Policy Integration in the Western Scheldt

The barriers and opportunities to policy integration of alternating polders

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Date of submission: *12-03-2026*
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Word Count (Excl. Reference List and Appendices): ~24300

Abstract
This thesis aims to analyse policy integration of alternating polders into flood risk management policies in the Western Scheldt, a complex estuarine system facing ecological degradation due to economic and infrastructural activities. It adapts frameworks that stem from biodiversity policy integration to assess the degree of policy integration as well as the barriers and opportunities for policy integration, while also taking account of the potential influence of various structural conditions. This study employs a constructivist approach. The research methodologies used include document analysis, semi-structured interviews, and participant observation. The findings indicate that while alternating polders are increasingly discussed and considered as a long-term flood-risk management solution, they have not been well-integrated into flood-risk policies as of yet. Their integration is largely strained by discursive barriers around depoldering, programmatic constraints and low capacity for their implementation. However, the increasing recognition of the limits of traditional dike-reinforcement methods, growing awareness of nature-based solutions and governance processes such as joint-planning initiatives provide opportunities for the integration of alternating polders. The study concludes that advancing policy integration requires greater stakeholder engagement and knowledge development, and institutional alignment of objectives and capacity to reconcile safety, ecological, and socio-economic objectives in the Western Scheldt.

Keywords: *Policy Integration, Flood Risk Management, Western Scheldt, Alternating Polders, Ecological Restoration*

Table of Contents:

List of Figures

List of Tables

Appendix List

Preface:

In front of you is my Master Thesis that focuses on the policy integration of alternating polders into flood risk management policies in the Western Scheldt. This thesis is the last step to finishing my master in Spatial Planning with the specialisation Cities, Water and Climate Change, and the last step to finishing my studies at Radboud University in Nijmegen. I am ever grateful for enabling me to explore and develop my long-standing interest in climate adaptation and, later in my studies, flood-risk management. Throughout my studies, I have also become increasingly attached to the city of Nijmegen, where I have found a strong sense of belonging, and for that, I am also grateful.

The process of writing this thesis was challenging, but it has taught me to expand my comfort zone and develop valuable new skills. I wish to thank my supervisor, Sander Meijerink, for his continuous support and constructive feedback over the extended period of writing this thesis, and for helping me get back on track when timelines were drawn out. His guidance and advice was integral to the completion of this thesis. Additionally, I wish to thank the interviewees who helped me establish a solid knowledge base for this thesis. Lastly, I wish to thank my family, friends, and my boyfriend for being my support network throughout the process of writing.

I hope you enjoy reading this thesis and that I can share with you my fascination on this topic and my commitment to a sustainable, resilient future.

1. Introduction

1.1: Context & Research Problem Statement

Climate change has amplified the need for climate adaptive measures to address emerging problems such as rising sea levels and increasingly irregular weather patterns. These impacts are predominantly felt in coastal or estuarine areas, especially with sea-level projections showing a worldwide increase of up to 1 meter in 2100 (Delta Programme, n.d.). These measures can include coastal hard infrastructure such as dikes, which have traditionally been a primary defensive barrier against these emerging problems. Although they offer coastal areas protection against flood risks, these measures can have harsh unintended consequences, disrupting habitats for coastal and marine species and natural sediment movements (Charuka et al., 2023). The dichotomy between the benefits and emerging disadvantages of hard coastal infrastructure is exemplified by the case of the Western Scheldt. The Western Scheldt is an important waterway which connects the port of Antwerp in Belgium, as well as the Port of Vlissingen and Terneuzen in the Netherlands to the North Sea. As such, safe navigable channels are essential to maintain its economic significance. These infrastructural projects, such as the continuous dredging in order to deepen the canals and creating barriers usually prioritize human and economic interests. As such, it is an important driver of degradation of natural areas. In the case of the Western Scheldt, this results in erosion of shallow water zones and ecologically valuable intertidal areas (BGGovernance, 2024), as well as a decrease in water quality, which affects fish populations (*Internationale Scheldecommissie*, 2023).

The Western Scheldt is one of the case studies adopted by the Blue-Green Governance project, which is a collaborative initiative funded by the European Union. It aims to develop innovative marine governance schemes linking marine policies with those of land and inland water. Their approach to land and sea governance aims to promote integration between institutional layers and across policy sectors, in order to provide better-informed decision making processes, improved participation and to leverage the potentials of digital tools and innovation (BGGovernance, 2024). The case study of the Western Scheldt is characterized by sea level rise, shallow water zone erosion, and loss of land due to groundwater pumping. These threats are expected to have a large impact on coastal economic sectors such as fishing, transport, energy and tourism (BGGovernance, 2024). As such, the adoption of a more holistic approach and coordination between policy sectors (Such as flood risk and nature policies) constitutes an important element of this case study.

