforcement project:

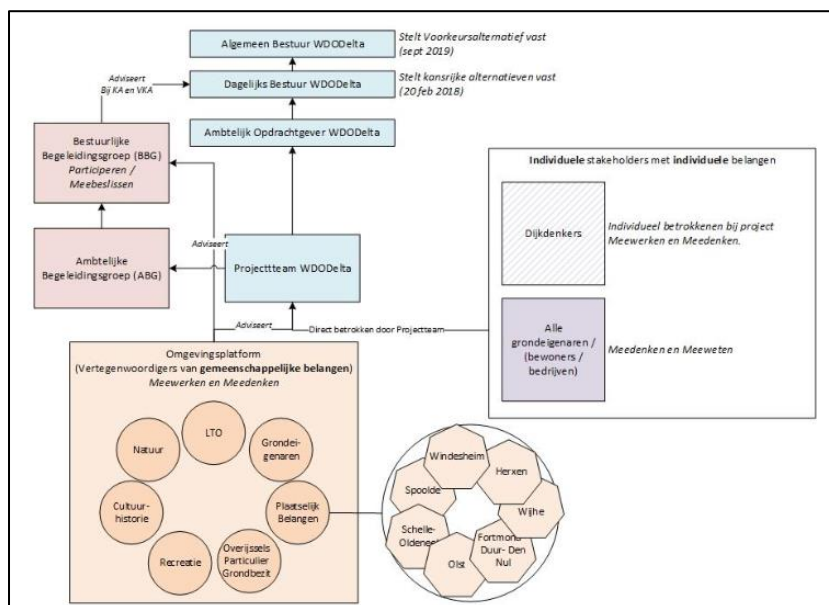


Figure 18: The Governance of the IJsseldijk Zwolle-Olst Dike Reinforcement Project

## Definition

Finally, the variable “definition” was described as the continuous effort to build shared meaning by articulating a common purpose and objectives (Emerson et al., 2012). During this dike reinforcement project, the variable “definition” might have been indicated as continuously aiming to build shared meaning by articulating and understanding the need to reinforce the dike.

In rtvOost’s news article, Martin Knol (Dijkdenker) is delighted with the reinforcement project. He lives behind the dike in Harculo. He says, “If the vertical sheet is executed, then all the residents in this area will remain intact” (*Conceptplan IJsseldijk*, 2019, 21:55). Additionally, according to Director Stephan Rientjes of LTO Noord Salland, “the presented variant is the less unfavorable option for the agricultural land ... Of course, we cannot hinder this ... Safety is most important; everyone understands that ... But there needs to come an indemnification along with it” (van Rossum, 2019, 09:02).

However, Interviewee 1 viewed this differently, arguing that “in principle, the preferred alternative is a logical choice; there is not so much discussion about it ... Only this location stands in the way,” and “everyone understands it is a difficult problem; everyone wants to improve that ... There is no misunderstanding in this.” Interviewee 1 further stated that “in different phases, you get completely

different stories, and that would make sense to some extent because it is a continuously evolving process with new insights.”

However, all these participants appeared to understand the need to reinforce the dike and therefore might have the same purpose. Nevertheless, it appears that the method of articulating and building shared meaning differs among the public participants.

#### Cluster IV: Internal Legitimacy

The final cluster states that if a feeling of justification by public participants emerges, this may increase their acceptance of the preferred alternative. Hence, the following variables are included: (1) negotiation, mutual gains, and conflict resolution for acceptance, (2) trust, (3) mutual understanding, and (4) procedural fairness.

##### ***Negotiation, Mutual Gains and Conflict Resolution for Acceptance***

In this dike reinforcement project, the variable “negotiation, mutual gains, and conflict resolution” might be recognized. In previously mentioned examples, at some dike trajectories, such as 10 (Herxen), 11 (Windesheim & Harculo), and 13 (Schellerdijk and Oldeneel), reinforcing the dike led to resistance by some residents. On the other hand, other residents and Dijkdenkers had strongly opposing values since the reinforcement toward the inner dike area may preserve the nature value of the outer dike area or face no space intervention or view obstruction. It is possible that in these dike trajectories, no mutual gains are assured between the water board and the public participants. However, according to a report by Krol (2019), this is only the case in three of the 15 dike trajectories of IJsseldijk Zwolle-Olst. Regarding the other dike trajectories, there appeared to be acceptance and hesitation about the alternatives to reinforce the dike.

##### ***Trust and Mutual Understanding***

In this case, the variables “mutual understanding” and “trust” may emerge during this dike reinforcement project. Based on the interviews, these factors might be experienced differently by different public participants.

During the meetings, there appeared to be differences concerning whether a public participant had expertise in these types of fields. Interviewee 3 stated that “educated stakeholders” know what it is about: “It is possible to have better conversations in this way.” Interviewee 3 stated that there were also, besides environmental managers, technical managers. These managers were responsible for the design and could give a technical explanation of it. Interviewee 3 noticed that, sometimes, public participants asked the technical manager difficult questions: “They continued their conversation later on, in order to get mutual understanding of what they are doing.”

Conversely, public participants with no prior education or (technical) background experienced these meetings differently. Interviewee 1 argued that during the meetings, “the shared information was confusing and not convincing, resulting in inhabitants dropping out”, and “the shared information is at some points very detailed and quite confusing.” However, regarding the non-knowledgeable stakeholders, Interviewee 1 stated that “sometimes, there is detailed information available about a small part of the dike trajectory ... But it is difficult to translate all this detailed information into something useful to yourself.” Newig et al. (2018) explained this as a precondition that stakeholders must be sufficiently knowledgeable. Thus, if knowledge input is important to the process, stakeholders who are likely to provide this knowledge should be invited to participate. Curtin and

Meijer (2006) further elaborated that only citizens with (expert) knowledge of the policy subject use the opportunity to read information about policy, the process, and the policy actors. Most people lack the knowledge to use transparency to participate in the policy-making processes (Curtin & Meijer, 2006).

