

Master's Thesis for the Spatial Planning programme,  
specialisation Cities, Water and Climate Change

# From Directive to Practice:

Implementing gradual land-water  
transitions in the Markermeer

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# Colophon

Title: From Directive to Practice: Implementing gradual land-water transitions in the Markermeer

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## Abstract

The European Water Framework Directive (WFD) is a cornerstone of EU environmental legislation aimed at achieving good chemical and ecological status for waterbodies (European Commission, 2023). Despite the progress, the Netherlands faces significant challenges in meeting the WFD objectives (Slagter, et al., 2024). One of the spatial measures that has the potential to contribute to achieving the ecological objectives of the WFD is the construction of gradual land-water transitions (GLWTs) (Heins et al., 2020). However, the implementation of GLWTs is complex because it is influenced by factors such as politics, public safety, community values, and costs (Morris et al., 2019).

This research aims to understand what influences the degree of success of the implementation of GLWTs. It applies an embedded single case study design, focusing on the Markermeer and four projects in this area that implemented GLWTs. The main question of this research is: *What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?*

A new conceptual framework was developed, combining four policy implementation theories with the PPPE model on policy success. The research combined desk research and fourteen semi-structured interviews with stakeholders involved in the four selected projects.

The results show that the degree of success of the implementation of GLWTs in the Markermeer depends on the alignment between four key implementation factors: problem pressure, administrative capacities, role of actors, and legal and policy. If one of these is lacking, full implementation success across the programmatic, process, political, and endurance assessment can't be achieved. Influential subfactors include political prioritisation, sufficient resources and process time, drive, cooperation, participation and support, and the role of the WFD as a project objective or assessment framework. Notably, the endurance success in the projects lags behind, mainly due to uncertainty about long-term funding for maintenance.

While the research provides valuable insights into what influences the degree of success, the generalisability because the research looks at just one waterbody and there is variation in project scale, goals and stakeholders.

Recommendations for praxis include integrating water quality objectives early in the process, taking advantage of synergy opportunities and supporting driven actors. Further research should investigate the long-term success of GLWTs, the interrelation between implementation factors and explore quantitative methods to assess their broader applicability.

**Key words:** Water Framework Directive (WFD), ecological water quality, gradual land-water transitions (GLWTs), policy implementation, policy success, spatial planning, Markermeer.

## Preface

In front of you lies my master thesis entitled “*From Directive to Practice: implementing gradual land-water transitions in the Markermeer*”. This master thesis was written to complete the master Spatial Planning: Cities, Water and Climate Change at Radboud University. This research focuses on what influences the degree of success of the implementation of gradual land-water transitions (GLWTs) in the Markermeer.

As a child, I grew up next to the Markermeer, unaware of its presence. With the new spatial developments in and around the Markermeer, my interests in policy and nature began to take shape. During my bachelor Liberal Arts and Sciences at the University Utrecht I became interested in the interaction between spatial planning and (environmental) policy. What fascinated me was the significant role of human intervention in shaping the physical landscape, guided by policy. Over the past six months, I have had the opportunity to deepen my understanding of the implementation of policy through the realisation of spatial measures.

My internship at Haskoning provided an inspiring environment to write my thesis. It gave me the opportunity to gain valuable insights into the professional field. With special thanks to my internship supervisors M. van Ginkel and P. Eijssen, for their inspiring conversations and encouragement during the process. I also want to thank S.V. Meijerink, my supervisor at Radboud University, for this valuable guidance, constructive feedback and critical insights. The conversations contributed to a result I am proud to present.

Finally, I would like to thank all the respondents who participated in this research for their time, openness and insights. The enthusiasm and drive of the people in the professional field were particularly striking during the interviews. This has motivated me enormously and increased my enthusiasm to contribute to this practice in the future.

I hope that you will enjoy reading this master thesis.

Eva Rijdsdorp

Utrecht, June 2025

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## Abbreviations

**GLWT:** Gradual land-water transitions

**HWBP:** High water protection programme (*Hoogwaterbeschermingsprogramma*)

**Ministry of AFFN:** Ministry of Agriculture, Fisheries, Food Security and Nature

**Ministry of I&W:** Ministry of Infrastructure and Water

**MMD:** Reinforcement of the Markermeerdijken

**MW:** Marker Wadden

**MW+:** Marker Wadden Plus

**PAGW:** Programmatic Approach to Large Water Bodies (*Programmatiese Aanpak Grote Wateren*)

**Rijkswaterstaat:** Directorate-General for Public Works and Water Management

**TBES:** Future-Proof Ecological System (*Toekomstbestendig Ecologisch Systeem*)

**TZ:** Reinforcement of the Houtribdijk in combination with Trintelzand

**WFD:** Water Framework Directive

**WL:** Waterfront Lelystad

# 1. Introduction

In 2019, the Council of State of the Netherlands ruled on the Nitrogen Action Plan (PAS). The Nitrogen Action Plan, introduced in 2015 to address the nitrogen problem, was declared invalid (NOS, 2019). This ruling was the start of the nitrogen crisis, as it made it legally impossible to grant permits for projects, such as housing construction, affecting nitrogen-sensitive areas. The result was a construction crisis, in which around 18.000 projects in the Netherlands were put on hold (ten Teije, 2019).

Now another potential crisis is looming. Similar to the nitrogen crisis, the implementation of the European Water Framework Directive (WFD) also risks creating significant challenges for construction and infrastructure projects (Koninklijke Bouwend Nederland, 2022). In 2027, the Netherlands must have achieved the objectives of the European Water Framework Directive for good chemical and ecological quality of ground- and surface water, but there is a great chance that this will not be achieved (KNW, 2024). According to Slagter et al. (2024), at the moment, 80% of the WFD standards are met in the Netherlands, but because of the one out, all out principle none of the waterbodies fulfils the objectives of the WFD.

One of the waterbodies in the Netherlands that faces challenges with the realisation of the (ecological) WFD objectives is the Markermeer (Grutters & Löwenhardt, 2022; Informatiehuis Water, 2024). Formerly the Markermeer was part of the *Zuiderzee*, with the closure of the Afsluitdijk and Houtribdijk the lake transformed into a freshwater lake (Grutters & Löwenhardt, 2022). The Markermeer is therefore a heavily modified lake (Informatiehuis Water, 2024). Natural lakes are characterized by a wide range of habitats and fish and bird communities (Heins, van Leijnehorst, & Lourens, 2020). An important part of these habitats and animal communities lies on the gradient from open water to marsh (Heins et al., 2020). Due to the artificial design of the Markermeer, as a kind of bathtub with hardly any shore zones, there are a few of these gradients from open water to marsh (Heins et al., 2020; van Puijenbroek & Sijtsma, 2009). This creates a one-sided food web and ecological deterioration therefore the biological quality elements of the WFD are still far below the WFD objectives (Grutters & Löwenhardt, 2022; Heins et al., 2020).

One of the spatial measures that has the potential to contribute to achieving the ecological objectives of the WFD in the Markermeer is the construction of gradual land-water transitions (Heins et al., 2020). The WFD does not have quantitatively formulated objectives for shallows and GLWTs, but they do contribute to the resilience and robustness of the lake (Heins et al., 2020). However, the realisation of GLWTs is complex because it is influenced by factors such as politics, public safety, community values, and costs (Morris et al., 2019). This research therefore focuses on the question of which factors influence the success of this implementation, using the Markermeer as an embedded case study.

## 1.1 Research problem statement

Since its adoption in 2000, the European Water Framework Directive (WFD) has been the cornerstone of water protection legislation in Europe and is seen as the most substantial and ambitious piece of European environmental legislation to date (European Commission, 2023; Voulvoulis et al., 2017). The ambitious objectives of the WFD include the protection and restoration of water bodies to achieve 'good status' (both chemically and ecologically) by

preventing further deterioration and, where possible, enhancing the quality of water bodies (Carter, 2007; European Commission, 2023; Kallis & Butler, 2001).

The implementation of the directive by Member States has been significantly delayed, with more than half of the water bodies failing to achieve the 2015 deadline for reaching good status (European Commission, 2019). This not only due to ecological recovery times but it also influenced by structural and policy-related challenges. There are different factors that hindered the achievement of the WFD. Firstly, the WFD is a major challenge, as it not only requires mitigation measures but also restoration measures (European Commission, 2019). Secondly, the current governance framework is fragmented instead of holistic (European Commission, 2019; Voulvoulis, Arpon & Giakoumis, 2017). Thirdly the integration of the WFD into other domains and policies poses a challenge (European Commission, 2019). Lastly, the WFD also faces financial challenges because of the high costs for implementation measures (European Commission, 2019; Kallis & Butler, 2001).

### **1.1.1 GLWTs as spatial measurement in the Markermeer**

One of the promising spatial measures that can help achieve the WFD objectives in the Markermeer is the implementation of GLWTs (Heins et al., 2020). The Markermeer has a lot of deep, open water, but there is a lack of shallows with aquatic plants, banks with reed beds, and marsh zones, while these areas are needed as spawning and growing zones to gather food and find shelter (Heins et al., 2020). It is therefore important to realise these missing habitats in the Markermeer in order to achieve the ecological WFD objectives, this can be done by implementing GLWTs (Heins et al., 2020).

The realisation of GLWTs ensures a gradient from open water to (Heins et al., 2020). This offers the opportunity for the development of aquatic and bankside plants, macrofauna and fish (de la Haye et al., 2011). GLWTs can therefore make the water system more natural, achieve a higher ecological quality and improve habitats (van Vossen & Verhagen, 2009).

In the Markermeer, the construction of GLWTs is therefore necessary. However, despite the potential, the implementation is complex. Barriers include competition with other spatial developments, high costs, uncertainties to long-term performance, lack of cooperation, and influence of politics (Dorst et al., 2021; Dario et al., 2024; Morris et al., 2019; Wetzler et al., 2024; Ministry of AFFN, 2024).

Due to both the ecological significance and the complexity of the implementation of GLWTs, it is relevant to research what the degree of success of the implementation of GLWTs in the Markermeer influences. This research aims to contribute to this understanding and explore potential strategies to improve the implementation.

## **1.2 Relevance of the research**

### **1.2.1 Scientific relevance**

The implementation of the Water Framework Directive has a clear spatial dimension, as spatial planning regulates the development and use of land and provides a balance between the various demands placed on land use (Carter, 2007). Concrete measures such as the construction of wetlands, deepening of waterways and GLWTs can be seen as spatial interventions that contribute to achieving the WFD objectives (Heins et al., 2020; Informatiepunt Leefomgeving,

n.d.-b). However, these spatial interventions have potential conflicts with urban development, agriculture and tourism (Frederiksen, Mäenpää & Hokka, 2008; Kallis & Butler, 2001). Planning authorities therefore have a key role in implementing the WFD through ensuring that the development and use of land fulfils the requirements of the WFD (Carter, 2007).

While the WFD does not contain explicit provisions in relation to land-use planning, the European Commission (2003) urges that implementation needs to ensure that bodies, responsible for land use planning, take account of the objectives (European Commission, 2003). This interaction, between spatial planning and the WFD, is essential because land use both depends on and affects water bodies (Frederiksen, et al., 2008). Spatial planning can contribute to the implementation of the WFD by having a long-term approach, by providing a forum for stakeholder involvement, by encouraging the development and use of land in a comprehensive way and by having a holistic approach integrating environmental, economic and social considerations (Carter, 2007).

Despite the importance of spatial planning in the implementation of the WFD and realisation of GLWTs, several gaps remain in the scientific literature. Firstly, most research in the Dutch context focuses on the ecological status, participation or river basin management (Boeuf & Fritsch, 2016). In contrast, relatively little attention has been paid to the practical implementation of concrete spatial measures, such as GLWTs. Secondly, previous research mainly focused on preparation phase of the WFD implementation, which resulted in a lack of studies examining the continuity and change during and after the first implementation cycle (Boeuf & Fritsch, 2016).

Thirdly, Boeuf and Fritsch (2016) note that most studies underuse theory in explaining patterns of WFD implementation, even though they can provide valuable insights. Theory should therefore have a more prominent role in future research on the WFD and its implementation (Boeuf & Fritsch, 2016). This research combines multiple theoretical frameworks on policy implementation to analyse the successful implementation of GLWTs.

Fourth, according to Bondarouk and Mastenbroek (2018) there is a need for research into countries where the practical implementation of EU environmental directives, such as the WFD, can be expected to be relatively problematic. Various factors, such as the historical physical characteristics of the lake and usage pressure on the lake from natura objectives, recreation, sand extraction and freshwater supply, influence the implementation of the WFD (Grutters & Löwenhardt, 2022). The Markermeer can therefore be seen as a case where research should pay extra attention to the implementation of the WFD due to these difficulties.

Lastly, there is a research gap about the implementation performance of WFD implementation. Bondarouk and Mastenbroek (2018) analysed that while some factors have received more attention, such as definitional details and objectives, other factors, such as staff, budget, and prioritisation, have received little attention. With the use of a new comprehensive framework, which combines different implementation factors, this research also focuses on the less researched implementation factors.

Concluding, while there is a critical role for spatial planning in achieving WFD goals in the Markermeer by implementing GLWTs, current literature mainly focuses on general WFD implementation or policy processes. However, an analysis of what influences the degree of success of the implementation of specific spatial measurements, such as GLWTs, is underexposed in current literature.

### 1.2.2 Societal relevance

Research into the implementation of GLWTs as part of the European Water Framework Directive in the Netherlands is socially relevant. Failure to achieve the objectives can have a major impact on social developments in the Netherlands (Carter, 2007). It's therefore important to research the implementation of specific measures, such as GLWTs, as these can contribute to the achievement of the WFD.

According to Carter (2007), failure to achieve the WFD's objectives poses a threat to the public health, biodiversity and economic growth. Good water management has a positive impact on the planet, people and the economy (European Commission, 2019). The WFD contributes to achieving a range of sustainable development goals (European Commission, 2019).

The societal urgency of the implementation of the WFD is also increasing as the final deadline of 2027 is approaching. While the directive remains in force beyond 2027, the possibility to extend the deadline has expired. If the WFD objectives are still not met in 2027, the Netherlands faces the risk of 'formal non-compliance', which could have serious legal and spatial consequences (Wuijts, Runhaar & van Rijswick, 2022).

According to Koninklijke Bouwend Nederland (2022), not achieving the objectives of the WFD has social consequences such as obstacles to solving the housing shortage or delays in the construction of necessary infrastructure. The five most common activities in construction and infrastructure projects require permits that are linked to the WFD (Koninklijke Bouwend Nederland, 2022). To solve the housing shortage in the Netherlands, it is important that new houses are built. However, according to Koninklijke Bouwend Nederland (2022), 25 percent of housing construction projects that discharge water during soil remediation and 10 percent of housing construction projects that extract groundwater run the risk of not getting a permit if the WFD objectives are not achieved. This not only causes delays in housing construction projects but can also ensure that these projects can't go ahead at all (Koninklijke Bouwend Nederland, 2022).

This urgency highlights the need for research into the implementation of spatial measures, such as GLWTs, that can help achieve the WFD objectives. This research provides insights into what the degree of success of the implementation of GLWTs to achieve the WFD influences and explores possible actions to help achieve the WFD objectives.

## 1.3 Research aim and research question

The primary goal of this research is to understand what influences the degree of success in the implementation of GLWTs. However, the role of spatial planning and the implementation factors can vary widely per context (Wiering, et al., 2018). Therefore, this research uses an embedded single case study design, focusing on one specific water body, the Markermeer. This reduces the complexity and allows for in-depth analysis. This research looks at four embedded units of analysis, consisting of four projects in the Markermeer. The explanation of these choices is further explained in paragraph 3.2.2.

The main research question of this research is:

*What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?*

To answer the main research question, this research uses two sub-questions:

1. *Which factors influence the implementation of GLWTs in the projects in the Markermeer?*
2. *How successful is the implementation of GLWTs in the projects in the Markermeer?*

The first question provides insight into the different factors that influence the implementation of GLWTs in the analysed projects. After the analysis of the factors, the success of the projects is analysed. Together, these sub-questions provide a comprehensive understanding of what influences the degree of success of the implementation of GLWTs to achieve the objectives of the WFD in the Markermeer. Lastly, the research will take a look at possible strategies to improve the implementation to provide recommendations for future practice.

To answer the research question, both desk research and interviews were conducted. The desk research consisted of a literature review to give an overview of the current academic knowledge on the factors that influence the implementation of EU directives and GLWTs. In addition, relevant policy documents were analysed to better understand the policy context of the WFD on the implementation of GLWTs. Simultaneously, semi-structured interviews were conducted with fourteen stakeholders involved in the selected projects. These interviews were transcribed, coded, structured, and analysed to get a better understanding of the implementation factors for GLWTs and the degree of success of the projects.

## 1.4 Reading guide

This thesis consists of seven chapters. Following this introduction chapter, Chapter 2 discusses the current academic knowledge regarding the implementation of EU directives and GLWTs, and policy success. Based on this a new conceptual framework and the operationalisation of this research is introduced. Chapter 3 focuses the research paradigm, research strategy, research methods and the role of validity and reliability in this research. Chapter 4 provides background on the case study area, Markermeer, by describing the historical physical context and the current status of the WFD objectives. Chapter 5 presents the results for each analysed project. These findings are further analysed and interpreted in Chapter 6, which answers the sub-questions and main research question. Finally, Chapter 7 reflects on the research findings, the contribution of this research to further theory development, the limitations of the research and the results, and provides recommendations for praxis and further research.

## 2. Theoretical Framework

To analyse the factors that influence the degree of success of the implementation of GLWTs in the Markermeer, this chapter brings together insights from existing academic literature.

This chapter starts by exploring the current academic literature on EU policy implementation. This paragraph will focus on four theoretical frameworks that each emphasise different implementation factors. These frameworks are then compared to identify similarities and differences between them.

To analyse the degree of success, the PPPE model by (Luetjens, Mintrom, & 't Hart, 2019) is introduced. The insights of the policy implementation frameworks and the PPPE model will be combined in a new comprehensive conceptual framework. This newly formed conceptual framework will guide the analysis of specific factors that influence the implementation of GLWTs. This chapter concludes with the operationalisation of this research.

### 2.1 Policy implementation EU

#### 2.1.1 Definition

Environmental EU policy has to be implemented by and within the member states (Bondarouk & Mastebroek, 2018). This is because, unlike regulations and decisions, directives are not directly applicable but require national laws to incorporate their rules into national legislation (European Union, n.d.-a)

Policy implementation refers to the phase between the process of incorporating EU directives into national laws of member states (transposition), and the enforcement of this by these member states (Bondarouk & Mastebroek, 2018).

The practical implementation consists of two stages: final policy formation and policy delivery. In the final policy formation stage, the local authorities operationalise national policy for the EU environmental directive. The complex policy is broken down into a series of implementation tasks consisting of assigning the responsible authority, setting a timescale in which the task has to be completed, and setting evaluation parameters (Bondarouk & Mastebroek, 2018). The member state must then notify the European Commission with their national implementing measures. The European Commission then examines the transposed law on if it meets the aims of the directive (European Union, n.d.-b). In the policy delivery stage, the policy instruments are put into practice, consisting of the enactment of physical measures and the provision of permits (Bondarouk & Mastebroek, 2018). The European Commission ensures that the law is implemented and meets the required deadlines (European Union, n.d.-b).

#### 2.1.2 Main perspectives on the implementation of EU policies

Geitzenauer et al. (2016) identifies four primary strands of research that form the basis of EU policy implementation frameworks. Firstly, the administrative effectiveness and resources perspective is a top-down, technocratic and apolitical perspective that frames implementation as a practical problem dependent on sufficient administrative resources, clear legal prescriptions, and the effective organisation of national authorities and procedures (Geitzenauer et al., 2016). The second perspective, (mis-)fit of institutional legacies, emphasises the

compatibility between the EU policy and the regulatory traditions of the country (Geitzenauer et al., 2016). The third perspective, actor constellations and power distribution, is an actor-based approach focusing on the role of interest, beliefs, and power relations (Boeuf & Fritsch, 2016; Geitzenauer et al., 2016). Lastly, the culture of compliance perspective emphasises the national attitudes towards the rule of law and compliance with legally binding rules, thus the culture of law-abidingness in the political administrative system of a Member State (Boeuf & Fritsch, 2016; Geitzenauer et al., 2016). Together, these four strands provide a comprehensive lens for analysing the factors that influence EU policy implementation.

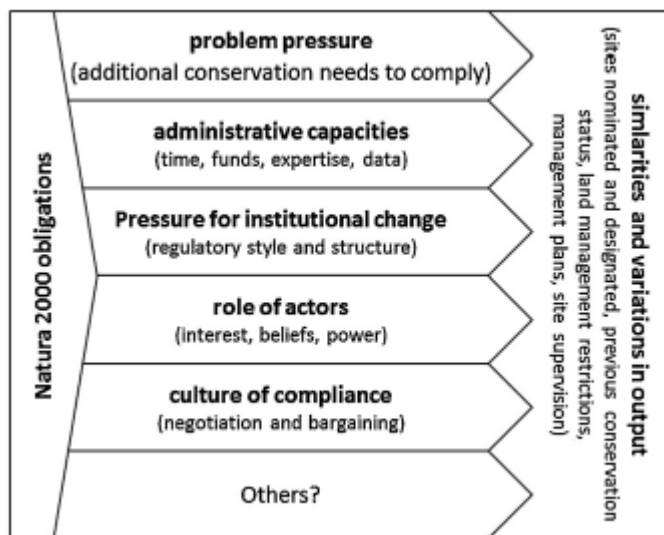
### 2.1.3 Frameworks of EU policy implementation

#### Geitzenauer et al. (2016) Analytical framework

The analytical framework of Geitzenauer et al. (2016) is an actor- and institution-oriented theoretical framework and is based on the four main perspectives on the implementation of EU policies. Geitzenauer et al. (2016) uses this to analyse the implementation of Natura 2000, but it can also be used to analyse other EU directives. The framework consists of five categories of explanatory factors of EU policy implementation in Member States (see figure 1).