Environmental Policy Integration, referring to the incorporation of environmental concerns in sectoral policies outside the traditional environmental policy domain, is increasingly recognized as being crucial to ensure timely and effective climate action. Increasingly complex and cross-cutting societal problems, such as climate change and environmental degradation, call for integrated policies, which aim to create synergies between policy sectors and minimize conflicts and contradictions (Biesbroek, 2021., Runhaar et al., 2021).

The Western Scheldt estuary represents a complex case of environmental policy integration (or EPI) and coastal flood risk management. Although recognition of the benefits of integrated policies is increasingly seen, there are still significant challenges in the process of policy integration and their implementation (BGGovernance, 2024). These challenges are

amplified by a multi-level governance structure regarding Western Scheldt policies and management; national policies must be aligned with both EU requirements and local interests and values.

In recent years, concerns have been raised about the ‘business as usual’ nature of dike reinforcement projects. Critics point towards the increasing cost and decreasing feasibility of continuously raising dikes. Steenstra et al. (2025) states in a knowledge programme on sea-level rise, how in the longer term, other conceptual approaches might be more feasible in terms of keeping the Netherlands safe and liveable than the continuation of the current practice of continuously raising dikes. More regionally, a member of the Water Board in Zeeland emphasizes this view. He estimates that the dikes can be raised one or two more times and predicts that after that, other techniques and solutions will be needed to continue protecting Zeeland from rising sea levels. "Let's say in 2075. In the meantime, we'll have to find new solutions to keep Zeeland dry" (Decraene, 2025). Another stakeholder also pointed to the limits of raising dikes, with this participant emphasizing the practical issues such as acquiring raw materials such as clay and sand, as well as the cost estimates (personal communication, June 10th 2025). Additionally, consequence reduction, as opposed to just reducing flood probability, is increasingly important. Over time, continuously heightening the dikes creates what he called a “bathtub effect”: the land behind the dike remains low while the water outside rises increasingly higher, meaning that when a breach does occur, the consequences become far more extreme. Van Belzen et al. (2021) illustrates this by noting how the submerged land of Saeftinghe is now the highest point in Zeeland, because this salt marsh area lies outside the dike. The Western Scheldt estuary carries sand and mud with each tide, and the land has already been raised by sediment dynamics to its current three meters above NAP (North Amsterdam Ordnance Datum). On average, polders in Zeeland are 3 meters lower than Saeftinghe because they are surrounded by high dikes that block the supply of sand and mud.

A flood management strategy that ties into the reconciliation between environmental and safety policy goals is the concept of alternating polders. According to van Belzen et al. (2021) an alternating polder essentially means that instead of a single sea dike, two dikes are used one behind the other, with the intervening polder temporarily connected to the Western Scheldt. This allows the transitional polder to rise through natural processes. After colonisation by salt marsh plants, the vegetation traps sediment and dampens wave energy. After several decades, depending on the speed with which sediment is deposited in the polder, the transitional polder is several meters higher than before. This extra height therefore provides safety for the land behind it and reduces the effects of salinization, and the fresh sea clay makes the land very fertile and suitable for agriculture again. The outer, seaward dike will mainly act as a buffer against which the waves can break, and a breach within this dike will connect it to the estuary. In extreme events, water can pass over the outer dike. The inner, landward dike will retain water within the polder, and should be maintained in order to compensate for sea-level rise. The implementation of alternating polders is only feasible in areas where a wide stretch of coastland (more than 200 metres) is available.

The idea of using a natural area as a buffer zone for floods stems from older flood risk management methods. Historical analyses of the 1953 North Sea flood show that floods in places where natural features such as marshlands or salt flats were present seaward of the

dikes experienced both a lower likelihood and a lower severity of floods (Zhu et al., 2020). This research by Zhu et al. (2020) inspired researchers to explore how harnessing natural processes such as tidal and sediment dynamics might contribute to long-term flood safety. A researcher from the NIOZ notes that silting alternating polders can make coastal zones extra safe. Their analyses show that this effect will only become more important for our safety as sea levels rise (TU Delft, 2020, June 30).