Another issue is how public participants are organized. Interviewee 2 stated that their interest organizations also received signals or questions from their members, which were sent to the water board. Conversely, individual public participants experienced this differently. Interviewee 1 argued that “inhabitants have a lot of questions,” and “the inhabitants are asking questions to the experts, and they want to have a clear answer on it.” Then, Interviewee 1 further stated that “they already made a decision without answering our questions...They gave different answers to the same question, which destroys trust ... There is no follow-up in this, or there is suddenly a new fact, a new thought direction, or the inhabitants are not involved yet, whereas the project team is already ahead.” Interviewee 1 argued, “You need to do it the right way and not make shortcuts.” Elaborating on this, Curtin and Meijer (2006) illuminated this difference, arguing that the information available for the public is generally used by civil society organizations and not by individual citizens. These organizations can represent citizens differently from official representative bodies. In this sense, the input of legitimacy in institutions such as the European Union could be strengthened if citizens understood the participation of civil society groups and perceived this input to be legitimate. However, there are also problems in representation here since the democratic nature of many NGOs is increasingly questioned. Interest groups can misuse the information to pursue specific interests (Curtin & Meijer, 2006).

Additionally, Interviewee 1 mentioned that “you don’t want to know everything in detail,” and “you want to make sure that you get a satisfactory answer.” Interviewee 3 also noticed that property owners “only have one frustration, especially people living close to the dike ... People do have a lot of questions such as, what are you going to do, what is it going to look like at the front of my door?” Interviewee 1 explained that property owners are particularly bound to this reinforcement project since the questions of the inhabitants related to their own entrances.

Interviewee 3 stated that these uncertainties might be strengthened, as “these projects are taking a lot of time ... We started in 2017 and then 2 or 3 more years to the preferred alternative ... And another 2 or 3 years later the definitive design ... In the meantime, inhabitants are waiting and asking questions such as why is it going so slowly?”. Thus, property owners appear to be more insecure concerning what will happen to their properties or living places rather than wanting to follow and understand everything about the dike reinforcement project.

A possible influence on this might be explained by these meetings and involvement occurring during the exploration phase. As mentioned previously, the disadvantage might be that the water board is still determining what the preferred alternative will ultimately look like. Interviewee 3 stated that “the only thing that is difficult is when you have a preferred alternative and it is not worked out yet ... Especially during the exploration phase, it is not possible to give an answer on this, it is very difficult.” Moreover, Interviewee 3 argued that “we are a part of the Dutch Flood Protection Program, and they suggest choosing the less expensive solution, unless it is possible ... This shrinks the input of public participants,” and “within these boundaries you may select or adapt ... That makes the selection of the preferred alternative different, compared to building a wind park ... Then you can genuinely give something back to the people.”

To conclude, as the analysis of this cluster might indicate, the more expertise individuals, public participants, and organized interest groups (civil society organizations) appear to have, the better the

opportunity to understand the situation by seeing the water board as more predictable, dependable, and even worthy of respect, whether or not one agrees with it. Conversely, the non-skilled public participants do not gain this, which hinders mutual understanding and trust. An indicator that might influence low to no mutual understanding and trust is the distance of their residence or other private property nearby or within the dike body, where dike reinforcement is required at the cost of their private space.

## 6. Conclusion and Recommendations

### 6.1 Empirical Conclusion

The process of involving public participation in decision-making has become increasingly important. Within the context of the DFPP, dike reinforcement is crucial to secure the (delta) cities and other places behind flood defenses, such as the primary and secondary dikes. Over the years, cities and other places (especially near the sea and rivers) are becoming more vital to society due to their rising economic value and more people living there. Consequently, this brings a greater level of exposure to people's lives and vital infrastructure within these places. Moreover, the risk of flooding will be amplified by climate change. The government alone does not have the capacity to manage flood risk. Therefore, private actors and citizens should be involved (Hegger et al., 2016).

Consequently, this dike reinforcement project requires intervention in the physical space throughout the Netherlands. However, public participants (residents and members of interest organizations) may have an attachment to these lands. The reasons for this include private property, preserving cultural heritage, nature, and recreation values.

However, across the academic literature, the involvement and potential impact of public participants during decision-making have been broadly discussed, covering different domains such as the environment and politics. Nonetheless, the definition of public participation still appears blurred and, therefore, debatable. Moreover, it appears that how and to what extent these characteristics of public participants impact decision-making remains ambiguous.

Hence, the goal of this master thesis was to discover which characteristics of public participants might be effective in the dike reinforcement projects. Therefore, the following main research question was stated:

*“Which characteristics of public participation impact the preferred alternative in DFPP collaborative projects?”*

Three sub-research questions were answered separately to properly respond to the main research question. The combination of these conclusions answers the main research question. Two other conclusions follow regarding the theory and methods for this research. Finally, a recommendation is provided for practice and further research.

#### **Sub-Research Question 1: According to the literature, how can the impact of public participation be measured in decision-making?**

Two theories were selected and combined into a CM to understand which characteristics of public participation impact the preferred alternative during DFPP collaborative projects. Thus, a framework was established to measure which characteristics of public participation impact the preferred alternative.

As mentioned earlier, this master thesis is a part of a greater Ph.D. study. This research focuses on cross-sector collaboration between different (non-state) actors. Therefore, Emerson et al.'s (2012) theory was used to explain the conditions for collaborative governance during the dike reinforcement project. Emerson et al. (2012) defined collaborative governance as “the process and

structures of public policy decision-making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic sphere to conduct a public purpose that could not otherwise be accomplished” (p. 2). Therefore, Emerson’s theory describes collaborative governance that includes actors with a background in the civic sphere (public participants), which makes this theory relevant to this research. Moreover, since this thesis is an enlargement of the Ph.D. research, it might be logical to use this theory to further specify collaborative governance to measure which characteristics might be effective for public participation regarding the preferred alternative.