**Figure 1**

*Analytical Framework*



*Note.* Adopted from “The implementation of Natura 2000 in Austria: A European policy in a federal system”, by Geitzenauer et al., 2016, *Land Use Policy*, 52, p. 124.

Firstly, the problem pressure factor. This consists of the direct need for additional efforts necessary for the compliance and implementation of the directive. For example, the designation of additional protected areas or adjusting protection levels of existing areas. The problem pressure therefore depends on how far the current state deviates from the desired state (Geitzenauer et al., 2016).

Secondly, administrative capacities are an apolitical management perspective. This factor originates from the administrative effectiveness and resources perspective. It looks at the availability and deployment of resources, the effectiveness of administrative organisation and procedures and the clarity of legal provisions. This entails time, funds, expertise, and data (Geitzenauer et al., 2016).

Thirdly, the pressure for institutional change. This factor originates from the (mis-)fit perspective and focuses on the extent of the need for institutional change induced by the EU directive. It looks both at the regulatory style and structure of the Member State. Thus, the factor addresses the potential explanatory contributions of both the degree to which the EU directive corresponds to the domestic traditions in actor interactions (regulatory style) and the domestic distribution of competencies (regulatory structures) (Geitzenauer et al., 2016).

Fourthly, the factor role of actors is a political factor. This factor is based on the actor constellations and power distribution perspective and thus focuses on the actors' interests, beliefs, and power relations. According to this factor the process of implementation is influenced by the responses of those affected by the policy (Geitzenauer et al., 2016).

Lastly, the culture of compliance factor. This factor looks at the national culture of compliance and is based on the culture of compliance perspective. It looks at if the member state has a culture of negotiation and bargaining or of direct compliance (Geitzenauer et al., 2016).

### **Malovrh et al. (2019) Nature conservation policy implementation framework**

Previous studies have shown that national implementation of nature conservation policies differs across the EU. Therefore Malovrh et al. (2019) developed a framework that offers a structural approach to analyse the factors that influence policy implementation for nature conservation, however this framework is also applicable for other studies on policy implementations, such as the implementation of GLWTs.

The *framework for the evaluation of operational environment factors influencing nature conservation policy implementation* finds its basis in neo-institutional theory and governance theory. The framework consists of three factors: legal and policy, economic and social factors (Malovrh et al., 2019).

Malovrh et al. (2019) combines the legal and policy factors because these two factors often overlap. The legal and policy factor therefore includes international agreements, national legal frameworks and policy frameworks and institutional setups. The economic factor is mostly focused on the funding and the social factor on stakeholder participation and cooperation (Malovrh et al., 2019). Table 1 shows a quick overview of these three factors that influence the implementation of conservation policies.

**Table 1**

*Factors Framework for the evaluation of operational environment factors*

<b>Legal and Policy Factors</b>	<b>Economic factors</b>	<b>Social factors</b>
International Conventions and Agreements	Financing mechanisms	Stakeholders' involvement in the establishment and management
National Legal Framework of Nature Conservation	Compensatory measures	Stakeholders' involvement in the implementation
Institutional Set-Up		
Legal Status of Protected Areas		
Transposition of the Directives		
Management Plans for the Directive		

*Note.* Modified adopted from “Evaluation of the Operational Environment Factors of Nature Conservation Policy Implementation: Cases of Selected EU and Non-EU Countries”, by Malovrh et al., 2019, *Forest*, 10.

Malovrh et al. (2019) also applied this framework to five EU countries. Their analysis showed that the legal frameworks were generally well established, while economic factors were seen as the major obstacle for nature conservation development. Market-based funding was suggested as a more stable alternative than the often-used state budget funding. Social factors were seen as the main failure, due to a top-down decision-making process, limiting stakeholder involvement, transparency, and continuity (Malovrh et al., 2019).

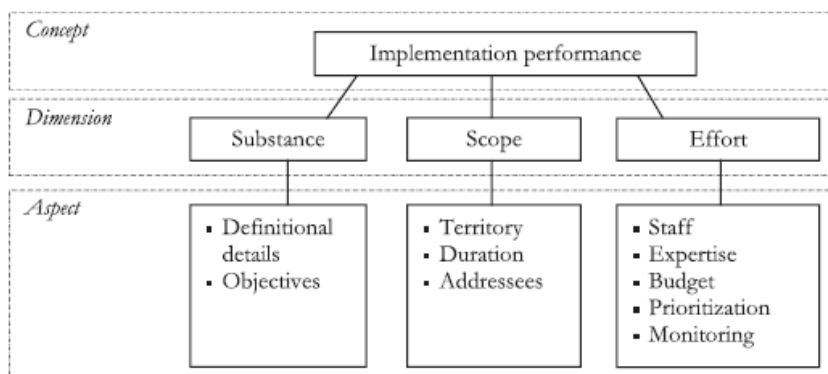
### **Bondarouk and Mastenbroek (2018) Policy implementation performance framework**

Bondarouk and Mastenbroek (2018) developed a policy implementation performance framework. Policy implementation performance is the intensity of policy outputs delivered by implementers in response to EU policy instruments. Their framework consists of three dimensions (substance, scope and effort) as shown in figure 2.

Substance is the essence of what central issue is being regulated by the policy instrument. This dimension consists of the definitional details and the objectives of the policy. The dimension scope is about the range of the policy. It answers the question of where, when and to whom the policy task applies. The scope dimension looks at three aspects, namely territory, duration, and addressees. Lastly, the effort dimension consists of the factors affecting the probability that substantial requirements are effectively achieved. Aspects of this are staff, expertise, budget, prioritisation, and monitoring (Bondarouk & Mastenbroek, 2018).

**Figure 2**

*Policy implementation performance framework*



*Note.* Adopted from “Reconsidering EU Compliance: Implementation performance in the field of environmental policy”, by Bondarouk & Mastenbroek, 2018, *Environmental Policy and Governance*, 28, p. 18.

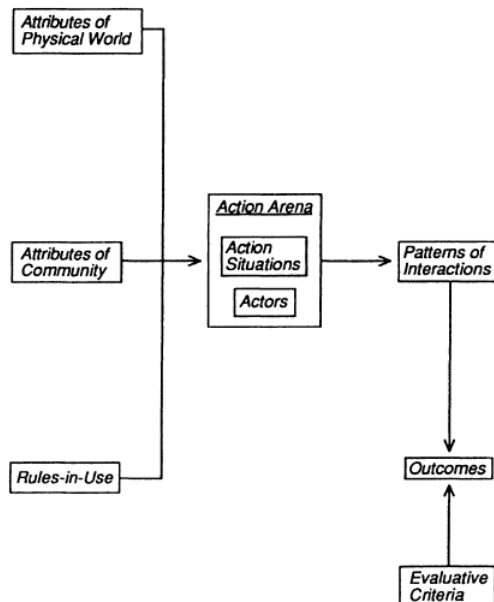
### **Ostrom et al. (1994) Institutional Analysis and Development Framework**

Another framework that can be used to analyse policy implementation is the Institutional Analysis and Development Framework from Ostrom et al. (1994). This is a well-established framework for analysing gaps between policy intentions and outcomes by explaining how national and international policies influence local implementation (Clement, 2010).

Figure 3 shows the IAD framework by Ostrom et al. (1994). This research focuses on the three factors that influence the action arena as these can be seen as the implementation factors and therefore help to explain what influences the degree of success of the implementation of GLWTs.

### Figure 3

The IAD Framework by Ostrom et al. (1994)



Note. Adopted from “Rules, Games, and Common-Pool Resources”, by Ostrom et al., 1994, University of Michigan.

Ostrom et al. (1994) starts with identifying three factors that influence the outcomes of policy implementation.

Firstly, the attributes of the physical world, according to Ostrom et al. (1994) “*the physical possibility of actions, the producibility of outcomes, the linkages of actions to outcomes, and the knowledge of actors all depend on the physical world and its transformations*” (Ostrom et al., 1994, p. 44). The physical attributes of the relevant world can be examined by asking a series of questions about how the world being acted upon in a situation affects the outcome, action sets, action-outcome linkages, and information sets in that situation (Ostrom et al., 1994).

Secondly, the attributes of the community influence the implementation of policy. These attributes consist of “*generally accepted norms of behaviour, the level of common understanding about action arenas, the extent to which the preferences are homogenous and distribution of resources among members*” (Ostrom et al., 1994, p. 45).

Lastly, the rules of the game influence the implementation of policy. The rules prescribe what actions are required, prohibited or permitted and the sanctions authorised if the rules are not followed (Ostrom et al., 1994).

### 2.1.4 Comparison and reflection implementation frameworks

Thus, the different frameworks reviewed each provide valuable insights into specific aspects of policy implementation. However, while there is considerable overlap between the frameworks, none of them offer a complete picture of the complexity encountered in implementing spatial measures such as GLWTs under the WFD.

Geitzenauer et al., (2016) framework offers a comprehensive foundation on policy implementation by providing insights into the problem pressure, administrative capacities, pressure for institutional change, role of actors and culture of compliance. However, this framework lacks an explicit focus on legal policy fit that the frameworks of Malovrh et al. (2019) and Bondarouk and Mastenbroek (2018) do offer.

While the framework of Malovrh et al. (2019) provides insights into legal and policy, economic and social conditions, the framework lacks insights into problem pressure. While the framework of Bondarouk and Mastenbroek (2018) offers insights into the legal, policy, and administrative conditions but lacks an actor-based approach. The framework by Ostrom et al. (1994) is the only framework that offers insights into the effect of attributes of the physical world on policy implementation. While this framework includes social, legal, and policy conditions, it does not account for the administrative capacities.

None of the frameworks fully account for all the different factors that can influence the implementation of policy. Therefore, a combined model, with a holistic view, is necessary to provide insights into all the different aspects that influence the implementation of GLWTs in the Markermeer. This integrated framework is further explained in paragraph 2.3.

## 2.2 Policy Success

According to Luetjens, et al. (2019), a project is a success “*to the extent that: a) it demonstrably creates widely valued social outcomes; through b) design, decision-making and delivery processes that enhance both its problem-solving capacity and its political legitimacy; and it c) sustains this performance for a considerable period even in the face of changing circumstances*” (Luetjens, et al., 2019, p. 8).

To analyse the project success, they established the PPPE model. For this research the model will be used to analyse different project. The model consists of four dimensions: programmatic, process, political, and endurance assessment (Luetjens et al., 2019).

- The programmatic assessment is a ‘classic’ evaluation of a project focused on the degree to which a project achieves valuable social impacts (Compton, Luetjens, & 't Hart, 2019).
- The focus of the process assessment is on how the policy design and decision-making process is organised and how this contributes to public problem-solving that enhances policy effectiveness (Compton et al., 2019).
- The political assessment examines how political coalitions and policymakers can build and maintain support for the project and the degree to which the project enhances their reputation (Compton et al., 2019).
- The endurance assessment analyses the degree to which the project’s programmatic, process, and political performance is maintained over time (Compton et al., 2019).

An important note on this is that to claim that a project is a success keeps an act of interpretation or framing (Luetjens et al., 2019). So, the success of a project is multi-dimensional and is therefore analysed with four different assessments: programmatic, process, political and endurance.

## 2.3 Conceptual framework

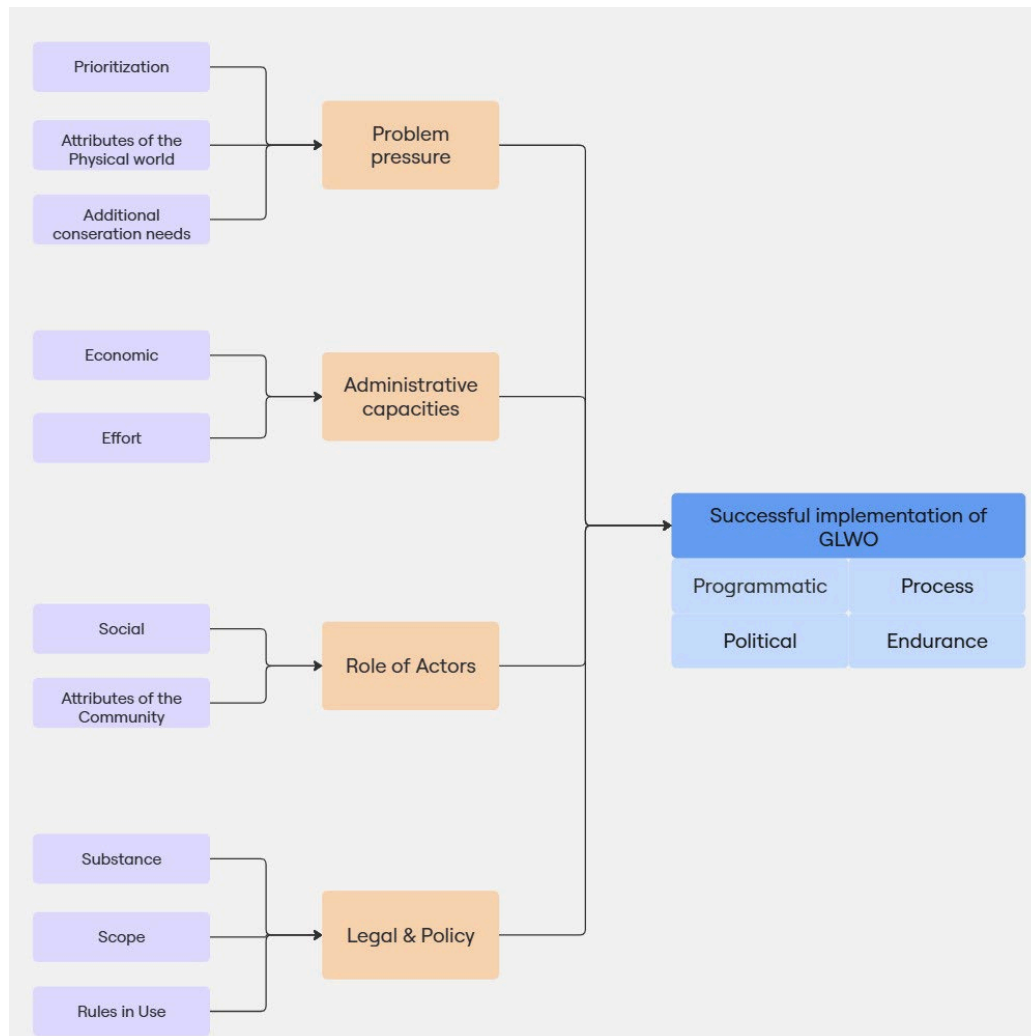
The four theoretical frameworks discussed in the previous section, show a number of factors that influence the implementation of European policy and directives. The frameworks show many comparisons but also have some differences. To get a comprehensive view on policy implementation, a new conceptual framework of policy implementation was developed.

Figure 4 shows this newly constructed conceptual framework. The basis of the model consists of the Analytical Framework by Geitzenauer et al. (2016). However, in his model 'legal and policy', from the framework by Malovrh et al. (2019) was not included. The legal and policy factor by Malovrh et al. (2019) seems an important factor to include in this newly constructed policy implementation framework, as the framework of Bondarouk and Mastenbroek (2018) also consists of two factors that influence legal and policy.

The factors Pressure for Institutional Change and Culture of Compliance are primarily concerned with national-level characteristics, and therefore particularly relevant when comparing different countries. However, this research focuses on a single waterbody within one national context, therefore the influence of these implementation factors are assumed to be constant across the four projects. As a result, these implementation factors have been excluded in the conceptual framework.

Therefore, the main factors of policy implementation are problem pressure, administrative capacities, role of actors, and legal & policy. The other factors of the frameworks can be divided under these key factors, as seen in figure 4. The conceptual framework with the indications of the theoretical sources of each factor can be found in Appendix 1.

**Figure 4**  
*Conceptual framework policy implementation success*



## 2.4 Gradual land-water transitions

The realisation of GLWT in the Markermeer has received more attention with the implementation of the WFD because of the large potential positive effects on the natural values by providing space for flora and fauna (de la Haye et al., 2011; Verhofstad et al., 2021; van Vossen & Verhagen, 2009).

Gradual land-water transition zones create habitats for both terrestrial and aquatic organisms within a vertical zonation with small gradients between land and water, in contrast to open water areas where this gradient is not present (Schmieder, 2004). GLWT are banks that have been designed by humans in such a way that the development of nature, landscape and ecology is stimulated (van Vossen & Verhagen, 2009). Gradual land-water transitions, therefore, play an important role for the overall biodiversity and ecosystem processes in lakes by enhancing habitat complexity and heterogeneity (Jin, et al., 2023). In addition to improving the quality of nature, the construction of GLWTs can also have other advantages, such as an integrated approach to policy tasks, social and economic benefits and tackling multiple sustainable development goals simultaneously (Dario, Curley & March, 2024; Ministry of AFFN, 2024).

As such, they can be seen as a form of Nature-based Solutions (NbS), which are defined as solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience (European Commission, 2021; Ministry of AFFN, 2024). GLWTs meet this definition as they have a positive influence on the water quality, biodiversity, and social challenges, such as recreation and flood safety (Dario et al., 2024; Informatiepunt Leefomgeving, 2025; Ministry of AFFN, 2025).

### 2.4.1 The complexity of implementing GLWTs

While GLWTs offer substantial ecological and societal benefits, their implementation poses several challenges as this is influenced by multiple different factors (Morris, et al., 2019). GLWTs require significant land area, which creates competition with other spatial demands (Dorst et al., 2021; Ministry of Infrastructure and Water Management (I&W), 2024; Ministry of AFFN, 2024; Wuijts et al., 2022). Secondly, their effectiveness is strongly context-dependent, which can result in (design) uncertainties about long-term performance and costs (Dario et al., 2024; Morris et al., 2019). Institutional barriers also play an influencing role as regulations and permitting systems tend to prefer traditional solutions, such as shoreline hardening techniques, over GLWTs (Ministry of AFFN, 2024; Wetzler et al., 2024; Dario et al., 2024). Furthermore, financial barriers or incentives strongly influence the abilities to realise GLWTs (Dario et al., 2024; Morris et al., 2019).

In addition to these factors, there are more possible drivers and barriers that can be distinguished for the implementation of GLWTs or general NbS measures. To relate this to this research, the various implementation factors for GLWTs have been organised based on the previously mentioned conceptual framework. Table 2 shows the drivers that are mentioned in the literature about the implementation of GLWTs.

**Table 2**

*Drivers of implementation of GLWTs*

Implementation factor	Driver	Source
<b>Problem Pressure</b>	Growing public outreach and awareness	Morris et al., 2019
	Climate change and associated sea level rise, and increased flood risk	Morris et al., 2019
	Coastal urbanisation, economic development, and urban renewal	Morris et al., 2019
	Embedding in local spatial and socio-cultural context	Dorst et al., 2021
<b>Administrative capacities</b>	Advances in science and technology	Morris et al., 2019
	(Community) education	Dario et al., 2024
	Financial incentives	Dario et al., 2024
	Demonstration projects: experimenting with green-grey/hybrid solutions	Dario et al., 2024
<b>Role of actors</b>	Knowledge sharing	Dario et al., 2024
	Trust, clear communication, social learning	Wamsler et al., 2020
<b>Legal and Policy</b>	Integration in governance and policy	Morris et al., 2019
	Criteria development and policy preference	Dario et al., 2024

Table 3 shows the barriers to the implementation of GLWTs.

**Table 3**  
*Barriers to implementation of GLWTs*

Implementation factor	Barrier		Source
<b>Problem Pressure</b>	Lack of awareness by decision-makers of the available options		Morris et al., 2019
	Impact GLWTs dependent on local context		Dorst et al., 2021
	Lack of Space	Various spatial challenges compete with each other	Ministry of AFFN, 2024
		Competition for urban space	Dorst et al., 2021
		Land availability	Ministry of I&W, 2024
		Voluntary land sales limit reached	Wuijts et al., 2022
<b>Administrative capacities</b>	Insufficient knowledge	Insufficient awareness of the possibilities that NbS offer	Dorst et al., 2021; Ministry of AFFN, 2024
	Insufficient knowledge sharing		Dorst et al., 2021 Ministry of AFFN, 2024
	Design uncertainties: uncertainties regarding the long-term performance, costs and maintenance of GLWTs		Dario et al., 2024
	Financial barriers	Insufficient financing	Ministry of I&W, 2024
		Influence of costs	Morris et al, 2019
		Benefit holders don't automatically co-finance	Ministry of AFFN, 2024
		Long-term benefits, while high short-term investment	Ministry of AFFN, 2024
	Insufficient public resources for maintenance		Dorst et al., 2021
	Insufficient capacity		Ministry of I&W, 2024
	Increasing workload		Wamsler et al., 2020
<b>Role of Actors</b>	Influence of politics		Morris et al., 2019
	Influence of community values		Morris et al., 2019
	Lack of transparency		Wetzler et al., 2024
	Lack of involvement of private sector		Dorst et al., 2021
	Lack of cooperation and coordination		Dorst et al., 2021
	Failure of decision makers to engage with the multiple stakeholders involved.		Morris et al, 2019
	Limited stakeholder involvement or not representative stakeholder involvement		Dorst et al., 2021
	Use, access and visual concerns of waterfront homeowners		Dario et al., 2024
<b>Legal and Policy</b>	Policies are insufficiently flexible to accommodate new approaches		Morris et al., 2019
	Criteria for permits are too restrictive.		Wetzler et al., 2024
	GLWTs are usually more complicated to permit than shoreline hardening techniques		Dario et al, 2024
	Permitting mismatches		Dario et al., 2024

This wide variety of implementation factors shows that GLWTs are not only ecologically complex but are also affected by the implementation factors problem pressure, administrative capacities, role of actors, and legal and policy.

## 2.5 Operationalisation

To answer the research question *What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?* the factors of the conceptual framework are operationalised.

### 2.5.1 Dependent variable

The dependent variable in the conceptual framework is the successful implementation of GLWTs. To make this measurable, it is important to operationalise this concept. The operationalisation of this concept is based on the policy success assessment map by Luetjens et al. (2019) and the operational coding rubric by Compton et al. (2019) and can be found in table 4.