Additionally, Newig et al.’s (2018) theory was used. This features the relationship between governance modes and the (environmental) output standard. Furthermore, it specifies and clarifies not only the potential relationship between participation and (environmental) outcomes but also whether it leads to a positive or negative result (Newig et al., 2018). Finally, Emerson et al. (2012) and Newig et al. (2018) both suggested that their theories might be adaptable to other expertise fields, such as public health and spatial planning.

Eventually, the theories of Emerson et al. (2012) and Newig et al. (2018) were combined to create a CM for this research. This is primarily based on Newig et al.’s (2018) scheme, which now comprises four different clusters: (1) representation of views, ideas, and concerns, (2) incorporation of knowledge, (3) deliberation, and (4) internal legitimacy.

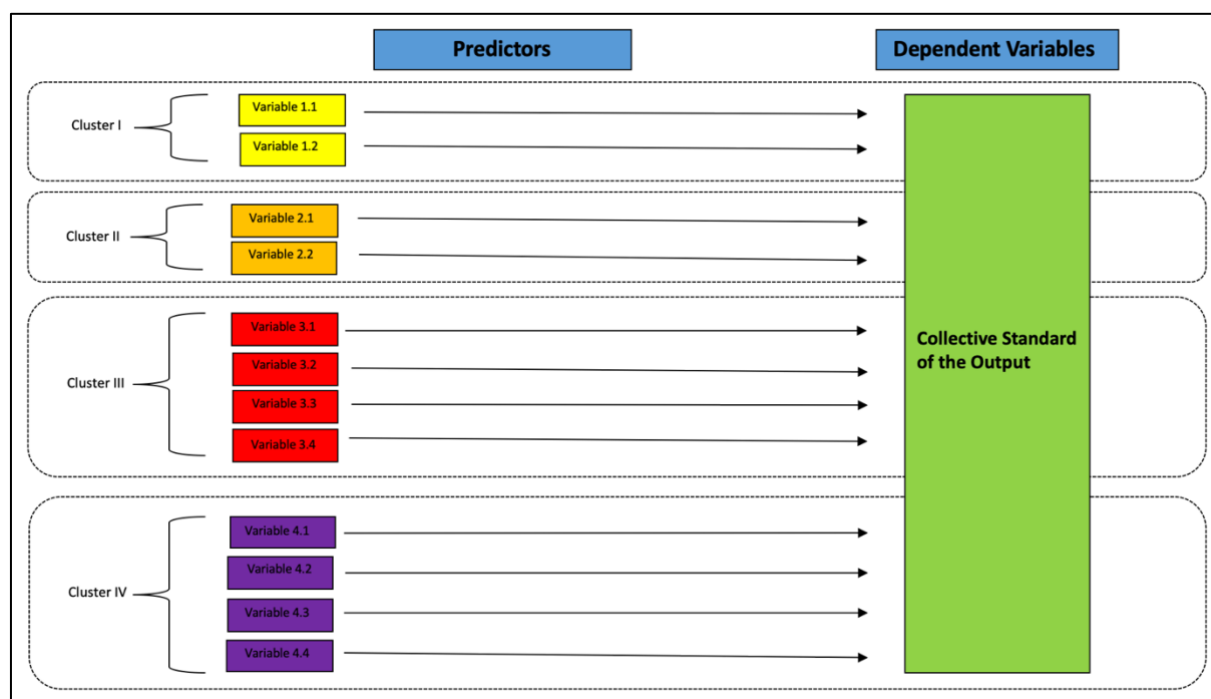


Figure 26: The Conceptual Model

The clusters include variables of both Newig et al. (2018) and Emerson et al. (2012), which feature the characteristics of public participants impacting the preferred alternative during the dike reinforcement projects. Furthermore, the linkages in the CM may serve as the causal relationship of the characteristics (variables) with the outcome (preferred alternative). Like the Newig et al. (2018) framework of causal mechanisms, this allows testing of whether an outcome is ultimately negative or positive.

**Sub-Research Question 2: Based on the literature, which factors might be indicated for public participants impacting the preferred alternatives?**

After constructing the CM, the independent variables (characteristics) were tested. This was conducted using quantitative analysis. Moreover, there was already an SPSS survey dataset available for this research, including multiple DFFP collaborative projects. The SPSS program was used to conduct the multi regression analysis.

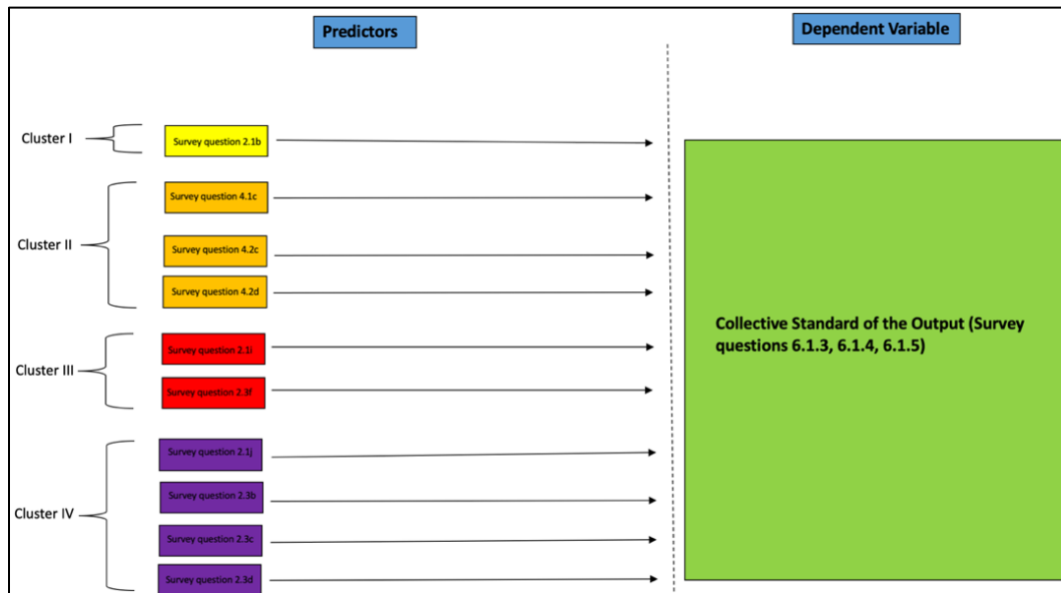


Figure 27: The Multiple Regression Analysis

Eventually, two independent variables (survey questions) were significant and therefore sufficiently enough to predict the dependent variable:

- **Survey Question 4.2b:** “Internal appointed experts substantially impacted the development of the preferred alternative” ( $p \leq .036$ ).
- **Survey Question 2.3c:** “Participants appreciate and respect differences such as including ambitions of the area in the project” ( $p \leq .029$ ).

Both independent variables meet the  $p$ -value  $p \leq .05$ . However, while the quantitative analysis indicated that these survey questions might significantly influence the dependent variable, it still might not explain how these survey questions contribute to the characteristics of public participants impacting the preferred alternative.

A case study follows to explore this (which is further discussed in the following paragraph). In addition, as mentioned before, the IJsseldijk Zwolle-Olst was selected as a case study.

**Sub-Research Question 3: How do these factors influence public participants impacting the preferred alternative in the IJsseldijk Zwolle-Olst dike reinforcement project?**

The final sub-research question was answered through a case study. Therefore, the IJsseldijk Zwolle-Olst dike reinforcement project was selected to discover how the appointed internal experts have influenced the characteristics of public participants impacting the preferred alternative of the dike reinforcement project IJsseldijk Zwolle-Olst. The CM was used as a theoretical lens to analyze this phenomenon. The case study indicated that all clusters were recognized, including most of their variables (characteristics).

First, from Cluster I, “representation of views, ideas, and concerns,” the variable “opening up DMPs to environmental concerns” was identified, as the water board invited non-state actors, such as residents, members of interest organizations, and other public participants, to the meetings. Additionally, the variable “discovery” was indicated, as the environmental managers (internal experts) might have addressed the identification, analysis, and implications through informing public participants about the need to reinforce the IJsseldijk Zwolle-Olst. Moreover, at some dike trajectories (9, 10, 11, 13, and 15), there were opposing views, ideas, and concerns among the public participants about the dike reinforcement. Some resisted the dike reinforcement measures, whereas the other side supported them. Thus, depending on whether there were a few or no consequences for public participants’ private property or nature, cultural, and recreational values, the response might be positive or vice versa.

Second, all the variables of Cluster II (incorporation of knowledge) were also identified. The variable “knowledge” might be expressed, as the environmental managers (appointed internal experts) had organized masterclasses about water safety and m.e.r. systematics. Additionally, the Dijkdenkers gained the opportunity to discuss the interim results of different studies with the environmental managers and other specialists (not to be confused with co-deciding). Regarding the variable “lay and local knowledge,” the Dijkdenkers could insert their local knowledge at several moments during the dike reinforcement project, such as by contributing to the alternatives.

Third, Cluster III (deliberation) also contributed to explaining the influence of environmental managers. Regarding the variable “commitment,” besides the water board, the managing board comprises different parties, such as Staatbosbeheer and Rijkswaterstaat. The environmental managers brought different types of groups together to the meetings (e.g., residents, interest organizations, and other public participants), crossing their own boundaries to create a concept-preferred alternative.

The variable “deliberative process” might also be identified since the water board had classified the different groups in their unique roles with their specific rules, tasks, and responsibilities. The environmental managers contributed to this by explaining and informing during the walk-in meetings the roles of the public participants, whether they became a Dijkdenker, property owner, or stakeholder. Consequently, the environmental managers had different methods of communicating specifically with Dijkdenkers, property owners, and other public participants candidly and reasonably regarding the concept-preferred alternative.

Concerning the variable “definition,” the environmental managers appeared to build shared meaning by articulating a common purpose and objectives. This became clear from three public participants from different dike trajectories. However, public participants might have differing opinions regarding how to solve the issue in question.



The final and fourth cluster may also be identified during this case study. The variable “negotiation, mutual gains, and conflict resolution for acceptance” states that different public participants hold opposing values regarding the alternatives in some of the dike trajectories. How environmental managers have influenced this might differ based on certain indicators.

One of these indicators might depend on the expertise level of public participants in this type of project. This may lead to mutual understanding. Another indicator is whether public participants living close to the dike have specific interests at stake (nature, cultural heritage, or recreational functions). Moreover, the extent of the shared information about the dike reinforcement project process might continuously evolve. Thus, a public participant gaining expertise and living or having a private property close to or in a dike body may lead to better mutual understanding, and therefore ultimately trust or the lack of it.

### **Answering the Main Research Question**

To conclude, the CM could have explained that all the four clusters with their variables would allow public participants to impact the preferred alternative, except for the variables “communication and bargaining” (Cluster III) and “procedural fairness” (Cluster IV). An important factor is the identification of appointed internal experts influencing this phenomenon. This has been discovered through conducting a multiple regression analysis. Furthermore, exploring this phenomenon further during the IJsseldijk Zwolle-Olst case study enabled the understanding that the environmental managers (appointed internal experts) of the water board contributed to the characteristics of public participation to impact the preferred alternative. This may include allowing public participants to engage in the meetings, transmit high-quality knowledge to contribute their own local knowledge, set up an entire governance structure by the waterboard to have deliberate discussions with Dijkdenkers, property owners, or interested stakeholders, and achieve mutual understanding and trust. During the case study, some other factors are indicated that might have impacted the results. These are mentioned below.

Based on the interviews, some insight is gained about public participants with expertise in these kinds of projects. This particular group of public participants have a benefit in gaining better conservation with environmental and or technical manager. For example, to know where it is about, and to even continue their conversation later to obtain mutual understanding of what the waterboard is doing during their dike reinforcement project. This has also been recognized in the literature, as Curtin and Meijer (2006) further discussed that only citizens with (expert) knowledge of the policy subject use the opportunity to read information about policy, the process, and the policy actors. Most people lack the knowledge to use transparency to participate in the policy-making processes (Curtin & Meijer, 2006).