**Table 4**

*Operationalisation dependent variable: implementation success GLWTs*

Concept	Variable	Indicator
<b>Programmatic success</b>	Realisation of public value	Outcomes
		Public value proposition
		Costs and benefits
<b>Process success</b>	Organisation policy design and decision-making process	Involvement of stakeholders
		Vigilance
		Consideration of values and interests
		Policy instruments
<b>Political success</b>	Build and maintain support	Political support
		Political legitimacy
	Reputation	Reputational impact
		Organisational reputation
<b>Endurance success</b>	Success maintained over time	Maintaining programmatic success
		Maintaining process success
		Maintaining political success
		Adaptability to changing circumstances

## 2.5.2 Independent variable

The independent variable concepts demonstrated in the conceptual framework are also operationalised. The operationalisation of these concepts can be found in table 5.

**Table 5**

*Operationalisation of independent variables: implementation factors*

Concept	Variable	Indicator
<b>Problem pressure<sup>1</sup></b>	Additional conservation needs to comply <sup>1</sup>	How far the current situation deviates from the desired situation <sup>1</sup>
		(Lack of) awareness <sup>6</sup>
	Prioritisation <sup>3</sup>	Public outreach <sup>6</sup>
		Coastal urbanisation, economic development, urban renewal <sup>6</sup>
		Lack of space: Various spatial challenges compete <sup>7</sup>
		Impact GLWTs dependent on local context <sup>7</sup>
Attributes of the physical world <sup>5</sup>	Embedding in local space and social-cultural context <sup>7</sup>	
	Financial barriers <sup>6</sup>	
	Financial incentives <sup>8</sup>	
<b>Administrative capacities<sup>1</sup></b>	Financing mechanisms <sup>2</sup> /Budget <sup>3</sup> /Funds <sup>1</sup> /Pay-off rules	Insufficient public resources for maintenance <sup>7</sup>
		Land ownership
		Perception of sufficient budget
		Project time/ process time
		Design (un)certainities <sup>8</sup>
	Time <sup>1</sup>	Knowledge gaps <sup>7</sup>
		Absence/presence of science-based evidence of initiatives
		Advances in science and technology <sup>6</sup>
		Perception of expertise
		Perception of information availability
		(Community) Education <sup>8&amp;9</sup>
		Demonstration projects <sup>8</sup>
	Information rules <sup>5</sup> : Data <sup>1</sup> , Expertise <sup>1&amp;3</sup>	Perception of sufficient staff
	Staff <sup>3</sup>	

		Capacity <sup>9</sup>
	Monitoring <sup>3</sup>	Perception of monitoring programs
<b>Role of actors<sup>1</sup></b>	Attributes of the Community <sup>5</sup> /Interests <sup>1</sup> / Beliefs <sup>1</sup>	Interests of the respondent <sup>1</sup>
		Influence of community values <sup>6</sup>
		Similarities of interests?
		Differences of interests?
		Beliefs about WFD <sup>1</sup>
		Beliefs about land-water transition zones
	Power <sup>1</sup> / Aggregation rules <sup>5</sup> / Position rules <sup>5</sup> / Authority rules <sup>5</sup>	Who has formal power?
		Who has informal power?
		Influence of politics <sup>6</sup>
		Sense of responsibility
	Social <sup>2</sup> / Boundary rules <sup>5</sup>	Actor involvement
		Stakeholder involvement in the establishment and management <sup>2&amp;6&amp;7</sup>
		Perceived effectiveness involvement in the establishment and management
		Stakeholder involvement in the implementation <sup>2</sup>
		Perceived effectiveness involvement in the establishment and management
Lack of involvement of private sector <sup>7</sup>		
Trust <sup>9</sup>		
Knowledge sharing <sup>7&amp;8</sup>		
Cooperation <sup>7</sup>		
<b>Legal &amp; Policy<sup>2</sup></b>	Substance <sup>3</sup>	Transparency <sup>10</sup>
		Definitional details <sup>3</sup>
		Objectives <sup>3</sup>
		Perceived feasibility of objective
	Scope <sup>3</sup>	Criteria development and policy preference <sup>8</sup>
		Perceived clarity where implementation should happen (Territory <sup>3</sup> )
		Perceived clarity when implementation should happen (Duration <sup>3</sup> )
		Perceived clarity who is responsible (Addressees <sup>3</sup> )

		Policy flexibility <sup>6</sup>
		Policy/permits restrictive of mismatches <sup>8&amp;10</sup>
	Scope rules <sup>5</sup>	Awareness of intended policy outcomes
		Integration in governance and policy <sup>6</sup>
	WFD directive	Conventions & Agreements <sup>1</sup>
		Legal status of protected areas <sup>1</sup>
		Transposition of the directives <sup>1</sup>
		Management plans for the directives <sup>1</sup>

Note.

1. Concept from the analytical framework by Geitzenauer et al., 2016.
2. Concept from the framework by Malovrh et al., 2019.
3. Concept from the policy implementation performance framework by Bondarouk & Mastenbroek, 2018.
4. Concept from the main perspectives on policy implementation by Geitzenauer et al., 2016.
5. Concept from the framework by Ostrom et al., 1994.
6. Driver/barrier from Morris et al., 2019
7. Driver/barrier from Dorst et al., 2021
8. Driver/barrier from Dario et al., 2024
9. Driver/barrier from Wamsler et al., 2020
10. Driver/barrier from Wetzler et al., 2024

## 3. Methodology

This chapter explains the methodology of the research. First, the research ideology on which this research will be based will be explained, secondly the strategy of the research will be specified. Next, the research methods, data collection and data analysis will be explained. The methodology chapter will end with a reflection on the validity and reliability of this research.

### 3.1 Research paradigm

A research paradigm is the basic belief system that guides the researcher in ontological, epistemological and methodological choices, shaping the researcher's assumptions about how to understand the research question, methods and findings, and thereby influencing both the research process and outcomes (Guba & Lincoln, 1994; (Saunders, Lewis, & Thornhill, 2015).

The dominant research paradigm in his research is post-positivism. This paradigm is suitable for this research as it acknowledges the existence of an objective reality while accounting for limitations by human perceptions and social constructs (Guba & Lincoln, 1994). The implementation of GLWTs is shaped by many different interacting factors, making it unlikely that this research will be able to explain all the factors involved. This aligns with the post-positivist view that reality is multifaceted and not fully observable (Guba & Lincoln, 1994). Furthermore, axiological assumption, or how the researchers' values influence the research, also plays a role in this research, as the objectives of the WFD and implementation of GLWTs involve value driven decisions, for example about environmental priorities (Saunders et al., 2015). This research thus aims to approximate reality as closely as possible, while acknowledging its limitations.

### 3.2 Research strategy

Through a better understanding of the research paradigm lying at the basis of this research, the research strategy can be defined. This research uses an embedded single case study design, with the Markermeer as the overarching case and four spatial projects as embedded units of analysis (Yin, 2003). As the Markermeer is a large area with many different spatial projects, this strategy enables an in-depth analysis of the complexity of the implementation of GLWTs while keeping the research feasible.

Having chosen an embedded case study as the research strategy, it is important to elaborate on its relevance and application in this research.

#### 3.2.1. Relevance

An (embedded) case study strategy is particularly suitable for research that seeks to understand complex phenomena, such as the implementation of GLWTs, within a specific context, in this case the Markermeer. This strategy allows for a holistic approach, identifying different implementation factors, by collecting a large body of data on everything to do with the implementation of GLWTs in the chosen projects (van Thiel, 2007).

This approach aligns with the research aim to analyse the different factors involved in the implementation of GLWTs. According to van Thiel (2007), a case study strategy creates a richly

detailed and extensive description of the area under study, gaining context-specific insights into the phenomenon. In addition, the applied nature of a case study fits the research aim by contributing to the understanding and improvement of policy implementation in relation to a concrete social issue (van Thiel, 2007).

### 3.2.2 Application

The application of the embedded case study strategy consists of selecting the (number of) cases and determining the embedded units and number of measurements (van Thiel, 2007).

#### Case area

According to Hay and Cope (2021), case study research involves the study of a single instance or a small number of instances of a phenomenon, aiming to explore the nuances, the contextual influences on, and explanations of that phenomenon. The different factors involved in the implementation of the WFD can vary widely per context (Wiering, et al., 2018). Examining Europe, or the entirety of the Netherlands, would be too broad, as the factors influencing the implementation of GLWTs can vary significantly between water bodies. Such an approach, therefore, risks oversimplifying these differences, resulting in limited insights. Focusing on a single water body allows this research to reduce the complexity caused by contextual variations, giving a better insight into what the success of the implementation of GLWTs influences.

The Markermeer was selected as the overarching case of this embedded case study. The Markermeer is part of the Rhine-East (WFD) water body and is an area in which multiple spatial developments are taking place or have taken place that are relevant to the implementation of GLWTs. Despite the relevance of the WFD objectives for this area, little research seems to have been done to date into the relationship between the realisation of GLWTs in the framework of the WFD in this area.

In addition, the choice for the Markermeer is also practical. From an introductory meeting with the senior expert in water and ecology at Haskoning (internship company), multiple relevant concrete cases were named in this area that they have worked on. This offers valuable starting points for the analysis. In addition, as a researcher I have direct access to information sources within the area thanks to personal networks and knowledge of the region. This contributes to the feasibility and depth of the study.

As a result, the Markermeer is a good fit for research into what influences the degree of success of the implementation of GLWTs in the Markermeer.

#### Embedded units: four selected projects

There are many spatial developments taking place or that have taken place in the Markermeer related to the realisation of GLWTs. Therefore, it was decided to focus on four spatial projects in this research to enable in-depth research and improve the feasibility. To determine these projects, both discussions with Haskoning and an area analysis were used. The area analysis focused on a description of the area, the current WFD status and important spatial developments. The primary sources of this analysis were the “*Trendanalyse Natuurthermometer*” (Grutters & Löwenhardt, 2022) and “*MIRT Overzicht 2025*” (Ministry of I&W, 2024). With this information, a project list was drawn up in which it became clear that there are two types of spatial developments that are relevant for the implementation of GLWTs: projects that have a main focus on water quality and projects that implement GLWTs to achieve other goals than water quality.

This research looks at two projects that have water quality as the main goal, namely the Reinforcement of the Houtribdijk in combination with Trintelzand (hereafter referred to as Trintelzand) and Marker Wadden (Plus). The other two projects have another main objective. Reinforcement Markermeerdijken has flood safety as the primary goal, while Waterfront Lelystad has housing construction as the main goal. The variation of these project objectives allows for a richer comparative analysis, as it can give insight into the effect of the main objective on the implementation of GLWTs.

Concluding, this research applies an embedded single case study strategy with the Markermeer as the overarching case, with a single point of measurement and multiple research methods to give insight into what influence the degree of success of the implementation of GLWTs in the Markermeer.

### 3.3 Research design/methods

In order to explore, describe and evaluate the factors that influence the success of the implementation of GLWTs, different research methods were combined.

The post-positivism paradigm allows for both qualitative and quantitative research methods. However, this research focuses on qualitative research methods and data. This method was chosen to gain insights into the experiences of the different actors involved in the implementation of GLWTs in the Markermeer.

To identify the factors influencing the implementation of GLWTs in the Markermeer, multiple steps were taken. The research started with desk research to get a better understanding of the area and policy framework in the Markermeer (Chapter 4. Case Study). After these fourteen semi-structured interviews were conducted, transcribed and coded. The data of both the interviews and desk research were then further analysed to identify similarities and differences between them. The methods are further explained below.

#### 3.3.1. Literature review

This research method provides an overview of the knowledge that already exists on a subject, in this case the knowledge on the implementation (factors) of European Directives. This review serves as a basis for the research problem, the scientific and societal relevance of the study and the theoretical framework (van Thiel, 2007). The literature review is done with the following keywords: policy implementation, European policy implementation, European Water Framework Directive, WFD, spatial factors policy implementation, barriers to implementation of WFD and GLWTs, and implementation strategies for the WFD and GLWTs.

#### 3.3.2 Desk research

Desk research is a research method that uses existing data sources (van Thiel, 2007). In contrast to a literature review, which is designed to give an overview about the knowledge that already exists, desk research collects the existing research data that have been collected by someone else to explain a certain phenomenon (van Thiel, 2007). The desk research involved the following keywords: WFD Markermeer (*Kaderrichtlijn Water*), *spatial projects Markermeer*, *WFD improvement program (KRW-verbeterprogramma)*, Environmental Impact Assessment [*project*]

(*Milieu-effectrapportage [project]*), projects *Rijkswaterstaat Markermeer*, *PAGW*, *TBES*, *KRW* [project name], *GLWTs Markermeer (land water overgangen Markermeer)*.

The primary documents used in the desk research involve the river basin management plans, recent MIRT overviews, the environmental impact assessments of the different projects, and the “*Trendanalyse Natuurthermometer Markermeer-IJmeer*” (Grutters & Löwenhardt, 2022).

### 3.4.3. Semi-structured interviews

To gain a better understanding of the factors influencing the successful implementation of GLWTs, fourteen semi-structured interviews were conducted. According to van Thiel (2007), semi-structured interviews are a flexible way of collecting data, allowing to explore pre-identified themes while also enabling respondents to introduce new insights. This method was chosen to verify the pre-identified implementation factors of GLWTs in the conceptual framework (figure 4), and to explore additional or context-specific factors that are not included in this framework.

During this research a non-probability sampling method was used (van Thiel, 2007). For each of the selected projects, an analysis was performed to identify relevant stakeholders involved in the implementation of GLWTs in the projects (see Appendix 2).

Respondents were selected based on their role and organisation, with deliberate variation across process, substantive, and executive roles. This ensured a broad range of perspectives across the different roles involved in the implementation of GLWTs.

In total seventeen people were approached for participation, each of whom received the same standardised information letter outlining the aims and procedures of the research (see Appendix 3). Fourteen respondents agreed upon doing the interview. Table 6 provides an overview of the respondents, their organisation, their role, the projects they were involved in, and when the interview took place. Notably, several respondents were involved in multiple of the selected projects. This overlap enabled the collection of insights across projects and allowed for a more comprehensive understanding of the implementation processes of GLWTs, as the participants were asked if they saw differences or similarities between these projects.

The interviews were conducted in Dutch as this is the native language of the respondent and lasted approximately 60 minutes. The interview guide (appendix 4) was structured in five subcategories: 1) Introduction, 2) WFD general, 3) WFD in the projects, 4) GLWTs in the projects, and 5) possibilities and barriers for the future.

**Table 6**  
*Respondents interviewed*

Respondent details				Role			Projects <sup>1</sup>			
Date of interview / Function / Organisation				Executive / Process / Substantive			MMD	TZ	MW	WL
A	22 april 2025	Stakeholder manager	Freelancer (Formally Rijkswaterstaat)		●		✓			
B	23 april 2025	Coordinator WFD	Rijkswaterstaat			●		✓	✓	✓
C	24 april 2025	Project director	Natuurmonumenten	●					✓	
D	24 april 2025	Programme manager	Municipality Lelystad	●						✓
E	24 april 2025	Project director	Freelancer for Natuurmonumenten, Municipality Lelystad	●				✓	✓	✓
F	25 april 2025	Senior advisor	Rijkswaterstaat			●		✓	✓	
G	25 april 2025	Network Coordinator	Rijkswaterstaat			●	✓	✓	✓	✓
H	28 april 2025	Process- and stakeholder manager	Netherlands Enterprise Agency (Formally Rijkswaterstaat)		●			✓	✓	
I	29 april 2025	Policy advisor	Ministry of I&W			●			✓	✓
J	1 May 2025	Project manager	Freelancer (Formally Rijkswaterstaat)	●				✓	✓	
K	8 May 2025	Policy advisor	Province of Noord-Holland			●	✓		✓	✓
L	9 May 2025	Manager	Province of Flevoland			●		✓	✓	✓
M	20 May 2025	Senior advisor water and ecology	Haskoning			●		✓	✓	✓
N	20 May 2025	Programme manager	Coalitie Blauwe Hart			●	✓	✓	✓	✓

1. MMD: Reinforcement of the Markermeerdijken, TZ: Trintelzand, MW: Marker Wadden, WL: Waterfront Lelystad.

Participants were asked to give informed consent to participate in the research and the recording of the interview. The informed consent procedure followed the guidelines provided by the Radboud University (n.d.-c). To document this informed consent, the ‘informed consent form adults 18+’ was used (Radboud University, n.d.-b). This document consists of an introduction, a description of the research, an explanation of what was expected from the participant, the notion of voluntary participation, an explanation of data use, a consent statement and contact information for further questions (see Appendix 5). The respondents were informed about this procedure in the first mail contact (invitation for interview), and this was then further discussed and signed before the interview started.

Some of the respondents indicated prior to the interview that they preferred to give permission for the information used in the thesis before it would be published. The respondents wanted to check

if the translation from interview to results was coherent with their story. In order to protect the privacy of the various respondents in this process, the respondents received a separate document containing only their own quotes and paraphrases that would be used. The results of the other respondents were not added to this document. The disadvantage of this method is that the respondent could not determine the full context of the results of the interviews. Therefore, these respondents had the opportunity to give comments or ask questions about this. The comments of the respondents were subsequently added as comments in the transcript and incorporated in the results.

During the interview, the interview was recorded, and the researcher took notes of the most important concepts and ideas on the printed interview guide. After the interview had been held, a transcript was made based on the recording. According to van Thiel (2007), a transcript is the most accurate and full report a researcher can give of an interview.

### 3.3.4 Data analysis

The data in this research passed through different phases of data handling, each of which was carefully documented to allow for transparency and reliability. After transcribing the interviews, the next step involved analysing and coding the data with the use of the Atlas.ti software. Atlas.ti is a qualitative research tool that can be used for coding and analysing interview transcripts (Radboud University, n.d.). Using Atlas.ti allowed to store a large body of data in a systematic way and document the steps taken in the data handling process.

The transcripts were coded by dividing the data units into even smaller units, labelling these units with a code, and comparing the different codes with each other (van Thiel, 2007). This was done in three steps:

1. Open coding: The transcripts were first examined broadly to identify striking themes and patterns. These were then connected with keywords with attention to the different perspectives of the respondents and their vocabulary (Scheepers & Tobi, 2021).
2. Axial coding: The themes and patterns generated during the open coding phase were examined and compared to analyse similarities and differences between them. The goal was to connect the significant fragments to the associated concepts from the conceptual framework (figure 4) (Scheepers & Tobi, 2021).
3. Selective coding: In the final coding phase, the coding was on a higher level of abstraction to discover the interrelationships between the open and axial codes (Scheepers & Tobi, 2021). The focus was on identifying the implementation factors of the GLWTs and the success of the GLWTs.

During the data analysis phase, the researcher has to make choices, this can create the risk of personal bias (van Thiel, 2007). To counteract this bias, in this research, as van Thiel (2007) proposes, all the choices made during the data analysis phase will be carefully documented by keeping a log of all the decisions that were taken. This was done by keeping a codebook that can be found in appendix 6.

Thus, to answer the research question *What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?* data was collected through desk research and fourteen semi-structured interviews after which this data was coded and analysed.

### 3.4 Validity and reliability

Validity consists of two variants, namely, internal and external validity. The internal validity describes if the researcher really measured the effect they intended to measure (van Thiel, 2007). To ensure this in this research, the theoretical framework is adequately operationalised, and the measurement instruments used are clearly defined in the methodology chapter. Furthermore, a codebook was kept, and the coding was done with the use of Atlas.ti to provide insights into the data analysis process.

The external validity refers to the extent to which a study can be generalised (van Thiel, 2007). According to van Thiel (2007) it is challenging to generalise findings from a case study strategy to other situations. The implementation factors that influence the degree of success in projects can vary widely per context. This research thus focuses on one water body, but this limits the generalisability of this research to other water bodies. Therefore, even though this research can give insights into the broader challenges of WFD implementation, it is important to acknowledge the limitations of generalising these findings (van Thiel, 2007).

The reliability of a study depends on the accuracy and the consistency with which the variables are measured. When the variables are accurately and consistently measured, the more certain it is that the results are systematic and representative (van Thiel, 2007).

The reliability of this research was guaranteed by interviewing a variety of stakeholders involved. The sample consisted of fourteen stakeholders from different organisations and with different roles in the area. In this way, an attempt was made to realise a sample that was as representative as possible. To ensure that respondents felt at ease so that they were able to speak their minds, respondents were allowed to decide for themselves where they wanted the interview to take place, this could be at a location of their choice or online. In addition, a semi-structured interview guide was used so that respondents, despite some room for their own input, were largely asked the same questions. This contributed to the comparability of the answers.

According to van Thiel (2007) triangulation is highly suitable for case study research because it counters the problem of reliability and validity. This research ensures theory triangulation by combining multiple different theoretical frameworks on policy implementation that form the basis of the conceptual framework of this research. Furthermore, this research ensures data triangulation by combining desk research, focused on policy documents, and semi-structured interviews, focused on the experiences, opinions, and point of views of stakeholders in the area.

## 4. Case study

### 4.1 Markermeer

As indicated in paragraph 3.2, the Markermeer was chosen as the case study area because of its relevance, characteristics, and accessibility. In this paragraph, the area and policy framework are introduced.

The Markermeer is located in the provinces Noord-Holland and Flevoland, see figure 5. With 70.0000 hectares, the Markermeer is one of the largest nature reserves and freshwater lakes in Europe (Royal HaskoningDHV, 2014).

**Figure 5**

*Location projects in Markermeer*



Source. Modified adopted from *Google Maps*, by Google, 2025.

Originally, the Markermeer was part of the former Zuiderzee. The construction of the Afsluitdijk (1932) separated the IJsselmeer and Markermeer from the sea. After the construction of the Houtribdijk (1976), the Markermeer was also separated from the IJsselmeer (Grutters & Löwenhardt, 2022). The shore of the lake mainly consists of dikes with a retaining structure made of stone (Royal HaskoningDHV, 2014). The Markermeer is therefore a man-made freshwater lake (Grutters & Löwenhardt, 2022; Informatiehuis Water, 2024).