Interest organizations may also support public participants, as their members can share their views, ideas, and concerns through these kinds of institutions. Moreover, some of their members are a part of the environmental platform, which are tasked to advice the waterboard during this dike reinforcement project. Furthermore, Curtin and Meijer (2006) argued that the information available for the public is generally used by civil society organizations and not by individual citizens. These organizations can represent citizens differently from official representative bodies. In this sense, the input of legitimacy in institutions, such as the European Union, could be strengthened if citizens understood the participation of civil society groups and perceived this input to be legitimate (Curtin & Meijer, 2006).

Finally, public participants' personal attachment to the project area also appears to influence this process. Based on the interviews, some public participants are bound to the dike reinforcement project due to their residences and are therefore attached to it for juridical and economic reasons. Consequently, this may lead to insecurity by these public participants, since they do not know what will happen. Two factors that might influence this is because the dike reinforcement project is just in the exploration phase. As Interviewee 3 says, these uncertainties might be strengthened as "the only thing that is difficult is when you have a preferred alternative and it is not worked out yet ... Especially during the exploration phase, it is not possible to give an answer on this, it is very difficult." Another great influence is the scope of the DFPP, as Interviewee 3 argued that "we are a part of the Dutch Flood Protection Program, and they suggest choosing the less expensive solution, unless it is possible ... This shrinks the input of public participants" and "within these boundaries you may select or adapt ... That makes the selection of the preferred alternative different, compared to building a wind park ... Then you can genuinely give something back to the people." This can also be recognized in the report of Fliervoet et al. (2019), as, for the environmental managers, the relevance of involving public participants in the DMP might be the inclusion of concerns and interests for an integral design. However, one critical note might be that including public participants depends on the project and location. Moreover, not all environmental managers appear convinced about applying public participation to dike reinforcement projects. The strict conditions of dike reinforcement are challenging to combine with the public's wishes when allowing increased involvement (Fliervoet et al., 2019).

## 6.2 Theoretical Reflection

As mentioned earlier, this research is based on the theories of the Emerson et al. (2012) CGR and Newig et al.'s (2018) framework of causal mechanisms. Consequently, these theories were fused together in a CM. This CM proved useful for both the quantitative analysis (multiple regression analysis) and the qualitative analysis (Ijsseldijk Zwolle-Olst case study). However, some changes were required before combining these two theories to form the CM. First, not all the variables of Emerson et al. (2012) and Newig et al. (2018) were used for this research, as some might overlap, such as "determination" (similar to "deliberative process" from Newig's theory) and "legitimacy" (similar to "procedural fairness" from Newig's theory) from Emerson et al. (2012), as well as variables of Newig et al. (2018), such as "collaborative DMPs" (similar to "commitment" from Emerson's theory) and "awareness raising and involvement in DMPs" (similar to "discovery" from Emerson's theory).

Furthermore, the Newig et al. (2018) framework of causal mechanisms was used as a foundation for the CM. This was achieved using the scheme with all the available relationships, from the clusters to the output. The first three clusters of Newig et al. (2018) were used and transformed to be useful for this research. The Newig's second output "acceptance of the output by stakeholders" was removed. Therefore, the collaborative dynamic "shared motivation" of Emerson's theory was transformed into the fourth cluster "internal legitimacy." This fourth cluster was also complemented with variables of both Emerson et al. (2012) and Newig et al. (2018). By also using the relationships of Newig et al. (2018), this research found a means to measure which characteristics of public participation might impact the preferred alternative during the DFPP collaborative projects.

Finally, this CM might also be suitable to apply to other DFPP collaborative projects since it is based on a survey conducted for all the DFPP collaborative projects. However, regarding other fields of spatial planning or beyond, one must be aware that other variables might be better to consider since this CM is closely related to the survey of the DFPP collaborative projects.

## 6.3 Methodology Reflection

In this research, the CM may have provided a good understanding of which characteristics of public participation impact the preferred alternative. The statistical analysis granted the opportunity to understand which characteristics of public participation have the most influence on the preferred alternative. Additionally, the case study selection identified which DFPP project would serve as the best case study. With the IJsseldijk Zwolle-Olst case study, it was possible to explore which characteristics might be identified and how these may be expressed during the process. Altogether, by performing this analysis, sufficient insight regarding which characteristics of public participation impact the preferred alternative has been gained. Nonetheless, some aspects are worth mentioning in this research.

First, this research benefited from an existing DFPP SPSS survey dataset. It comprised multiple DFPP dike reinforcement projects in which participants completed a survey concerning cross-sector collaboration. However, the SPSS dataset had to be adjusted specifically for this research. The first step was to filter out all the respondents who completed less than 85% of the survey. This percentage was assumed to be reliable to further proceed with the statistical analysis for this research.

Furthermore, the CM was first provided with three outputs based on Newig et al.'s (2018) theory: (1) environmental standard of the output, (2) acceptance of the output by stakeholders, and (3) implementation of and compliance with the output. The variables of the CM needed to be linked to the survey questions to conduct a statistical analysis. There appeared to be no survey questions present that might be related to the second and third outputs. Thus, these two outputs were removed from the CM, which led to only one output, namely the collective standard of the output. Nonetheless, this was partially counteracted by adding the final and fourth cluster, internal legitimacy.

Based on the statistical analysis results, the case study selection was conducted. This analysis was constructed within the research and used different features to test the DFPP projects, including scoring high on the survey questions, whether the participants within a project represented different institutional backgrounds (state, market, and civil society), and practical issues (willingness to be interviewed). Because each round was provided with a different type of test, this method was considered sufficiently reliable to select a case study.

For the case study, this research included a policy document analysis and semi-structured interviews. Nonetheless, some barriers were identified when conducting the case study. First, an invitation email was sent to multiple participants involved in the IJsseldijk Zwolle-Olst project. Eventually, only three of nine participants agreed to be interviewed. Three interviewees might be marginal for a case study. However, these three interviewees brought different perspectives to the interviews, as they had different experiences, expertise, and backgrounds, such as being a member of a nature or residents' organization or an employee of the water board. Moreover, this research further complemented this case study with different news articles about the dike reinforcement project, in which other public participants, such as Dijkdenkers and a chairman of LTO Salland, were interviewed. Thus, this may have increased the reliability of the research.

It turns out that four additions are conditional as well to the degree the characteristics of public participation have a positive or negative impact on the preferred alternative, namely expertized individual public participants, personal attachment (residence, private property, or other nature and

cultural heritage values) to the dike, and being a part of an interest organization. Expertized individual public participants can better follow the DMP, allowing them to be more committed and perceive the waterboard as more predictable and leading to mutual understanding and respect by both parties. Being a part of an interest organization is another way to gather and represent views, ideas, and concerns of public participants to an official representative body and better process the information available to the public. Furthermore, the more personal attachments (e.g., private property, residence) are approximate to the dike, the less room for certainty can be shared with the public participants, leading to a less predictable process and decreased mutual understanding and trust. The DFPP's scope and budget also aims to find the cheapest option for the dike reinforcement, leading to less room for the public participants to share their views, ideas, and concerns.

## 6.4 Recommendations

### For Practice

Some recommendations for practice are given here. With these recommendations, it is possible to elaborate and improve the understanding of which characteristics of public participation impact the preferred alternative.

First, during the IJsseldijk Zwolle-Olst case study, multiple invitations were sent to participants involved in the dike reinforcement project. Three of them agreed to be interviewed. Additionally, they only represented the group from the Environmental Platform, property owners, and the water board task team. Therefore, it is recommended to also conduct interviews with, for example, a Dijkdenker and a member of the BBG or ABG (e.g., Staatsbosbeheer, municipality Zwolle, and Overijssel Province). This could provide an overall view of the experiences of the different groups included in the dike reinforcement project.

Another recommendation would be to also focus on successful meetings with property owners, Dijkdenkers, and other involved public participants. According to the report by Krol (2019), five of the 15 dike trajectories resisted the dike reinforcement. Since this is one-third of all the dike trajectories, it would be interesting to gain in-depth knowledge of what characteristics public participants (Dijkdenkers, property owners, and members of interest organizations) might have for impacting the preferred alternative.

### For Further Research

This research explored which characteristics of public participation impact the preferred alternative. More specifically, a CM was created to identify and measure whether the characteristics of public participation led to an impact during the DMP. However, although this phenomenon was explored, more research is needed toward in-depth knowledge regarding external indicators influencing these characteristics of public participation. As mentioned earlier, the DFPP emphasized that the dike reinforcement project should be as cheap as possible. Thus, the DFPP is extremely strict in leaving space for the input of public participation. Especially, when public participants have private property nearby or within the dike body, these private properties must be physically altered. Thus, it might be futile to oppose dike reinforcement project. Based on the case study, both (interviewed) public participants and the water board understand the need to reinforce the dike in the IJsseldijk Zwolle-Olst project. The difference is that some public participants want to know what will happen to their

private properties to remove any uncertainty. However, the water board must also find a balance between these public participants and the strict rules derived from the DFPP. Moreover, during an exploration phase, it might be challenging to share what will eventually occur.

Therefore, it might be useful to include more DFPP projects and focus on exploring methods of achieving temporary assurance between these parties. One recommendation this study proposes is the management of expectations. This phenomenon was also identified in other DFPP dike reinforcement projects for Kinderdijk-Schoonhovenseveer, Tiel-Waardenburg, and Neder-Betuwe. An environmental manager stated that “an example of management of expectations when an environmental manager stays critical on the advantages and disadvantages of a dike construction ... Many inhabitants think they have won because their house remains ... Then I say ho ho, the dike construction needs to be constructed yet and that damage will come along ... I am trying to temper the expectations ... The house remains, but if there are cracks in it ... That is the honest story I am trying to tell” (Fliervoet et al., 2019, p. 29).

Another recommendation is to conduct further research on how interested organizations might influence decision-making. In the IJsseldijk Zwolle-Olst dike reinforcement project, the water board selected members (public participants) from different interest organizations attached to the project area. In certain circumstances, these types of organizations might genuinely impact the process. During the interviews, one of the interviewees said that one of their ideas was realized by testing whether the new dike revetment would be a suitable habitat for certain plant species, which would otherwise be lost along with the current dike revetment. As mentioned earlier, this situation appears unique, and other factors might have played a role. This phenomenon might also be explained by Curtin and Meijer (2006), as the available information for the public will generally be used by civil society organizations and not individual citizens. These organizations can represent citizens differently to official representative bodies. In this sense, the input of legitimacy in institutions such as the European Union could be strengthened if citizens knew the participation of civil society groups and if citizens perceived this input as legitimate (Curtin & Meijer, 2006).

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## 8. Annex

**Annex 1 Interview Guide**

**Annex 2 Vragenlijst Bestuurder Waterschap of andere Overheidsorganen**

**Annex 3 Vragenlijst Omgevingsmanager**

**Annex 4 Vragenlijst Publieke Participant**

## Annex 1 Interview Guide

<b>Algemene introductie</b>	Goedendag, wat leuk om u te ontmoeten. Mijn naam is Arturo le en ik wil u bedanken voor uw medewerking aan dit onderzoek.
<b>Doel van het interview</b>	Het doel van dit interview is om meer inzicht te krijgen op welke wijze publieke participanten mogelijk hebben bijgedragen aan het voorkeurs alternatief (VKA) binnen het IJsseldijk Zwolle-Olst project.
<b>Verwachtingen geïnterviewde en interviewer</b>	Ik zou een aantal vragen willen stellen over uw ervaringen hiermee.
<b>Lengte van het interview</b>	Het interview zal ongeveer een uur duren, vindt u dat goed?
<b>Wat er gebeurt met de data en anonimiteit?</b>	De bevindingen uit dit interview zullen samen met de andere interviews worden samengevat. Uw naam zal hierin niet worden genoemd. Deze blijft enkel en alleen toegankelijk voor mij en de scriptie begeleiders.
<b>Bijdrage geïnterviewde</b>	U zal dus bijdragen aan de hoeveelheid data over dit project en potentieel ook aan de verbetering hiervan. Zou u na het interview ook een transcript willen ontvangen?
<b>Opname</b>	Overigens, vindt u het goed als ik het interview opneem? Dit zal het namelijk eenvoudiger voor mij maken om de bevindingen te analyseren.
<b>Vragen</b>	Voordat we beginnen, heeft u nog vragen?
<b>Einde introductie</b>	Oke, laten we beginnen.