## 4.2 The WFD in the Markermeer

Since its adoption in 2000, the European Water Framework Directive (WFD) has been the cornerstone of water protection legislation in Europe and is seen as the most substantial and ambitious piece of European environmental legislation to date (European Commission, 2023; Voulvoulis et al., 2017). Its ambitious goals include the protection and restoration of water bodies to achieve ‘good status’ (both chemically and ecologically) by preventing further deterioration and, where possible, enhance the quality of waterbodies (Carter, 2007; European Commission, 2023; Kallis & Butler, 2001).

In the Netherlands the National Government is responsible for the translation of the WFD Directive into Dutch legislation and regulation. This is stated in the “*Omgevingswet*” and “*Besluit kwaliteit leefomgeving* (BKL)”, which are translated into national policy principles, frameworks and instruments. The Ministry of I&W is the coordinating authority (Informatiepunt Leefomgeving, n.d.-a). The Markermeer is a National Water and therefore falls under the responsibility of Rijkswaterstaat (Informatiehuis Water, 2024).

### Current WFD situation Markermeer

The Markermeer falls under the Rhine (-East) river basin and is larger than 100km<sup>2</sup> with stagnant, buffered fresh water without connection to the sea. Due to the physical changes resulting from human activities, the lake has the WFD status strongly modified (Informatiehuis Water, 2024).

According to the Trend Analysis Nature Thermometer by Grutters and Löwenhardt (2022), the conditions of the lake have hardly changed in the past three WFD periods. The physical-chemical and chemical quality requirements of the lake almost meet the standard. The biological quality elements of the WFD are still far below the target (see table 7) (Grutters & Löwenhardt, 2022).

**Table 7**

*Current situation WFD objectives in the Markermeer*

Thermometer	2014	2017	2020
Biological	0,56	0,59	0,59
Physical chemical	1,00	1,01	0,99
Chemical	0,96	0,95	0,97
Total score WFD	0,69	0,71	0,71

*Note.* Adopted from “Trendanalyse Natuurthermometer Markermeer-IJmeer” by Grutters et al., 2022, Sweco.

Resurfacing and suspended sediments in the lake have negative effects on the food web and water quality (Grutters & Löwenhardt, 2022). The main environmental bottlenecks for achieving the WFD objectives of the lake are the insufficient transparency of the lake (due to the high silt content) and the limited habitat diversity (Grutters & Löwenhardt, 2022). The insufficient biological quality elements indicate that ecological measures, such as GLWTs, are necessary to achieve the WFD objectives (de la Haye et al., 2011; Heins et al., 2020; Verhofstad et al., 2021; van Vossen & Verhagen, 2009).

The lake’s historical physical characteristics and its insufficient ecological quality, form the framework within which the implementation of GLWTs in the Markermeer takes place. The following chapter presents the results of the research into what influences the degree of success of the implementation of GLWTs in the Markermeer.

## 5. Results

Within this chapter, the results of this research are described, based on the desk research and the transcription and analysis of the fourteen semi-structured interviews. To be able to answer the main research question *What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?* the results are structured per project.

This chapter starts with the results of the general implementation factors of GLWTs in the Markermeer. After this the results of every project are described. This starts with a general description of the project, followed by the results of the implementation factors and concludes with the results of the success of the implementation of GLWTs in the project. After the results per project, a comparison of the results of the projects is made.

### 5.1 General Factors

During the interviews it became clear that a number of factors influence the entire Markermeer, and thus all the projects. It is therefore important to first explain these results before going into more depth about the results per project.

#### Problem Pressure

##### **Additional conservation needs to comply**

The majority of the respondents state that the current state of the Markermeer does not meet the WFD objectives (Respondent B, C, E, F, G, H, I, K, M & N, interview). Despite the fact that the lake is relatively clean and that the chemical quality requirements are not a problem, the ecological objectives are not met (Respondent B, C, E, I & N, interview).

At the same time, there is no consensus on whether additional GLWTs should be implemented in the Markermeer. Some of the respondents argue that additional spatial measures are necessary to achieve good ecological quality (Respondent B, C, E, & N, interview), while others indicate that the lake should mainly be left undisturbed, as spatial interventions cause disruption that negatively impacts ecological quality (Respondent G & I, interview).

##### **Prioritisation**

With the introduction of the WFD, resistance to the objectives arose, which resulted in few measures, such as GLWTs, being implemented.

*“The WFD was my first lobby dossier that I took on for Natuurmonumenten, and it made your hair stand on end, because the mood in The Hague was basically ‘What a disaster this Water Framework Directive is. How can we do as little as possible and make sure Brussel doesn’t notice?’ That was the mindset back in 2003-2004”* (Respondent C, interview)

At the time of the research, the approaching deadline for the WFD objective creates a sense of urgency. *“I also have the impression that the priority nationally has become much higher now that it is getting closer and we have to jump difficult gaps”* (Respondent G, interview). This sense of urgency is also reflected in the fact that an impulse programme for the WFD is introduced (Respondent H & K, interview).

## Physical factors

### Fixed water level

A conflicting interest regarding the ecological quality is the importance of the Markermeer as freshwater storage. As a result, the Markermeer has an unnatural, reversed, fixed water level. A fixed water level has a negative impact on GLWTs, as they need to be able to flood and drain (Respondent B, H & N, interview). In addition, for the benefit of freshwater storage, the lake has a reversed water level, this means that the water level is slightly higher in the summer and slightly lower in the winter. However, from an ecology perspective, and for the effectiveness of GLWTs, the water level should be high in the winter and low in the summer (Respondent H, interview). Therefore, the lake as freshwater storage negatively affects the implementation of GLWTs.

### Size of the lake

The Markermeer is approximately 70.000 hectares in size. Due to the size of the lake, the effects of the projects and constructed GLWTs are not immediately visible across the entire lake but can only be noticeable in the vicinity of the projects (Respondent C & J, interview). According to respondent K, this can have a negative impact on the legitimacy of projects that want to realise WFD objectives, as it makes it difficult to clearly communicate their effects, which is necessary for the accountability of the expenditure of public funds.

### Depth and shape of the lake

The Markermeer has an average depth of 4 metres, with steep paved banks, resulting in only a limited amount of GLWTs. The realisation of GLWTs at these deeper locations is expensive, as it requires relatively much more material to fill the area (Respondent F, H, J, M & N, interview).

### Lack of space

The problem of limited space for all the existing competing demands is a problem throughout the Netherlands, including in the Markermeer. The high pressure on the use of land and water is caused by Natura 2000, the WFD, housing, recreation, sand extraction, sailing, fishing, and freshwater supply (Respondent I, interview). This high usage pressure complicates the implementation of GLWTs because these measures also require space.

## Administrative Capacities

### **Information rules: data**

In general, the Markermeer is considered one of the best-researched lakes in the Netherlands (Respondent C, F & I, interview). Although there is a lot of knowledge available, there are still knowledge gaps regarding how GLWTs can best be managed and maintained (Respondent G, interview), the impact of deep sand extraction pits (Respondent E, interview) and the understanding of the entire system (Respondent B, interview). Sufficient knowledge can contribute to taking the right measures and adjusting projects based on this knowledge (Respondent B, E & I, interview). According to respondent E, knowledge gaps can lead to opinions playing a more important role in the decision-making process than facts, which complicates the decision-making process.

Thus, knowledge can have a positive influence on the implementation of GLWTs, as measures can be taken based on facts and the implementation can be better aligned with the functioning of the

system. On the other hand, insufficient knowledge can result in uncertainty and delays in the decision-making process, which puts pressure on the implementation of GLWTs.

## Role of Actors

### Political influence

Political decisions have a strong influence on the feasibility, cash flows, and scope of GLWTs. The national government determines the national policy and the prioritisation of objectives, for example, placing greater importance on flood safety and freshwater supply than water quality. Public organisations, such as Rijkswaterstaat, are obligated to follow this prioritisation. (Respondent A, B, D, J, M & N, interview).

*“The biggest problem often lies with the administrators and politicians ‘..’ who give the project a certain twist or set certain preconditions and frameworks that prevent it from getting of the ground”* (Respondent N, interview).

## Legal & Policy

### Programmatic Approach to Large Water Bodies

The Programmatic Approach to Large Water Bodies (PAGW: *Programmatische Aanpak Grote Wateren*), launched in 2018, is an investment programme of the ministries of I&W and AFFN aimed at improving the ecological (water) quality of large water bodies such as the Markermeer (Netherlands Enterprise Agency, 2022). The PAGW provides both direction and financing for additional measures to the Natura 2000 and WFD programmes, including the implementation of GLWTs (Bureau ZET, 2023).

### Future-Proof Ecological System

In the *Rijk-Regioprogramma Amsterdam-Almere-Markermeer* (RRAAM), the national government and regional authorities have established joint ambitions for the ecology, housing and mobility of this area. For ecology, these ambitions have been translated into the Future-Proof Ecological System (TBES: *Toekomstbestendig Ecologisch Systeem*) (Grutters & Löwenhardt, 2022). A key task of TBES is the realisation of GLWTs (Grutters & Löwenhardt, 2022).

### WFD: One out, all out principle

The ‘one out, all out principle’ of the WFD means that if one WFD objective is not met, the entire waterbody is classified as insufficient. This not only makes it difficult to achieve the WFD objectives but may also negatively affect the realisation of GLWTs. Despite major investments in projects, the area continues to score insufficient. According to respondents H and K this reduces the support and motivation for these types of measures. For example, this can have a negative influence on the accountability of expenditure for the realisation of GLWTs in the Markermeer (Respondent K, interview).

### Lack of a system approach

Policy is locally orientated due to area-specific objectives, while nature is a system that extends beyond local boundaries (Respondent G, J & N, interview). There seems to be an increasing need for programmes, such as the PAGW, that are more focused on the system conditions. The idea behind a system-based approach is that when you focus on the system, the quality of natural values will follow automatically (Respondent F, I & M, interview). Lack of such an approach may result to the underutilisation of possible synergy opportunities for the implementation of GLWTs.

## 5.2 The reinforcement of the Markermeerdijken

This paragraph presents the results of the project background, implementation factors and success assessments of the reinforcement of the Markermeerdijken. The results are based on the desk research and fourteen conducted interviews.

### 5.2.1 Project background

The Markermeerdijken are located between Hoorn and Amsterdam, along the Markermeer. The second national assessment under the Flood Defences Act showed that parts of the Markermeerdijken no longer meet the legal safety standards. The reinforcement of the Markermeerdijken is aimed at realising a safe dike that meets the legal safety standards against flooding (Alliantie Markermeerdijken, 2017). This project was carried out by the Markermeerdijken Alliance, who reinforced 33 kilometres of dike in the period from 2016 to 2021 (Province of North-Holland, n.d.-a).

In the Environmental Impact Assessment (EIA) for the reinforcement project, the effect of the project was assessed as generally neutral, as the covering of the new outside was comparable with the existing situation. To compensate for loss of natural values, a completely new (natural) area was developed, namely *Stadsstrand Hoorn* (Alliantie Markermeerdijken, 2017). *Stadsstrand Hoorn* consists of 1 kilometre of GLWTs, approximately 20 hectares, which positively contribute to the ecological quality of the Markermeer (Alliantie Markermeerdijken, 2017; Province of North Holland, n.d.-b; Recreatieschap Westfriesland, n.d.).

### 5.2.2 Implementation factors

This paragraph provides an overview of the results from the desk research and fourteen conducted interviews regarding the factors that influence the implementation of GLWTs in the project reinforcement of the Markermeerdijken.

#### **Problem pressure**

##### *Competition with other interests*

The reinforcement of the Markermeerdijken is a project within the High-Water Protection Programme (HWBP). and therefore, has the primary objective of flood safety. As a result, water quality objectives do not fall under the scope of the project (Respondent A, interview).

The connection between flood safety, recreation, and water quality can be seen in the project *Stadsstrand Hoorn*. As part of the project, a “*very long sandy foreshore*” was realised (Respondent A, interview). First and foremost, this GLWT has a flood safety objective by protecting the dike through breaking the waves (Respondent A, interview). Secondly, it has a recreational objective because it can be used for leisure activities (Respondent A, K & M, interview). Recreation benefits from the realisation of GLWTs, as more recreational possibilities are created and the quality of the recreation improves due to the presence of nature (Respondent K, interview). Finally, it has a water quality objective because the GLWTs contribute to the WFD.

Notably, the HWBP both contributes to and conflicts with the interests for the implementation of GLWTs in the reinforcement of the Markermeerdijken. Combining the different interests, instead of focusing on their competition, has made a positive contribution to the implementation of GLWTs.

## Administrative capacities

The HWBP has an effect on the administrative capacities for the implementation of GLWTs within the reinforcement of the Markermeerdijken project.

### Financing

The HWBP works with the core values that dikes must be reinforced in a “*sober, robust and efficiently*” manner (Respondent A & H, interview). This means that flood safety objectives must be achieved with the lowest possible investment (Respondent A, interview). Water quality objectives fall outside the scope, and therefore financing, of the project (Respondent A & J, interview). In addition, according to respondent A, GLWTs are often more expensive to construct and maintain than traditional reinforcements. GLWTs, therefore, do not align with the core values of the HWBP.

In the project, the environmental impact assessment (EIA) showed that the project would negatively affect the water quality, which meant that the project would not be permissible. As a mitigation measure, a GLWT was implemented in the form of *Stadsstrand Hoorn*. Because this measure was directly linked to making the project permissible, the GLWTs became part of the project scope and could therefore be financed from the HWBP budget (Respondent A, interview).

The financing of GLWTs in the reinforcement of the Markermeerdijken was thus only possible on a small scale in order to comply with the permitting requirements.

### Project time

From the planning elaboration phase onwards, HWBP projects tend to move at high speed (Respondent H, interview). Due to the project’s primary objective of flood safety, possible synergy opportunities for the realisation of GLWTs were only identified late in the process (Respondent N, interview). In addition, these types of projects lack the additional capacity to include water quality objectives in the project (Respondent A, interview).

The administrative capacities for the realisation of GLWTs in this project were therefore limited by the core values of the HWBP.

## Role of actors

### Cooperation

For the reinforcement of the Markermeerdijken, an alliance was established in which market and public organisations worked together on the project (Respondent A, interview). However, respondent N indicates that nature organisations, such as the Coalition Blauwe Hart, were involved too late in the project. As a result, the nature perspective was only considered at a late stage of the project, which, according to respondent N (interview), limited the realisation of GLWTs. This suggests that not only was the cooperation itself important for the implementation of GLWTs in the project, but also the process of cooperation, such as involving the various stakeholders at an early stage.

### Legal and Policy

The reinforcement of the Markermeerdijken focuses on improving flood safety. These types of projects must do a WFD assessment, which tests if the water quality does not deteriorate. Although none of the respondents knew the exact outcome of this assessment, in this project the assessment “*was not a showstopper*” but a mitigation measure had to be taken in the form of *Stadsstrand Hoorn* (Respondent A, interview).

In conclusion, in the reinforcement of the Markermeerdijken only a limited number of GLWTs were realised. The main reason for this was that the project is part of the HWBP. Therefore, conflicting interests, lack of (financial) resources and capacity, and a short project duration limited the implementation of GLWTs. The GLWT that was realised, *Stadsstrand Hoorn*, was only realised to mitigate the effects of the project on the water quality.

*“Ideally, you would do something extra for the water quality. But that is not in the scope of the project. Ultimately, the scope is decisive.”* (Respondent A, interview).

### 5.2.3 Success

To analyse the degree of success of the project reinforcement of the Markermeerdijken the PPPE model was used. The following assessments are considered: programmatic, process, political and endurance.

#### **Programmatic assessment**

The programmatic assessment shows that public value has been created, but this is mainly the result of the flood safety objective (Respondent A, interview). The contribution to the ecological objectives of the WFD has been limited to approximately 20 hectares of GLWTs (Recreatieschap Westfriesland, n.d.). This means that, for this research, the project scores moderate on programmatic success.

#### **Process assessment**

The process assessment shows that there was limited time and attention in the project to include other objectives, such as water quality, in the decision-making process (Respondent A, H, J & N, interview). This may be the reason why parties, such as Coalition Blauwe Hart, were only included relatively late in the decision-making process (Respondent N, interview). Scientifically substantiated objectives, such as the importance of water quality, were therefore made subordinate to the primary objective of flood safety, which limits the success of the decision-making process.

#### **Political assessment**

None of the respondents made a direct statement about the political legitimacy or its possible influence on the reputation of the actors involved, which is what the political assessment focuses on. It is clear that the project aligns with the core values of a HWBP project (sober, robust and efficient), which may contribute to its political legitimacy in the field of flood safety (Respondent A, interview). However, its legitimacy in terms of ecological improvement through the realisation of GLWTs is considerably limited due to the small scale of *Stadsstrand Hoorn*. For this research, which focuses on the success of the implementation of GLWTs, the political success is limited.

#### **Endurance assessment**

The endurance assessment shows that the project was successfully completed and that the new dyke fulfils the flood safety objectives for a certain time. However, none of the respondents made a statement about the long-term success of the GLWTs.

## 5.3 Trintelzand

This paragraph presents the results of the project background, implementation factors and success assessments of the project Trintelzand. The results are based on the desk research and fourteen conducted interviews.

### 5.3.1 Project background

#### Reinforcement of the Houtribdijk

The Houtribdijk separates the Markermeer from the IJsselmeer and functions as a breakwater. The dike plays an important role in protecting against flooding around the Markermeer and IJsselmeer (Ministry of I&W, 2022). The second national assessment showed that the Houtribdijk no longer met the legal safety standard. Therefore, reinforcement of the dike was necessary to bring the dike to the required safety level (Rijkswaterstaat, 2016).

#### Trintelzand

During the reinforcement of the Houtribdijk project, an opportunity for collaboration arose (Rijkswaterstaat, n.d.). On 20 March 2017, Rijkswaterstaat decided to link one of the WFD tasks for the Markermeer to this project (Rijkswaterstaat, 2017). This resulted in the plan to realise Trintelzand, in addition to the dike reinforcement. Trintelzand is a nature reserve with the aim of improving the water quality and ecology of the Markermeer (Rijkswaterstaat, n.d.).

Trintelzand consists of GLWTs, sandbanks, dams and separate shallow and marshy waters bodies within the dikes (Achterkamp et al., 2022; Grutters & Löwenhardt, 2022). Together, they form a shallow bay with many aquatic vegetations, reed beds and habitats for various species of plants and animals (Ministry of I&W, 2022).

The project is still in the pioneering stage and its intended goals are still far away (Grutters & Löwenhardt, 2022). While the construction of the project caused a temporary slight increase in the turbidity of the Markermeer, thus a temporary deterioration of the water quality, current developments indicate that the initial conditions will contribute to the ecological quality of the area (Grutters & Löwenhardt, 2022; Rijkswaterstaat, 2016).

### 5.3.2 Implementation factors

This paragraph presents the results from the desk research and fourteen conducted interviews regarding the factors that influence the implementation of GLWTs in the project Trintelzand.

#### **Problem pressure**

##### *Additional conservation needs to comply*

An important driver for the implementation of GLWTs in the project Trintelzand was the cancellation of the WFD measure *Hoornse Hop* (Respondent J & K, interview). The *Hoornse Hop* was a WFD measure from the second tranche (Stroomgebiedbeheerplan 2016-2021) (Rijkswaterstaat, 2022).

The decision not to continue the *Hoornse Hop* followed research that showed that the project did not provide sufficient ecological added value (Respondent G, J & K, interview). In combination with the time pressure, because the WFD measures had to be realised before 2021, this made the project unfeasible (Respondent G, interview). However, the project had already been registered with the EU as a WFD measure, which meant that there was an obligation to implement a

comparable alternative (Respondent G, interview). This pressure had a positive effect on the implementation of GLWTs in the project Trintelzand.

### *Physical factors*

The physical factors of the project area of Trintelzand play an important role in the implementation of GLWTs, as respondent M explained in the interview:

*“The first part of the Houtribdijk from Lelystad has been traditionally reinforced. That had to do with the fact that it was very deep there. ‘..’ From Trintelzand to Enkhuizen, that used to be a large sandbank in the Zuiderzee period, therefore, it was a lot less deep there. That made it a suitable location for sand against the dike. So that is depth, but it is actually money, because it simply costs a lot more to fill a considerable depth.”* (Respondent M, interview)

Trintelzand was thus constructed on the old Enkhuizer sandbank, which had the advantage that the GLWTs do not subside, and it is relatively shallow compared to the rest of the lake (Respondent G, H & M, interview). This also had a positive influence on the costs of the project, as less material was necessary than in other parts of the lake (Respondent H & M, interview).

### **Administrative capacities**

#### *Project time*

Project time played an important role in the construction of Trintelzand. As mentioned in paragraph 5.2.2, HWBP projects are usually carried out at high speed (Respondent H, interview). However, in the project Trintelzand, additional time became available due to the introduction of new standards for dike reinforcements, which meant that the project had to be reassessed (Respondent H, interview). According to respondent H, this created the opportunity to incorporate the viewpoint of Natuurmonumenten into the project.

*“Just before that, Natuurmonumenten had come up with the idea of ‘can you make that transition differently, so that you can use land more intelligently and thus develop extra nature’. Then we [Rijkswaterstaat] used that time to see if that idea could also be cost-effective.”* (Respondent H, interview)

The extra project time therefore provided space to link Trintelzand, or GLWTs, to the dike reinforcement. However, respondent N notes that although additional time became available, it emerged relatively late in the process. According to him, as a result, not all opportunities were used, which ultimately led to fewer GLWTs being realised than was potentially possible (Respondent N, interview).

#### *Use of resources*

The project made efficient use of resources. In the sand extraction pits, above the sand required for the sandy reinforcement of the dike, there was a layer of silt, clay, peat, and sand that could not be used for the reinforcement but was suitable for nature development. This top layer was used for the construction of Trintelzand (Respondent G & H, interview). According to respondent G, it therefore *“did not become 100 hectares, but 600 hectares, and we also saved two million on a total of five million”* (Respondent G, interview).

The efficient use of resources was possible by connecting the flood safety objectives with water quality objectives, which contributed to the area of GLWTs that could be implemented in the project.

### *Financing mechanisms*

As a result of the discontinuation of the *Hoornse Hop*, financial resources became available for a new WFD measure (Respondent D, E, H, J & M, interview). After a new exploration (Respondent J, interview) and advice from individuals within the Rijkswaterstaat organisation (Respondent G, interview), it was decided to allocate part of the funds, originally intended for the *Hoornse Hop*, to the construction of Trintelzand. *“With that [WFD funds] it was really a clear incentive to make it possible, otherwise that part of Trintelzand would simply not have been there.”* (Respondent E, interview).

Compared to *Hoornse Hop*, Trintelzand not only had fewer opponents, but also a larger surface area could be realised, which could provide more ecological benefits (Respondent B, interview). In addition, the implementation of GLWTs between Trintelhaven and Enkhuizen contributed to flood safety objectives and was no more expensive than a traditional solution. This also enabled it to be funded through the subsidy from the HWBP (Respondent H, interview).

Thus, the project Trintelzand is a synergy opportunity in which the realisation of GLWTs is linked to the dike reinforcement task.

*“I have always said that it should simply be included in the Houtribdijk, because if you create a separate implementation organisation for that, you will lose so much more energy.”* (Respondent J, interview)

This synergy opportunity seems to have a positive impact on the availability of administrative capacities and thus on the implementation of GLWTs.

### **Role of Actors**

#### *Drive and cooperation*

According to several respondents, the drive of individuals played an important role in the project.

#### Drive Natuurmonumenten

Respondent H indicated that *“the drive of Natuurmonumenten to do things differently”* was important for the realisation of the project. In addition, respondent C [Natuurmonumenten] stated:

*“Natuurmonumenten is not part of the government and agreements on the WFD but can make an important contribution to achieving the objectives that the governments have agreed upon.”* (Respondent C, interview)

As previously discussed in the paragraph on project time, Natuurmonumenten suggested the idea of changing the reinforcement of the Houtribdijk project at the transition from the sandy bank to the stone dike so that the soil could be used more efficiently to develop additional nature (Respondent E & H, interview).

#### Drive RWS

Secondly, the drive of Rijkswaterstaat played an important role. The director was open to exploring the alternative with Trintelzand and also thought this was a good idea (Respondent H, interview). In addition, Rijkswaterstaat employees advised the director not to stand still after the cancellation of the *Hoornse Hop* (Respondent G, interview).

#### Drive tender process

Lastly, respondent H mentions that contractors were given the opportunity, by Rijkswaterstaat, to develop a larger variant for Trintelzand in the tender. This opportunity was used by the contractor, which allowed the area to be tripled for approximately 1 million euros extra (Respondent H, interview). The drive of the contractor and Rijkswaterstaat to include a larger variant had a positive effect on the scale of the GLWTs realised in this project (Respondent H, interview).

So, the persistence and drive of the various individuals and organisations have played an important role in the creation and quantity of GLWTs in the Trintelzand project. Respondent H concludes, *“Without the drive of people, who want to do it together and know how to create space, it is very difficult”* to realise these types of projects.

## Legal & Policy

### *Role of the WFD*

For the original plan, reinforcement of the Houtribdijk without Trintelzand, the role of the WFD was only as a legally required assessment framework (Respondent H & M, interview). *“You have projects that are intended to improve flood safety, such as the Markermeerdijken and the Houtribdijk, and then you always have to assess them against the WFD, the WFD situation may not deteriorate”* (Respondent M, interview).

When the synergy opportunity arose, the WFD was no longer simply the assessment framework but became an objective of the project. The WFD therefore shifted from assessment framework to project objective, which resulted in the realisation of GLWTs.

### *Permits*

Various sizes of Trintelzand were assessed when drawing up the EIA. According to respondent H, this was legally helpful.

*“When the opportunity [for a larger variant] was offered [by the contractor] and funded by the WFD funds, it could be realised very easily, few adjustments were needed to the existing permits that you had, so that was very useful”* (Respondent H, interview).

In conclusion, the project Trintelzand was originally a traditional dike reinforcement project. The HWBP assessment framework, on which the reinforcement was based, was adjusted. This created momentum to look at other opportunities. The construction of Trintelzand, and therefore the implementation of GLWTs, was then linked to the dike reinforcement project (Respondent H, interview). The relatively shallow project area, time, capacity, money, and drive played a major role in the implementation of GLWTs in this project.

## 5.3.3 Success

The PPPE model was used to analyse the success of the Trintelzand project. The following assessments are examined: programmatic, process, political, and endurance.

### **Programmatic**

The programmatic assessment shows that considerable public value has been created by realising approximately 470 to 600 hectares of GLWTs (Respondent G, interview; Grutters & Löwenhardt, 2022). This is even more than was originally planned in the reinforcement of the Houtribdijk project and in the later combination with Trintelzand. The project therefore makes a

substantial contribution to the WFD and nature objectives in the area (Respondent B, F, G, J & M, interview).

### Process

The process assessment shows that, in contrast to other HWBP projects, there was room for the realisation of GLWTs in this case (Respondent H, interview). This was due to a unique combination of circumstances in which flood safety objectives and water quality objectives were linked (Respondent H & J, interview). This was largely enabled by the drive and cooperation of several involved parties. This shared drive contributed to the success of the process.

### Political

The political assessment shows that the project has political legitimacy, as it contributes to both the WFD and flood safety objectives. However, the project area is a closed nature reserve and therefore not publicly accessible, which limits the visibility and awareness of the project (Respondent L, interview). *“Closed nature reserves are not something that people are happy about, because they cost a lot of money and why can’t ‘we’ enjoy them”* (Respondent L, interview). As a result, despite contributing to the objectives, it is likely that the project will only make a limited positive contribution to the reputation of the actors involved.

### Endurance

The long-term success of Trintelzand is still partly uncertain. The precise impact in the long term is still unclear, for example because erosion is difficult to estimate. The monitoring programme of Trintelzand contributes to the possible long-term success by identifying possible problems and successes so that they can be addressed in time (Respondent G & I, interview). For Trintelzand, a financing programme is available for the management and maintenance of GLWTs. However, the long-term success remains dependent on the availability of sufficient public resources, which depends on the political context.

## 5.4 Marker Wadden

This paragraph presents the results of the project background, implementation factors and success assessments of the project Marker Wadden. The results are based on the desk research and fourteen conducted interviews.

### 5.4.1 Project background

The Marker Wadden is a newly constructed archipelago in the Markermeer (Deltares, n.d.). The Marker Wadden was initiated by Natuurmonumenten (Municipality Lelystad & Natuurmonumenten, 2013) In collaboration with Rijkswaterstaat and Boskalis, they worked on the implementation of this new archipelago. The project consists of the construction of seven natural islands. In 2016, they started the first phase (construction of five islands) and in 2021, the second phase started with the construction of the 6<sup>th</sup> and 7<sup>th</sup> island (Natuurmonumenten, n.d.).

The islands were constructed with sand, clay and silt from the Markermeer (Natuurmonumenten, n.d.). The idea behind the Marker Wadden is to create a robust nature reserve with large-scale spawning grounds and natural shores, to combat the loss of biodiversity (Deltares, n.d.; Grutters & Löwenhardt, 2022). Due to its design, with multiple islands with different waters within them,

there is a large shore length. This increased the area of GLWTs in the lake (Grutters & Löwenhardt, 2022).

## 5.4.2 Implementation factors

This paragraph presents an overview of the results from the desk research and fourteen conducted interviews regarding the factors that influence the implementation of GLWTs in the Marker Wadden project.

### Problem Pressure

#### *Physical factors*

Various physical factors play a role in the implementation of GLWTs in the Marker Wadden project.

Firstly, the project area of Marker Wadden is located in a deep area. This meant that a large amount of material was needed to raise the area, which is expensive (Respondent H & J, interview). In addition, the dynamics of water and wind can cause erosion to the GLWTs (Respondent E, F & H, interview). The Marker Wadden has tried to protect itself from this by placing a stone edge on the northwest side, which should prevent erosion of sand (Respondent C, E, H & J, interview). Finally, the shape of the Marker Wadden contributes to the size of the GLWTs in the project. Respondent C compares the design of the Marker Wadden to lungs, where the various islands themselves already provide GLWTs, but if you zoom in on a micro scale, the actual length of GLWTs is much greater due to the mosaic of water features and banks (Respondent C & E, interview). This can be compared to the alveoli of lungs (Respondent C, interview).

Physical factors, such as the depth of the location and the dynamics of water and wind, may have limited the implementation of GLWTs of the Marker Wadden. On the other hand, the shape of the Marker Wadden contributes to the amount of GLWTs that have been realised.

#### *Conflicting interests*

For the construction of GLWTs in the Marker Wadden project, a location was chosen where the influence of conflicting interests was limited.

*“That is the great advantage of the Marker Wadden. ‘,,’ It is not located near other parties that have a clear interest in it. And that really makes a big difference in the ease with which you can realise it. It really was a bit of a tabula rasa”* (Respondent J, interview)

Because there were few conflicting interests in the area, an opportunity arose to realise something *“very smoothly, with relatively little resistance”* (Respondent J, interview).

### Administrative Capacities

#### *Financing*

Financing played a decisive role in the creation of Marker Wadden, *“otherwise nothing would have been realised”* (Respondent C, interview).

The first financier of the Marker Wadden was the *Nationale Postcode Loterij* (Respondent F, J, K & L, interview). The funding from a third party played an important role. The cabinet at the time had said that they wanted to invest in nature, but that it was not something that the government alone should do (Respondent L, interview). As a result, the government could no longer afford not to invest (Respondent J, interview). A financial commitment was then made for the first phase by the

Ministry of I&W (Respondent I, interview). This made the realisation of the first phase of GLWTs possible.

For the second phase (the E-islands), money became available from the PAGW. Respondent H states that the necessary resources for the construction, such as the sand dredger, were still present in the area during this period. This allowed additional GLWTs to be realised in an efficient manner (Respondent H, interview).

### Resources for maintenance

In addition, the resources are needed to maintain the GLWTs of the Marker Wadden. The long-term success of the Marker Wadden (based on the objectives of nature restoration and the WFD) depends on the robustness and sustainability of the measures (Respondent C, E & F, interview).

Respondent E emphasises that this robustness is not self-evident.

*“It is now being discussed whether or not Marker Wadden can be sustainably preserved and that is because we have had much more erosion of those soft edges than we expected ‘...’ If we had known that in advance, we would have ensured that more rubble would be used because then you would have less maintenance”* (Respondent E, interview)

Due to natural processes, structural management and maintenance are necessary to ensure sustainable preservation of the GLWTs of the Marker Wadden.

In addition, Respondent C states:

*“We [Natuurmonumenten] see that the management and maintenance of Marker Wadden is really expensive if you want to keep it the way it was constructed. And I think that Natuurmonumenten really does not have enough resources for that”* (Respondent C, interview)

In the long term, a lack of maintenance, due to insufficient financial resources, can reduce the success of GLWTs (Respondent C, interview).

### *Expertise*

The expertise and flexibility of Rijkswaterstaat allowed the permit procedure to be completed more quickly, which resulted, according to respondent C, in a time gain of three or four years and therefore lower process costs. Rijkswaterstaat also helped set up a challenging question for the market (Respondent C, interview). According to him, these two examples of Rijkswaterstaat's expertise in the Marker Wadden project were important for the implementation of GLWTs (Respondent C, interview).

### *Land ownership situation*

The owner of the entire Markermeer is the National Government of the Netherlands. This simple land ownership situation had, according to respondent C, a positive effect on the realisation of the Marker Wadden.

### *Implementation focus*

In the Marker Wadden project, the implementation was already the focus at the start of the design process. As a result, the focus, according to respondent A, was on using resources as efficiently as possible with the aim of realising the largest possible version of the Marker Wadden with the

resources available. According to this respondent, such an emphasis on implementation is not self-evident for the implementation of GLWTs, although he believes this contributes to the realisation (Respondent E, interview).

## Role of Actors

### Drive

The Marker Wadden is an initiative by Natuurmonumenten, which had an intrinsic drive for the project, making nature its primary objective (Respondent E & N, interview).

*“Natuurmonumenten is an organisation that has courage and guts. That is how they started with the Marker Wadden. ‘...’ They started from their own expertise and resources, and they succeeded.”* (Respondent N, interview)

In addition to the drive from Natuurmonumenten, there were also individuals within public organisations who played a role in this. For example, respondent K indicates that individuals from the Province of North Holland looked for opportunities to contribute to the project, although there were political tensions for this.

Perseverance and drive thus played a role in this project in realising GLWTs.

### Cooperation

Various respondents (Respondent C, E & I, interview) considered collaboration as an important factor for the realisation of the Marker Wadden. Rijkswaterstaat and Natuurmonumenten had a balanced collaboration for this project, in which neither party was dominant (Respondent C, E & I, interview). The project director of Marker Wadden (Respondent C, interview) indicated that he had focused on this from the start because Natuurmonumenten could never have done this alone (Respondent C, interview).

The collaboration on the Marker Wadden was established by linking various goals, which united the interests of the various parties. Respondent E explains, *“You are looking for parties that say, we have an interest and from that interest we are also prepared to contribute financially to such a project”*. (Respondent E, interview). For example, Natuurmonumenten itself contributes from the interest of improving biodiversity in the Netherlands (Respondent C & E, interview). The Ministry of I&W due to their interest in the WFD and the Ministry of ANF (nowadays AFFN) because of nature (Respondent E, interview). According to respondent E, in order to create financial support, Natuurmonumenten did not regard the government as a single entity but as several. This made it possible to get funding from different ministries for this project.

In the Marker Wadden project, cooperation played a role by connecting different interests for financial support. Cooperation was used as a strategy to make the project, and the realisation of GLWTs, possible.

### Support and participation

The Marker Wadden project team invested time and energy in participation and getting people excited about the measure. By engaging people with the story of the Marker Wadden, support for the measure was created (Respondent C & E, interview). *“Not because they are giving money for the Marker Wadden, but because this creates support in society for the idea”* (Respondent E, interview). To achieve this, one of the islands is open to the public, features an island pavilion, and has hundreds of volunteers involved in the island (Respondent E, interview). The ability to

experience the island has generated public support and added value for the city (Respondent L, interview).

Participation, the ability to experience the project and engaging people in the story of the Marker Wadden all contributed to building support for the project.

## Legal & Policy

### *Role of the WFD*

The WFD played an important role in the realisation of the Marker Wadden, despite the fact that the project was not officially a WFD measure. Firstly, the WFD assessment was a mandatory requirement of the permitting process, according to respondents E and M. In addition, according to several respondents (Respondent C, E, H & M, interview), the objective was considered important for the stakeholder involvement, cooperation and capacity within the project. Respondent E explains that the project's contribution to the WFD objectives provided a motivation for the ministry to co-invest. This created the opportunity to realise additional islands, and thus more GLWTs. The WFD objective in the Marker Wadden project therefore functioned as a strategy to involve actors, such as the ministry, to realise a larger amount of GLWTs.

### *Procedures*

Procedures sometimes formed an obstacle in the realisation of the Marker Wadden. Respondent C gave two examples of this. Firstly, innovative projects, such as the Marker Wadden, do not always lend themselves well to the thoroughness of the MIRT procedures, making them difficult to get off the ground. Secondly, the expertise of Rijkswaterstaat was sometimes hindered by the internal procedures that they had to go through (Respondent C, interview).

Nevertheless, according to respondent C, the procedures did not have major negative consequences because "*the authorities adopted a cooperative approach*" which meant that procedures and permits could be arranged on time.

Procedures can therefore affect the implementation of GLWTs. The effect of this depends on the individuals involved and knowledge of the procedures.

In conclusion, the Marker Wadden project has realised many GLWTs through the realisation of nature islands in a lung shape. The drive of Natuurmonumenten to realise this, and the collaboration with Rijkswaterstaat, played a major role in the implementation of GLWTs. In addition, the availability of financial resources played a major role, especially the first financial contribution from the *Nationale Postcode Loterij*, which provided momentum. Besides focusing on GLWTs, the project also aimed to foster participation and support by opening one of the islands to the public.

## 5.4.3 Success

The PPPE model was used to analyse the success of the Marker Wadden project. The following assessments are made programmatic, process, political, and endurance.

### **Programmatic**

The programmatic assessment shows that the Marker Wadden project has created public value in multiple ways. Firstly, the project has realised an "*enormous area of GLWTs*" (Respondent C, interview), between 765 and 1300 hectares (Grutters & Löwenhardt, 2022; PAGW, 2023). As a result, the project contributes to both the WFD and broader nature conservation objectives in the

Markermeer (Respondent B, C, E, I, L, M & N, interview). In addition, one of the islands is open to the public, which contributes to the recreational opportunities in the Markermeer (Respondent C, L & N, interview).

### Process

The process assessment shows that the nature objectives have been included in the process from the start (Respondent C, E & M, interview). To achieve these objectives, intensive cooperation has taken place between various stakeholders, including Natuurmonumenten and Rijkswaterstaat. The intrinsic motivation of Natuurmonumenten to realise a project that positively contributes to the biodiversity of the area has played an important role in the process success (Respondent E, H, J & N, interview). Additionally, the first financial contribution from a third party, the *National Postcode Loterij*, provided important support (Respondent J & L, interview). To implement GLWTs, collaboration between different stakeholders was established, which contributed to the process success.

### Political

The political assessment shows that the project has political legitimacy because it contributes to the WFD and nature objectives. This legitimacy is further strengthened because objectives of various parties, such as the ministry, have been explicitly linked to the project. As a result, the project has gained broader political support.

In addition, the project is partly open to the public, which increases the visibility and awareness of the project and thus positively contributes to the reputation of the actors involved.

*“By realising something like the Marker Wadden in the municipality, residents of Lelystad have also become proud of the Marker Wadden and how beautiful it is. As a result, they have also come to appreciate and experience the Markermeer as an area more.”*  
(Respondent L, interview)

The visibility and experience of the project thus contributes to both political legitimacy and to the reputation of the actors involved. It can therefore be seen as a large political success.

### Endurance

The endurance assessment shows that the long-term success of the Marker Wadden is still difficult to determine, because the precise impacts of the project are still unclear (Respondent C & I, interview). However, a monitoring programme is in place to identify problems and successes so that they can adjust the project based on this knowledge (Respondent E, interview). In addition, there is an ongoing debate about whether the Marker Wadden can be sustainably maintained in the long term, due to limited resources for management and maintenance (Respondent C & E, interview). The project does not receive public funding for this (Respondent E, interview).

## 5.4.4 Marker Wadden Plus

The interviews also highlighted the possibility of an expansion of the Marker Wadden, Marker Wadden Plus, which is currently being explored by Natuurmonumenten. Although this is a separate project from the original Marker Wadden, it is relevant to briefly analyse it in the context of this research, as it also aims to implement GLWTs in the Markermeer. Even though this project is still in the exploration phase, it can provide additional insights into whether and how the implementation factors have changed over time and whether expansions of projects that have realised GLTWs are feasible.

## Project background

The idea for Marker Wadden Plus emerged as a result of the fact that many objectives for the Markermeer, such as those related to WFD, Natura 2000 and TBES, have not yet been achieved (Markerzand & Natuurmonumenten, 2025). To help achieve these goals, the second phase of the Marker Wadden has been included in the PAGW as a potential long-term measure. At the time of this research, Natuurmonumenten is investigating the possibility of realising an expansion earlier, without funding from the PAGW, but in collaboration with the sand extraction consortium Markerzand. The goal is to combine sand extraction for nature development with extraction for the commercial sand market in order to realise approximately 500-1000 hectares of GLWTs that contribute to the WFD objectives (Markerzand & Natuurmonumenten, 2025).

## Implementation factors

This paragraph presents an overview of the results from the desk research and fourteen conducted interviews regarding the factors that influence the implementation of GLWTs in the project Marker Wadden Plus. To avoid repetition, this paragraph focuses on the aspects that differ from the original project.

### *Problem Pressure*

The Marker Wadden Plus project aligns with the coastal vision of Lelystad (Respondent D, interview). In addition, the project offers the opportunity to improve the overall functioning of the original Marker Wadden by adding soft shoreline edges and filling in existing compartments (Respondent E, interview). These two aspects indicate that there is pressure from other interests to realise the project.

However, several factors negatively influence the problem pressure of the Marker Wadden Plus. Firstly, the potential ecological impact of the original phase is still unclear. While a large number of respondents point out that the Marker Wadden has had a positive impact on nature (Respondent B, C, E, I, L, M & N, interview), some respondents also emphasise that the precise effects of the original project are still unclear (Respondent H & I, interview). According to respondent I, these results are necessary to justify the expenditure of public funds and are therefore critical for the decision-making regarding the realisation of a second phase. Furthermore, respondents G and I express concerns that the new interventions disturb the ecological values of the area, arguing that the lake should instead be left undisturbed.

Overall, the implementation factor problem pressure has both a positive and negative influence on the implementation of GLWTs in the Marker Wadden Plus project.

### *Administrative Capacities*

The financing for Marker Wadden Plus remains uncertain. For example, respondent D [municipality of Lelystad] indicates that the municipality of Lelystad and Natuurmonumenten are committed to the project, but the municipality lacks the financial capacity for large-scale nature developments. Respondents E and N add that Natuurmonumenten partly has its own resources, but this is not enough to finance the project. Therefore, Natuurmonumenten aims to secure sufficient funding through the collaboration with the sand extraction consortium. Despite the diverging interests, economic versus ecological, the partnership plays a crucial role in enabling the funding for the implementation of GLWTs. If neither the PAGW nor the consortium provides sufficient financial support, the project won't be feasible.

Furthermore, the availability of knowledge also differs to the original project. At the time of research, and therefore during the exploration phase of Marker Wadden Plus, there is an ongoing debate about the sand extraction process for the implementation of GLWTs. Respondent E states that there is a knowledge gap regarding the potential effects of deep sand extraction pits in the Markermeer. One current hypothesis suggests that these pits might capture phosphate, which could negatively impact the water quality. If this is the case, the sand extraction process required for Marker Wadden Plus may not be permissible, as creating new pits could deteriorate the water quality. Natuurmonumenten has therefore commissioned further research into this issue (Respondent E, interview). A lack of knowledge about the implementation of GLWTs can lead to delays in the process or to the decision that the project may not be realised altogether.