## Annex 2 Vragenlijst Bestuurder Waterschap of andere Overheidsorganen

### **Blok 1: Introductie**

Vraag 1: Zou u zelf in het kort kunnen voorstellen?

Vraag 2: Wat is de belangrijkste taak binnen uw functie?

Vraag 3: Hoe lang bent u al werkzaam bij uw organisatie?

### **Blok 2: Definitie omgevingsmanagers en publieke participanten**

Vraag 4: Wat houdt volgens u omgevingsmanagement in?

Vraag 5: Wat verstaat u persoonlijk onder publieke participatie?

Vraag 6: Wat zijn de redenen om wel of niet publieke participatie toe te passen?

### **Blok 3: De thema's**

Vraag 7: Bij welke dijktrajecten bent u betrokken geweest?

- *Doorvraag: Kunt u kort toelichten wat u rol hierin was?*

Vraag 8: Zijn volgens u de randvoorwaarden/kaders voor publieke participatie in dijkversterkingsprojecten voldoende uitgewerkt?

- *Doorvraag: Ja, was er voldoende beleidsruimte?*
- *Doorvraag: Nee, wat ontbrak er volgens u?*
- *Doorvraag: Hebben omgevingsmanagers hieraan aan kunnen bijdragen?*

Vraag 9: Op welke manier werden publieke participanten betrokken gedurende het project (Dijkateliers, Inspraakavonden, Keukentafelgesprekken)?

- *Doorvraag: wat waren de voor- en nadelen van deze bijeenkomsten gedurende dit project?*

Vraag 10: Wat was de rol van omgevingsmanagers hierin geweest?

- *Doorvraag: Op welke wijze hebben ze wel en/of niet kunnen bijdragen?*

Vraag 11: Welke middelen waren er beschikbaar voor publieke participanten (geld, kennis, juridische middelen)?

Vraag 12: Hadden de publieke participanten volgens u voldoende kennis en/of ervaringen over het onderwerp?

- *Doorvraag: Waar merkte je dat aan?*
- *Doorvraag: Waartoe heeft dat geleid?*
- *Doorvraag: hebben intern toegewezen experts hieraan kunnen bijdragen?*
  - o *Zo ja, hoe?*
  - o *Nee, waarom niet?*

Vraag 13: Was volgens u het proces transparant?

- *Doorvraag: waarom?*

Vraag 14: Ervaarde u voldoende vertrouwen tussen de publieke participanten en omgevingsmanagers?

- *Doorvraag: waarom?*

#### **Blok 4: Uitkomsten/resultaten**

Vraag 15: Wat in het VKA is terug te zien, afkomstig van de publieke participanten?

Vraag 16: Wat zou u de volgende keer anders doen m.b.t publieke participatie?

- *Doorvraag: Waarom?*

#### **Blok 5: Toekomst publieke participanten en omgevingsmanagers**

Vraag 17: Hoe zou publieke participatie bij dijkversterkingsprojecten er in de toekomst volgens u eruit zien?

Vraag 18: Hoe zouden omgevingsmanagers een verdere rol hierin kunnen spelen volgens u?

#### **Afronding**

*Dank u vriendelijk voor uw medewerking aan dit interview. Heeft u nog andere vragen, opmerkingen of aanvullingen? Ik zou u willen verzoeken ons gesprek niet met andere collega's en belanghebbenden te bespreken, zodat we alle individuele ervaringen kunnen verwerken.*

## Annex 3 Vragenlijst Omgevingsmanager

### **Blok 1: Introductie**

Vraag 1: Zou u zelf in het kort kunnen voorstellen?

Vraag 2: Hoe lang bent u al werkzaam als omgevingsmanager bij WDOdelta?

### **Blok 2: Definities omgevingsmanagement en publieke participatie**

Vraag 3: Wat houdt omgevingsmanagement volgens u in?

Vraag 4: Wat is uw belangrijkste taak als omgevingsmanager?

Vraag 5: Wat verstaat u onder publieke participatie?

### **Blok 3: Ervaringen met publieke participatie**

Vraag 6: Bij welke deeltraject(en) bent u betrokken geweest in dit project?

- *Doorvraag: Kunt u uw verantwoordelijkheden in het kort toelichten?*

Vraag 7: Wat was het doel van publieke participatie in dit project?

Vraag 8: Had u zelf andere doelen in gedachte met publieke participatie in dit project?

### **Blok 4: De thema's**

Vraag 9: Waren de randvoorwaarden/kaders voor publieke participatie voldoende uitgewerkt volgens u?

- *Doorvraag: Ja, was er voldoende beleidsruimte?*
- *Doorvraag: Nee, wat ontbrak er volgens u? Wat waren de gevolgen hiervan?*
- *Doorvraag: Hoe hebben u en andere collega's een rol kunnen spelen hierin?*

Vraag 10: Welke soorten bijeenkomsten waren er (inloopbijeenkomsten, keukentafel gesprekken, dijkateliers)?

- *Doorvraag: welke bijeenkomst(en) had de meeste impact volgens u op de publieke participanten?*
- *Doorvraag: op welke manier?*

Vraag 11: Over welke thema's/onderdelen konden publieke participanten meebeslissen, meedenken en/of geïnformeerd worden?

- *Welke belemmeringen en/of mogelijkheden waren hiervoor?*

Vraag 12: Welke middelen zijn er beschikbaar voor publieke participanten (geld, kennis en juridische middelen)?