### *Role of Actors*

According to respondent D, there currently seems to be no political support for the Marker Wadden Plus project, especially when it is framed as an extension of the Marker Wadden. While the original project involved a collaboration between Natuurmonumenten and Rijkswaterstaat, this is no longer the case. Instead, Natuurmonumenten collaborates with a consortium of sand extraction companies to use resources efficiently and to make the project (financially) feasible (Respondent E, interview). The absence of political support, and thus the lack of a government actor as a partner, may have negative consequences for the realisation of the project.

The original project has ensured that the project has become more widely known to the public (Respondent L, interview). The public support for the original project may positively influence the expansion. This was confirmed by respondent N, as a result for Marker Wadden Plus “*they can rely on the successes they had*” (Respondent N, interview).

### *Legal & Policy*

In the original project of the Marker Wadden, administrative procedures did not play an obstructive role. However, the project team expects more difficulties with the administrative procedures for the expansion. Respondent C attributes this to the changing role of the government, namely from a cooperative partner during the original project to a regulatory authority in the Marker Wadden Plus project. As a result, there is less involvement from governmental agencies in assisting with the permitting process (Respondent C & E, interview).

In conclusion, the Marker Wadden Plus project appears to be affected by more implementation factors that hinder the realisation of GLWTs compared to the original project. The absence of cooperation with Rijkswaterstaat, an actor that positively contributed to the permitting process in the original project, results in a more complex procedure process in the expansion project.

### **Success**

To analyse the degree of success of the Marker Wadden Plus project the PPPE model was used. This analysis is based on the results of the desk research and interviews. The following assessments are considered: programmatic, process, political and endurance.

#### *Programmatic*

The programmatic assessment shows that the Marker Wadden Plus project once again contributes to public value by realising approximately 500 to 1000 hectares of GLWTs (Markerzand & Natuurmonumenten, 2025). Similar to the original project, it contributes to the objectives of the WFD and broader nature conservation objectives. However, in contrast to the original project, the

newly constructed islands won't be accessible to the public (Respondent E, interview), which means that this project contributes less to recreational opportunities than the original project.

### *Process*

The process assessment shows that the intrinsic drive of Natuurmonumenten continues to play an important role in the implementation of GLWTs. Building on the existing GLWTs provides a foundation of experience and knowledge, which can positively influence the project. At the same time, collaboration with government actors is limited, and therefore partnerships are formed with market parties. As a result, the process assessment shows both strengths and weaknesses.

### *Political*

The political assessment suggests that, like the original project, Marker Wadden Plus is likely to enhance the reputation of involved actors. However, the lack of public access to the new islands may reduce the level of political success compared to the original project.

### *Endurance*

The Marker Wadden Plus contributes to the long-term success of the original project because part of the project is aimed at strengthening the original project. Nevertheless, uncertainty remains about the long-term success due to the uncertainty about sufficient (public) financing for management and maintenance (Respondent E, interview).

## 5.5 Waterfront Lelystad

This paragraph presents the results of the project background, implementation factors and success assessments of the project Waterfront Lelystad. The results are based on the desk research and fourteen conducted interviews.

### 5.5.1 Project background

Lelystad wants to grow considerably as a city in the coming decades (from 80.000 to 120.000 inhabitants) by using its unique location by the water (Royal HaskoningDHV, 2023). One of the areas that the municipality of Lelystad wants to develop for this is the area between Lelystad-Haven and the Houtribdijk, also known as the Waterfront. They want to create an attractive urban coastal zone with attractive new residential landscapes by the water and an economically powerful leisure programme. Nature development, through the realisation of GLWTs, is also a part of the intended area development (Royal HaskoningDHV, 2023).

According to Mecanoo (n.d.), the most effective way to do this is to physically expand the city over the dike and into the water. This spatial development can have an impact on the water quality requirements of the WFD. While the “*MER Waterfront Stedelijke Kust Lelystad*” (Royal HaskoningDHV, 2023) shows that all variants of this project have no impact on the groundwater quality and chemical surface quality, and the preliminary preferred alternative is expected to have a positive effect on the ecological quality, during the realization phase the variants do possibly have a negative effect on the ecological water quality (Royal HaskoningDHV, 2023).

## 5.5.2 Implementation factors

This paragraph provides an overview of the results from the desk research and fourteen conducted interviews regarding the factors that influence the implementation of GLWTs in the project Waterfront Lelystad.

### Problem Pressure

#### *Different interests*

Various interests play an important role in the realisation of Waterfront Lelystad. The project aims to integrate multiple objectives, including housing, recreation, economy, and nature (Respondent D & E, interview). However, not all respondents experience this integration in practice. For instance, respondent N indicates that the project barely contributes to the implementation of GLWTs and is instead focused on housing.

Additionally, some interests directly conflict with the implementation of GLWTs. For example, national priorities concerning flood safety and freshwater supply have led the Dutch government to oppose new land reclamation in the Markermeer (Respondent E, interview). As a result, political priorities unrelated to water quality restrict the potential for GLWTs implementation within the Waterfront Lelystad project.

### Administrative Capacities

#### *Financing*

The financing of Waterfront Lelystad is done from the project itself, through the sale of homes the costs of the area development, and therefore also the implementation of GLWTs, are funded (Respondent D & E, interview). Simultaneously, the construction of GLWTs contributes positively to the financing by increasing the attractiveness of the area. This ensures that the homes, which are also part of the project, become more valuable (Respondent E, interview). This creates a mutually reinforcing dynamic in which the project facilitates the implementation of GLWTs, and the GLWTs facilitate the feasibility of the project.

#### *Use of resources*

The project has found strategies to construct GLWTs as efficiently as possible. The sand extraction needed for the land reclamation is done locally, which makes it cheaper (Respondent D & E, interview). In addition, above the sand layer, which is needed for the land reclamation for housing construction, there is a top layer of clay that can be used for the realisation of GLWTs (Respondent E, interview). These strategies demonstrate how efficient use of resources leads to the implementation of GLWTs.

### Role of Actors

#### *Cooperation*

The development of Waterfront Lelystad involves frequent discussions between the municipality of Lelystad, the Ministry of I&W, Rijkswaterstaat, the province of Flevoland, and Water Board Zuiderzeeland (Respondent D & I, interview). These discussions were often met with enthusiasm from the involved stakeholders. However, as respondent D notes, “*somehow you can’t get it done*” (Respondent D, interview).

The cooperation in the project is not experienced as effective by all stakeholders. According to respondent N, nature organisations were not involved at an early stage to contribute to the

planning process. Instead, they were only given the opportunity to submit a point of view through the formal route (Respondent N, interview).

Furthermore, respondent E observes that promising opportunities remain unused due to limited cooperation with Rijkswaterstaat. He suggests that this may be because another policy issue is currently more dominant, namely Water and Soil Guiding (*Water en Bodem Sturend*) (Respondent E, interview). Rijkswaterstaat, therefore, primarily focuses on the assessment of the WFD but does not actively engage in enhancing the project's ecological ambitions, such as the development of GLWTs, even though they are responsible for achieving the WFD objectives in the Markermeer (Respondent E, interview). According to respondent E, the focus lies more on “*a small minus during the implementation than on the big plus*” in the end result (Respondent E, interview).

*“You create a project that can potentially contribute a lot to a [GLWTs and WFD] goal”. ... “You expect them [Rijkswaterstaat] to immediately knock on the door and call and say, ‘Gosh, can we do something?’ Never. I think that is really crazy”* (Respondent E, interview).

In this project, Rijkswaterstaat appears to take on the role of regulatory authority responsible for granting permits, rather than acting as a possible partner in the implementation of GLWTs.

This limited involvement and cooperation of nature organisations and Rijkswaterstaat reduces opportunities to integrate valuable expertise, such as ecological and procedural knowledge, into the implementation of GLWTs in the Waterfront Lelystad project.

## **Legal & Policy**

### *Role of the WFD*

In the Waterfront Lelystad project, the WFD functions merely as an assessment framework rather than as a project objective. According to respondent E, the fact that the WFD is not an objective of the project is mainly due to that Rijkswaterstaat did not express interest in the municipality's proposal to realise a substantial nature development component.

A WFD assessment is, however, mandatory for the permitting process (Respondent B, D, E & M, interview). Since the project involves construction outside the dike, the WFD designated area will be lost, making mitigation mandatory (Respondent B, interview). Through the realisation of GLWTs in the project, this mitigation and even more is realised.

Additionally, the construction of the project causes a temporary deterioration of the water quality. According to Rijkswaterstaat, such temporary deterioration is no longer permissible, even if the project contributes to the water quality in the long term. Rijkswaterstaat refers to the ruling of the European Court for this (Respondent E, interview).

*“If it is true that such a minus is not allowed, that as a result the entire project cannot proceed, then all the pluses [benefits] of the project will not be realised either. In that case, then the procedure of the WFD assessment is actually enormously hopelessly in the way.”* (Respondent E, interview)

At the time of research, it was still under investigation whether this interpretation of the European Court should be interpreted in this way (Respondent D & E, interview). Nevertheless, it seems to have a negative effect on the realisation of the project, as temporary disruption during construction is inevitable (Respondent M, interview).

### *Role of Water and Soil Guiding*

The Water and Soil Guiding (*Water en Bodem Sturend*), introduced by the Ministry of I&W, places restrictions on new land reclamation in the Markermeer. However, exceptions apply to projects with far-reaching agreements or in cases where issues cannot be resolved otherwise (Respondent D & E, interview). According to respondents D and E, the project may fall under this exception, which is why the project started the procedure for a new zoning plan at the end of 2023 and is in intensive discussions with the various ministries, the province, the water board, and Rijkswaterstaat (Respondent D & E, interview).

Respondent D also mentions an alternative variant that would not be affected by the Water and Soil Guiding policy. However, this project only includes construction within the dike, which means that no GLWTs would be implemented (Respondent D, interview). The Water and Soil Guiding policy thus has a negative influence on the realisation of GLWTs.

In conclusion, the Waterfront Lelystad project is still in the exploration phase. The most important factors influencing the implementation of GLWTs include the availability of internal project financing, the mismatch between national objectives and the project objectives, the drive and initiative of the Municipality of Lelystad, the limited cooperation with Rijkswaterstaat, and the failure to involve nature parties early on in the planning process.

### 5.5.3 Success

The PPPE model was used to analyse the success of the Waterfront Lelystad project. The following assessments are examined: programmatic, process, political, and endurance.

#### **Programmatic**

The programmatic assessment shows that the Waterfront Lelystad project creates public value in various ways, both through housing construction and the realisation of GLWTs (Respondent E, interview). The financing comes entirely from the project itself, and costs are reduced by making efficient use of materials (Respondent D & E, interview).

Although the project, according to respondent E, realises approximately 60 hectares of GLWTs, respondents are not unanimous about the added value of this, given the relatively limited scale (Respondent D & E, interview). As a result, the programmatic success is therefore uncertain but is likely slightly positive due to its contribution to both ecological and housing objectives.

#### **Process**

The process assessment shows that the decision-making process is progressing with difficulty. While the municipality of Lelystad has the drive to realise GLWTs, the project suffers from limited cooperation with other stakeholders. Rijkswaterstaat mainly plays a regulatory role and is not perceived as an active partner (Respondent E, interview). Furthermore, nature organisations were not involved at an early stage (Respondent N, interview). The process success is therefore limited.

#### **Political**

The political assessment reveals different perspectives on the desirability of the project. The projects objectives do not fully align with current national policy objectives, resulting in tension between housing ambitions, nature restoration and freshwater supply objectives. This misalignment creates uncertainty about the political legitimacy and the effect on the reputation of the parties involved, which limits the political success.

### Endurance

The project is still in the exploratory phase, which makes it difficult to determine the long-term success. Key uncertainties remain regarding the impact of the WFD assessment and the implications of the Water and Soil Guiding policy. These factors complicate the project’s long-term prospects and make the endurance assessment currently inconclusive.

## 5.6 Comparison projects

In order to compare the implementation factors and the success of the different projects, an overview table was first created with all relevant factors that influenced the success of the implementation of GLWTs (see appendix 7). Based on this table, the factors were analysed per key implementation factor (problem pressure, administrative capacities, role of actors, legal & policy) in terms of their positive or negative influence on the implementation of GLWTs. The key results from the comparison of the factors and the degree of success are discussed below.

### 5.6.1 Comparison factors

All four key implementation factors were mentioned in the interviews. As shown in table 8, there are both similarities and differences between the projects in how these factors influence the implementation of GLWTs. While many of these factors affect all projects, the results show that their impact is largely project specific. In addition, for the Marker Wadden Plus and Waterfront Lelystad projects, some factors remain unknown, as these projects are still in the exploration phase. These unknown factors are indicated in the table with “UNK”.

**Table 8**  
*Comparison implementation factors*

Category	Factor	Projects				
		MMD	TZ	MW	MW+	WL
Context	Heclare GLWTs	Small	Large	Extensive	Extensive	Medium
Problem Pressure	Synergy opportunity	Positive influence	Positive influence	Not relevant	Positive influence	Positive influence
	Depth location	Negative influence	Positive influence	Negative influence	Negative influence	Negative influence
	Prioritisation/urgency	Negative influence	Positive influence	Positive influence	Positive influence	Positive influence
	Prioritisation water safety	Negative influence	Positive influence	Not relevant	Not relevant	Negative influence
	Prioritisation freshwater supply	Negative influence	Positive influence	Not relevant	Not relevant	Negative influence
Administrative Capacities	Project/process time	Negative influence	Positive influence	Positive influence	UNK	UNK
	Financial resources	Negative influence	Positive influence	Positive influence	Positive & negative influence	Positive influence
	Efficient use of resources	Negative influence	Positive influence	Positive influence	Positive influence	Positive influence
	Land ownership	Negative influence	Positive influence	Positive influence	Positive influence	UNK
	Management & maintenance	Negative influence	Positive & negative influence	Negative influence	Negative influence	UNK
Rol of Actors	Cooperation	Positive influence	Positive influence	Positive influence	Positive & negative influence	Negative influence
	Drive	Negative influence	Positive influence	Positive influence	Positive influence	Positive & negative influence
	Role Rijkswaterstaat	Negative influence	Positive influence	Positive influence	Negative influence	Negative influence
	Support & participation	Negative influence	Negative influence	Positive influence	Positive influence	Negative influence
Legal & Policy	WFD assessment	Positive influence	Positive influence	Positive influence	Positive influence	Negative influence
	WFD objective	Negative influence	Positive influence	Positive influence	Positive influence	Negative influence
	Administrative & legal procedures	Not relevant	Positive influence	Positive influence	Negative influence	Negative influence
	TBES	Not relevant	Positive influence	Positive influence	Positive influence	Not relevant
	PAGW	Not relevant	Positive influence	Positive influence	Not relevant	Not relevant
	SGBP	Not relevant	Positive influence	Positive influence	Positive influence	Not relevant
	Water and Soil Guiding	Not relevant	Not relevant	Not relevant	Not relevant	Negative influence

<b>Small</b>	< 50 ha
<b>Medium</b>	50 - 400 ha
<b>Large</b>	400 - 800 ha
<b>Extensive</b>	> 800 ha

	Positive influence
	Negative influence
	Positive & negative influence
	Not relevant
	Unknown

## 5.6.2 Comparison success

Table 9 provides an overview of the results of the degree of success of the four projects, assessed using the four success assessments: programmatic, process, political and endurance.

**Table 9**

*Overview success assessment projects*

	MMD	TZ	MW	MW+	WL
Programmatic	Moderate	Large	Large	Large	Moderate
Process	Limited	Large	Large	Moderate	Limited
Political	Limited	Moderate	Large	Moderate	Limited
Endurance	Limited	Moderate	Limited	Limited	Limited

The projects generally score well on programmatic success. However, it should be noted that for the Marker Wadden Plus and Waterfront Lelystad projects, no public value had yet been realised at the time of the research. These projects were assessed on their programmatic success based on the plans currently in place.

The Trintelzand and Marker Wadden projects appear to be the most successful, especially in the programmatic and process assessments. The Markermeerdijken, Marker Wadden Plus, and Waterfront Lelystad projects generally score lower. In particular, the process and political success remain limited in these projects compared to the other two. The endurance success scores are limited to moderate for all projects, indicating uncertainty about the long-term success of the projects.

## 6. Conclusion

In this chapter, the conclusion of this thesis is presented by answering the sub-questions and main research question of this research, as introduced in paragraph 1.3. In order to answer the main question *What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?* an embedded single case study was used, with four projects in the Markermeer as embedded units of analysis.

To analyse what influences the degree of success of the implementation of GLWTs, four policy implementation theories and the PPPE model are combined into an integrated conceptual framework (see figure 4). This new framework served as the analytical lens to analyse the implementation of GLWTs in the Markermeer. Based on the analysis of the results of the desk research and fourteen semi-structured interviews an answer can be given to the sub-questions and main research question.

### 6.1 Implementation Factors

This paragraph addresses the second sub-question of this research “*Which factors influence the implementation of the GLWTs in the projects in the Markermeer?*”. To answer this, as shown in the conceptual framework (see figure 4), there are four implementation factors: problem pressure, administrative capacities, role of actors, and legal & policy. All four implementation factors were found to be relevant although the extent and impact varied across the projects. The key factors are discussed below, illustrating how they influence the implementation of GLWTs in the Markermeer.

#### 6.1.1 Problem Pressure

Problem pressure influences the implementation of GLWTs mainly through prioritisation or urgency and the physical factors of the lake. Between 2000, the establishment of the WFD, and the moment of research, the sense of urgency regarding the WFD has changed. Whereas achieving these objectives was initially seen as feasible and less urgent, it is now clear that the objectives for 2027 will likely not be achieved. According to most respondents, this approaching deadline has increased the sense of urgency and more investment in measures that contribute to the WFD. However, these statements are not consistent with the results of the Marker Wadden Plus and Waterfront Lelystad projects, as they have no funding from the national government.

Additionally, the physical factors of the lake play an important role. The Markermeer is an artificial lake, making it a large, deep basin with steep banks and an unnaturally reversed fixed water level. This makes the implementation of GLWTs expensive and complex, and the effects of the projects at the scale of the entire lake are not visible. Thus, the subfactors prioritisation and physical factors of the lake influence the problem pressure and thereby the implementation of GLWTs.

#### 6.1.2 Administrative capacities

Administrative capacities influence the implementation of GLWTs mainly through financing mechanisms, project time, information, and expertise.

Financing mechanisms play an important role in the implementation of GLWTs. Project budgets determine the boundary conditions for the realisation of GLWTs. Since GLWTs often fall outside the project scope, for example in HWBP projects, additional financing is necessary. Projects in which GLWTs fall within the project objective or have additional financing (such as PAGW or contribution from a third party) were able to implement GLWTs. However, securing funding for management and maintenance for these types of projects remains a challenge.

Time also plays an important role. Sufficient time during the process allows for the integration of GLWTs in projects with other main objectives, as was the case in the Trintelzand project. In contrast, HWBP projects, such as the reinforcement of the Markermeerdijken, are often implemented under strict timelines, leaving little room for incorporating GLWTs.

In addition, information and expertise are important. Expertise, for example, from Rijkswaterstaat in the Marker Wadden, can stimulate implementation. A lack of knowledge can form a barrier, as seen in the case of uncertainties about the effects of deep pits. These uncertainties can delay projects or even prevent them from realisation altogether.

In short, financing, time, data, and expertise are important sub-factors within administrative capacity. When these factors are present, they create opportunities for the implementation of GLWTs. If these capacities are limited, they form a barrier.

### 6.1.3 Role of Actors

The role of actors influences the implementation of GLWTs mainly through political influence, drive, cooperation and support.

Political choices and priorities determine to which objectives resources and capacity are allocated. In the Markermeer the priorities are mainly focused on flood safety and freshwater supply, which may conflict with the implementation of GLWTs, as seen in the HWBP and Water and Soil Guiding programmes. It does not always have to be that different interests have a negative influence, sometimes these interests can be linked to each other and contribute to the implementation of GLWTs, such as in Trintelzand.

The drive of organisations and individuals also plays an important role. The drive of actors, such as the involvement of Natuurmonumenten in the Marker Wadden and Trintelzand projects, appears to be important for placing GLWTs on the agenda and realising them. In projects where this drive is lacking, like in the reinforcement of the Markermeerdijken, GLWTs remain limited to the minimal obligation under the WFD assessment.

Finally, cooperation and support are important factors. Good cooperation between the various stakeholders, and especially the involvement of the national government, contributes to the implementation of GLWTs, as can be seen in the Trintelzand and Marker Wadden projects. In contrast, in more recent projects, such as the Marker Wadden Plus and Waterfront Lelystad, the national government does not emerge as a collaboration partner. Governmental initiative or support can positively influence the implementation of GLWTs, while its absence can hinder it. Cooperation and support from the public can also contribute to the implementation, for example, in the Marker Wadden project, where one island is publicly accessible.

In summary, the role of actors influences the implementation of GLWTs in the Markermeer through political priorities, drive, cooperation, and support. When these sub-factors are present,

opportunities arise for the implementation of GLWTs, while their absence can create barriers to the implementation.

#### 6.1.4 Legal & Policy

Legal and policy factors influence the implementation of GLWTs through the role of the WFD, procedures and permits, and the policy scope.

The WFD is an important legal instrument for the implementation of GLWTs, serving as an assessment framework in all analysed projects. The WFD prohibits any deterioration of water quality, which sometimes obligates projects to implement water quality measures, such as GLWTs, as seen in the reinforcement of the Markermeerdijken. This stimulates the implementation of GLWTs. However, a recent ruling by the European Court prohibits temporary deterioration, meaning that even projects aiming to improve the water quality in the long term, such as Waterfront Lelystad, can be blocked.

Additionally, the WFD's one out, all out principle can be demotivating. Despite improvements in water quality near the project sites, this is not reflected in the WFD score of the Markermeer, which makes it difficult to justify public expenditures in GLWTs.

In the Trintelzand and Marker Wadden projects, the WFD was explicitly a project objective, which positively influenced the implementation of GLWTs, partly because this objective was integrated from the start.