Vraag 13: Hadden de publieke participanten volgens u voldoende kennis en/of ervaringen over het onderwerp?

- *Doorvraag: Waar merkte je dat aan?*
- *Doorvraag: Waartoe heeft dat geleid?*
- *Doorvraag: Heeft u daar aan kunnen bijdragen?*
  - o *Zo ja, hoe?*
  - o *Nee, waarom niet?*
  - o

Vraag 14: Was het proces volgens u transparant?

- *Doorvraag: waarom?*

Vraag 15: Ervaarde u voldoende vertrouwen tussen de publieke participanten en omgevingsmanagers (u)?

- *Doorvraag: waarom?*

#### **Blok 5: Evaluatie van het participatieproces**

Vraag 16: Als u terugkijkt op het participatieproces, wat ging er wel en niet goed?

Vraag 17: Waren er momenten in het proces waarin je alle zeilen bij moest zetten om iets toch goed te laten lopen (b.v. voorstellen over het VKA goed of afkeuren van publieke participanten)

- *Doorvraag: Wat waren die momenten?*
- *Doorvraag: Hoe zijn jullie hierachter gekomen?*
- *Doorvraag: Hoe hebben jullie het opgelost?*

#### **Blok 6: Uitkomsten/resultaten**

Vraag 17: Wat in het VKA is terug te zien wat uit de publieke participatie komt?

Vraag 18: op welke vlakken denkt u dat publieke participatie uiteindelijk invloed hebben gehad op het voorkeursalternatief?

#### **Blok 7: Toekomst Publieke Participatie**

Vraag 19: Wat zou u de volgende keer anders doen m.b.t publieke participatie?

- *Doorvraag: Waarom? Wat zou u opnieuw doen?*

Vraag 20: Wat verwacht u van de ontwikkeling van betrekken/invloed van publieke participanten in de toekomst op het VKA?



## **Afronding**

*Dank u vriendelijk voor uw medewerking aan dit interview. Heeft u nog andere vragen, opmerkingen of aanvullingen? Ik zou u graag willen verzoeken ons gesprek niet met andere collega's en belanghebbenden te bespreken, zodat we alle individuele ervaringen kunnen verwerken.*

## **Annex 4 Vragenlijst Publieke Participanten**

### **Blok 1: Introductie**

Vraag 1: Zou u zelf in het kort kunnen voorstellen?

Vraag 2: Werk of woont u ook in de buurt van de IJsseldijk?

- *Doorvraag: Zo ja, hoe lang werkt en/of werkt u al in het projectgebied?*

Vraag 3: Heeft u al eerder deelgenomen aan andere projecten vanuit het waterschap?

- *Doorvraag: Zo ja, wat voor project was dat?*
- *Doorvraag: Hoe heeft u dat ervaren?*

### **Blok 2: Definities en betrokkenheid project**

#### **Mogelijkheid om te participeren**

Vraag 4: Hoe bent u betrokken geraakt bij dit project?

Vraag 5: Hoe betrokken voelt u zich bij dit project (cijfer 1-10)?

- *Doorvraag: Waarom voelt u zich in die mate betrokken?*

Vraag 6: Wat is volgens u het doel van dit project?

Vraag 7: Wat verstaat u onder publieke participatie?

Vraag 8: Wat verstaat u onder omgevingsmanagement?

### **Blok 3: De thema's**

#### **Spelregels deelname**

Vraag 9: Waren de randvoorwaarden/spelregels van het proces voldoende duidelijk voor u?

- *Doorvraag: Waar mocht u wel/niet over meepraten?*
- *Doorvraag: Was de projectplanning vooraf duidelijk?*

#### **Soorten bijeenkomsten**

Vraag 10: Bij welke bijeenkomsten bent u langs geweest (keukentafelgesprekken, inloopbijeenkomsten, dijkateliers)?

- *Doorvraag: Welke bijeenkomst(en) heeft u als fijnst ervaren?*

### **Communicatie/informatieverschaffing**

Vraag 11: Had u het gevoel dat u voldoende kennis/ervaring had over het onderwerp?

Vraag 12: Hoe ervaart u de communicatie met de omgevingsmanagers?

Vraag 13: Kreeg u voldoende en begrijpelijke informatie mee om goed te kunnen deelnemen aan het project?

- *Doorvraag: Op welke manier kreeg u die?*

### **Vertrouwen**

Vraag 14: Hoe ervaarde u de relatie tussen u en de omgevingsmanagers?

- *Doorvraag: Hoe zou de relatie in uw ogen moeten zijn?*

### **Blok 4: Uitkomsten en resultaten**

Vraag 15: Wat is er uiteindelijk gedaan met de uitkomsten/ideeën van de betrokken publieke participanten?

- *Doorvraag: Had u het gevoel dat wat door u of andere publieke participanten was ingebracht daadwerkelijk terug te zien was in deze uitkomsten?*

Vraag 16: Welk cijfer (1-10) zou u het [eindresultaat/VKA] geven?

- *Doorvraag: Kunt u uitleggen waarom?*

Vraag 17: Op welke vlakken denkt u dat publieke participanten uiteindelijk invloed hebben gehad op het VKA?

### **Blok 5: Toekomst Publieke Participatie bij IJsseldijk Zwolle-Olst project**

Vraag 18: Hoe zou in de toekomst publieke participanten een plaats moeten hebben in dijkversterkingsprojecten?

Vraag 19: Zou u nog een advies willen meegeven aan het waterschap m.b.t het betrekken van publieke participanten bij dijkversterkingsprojecten?

### **Afronding**

*Dank u vriendelijk voor uw medewerking aan dit onderzoek. Heeft u nog andere vragen, opmerkingen of aanvullingen? Omdat we nog meer grondeigenaren en andere belanghebbenden gaan interviewen, willen we u graag verzoeken uw ervaringen niet met andere deelnemers te bespreken, zodat we alle individuele ervaringen kunnen verwerken.*