In addition, procedures and permits also influence the implementation. In cases with a proactive government, such as Rijkswaterstaat in the Marker Wadden project, procedures did not hinder the implementation of GLWTs. Notably, the influence of procedures and permits changes when government's role shifts. When governments act more as regulatory bodies, such as in the project Waterfront Lelystad, procedures can become barriers to the implementation.

Finally, the policy scope plays a role. While water quality is a system-level issue, policy and projects are often locally orientated. Programmes, such as the PAGW and TBES, stimulate a system approach, which positively affects the implementation of GLWTs as they contribute to the quality of the broader system.

Thus, the WFD as an assessment framework and project objective, active government involvement in procedures and a system-orientated policy scope promote the implementation of GLWTs.

#### 6.1.5 Conclusion implementation factors

In conclusion, the analysis shows that the implementation of GLWTs does not depend on one single factor but rather on the interaction between problem pressure, administrative capacities, role of actors, and legal & policy. This confirms the theoretical insight that successful policy implementation requires the alignment of these factors.

When political prioritisation is accompanied by sufficient (financial) resources, process time, drive, cooperation, support, and a policy stimulus such as the WFD, momentum for the implementation of GLWTs is created. In the absence of one of these factors, such as a proactive government, the implementation runs into barriers.

Each of the key factors consists of subfactors that vary in their degree of influence on the implementation. This research showed that several subfactors were consistently influential across the projects: prioritisation and physical factors of the area (problem pressure), sufficient (financial) resources (administrative capacities), political influences, drive, cooperation and support (role of actors), and policy incentives like the WFD (legal & policy). These elements reinforce each other, for instance, political prioritisation is often required for mobilising administrative capacities.

## 6.2 Success

This paragraph addresses the third sub-question of this research is: “*How successful is the implementation of GLWTs in the projects in the Markermeer?*” To answer this, the four assessments of success, as seen in the conceptual framework (figure 4), are made. The programmatic, process, political, and endurance assessments are discussed below, analysing the degree of success of the implementation of GLWTs.

### 6.2.1 Programmatic success

Programmatic success refers to creating public value and limiting negative side effects. All analysed projects contribute to this, especially in the areas of flood safety, water quality, and recreation. For example, the reinforcement of the Markermeerdijken primarily strengthens flood safety, while the addition of *Stadsstrand Hoorn* enhances both flood safety, recreation, and water quality. Marker Wadden and Trintelzand have realised a substantial area of GLWTs, contributing to both the objectives of the WFD and broader nature conservation objectives. Marker Wadden also adds recreational value.

Marker Wadden Plus and Waterfront Lelystad have not yet been realised but aim to realise public value. For Marker Wadden Plus this is water quality, for Waterfront Lelystad this is housing, recreation and water quality.

All projects demonstrate some degree of programmatic success, with the notion that two projects have not yet been realised, and no negative side effects were mentioned by the respondents.

### 6.2.2 Process success

Process success refers to a careful and knowledge-based decision-making process. Although the Markermeer has been well researched, knowledge gaps remain, for instance regarding the effect of deep sand extraction pits. Timely cooperation with governments, market parties and NGOs is also important.

While all projects involve cooperation and build on available knowledge about the Markermeer, the degree to which these have been effectively applied varies. In projects such as Trintelzand and Marker Wadden, cooperation and knowledge have been used effectively. In contrast, in the reinforcement of the Markermeerdijken and Waterfront Lelystad projects, ecological expertise and relevant partners were involved too late or too limited, which negatively affected the process success. Furthermore, the more recent projects, Marker Wadden Plus and Waterfront Lelystad, show little collaboration with the national government.

### 6.2.3 Political success

Political success relates to political legitimacy and the impact of the project on the reputation of involved actors. Marker Wadden performs well on both aspects, partly due to its public visibility and efforts to involve individuals. Trintelzand mainly shows political legitimacy, because it meets its objectives, but its limited visibility means the reputational benefits are limited.

The Markermeerdijken project is considered legitimate in terms of flood safety but less so regarding the implementation of GLWTs. Waterfront Lelystad seems to be the most controversial, while the municipality is positive, the national government seems less positive about the project.

### 6.2.4 Endurance success

Endurance success concerns the long-term success of the project outcomes. Management and maintenance of GLWTs are crucial to ensuring their long-term success. While Trintelzand has secured funding for maintenance, Marker Wadden has not. However, these resources remain dependent on public support and political priorities, which can change over time. This creates uncertainty about the long-term success of GLWTs in the Markermeer.

### 6.2.5 Conclusion success assessment

In conclusion, this analysis shows that the implementation of GLWTs in the projects is relatively successful at the programmatic level, as all projects create a form of public value. However, theory suggests that a project cannot be considered successful if it fails on one of the four assessments (Compton et al., 2019). As a result, the success of the projects remains limited when the other success assessments are considered.

In terms of process, it appears that the necessary knowledge is not always available and that cooperation with relevant parties is not always sufficiently achieved in the projects. Politically, the legitimacy and support are unevenly distributed; some projects, such as Marker Wadden, have broad support, while others, such as Waterfront Lelystad, encounter resistance. However, the most pressing concerns seem to lie in endurance, as the long-term success depends on the availability of resources, which is affected by political priorities.

## 6.3 Main research question

This research aimed to answer the main research question: *What influences the degree of success of the implementation of GLWTs to achieve the objectives of the Water Framework Directive in the Markermeer?*

Based on the conceptual framework developed in this research, combining four policy implementation theories with the PPPE model, the degree of success of the implementation of GLWTs depends on the alignment between problem pressure, administrative capacities, role of actors, and legal & policy. If even one of these factors is insufficiently present, full implementation success across the four PPPE assessments remains out of reach.

While all four key implementation factors are relevant, this research shows that certain subfactors seem to have a stronger influence on the degree of success: political prioritisation, sufficient (financial) resources and process time, drive, cooperation, participation and support, and the role of the WFD as a project objective or assessment framework. These influential

subfactors help explain why projects like Trintelzand and the Marker Wadden show a higher degree of success than the reinforcement of the Markermeerdijken or Waterfront Lelystad.

The analysis further demonstrates that success in one dimension does not guarantee overall success. Most projects perform well on the programmatic assessment, realising public value such as water quality and flood safety. However, they often fall short in terms of process, political and endurance success, limiting the overall success of the implementation of GLWTs in the Markermeer.

## 6.4 Strategies

From the broad analysis of what influences the degree of success of the implementation of GLWTs in the Markermeer, four strategies have been identified that contribute to the successful implementation of GLWTs.

Firstly, this analysis showed that projects tend to be more successful in the implementation of GLWTs when they succeed in integrating their objectives into existing political priorities. For example, in the Marker Wadden project, the various objectives were integrated, which created political legitimacy. In contrast, the project Waterfront Lelystad lacked this integration and experienced limited political support.

Secondly, the analysis shows that the presence of the drive of individuals and organisations, and cooperation is an important recurring factor in projects that have realised a significant area of GLWTs, such as Trintelzand and Marker Wadden. In contrast, the projects reinforcement of the Markermeerdijken and Waterfront Lelystad show that if there is insufficient drive and cooperation to realise the GLWTs, this leads to limited realisation.

Thirdly, participation and support appear to contribute to the realisation of GLWTs. Marker Wadden took active efforts to improve the experience and involvement of citizens, which resulted in broad support for the project, positive public perception, and political legitimacy. This was less evident in the projects reinforcement of the Markermeerdijken, Trintelzand, and Waterfront Lelystad.

Finally, this research shows that the endurance success is mainly limited due to the uncertainty about sufficient administrative capacities for management and maintenance. It is therefore important to ensure this funding early on in the process to successfully implement GLWTs.

To sum up, this analysis highlights four strategies for successful implementation of GLWTs: connecting project goals to political priorities, fostering drive and cooperation, ensuring participation and support, and securing long-term resources for management and maintenance.

## 7. Discussion

This chapter presents a discussion regarding this research. This entails the discussion of the research findings, the research and results limitations, the contribution to further theory development, and recommendations for the praxis and future research. The discussion of the research findings focuses on the relationship between the research findings and existing academic literature. The section on research and results limitations discusses the research paradigm, generalisation and subjectivity of the research. The paragraph about the contribution to further theory development goes into more depth about the impact of this research on the current academic literature. The recommendations entail both recommendations for the praxis by explaining steps for better implementation of GLWTs in the Markermeer, as well as possibilities for further research to get a better understanding of this phenomenon.

### 7.1 Research Findings

For this research, multiple academic theories on implementation factors of European Directives and policy in general were used. To get a comprehensive view on policy implementation, these identified factors were combined to define a new conceptual framework (see figure 4). Four key implementation factors emerged from this: problem pressure, administrative capacities, role of actors, and legal & policy. The PPPE model of Luetjens et al. (2019) was used to analyse the success of the implementation.

In contrast to the separate policy implementation theories, which only deal with a selection of these factors, this research shows that the implementation of GLWTs in the Markermeer is influenced by all four key implementation factors. Moreover, these factors influence each other.

It is notable that restrictions in the permit process were mentioned in ongoing projects, while this was not the case in completed projects. Respondents emphasise the importance of a national government partner to properly complete these procedures, which was not present in the ongoing projects. The influence of this is not explicitly mentioned in the literature.

An important contribution of this research is the identification of certain sub-factors that seem to have more influence on the implementation of GLWTs. These largely correspond with the literature. Both in theory and in this research, the implementation of GLWTs appears to be influenced by political prioritisation, sufficient (financial) resources, cooperation, participation, and drive (Dorst et al., 2021; Morris et al., 2019). Uncertainty about long-term success, due to ambiguities about management and maintenance, corresponds to the concept of design uncertainties from the literature (Dario et al., 2024).

There are also some differences visible. Although the limited involvement of private parties is mentioned in the literature by Dorst et al. (2021), this is not the case in this research. On the contrary, in the Marker Wadden Plus project, the active collaboration with private parties (sand extraction consortium) makes a positive contribution to the implementation of GLWTs. In addition, the influence of demonstration projects, scientific progress, and social learning processes was not mentioned in this research, while these are discussed in the literature (Dario et al., 2024; Morris et al., 2019; Wamster et al., 2020).

Furthermore, this research introduces 'scale' as a missing factor in existing theories. Due to the size of the lake, the visible impact of projects appears to be limited to the project area. In addition,

the factor of scale also explains the different responses when it comes to the availability of sufficient resources. Although the projects themselves often have sufficient resources for the implementation of GLWTs, there appear to be insufficient resources for the entire GLWTs task of the lake, as thousands of hectares would need to be realised (Grutters & Löwenhardt, 2022).

### 7.1.1 Contribution to further development of theory

By combining the theories of Geitzenauer et al. (2016), Malovrh et al. (2019), Bondarouk and Mastenbroek (2018), and Ostrom et al. (1994), a holistic approach was adopted to analyse the factors that influence the implementation of GLWTs in the Markermeer. This holistic approach provides an overarching view of the factors, whereby the theories complement and deepen each other. This research showed that all four key implementation factors affect the implementation of GLWTs. Thus, this research shows that expanding the existing implementation theories by integrating them is valuable for this type of analysis. Consequently, this research has therefore contributed to both the confirmation and extension of existing theories regarding the implementation of GLWTs. However, it remains unclear whether these factors apply to all types of (European) policy implementation.

## 7.2 Reflection on research and result limitations

### Research Paradigm

The underlying research paradigm of this research is post-positivism, as described in paragraph 3.1. This paradigm acknowledges the existence of an objective reality while accounting for the limitations imposed by human perceptions and social constructs (Guba & Lincoln, 1994).

As indicated in paragraph 3.1, it is not possible to identify all factors that influence the implementation of GLWTs due to the complexity and interaction of multiple factors. Additionally, axiological assumptions play a role in the formulation of the results and conclusions. To counteract this, all the steps taken in this research were carefully documented to guarantee transparency. However, the underlying assumptions of the researcher will always influence the research, for example, in the selection of the respondents or the precise wording of interview questions. Therefore, it is important to interpret the results of this research with this notion in mind.

### Generalisability

This research looked at one specific area, the Markermeer. While it seems likely that the key implementation factors will also have a noteworthy influence on the implementation of GLWTs in other areas, the implementation factors can vary widely across areas, as they are context dependent. Therefore, the generalisability of this research is limited.

Respondents' selection was based on an analysis on the relevant actors and advice from experts at Haskoning. This may have resulted in selection bias. To minimise this effect, it was decided to select a diverse group of respondents from different organisations and roles. In addition to the recommended organisations, others were approached as well, such as the Coalition Blauwe Hart, Arcadis, and freelancers. However, there are also potentially interesting actors for the implementation of GLWTs in the Markermeer that, due to the size of the study, were not included in this study, such as sand extraction companies and Alliances Markermeerdijken. In addition, most of the respondents had a prominent role in the realisation of the projects, which may have influenced their answers to speak more positively about the projects.

### Comparability of cases

A limitation of this research is the limited comparability of the selected projects. These projects differ in terms of objective, scale, and stakeholders, which limits the comparability. However, the diversity was intentionally chosen to analyse the effect of the implementation factors despite the varying conditions. To reduce the comparability limitation, the same conceptual framework was applied to all projects, ensuring consistency in the analysis. Thus, while the diversity of the projects poses challenges, it also gave some interesting insights that possibly would not have been obtained from more comparable projects.

### Subjectivity of success

The semi-structured interviews showed that respondents mainly assess success based on whether or not a project has been implemented. When determining the success of the projects, a certain degree of subjectivity remains. For example, for the programmatic assessment, the reinforcement of the Markermeerdijken scores moderate on this as it implemented little GLWTs, although it does contribute to public value through flood safety. In addition, the Waterfront Lelystad and Marker Wadden Plus projects have not yet been implemented. As a result, it is difficult to evaluate their success, as future developments remain uncertain.

## 7.3 Recommendations for Praxis

The construction of GLWTs is important to improve the water quality of the Markermeer in order to achieve the WFD objectives. Failure to achieve these objectives may lead to legal and spatial consequences (Wuijts et al., 2022). Based on the results, analyses, conclusions, and defined strategies of this research, and the possible solutions identified by respondents (see appendix 8), the following recommendations for policymakers and practitioners are proposed to improve the implementation of GLWTs.

1. Integrate water quality objectives early in projects. In projects such as the reinforcement of the Markermeerdijken, water quality was not the main objective, which is why the possibility of the implementation of GLWTs was not included early in the planning process. As this research shows, integrating GLWTs in the initiation phase of projects increases the chance of successful implementation.
2. Take advantage of synergy opportunities. In the Trintelzand, Waterfront Lelystad, and Marker Wadden Plus projects, synergy opportunities ensured efficient use of resources, allowing GLWTs to be implemented, sometimes even larger than the original plan. The national government can play a key role in promoting these synergies, but it also requires the drive and involvement of both public and private actors.
3. Support driven actors. The research shows that organisations and people with drive had a positive impact on the implementation of GLWTs. The government should therefore stimulate bottom-up initiatives that want to implement GLWTs.
4. Ensure structural system-level financing. While individual projects often secure sufficient funding for the implementation of GLWTs, there is a lack of financing at the system level to meet the objectives of the WFD. Although the PAGW and TBES take a step in this direction, they are insufficient to realise the full ambition of thousands of hectares. The national government should therefore introduce a structural system-level financing programme in which sufficient resources are made available for the entire task.
5. Secure long-term financing for management and maintenance. The long-term success of GLWTs depends on management and maintenance. However, the long-term availability of

the resources for this remains uncertain. The government should therefore develop a structural solution for this, for example, by realising a long-term financing programme for management and maintenance.

6. Strengthen legal anchoring of WFD objectives. With the 2027 deadline in mind for achieving the WFD objectives, it is important that the Netherlands can demonstrate that it has done everything possible to achieve the objectives. It would therefore be valuable if projects were not only assessed to prevent deterioration, but also if permitting procedures required all projects to contribute positively to the water quality. This is similar to the approach already adopted in the UK, as respondent M mentioned.

## 7.4 Recommendations further research

Following this research, several suggestions are proposed for future research to deepen the understanding of the implementation of GLWTs.

1. Quantitative research into the factors. This research was a qualitative study focused on what influences the degree of success of the implementation of GLWTs. Due to the time intensive nature of qualitative research, 'only' fourteen actors were interviewed. A quantitative follow-up study offers the opportunity to include a large sample, which could improve the generalisability and reliability.
2. Research into the interrelation between implementation factors. This study shows that not only individual factors but also their interaction affect the implementation of GLWTs. Further research could therefore focus on analysing these interrelations. Such an analysis could provide more insights into the dynamics between the implementation factors.
3. Comparative research into projects with one objective. As discussed in the paragraph 7.2, this study looked at diverse projects. Future research could focus on a comparison of projects with the same objectives to investigate what influences the success of the implementation of GLWTs in these specific types of projects. Such a comparison may help to better isolate and compare the influence of specific factors.
4. Research into long-term success of GLWTs. While this study considered long-term success, through the endurance assessment, it remains unclear how sustainable the results of the implemented GLWTs will be in the long-term. Further research on this could provide possible relevant insights into how the success of the implementation of GLWTs can be maintained.
5. Research into the current impact of policy and permits. A notable finding from this research was that the more recent projects, the projects that are still in the exploratory phase, seem to have more difficulties with legislation and regulations to implement GLWTs than projects that have already been implemented. This suggests a possible shift in the influence of the legal and policy implementation factor. Further research into how the role of policies influences can therefore provide valuable insights.
6. Application of implementation factors in different contexts. This research has shown that the four key implementation factors from the newly formed conceptual framework influence the degree of success of the implementation of GLWTs. However, it remains unclear if this new conceptual framework is applicable to other forms of policy implementation. Further research could test the applicability of this conceptual framework in different contexts.

By building on the recommendations for praxis and further research, policymakers, practitioners and academic researchers can contribute to the successful implementation of GLWTs.

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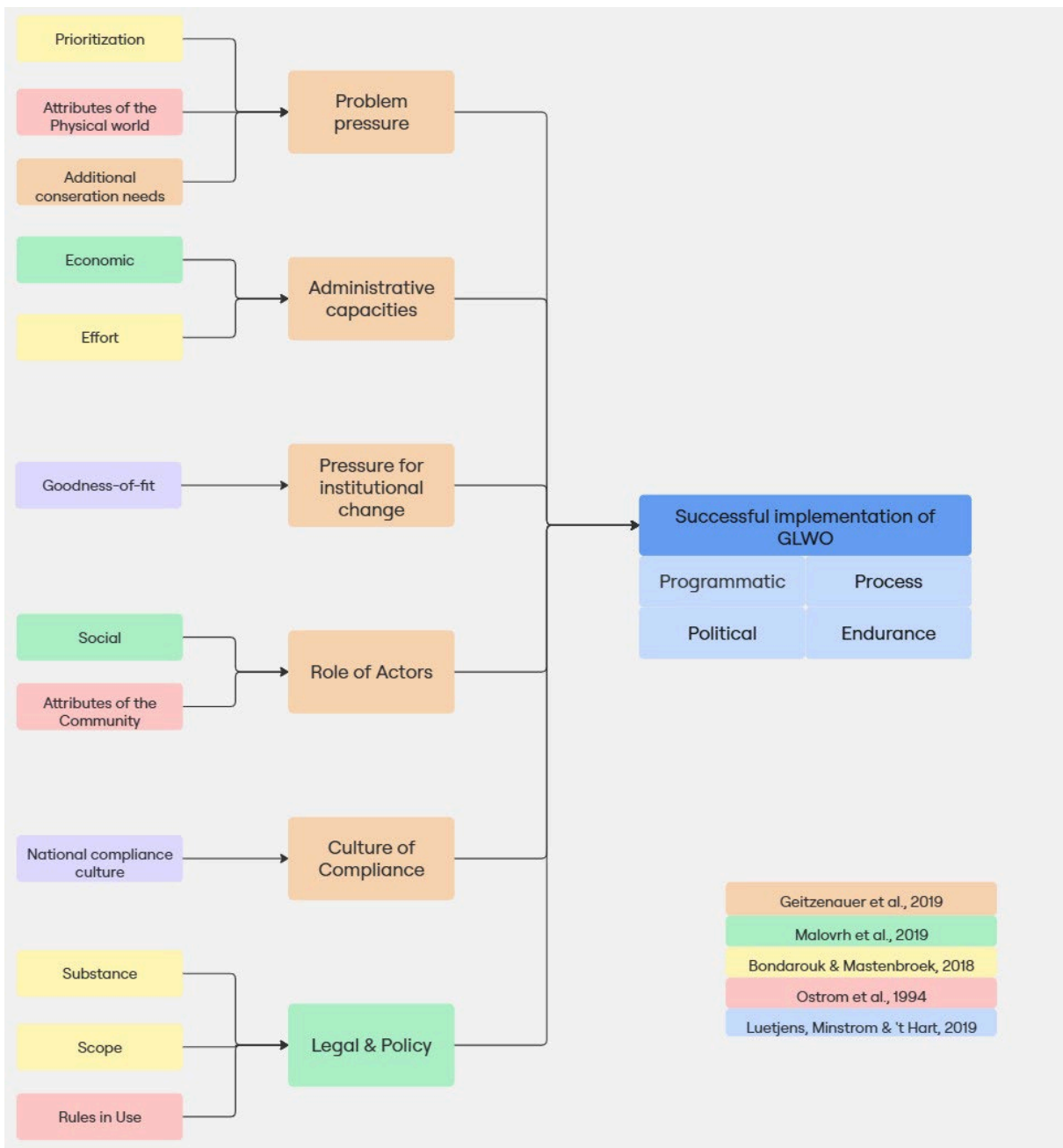
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## Appendices

## Appendix 1 Conceptual framework



## Appendix 2 Primary organisations per project

<b>Reinforcement Markermeerdijken</b>	<b>Trintelzand</b>	<b>Marker Wadden</b>	<b>Waterfront Lelystad</b>	<b>General</b>
Hoogheemraadschap Hollands Noorderkwartier	Rijkswaterstaat	Rijkswaterstaat	Rijkswaterstaat	Ministry of I&W
Rijkswaterstaat	Province of Flevoland	Province of Flevoland	Province of Flevoland	Coalitie Blauwe Hart
Province of North Holland	Province of North Holland	Province of North Holland	Municipality of Lelystad	
Alliantie Markermeerdijken	Municipality of Lelystad	Municipality of Lelystad	Waterschap Zuiderzeeland	
	Municipality of Enkhuizen	Natuurmonumenten	Haskoning	
	Waterschap Zuiderzeeland	Haskoning		
	Hoogheemraadschap Hollands Noorderkwartier			
	Haskoning			

## Appendix 3 Invitation interview

Beste x,

Ik schrijf u met een vriendelijk verzoek om deel te nemen aan mijn scriptieonderzoek.

Mijn naam is Eva Rijdsdorp en ik volg de master Spatial Planning aan de Radboud Universiteit. Momenteel ben ik bezig met mijn afstudeeronderzoek.

### Onderzoeksdoel

In samenwerking met Royal HaskoningDHV onderzoek ik de rol van ruimtelijke ontwikkelingen bij de implementatie van de ecologische doelstellingen van de Kaderrichtlijn Water (KRW) in het Markermeergebied. Daarbij wil ik in kaart brengen welke factoren bij deze projecten van invloed zijn op de implementatie van de KRW, met als doel de belangrijkste kansen en obstakels te identificeren.

Mijn focus ligt op vier projecten in het Markermeergebied:

- Waterfront Lelystad
- Marker Wadden
- Versterking Houtribdijk i.c.m. Trintelzand
- Versterking Markermeerdijken

Ik ben erg benieuwd naar uw expertise en perspectief op dit onderwerp. Uw deelname zou van grote waarde zijn voor de diepgang en nauwkeurigheid van mijn onderzoek.

### Beschrijving van deelname

In dit onderzoek wordt u geïnterviewd door mij (Eva Rijdsdorp). Het interview duurt ongeveer één uur. In het interview zal ik u vragen stellen over hoe u (of uw organisatie) kijkt naar ruimtelijke projecten en de implementatie van de KRW in het Markermeer. Hierbij zal de nadruk liggen op grootschalige landwaterovergangen.

### Vrijwilligheid

U beslist zelf of u deelneemt aan dit onderzoek. Uw deelname is vrijwillig. U mag altijd nee zeggen. U hoeft geen vragen te beantwoorden waar u liever geen antwoord op geeft, en u kunt op elk moment tijdens het onderzoek uw deelname stopzetten en uw toestemming intrekken. U hoeft niet aan te geven waarom u stopt.

### Planning en contactgegevens

Dit bericht dient als eerste toelichting op het onderzoek. Ik zal u in de komende dagen ook nog telefonisch benaderen om dit verder met u te bespreken. Als u bereid bent deel te nemen, kunnen we samen een geschikt moment en locatie afstemmen die voor u het beste uitkomt. Ik hoor graag of u bereid bent deel te nemen aan het onderzoek. U kunt mij bereiken via e-mail op [eva.rijdsdorp@ru.nl](mailto:eva.rijdsdorp@ru.nl) of telefonisch op 06-23368910.

Uw expertise en bijdrage zouden van grote waarde zijn voor de succesvolle afronding van mijn scriptieonderzoek. Ik waardeer het zeer dat u deelname overweegt en zie uw reactie met belangstelling tegemoet.

Met vriendelijke groet,

Eva Rijdsdorp

## Appendix 4 Interview guide

Categorie	Vraag	Waarom deze vraag?
<p>Voor we het interview starten begin ik graag eerst met een korte kennismaking. Zal ik beginnen? Ik ben Eva en ik ben met mijn master Spatial Planning aan de Radboud Universiteit bezig. Ik woon in Utrecht maar ben opgegroeid in Lelystad. Op dit moment loop ik stage bij Royal HaskoningDHV. Zij helpen mij met mijn onderzoek en ik loop hier mee om een beter beeld te krijgen wat ik na het afronden van mijn studie wil gaan doen.</p>		
Introductie respondent (0.00)	Kunt u kort iets vertellen over uzelf, uw organisatie en uw rol in het Markermeergebied?	Role of Actors
	<p>Wat zijn de projecten in het Markermeergebied waarbij u betrokken was, en zou u kort uw functie/rol hierin kunnen benoemen.</p> <ul style="list-style-type: none"> <li>- Projecten/ ruimtelijke ontwikkelingen <ul style="list-style-type: none"> <li>o Marker Wadden</li> <li>o Waterfront Lelystad</li> <li>o Markermeerdijken</li> <li>o Versterking Houtribdijk/ Trintelzand</li> </ul> </li> <li>- Functie/rol</li> <li>- Hoe bent u betrokken bij de uitvoering van de KRW?</li> </ul>	Role of Actors
<p>Bedankt voor uw introductie. Ik heb het interview opgedeeld in verschillende thema's. Ik zou het graag eerst met u hebben over de KRW in het Markermeer in het algemeen, daarna wil ik graag ingaan in hoe u de KRW terugziet in de projecten waarbij u betrokken was/bent.</p>		
Algemeen KRW: Belangrijk (5.00)	<p>Bent u bekend met de KRW doelen in het Markermeer?</p> <ul style="list-style-type: none"> <li>- Welke doelen van de KRW in het Markermeer zijn volgens u het meest belangrijk, en waarom?</li> </ul>	Problem Pressure
	<p>Wie is er volgens u verantwoordelijk voor de realisatie van de KRW doelen?</p> <ul style="list-style-type: none"> <li>- En wat is de rol van uw organisatie hierin, en de andere partijen?</li> </ul>	Role of Actors
	Zijn de KRW-doelstellingen duidelijk gedefinieerd?	Legal & Policy
<p>[Samenvatten antwoord respondent] Ik zal u nu wat vragen over de rol van de KRW in de projecten waarbij u betrokken bent geweest in het Markermeergebied.</p>		

KRW in het project (20.00)	In hoeverre speelden de KRW-doelstellingen een rol in de planvorming of de uitvoering van het project? Kunt u hier voorbeelden van geven? (beïnvloed/ gericht op) <ul style="list-style-type: none"> <li>- Beïnvloed: Waren er onderdelen van het project die aangepast moesten worden vanwege de KRW-doelen?</li> <li>- Welke instrumenten? <ul style="list-style-type: none"> <li>o <i>MIRT, MER, Watertoets, bestemmingsplannen, projectbesluit, subsidie- en uitvoeringsprogramma's, kennisinstrumenten, gebiedsprocessen</i></li> </ul> </li> </ul>	Invloed KRW-doelstellingen op ruimtelijke projecten Legal and Policy Administrative Capacities
	In hoeverre beschikt uw organisatie over voldoende middelen (tijd, geld, expertise, data) om de KRW-doelstellingen in het project te implementeren? (project specifiek, voorbeelden vragen) <ul style="list-style-type: none"> <li>- Gelden vanuit het Rijk (PAGW)</li> </ul>	Administrative Capacities
	Speelden juridische of bestuurlijke procedures een belemmerende of juist ondersteunende rol?	Legal & Policy
	Is er sprake van (kennis) uitwisseling tussen de verschillende projecten om zo de KRW-doelen in het Markermeer beter te behalen?	Role of Actors Administrative Capacities
Ruimtelijke maatregelen (intro)	Wat zijn volgens u de belangrijkste ruimtelijke maatregelen voor het behalen van de KRW doelstellingen in het Markermeer?	
[Samenvatten antwoord respondent] Bedankt voor uw inzichten. Volgens de Natuurthermometer Markermeer zijn vooral de biologische KRW-doelstellingen van het Markermeer een probleem bij het behalen van de KRW doelen. Ik zou nu graag specifiek in willen gaan op de rol van grootschalige landwaterovergangen met betrekking tot de KRW in de projecten waarbij u betrokken bent geweest.		
Grootschalige landwaterovergangen (45:00)	Hoe ziet u de rol van natuurvriendelijke oevers/ landwaterovergangen in het realiseren van de KRW doelstellingen in het Markermeer? <ul style="list-style-type: none"> <li>- Welke benaming gebruikt uw organisatie hiervoor?</li> <li>- Rol in dit project?</li> </ul>	Rol van KRW-implementatie
	Welke factoren zijn van invloed geweest op de realisatie van landwaterovergangen/ natuurvriendelijke oevers? <ul style="list-style-type: none"> <li>- Positief en Negatief</li> <li>- <i>Juridische of bestuurlijke processen</i></li> <li>- <i>Voldoende middelen (tijd, geld, expertise, data)</i></li> </ul>	Problem Pressure Administrative Capacities Pressure for institutional change Role of Actors Culture of Compliance, Legal & policy
	Was het project succesvol?	Policy implementation success

	<ul style="list-style-type: none"> <li>- Waardoor?</li> <li>- Belangrijkste opbrengsten/ nadelige gevolgen</li> </ul>	
[Samenvatten antwoord respondent] Bedankt voor uw antwoord. Ik ga nu graag nog even in op uw ervaringen in inzichten over de KRW in het algemeen.		
Afsluiter (55:00)	Welke kansen ziet u om de implementatie van de KRW te verbeteren? (gebied) <ul style="list-style-type: none"> <li>- Bijv. ruimtelijke planning- en ontwerpprincipes of ruimtelijke strategieën</li> </ul>	Policy implementation success
	Zijn er volgens uw organisatie aanvullende maatregelen nodig voor de implementatie van de KRW in het Markermeergebied? Zo ja, welke? <ul style="list-style-type: none"> <li>- Flexibiliteit</li> <li>- Institutionele barrières</li> </ul>	Policy implementation success Problem Pressure Pressure for institutional change
<i>Algemeen KRW: Extra vragen (als er tijd over is)</i>	<i>Beïnvloed de (ecologische) KRW-doelstelling (vanuit het Rijk) de haalbaarheid en uitvoering van ruimtelijke projecten? Zo ja, hoe?</i>	<i>Legal &amp; Policy</i>
	<i>Wat draagt volgens u bij aan de ruimtelijke implementatie van de KRW? / Hoe draagt het project bij aan de implementatie van de KRW?</i>	<i>Policy implementation success</i>
	<i>Hoe wordt vanuit uw organisatie gestuurd op de implementatie van de KRW?</i>	<i>Role of Actors (vooral voor ministerie)</i>
	<i>In hoeverre ziet u de KRW als ruimtelijke opgave in het Markermeer? Is dit voldoende gebord in ruimtelijk beleid?</i>	<i>Legal &amp; Policy (vooral voor ministerie)</i>
Afronding	Is er nog iets dat u belangrijk vindt om te benoemen? <ul style="list-style-type: none"> <li>- Doelstellingen KRW</li> <li>- Ruimtelijke implementatie van de KRW</li> <li>- Grootschalige landwaterovergangen</li> </ul>	

## Appendix 5 Informed consent

### Rol van ruimtelijke ontwikkelingen op de KRW implementatie

#### Inleiding

U bent uitgenodigd om mee te doen aan een wetenschappelijk onderzoek van de Radboud Universiteit. Voordat u beslist of u wilt meedoen aan dit onderzoek, krijgt u uitleg over wat het onderzoek inhoudt. Lees deze informatie rustig door.

#### Waarover gaat het onderzoek?

In samenwerking met Royal HaskoningDHV schrijf ik mijn scriptie over de rol van ruimtelijke ontwikkelingen op de implementatie van de KRW in het Markermeer gebied. In dit onderzoek wil ik kijken naar de rol van ruimtelijke projecten op het behalen van de KRW doelstellingen. Hiervoor zal ik kijken naar welke factoren, bij deze projecten, invloed hebben op de implementatie van de KRW om zo de belangrijkste kansen en obstakels voor de implementatie te achterhalen. In dit onderzoek focus ik op vier specifieke projecten in het Markermeer:

- Waterfront Lelystad
- Marker Wadden
- Versterking Houtribdijk i.c.m. Trintelzand
- (Versterking Markermeerdijken)

#### Wat wordt er van u verwacht?

In dit onderzoek wordt u geïnterviewd door mij (Eva Rijdsdorp). Als u toestemming geeft, wordt er een geluidsopname van dit interview gemaakt om de nauwkeurigheid van het onderzoek te waarborgen. De opname wordt gebruikt als onderzoeksdata. Het interview duurt ongeveer één uur. In het interview zal ik u vragen stellen over hoe u (of uw organisatie) kijkt naar ruimtelijke projecten en de implementatie van de KRW in het Markermeer.

#### Vrijwilligheid

U beslist zelf of u deelneemt aan dit onderzoek. Uw deelname is vrijwillig. U mag altijd nee zeggen. U hoeft geen vragen te beantwoorden waar u liever geen antwoord op geeft, en u kunt op elk moment tijdens het onderzoek uw deelname stopzetten en uw toestemming intrekken. U hoeft niet aan te geven waarom u stopt. U kunt tot twee weken na deelname ook uw onderzoeksgegevens en persoonsgegevens laten verwijderen, door een mail te sturen naar [eva.rijdsdorp@ru.nl](mailto:eva.rijdsdorp@ru.nl)

#### Wat gebeurt er met mijn gegevens?

Uw deelname aan dit onderzoek is vertrouwelijk. De data worden niet gebruikt voor andere onderzoeken. De data zullen voor tien jaar worden opgeslagen op het Radboud netwerk om wetenschappelijke integriteit te waarborgen. Voor de data, en de audio-opname, geldt dat alleen ik en mijn thesis begeleider (Sander Meijerink) hier toegang tot hebben. Het definitieve scriptieverslag zal (openbaar) gepubliceerd worden. U kunt ervoor kiezen om anoniem te blijven waarin enkel de naam van de organisatie genoemd zal worden.

**Toestemmingsverklaring**

Als u aan dit onderzoek wilt meedoen, wil ik u vragen een toestemmingsverklaring te ondertekenen. Door uw schriftelijke toestemming geeft u aan dat u de informatie heeft begrepen en instemt met deelname aan het onderzoek.

**Heeft u vragen over het onderzoek?**

Als u meer informatie over het onderzoek of het bewaren van onderzoeksgegevens wilt hebben, kunt u contact opnemen met de uitvoerend onderzoeker:

Contactgegevens onderzoeker:

Naam: Eva Rijdsdorp

Titel: Master Student Spatial Planning

E-mail adres: [eva.rijdsdorp@ru.nl](mailto:eva.rijdsdorp@ru.nl)

Telefoonnummer: 06-23368910

Begeleider vanuit de Universiteit: Sander Meijerink

**Toestemming**

Ik heb uitleg gekregen over het doel van het onderzoek. Ik heb vragen mogen stellen over het onderzoek. Ik neem vrijwillig aan het onderzoek deel. Ik begrijp dat ik op elk moment tijdens het onderzoek mag stoppen als ik dat wil. Ik begrijp hoe de gegevens van het onderzoek bewaard zullen worden en waarvoor ze gebruikt zullen worden. Ik stem in met deelname aan het onderzoek zoals beschreven in het informatiedocument.

Naam deelnemer:

Datum:

Handtekening:

Naam onderzoeker: Eva Rijdsdorp

Datum:

Handtekening:

## Appendix 6 Code book

### Code book policy implementation factors

Aspect	Category	Group code	Analytical code
<b>Implementation factors</b>	Problem pressure	Additional conservation needs to comply	Current situation sufficient
			Current situation insufficient
			Current situation insufficient, but no more measurements
		Prioritisation	Awareness and urgency
			Lack of awareness and urgency
			Timing and effort
			Competition with other interests
			Deadline
		Attributes of the physical world	Lack of space
			Imbedding in local space and social-cultural context
			Physical factors impact the implementation
		Administrative capacities	Information rules: expertise/data
	Insufficient information/data		
	Positive influence information		
	Negative influence information		
	Sufficient expertise		
	Insufficient expertise		
	Innovation		
	Education		
	Instruments		Spatial or environmental compensation
			PAGW
			WFD assessment
	Monitoring		Landownership
			Execution monitoring
	Payoff rules/financing		Difficulties monitoring
			Sufficient financing
		Insufficient financing	
		Financing mechanisms	
		Efficiency financing flows	
		Financing maintenance	
	Staff	Financing important for WFD	
		Sufficient capacity	
Time	Insufficient capacity		
	Sufficient project time		
Role of Actors	Aggregation rules: power/addressees	Insufficient project time	
		Political and administrative influence	
		Sense of responsibility and ownership	

	Position rules: position, task, roles, responsibilities	Insufficient sense of responsibility and ownership
		Shared responsibility
		No shared responsibility
		Tasks and Roles Ministry
		Tasks and Roles Rijkswaterstaat
		Tasks and Roles other actors
		Rijkswaterstaat responsible
	Stakeholder involvement	Cooperation contributes
		Cooperation does not contribute
		Positive effects on cooperation
		Negative effects on cooperation
		Knowledge sharing
		Insufficient knowledge sharing
		Sufficient participation
		Insufficient participation
		Partnerships
		Network
	Values, beliefs, norms and interests	Drive
		Influence of community values
		Influence of stakeholder interests
		Interests and beliefs WFD
		Policy values
		Support
Legal & Policy	Definitional details	Influential details of WFD
		Precise knowledge about definitional details
		Imprecise knowledge about definitional details
	Positive aspects L&P	Objectives clearly defined
		Carefulness
		Stimulating policy
		Procedures involve WFD in projects
	Negative aspects L&P	Ambiguous procedures
		Feasibility
		One out, all out
		WFD rigidly formulated
		Conflicting policy
		Lack of a system approach
	Scope rules	Intended policy outcome

### Code book Implementation success

Aspect	Category	Analytical code
Implementation success	Programmatic	Effect on nature
		Effect on WFD

	Support
	Efficiency and effectivity
	Project realised
	GLWTs realised
	Effect project difficult to determine
Process	Cooperation
	Drive
	Vigilant practices
	Use of evidence
Political	Deadline WFD
	Framing
	Reputational impact
Endurance	Long term effects
	Long term implementation
	Maintenance
	Sustained performance

### Code book strategies

Aspect	Analytical code
<b>Strategies</b>	System thinking
	Prioritisation and input
	One out, all out
	Cooperation and shared responsibility
	Participation
	Projects are only permitted if they contribute

## Appendix 7 Comparison implementation factors

Project	Problem Pressure		Administrative Capacities		Role of Actors		Legal & Policy	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Reinforcement of Markermeerdijken		Deep location Flood safety priority No synergy opportunity		No financing for water quality objectives Little process time Preference for traditional dike reinforcement > cheaper management and maintenance	Recreational interests Cooperation: Alliantie	No clear initiator for GLWTs No drive for GLWTs RWS limited role	WFD assessment	HWBP: sober, robust, efficient No WFD objective
Trintelzand	Shallow location Hoorse Hop did not go ahead Flood safety and water quality priority Synergy opportunity utilised	Dynamics of water and wind > erosion	Enough project time Efficient use or resources: process, construction Simple land ownership Sufficient financial resources	Information gap soil Information gap management and maintenance	Pressure from Haskoning and Natuurmonumenten for non-traditional measure Drive Natuurmonumenten, RWS-employees, project manager Hoorse Hop, constructor. RWS-executor	Project team Houtribdijk difficult start phase	WFD assessment WFD objective TBES Larger variant included in MER SGBP PAGW	HWBP
Marker Wadden	Location with few interests Hoorse Hop did not go ahead	Freshwater supply and flood safety importance Deep location Dynamics of water and wind > erosion	Sufficient financial resources Implementation central Simple land ownership Project time reduced by RWS expertise	Insufficient resources management and maintenance	Equal cooperation and involvement of actors Trust Participation and support Drive Natuurmonumenten Drive individuals		WFD assessment WFD objective TBES Legal or administrative procedures no obstacle PAGW	Multiplicity of procedures sometimes frustrating

					Framing RWS collaboration partner			
Marker Wadden Plus	Coastal vision Lelystad Location with few interests Synergy opportunity with sand extraction	Freshwater supply and flood safety importance Deep location Effects and results original project not clear yet, waiting for this. Leave Markermeer alone	Implementation central	Knowledge gaps sand extraction pits Financing difficult	Meer support because of experience and knowledge original project Cooperation with sand extraction companies	RWS not involved No political support RWS in role of regulative authority		Administrative procedures play an obstructive role
Waterfront Lelystad	Synergy opportunity: integral	Freshwater supply and flood safety importance	Financing from the project itself Efficient use of resources		Drive Municipality of Lelystad	No drive RWS Cooperation not effective RWS not involved Nature parties to late involved in the process		Water and soil guiding No WFD objective WFD assessment: temporary deterioration

## Appendix 8 Strategies

In response to the question “What opportunities do you see to improve the implementation of the WFD or GLWTs?” respondents named several possible strategies that could have a positive effect on the implementation. The most relevant strategies are shown in table.

Strategy	Explanation	Respondents
System approach	Nature does not work with boundaries and certain values for species. Projects should focus on improving the entire system, then WFD objectives will follow automatically.	A, B, D, E, G, H, I, J, K, L, N
Make a serious effort	In order to achieve the WFD objectives and to realise GLWTs, it is important to take this task seriously. For this, it is not only important that people work hard for this, that financial resources are made available and that support is provided by the government, but also that we do not get stuck for too long in continuing to investigate possible projects. It is not possible to decide based on all the information, because then you keep waiting	C, D, E, I, J,
Moving away from the one out, all out principle	The one out, all out principle makes the achievement and progress of the WFD difficult, which has a negative impact on the support for WFD measures such as GLWTs. This principle should therefore be abandoned, and a benchmark should be introduced that shows progress.	H, K
Collaboration and shared priority	Several respondents indicate that collaboration is important for the realisation of GLWTs and that it should be regarded as a joint priority.	E, F, K, N
Focusing on participation and experience	Involving individuals and making GLWTs tangible strengthens the support for these types of measures. More effort should therefore be put into this.	C, E, L
Require projects to contribute to ecology objectives	For every project with a possible effect on the water quality, the WFD assessment is mandatory. This checks whether the project has any negative effects on the WFD. In the UK, projects must not only not have a negative effect but also contribute to water quality before they can be permitted. Making it mandatory that projects must contribute to water quality can contribute to achieving the WFD objectives and the implementation of GLWTs.	M