More recent studies by Terpstra et al. (2025) have indicated that alternating polders reduce flood risk as well as flood probability, as it effectively creates a larger buffer zone, reducing the inundation of water into the polder. Research from the University of Applied Science Zeeland has conducted modelling studies, testing the effect of an alternating polder in what is thought to be the most effective location for implementation, the eastern edge of the Zak van Zuid-Beveland, an umbrella name for the polder area under Goes. The study indicated that an alternating polder along this area can significantly reduce the impacts of a flood. Early establishment of an area that traps sediment substantially limits the depth and width of a flood breach in the case of an extreme event. Results indicate that under one meter of sea level rise, the depoldered area can fully mitigate the increase in damage and casualties associated with this sea level rise. Even under a sea level rise of two metres, these areas still provide significant flood damage reductions. As such, these water-retaining landscapes can also reduce pressure on other dike systems and improve their safety standards. The study emphasizes the importance of timely implementation, and taking the amount of time it takes for alternating polder landscapes to be able to trap sediment at a rate that matches sea level rise, into account. Although research suggests that such a landscape, to a certain extent, fills a water-retaining and water-regulating function in every phase of development, delayed implementation, after the onset of accelerated sea-level rise, would significantly halt the development of such a landscape (Terpstra et al., 2025., Van Belzen et al., 2021). As such, these studies emphasize that alternating polders are a no-regret measure that cannot be implemented too early, but can be started too late, adding that it might take fifty years before an alternating polder is fully developed.

While alternating polders are a promising flood-risk management strategy that reconcile safety and environmental concerns, barriers such as public opposition and policy challenges have hindered adoption of alternating polders. As of yet, there are no concrete plans for the implementation of alternating polders in the Western Scheldt, as the introduction of alternating polders is very much in its exploratory stage, and is met with strong opposition from the agricultural sector, concerned about the possibility of land loss and depoldering, which entails the process of intentionally giving land back to a river or sea by moving flood defenses inland.

The concept of alternating polders has resurfaced in recent discussions. Although the provincial coalition agreement 2023-2027 already states that Zeeland will not be depoldered, proponents of alternating polders from several governmental and societal organisations, do not rule out the possibility of the implementation of alternating polders (Provincie Zeeland, 2023). However, this implementation is recognized as a complex and large investment that is not without risks. The alternative, the continuous reinforcement of current dikes, would mean increasing risks for future generations (Van Belzen et al., 2021).

1.2: Research Objective and Research Question

The objective of this research is to gain insight into the barriers and opportunities to the integration of alternating polders into flood risk management policies for the Western Scheldt

The main question is as follows:
What are barriers and opportunities to the integration of alternating polders into flood risk management policies for the Western Scheldt?

Sub-questions:

- *What is the current status of the Western Scheldt in terms of its environmental conditions and flood risk?*
- *To what extent are alternating polders currently integrated into flood risk management policies for the Western Scheldt?*
- *What are the structural conditions to the integration of alternating polders into flood risk management policies for the Western Scheldt?*
- *What are governance processes for the integration of alternating polders into flood risk management policies for the Western Scheldt?*

1.3: Scientific Relevance

This study aims to contribute to the scientific literature on policy integration within flood risk management and ecological restorations by examining integration of alternating polders into flood risk management policies for the Western Scheldt. It aims to do so in various ways explained below.

First, this study focuses on alternating polders, which is a politically sensitive and emerging flood risk management method. It aims to assess and explain how alternating polders are positioned and constrained under conditions of legal rigidity, institutional fragmentation and contentious discursive narratives. This addresses the need for empirical research on policy integration in complex-social ecological systems as highlighted by Cumiskey et al. (2019) and Runhaar et al. (2024). Another gap in the literature identified by Cumiskey et al. (2019) and Baack et al. (2024) is the influence of external or contextual factors on the outcomes of policy integration. By using the structural factors outlined by Hegger et al. (2020), this study aims to identify the external barriers and opportunities that contextual factors can represent for the degree of policy integration.

Although nature-based solutions have been explored as policy options for the Western Scheldt (Van Belzen et al., 2021., Terpstra et al., 2025, Van Loon-Steensma & Kok, 2016, Zhu et al., 2020), their focus has been mostly focused on the technical and physical aspect, often highlighting the potential of certain nature-based flood risk management strategies, such as multifunctional dikes or saltmarshes seaward of dikes, and how they can be implemented. The Blue-Green Governance Project highlights the knowledge gap on coordination across nature policies and water safety policies in the Western Scheldt case study, as well as engagement of stakeholders in a multi-level governance system (BGGovernance, 2024). This research will add to the literature of flood risk management strategies that employ nature-based services, and alternating polders specifically, by

focusing more on the governance processes and the factors that influence policy integration. Such as the coordination of stakeholders through joint planning, and the institutional settings that shape and limit opportunities.

Third, this study aims to contribute to the existing literature on discourse and conflict in flood risk management governance. Building upon research by Van Buuren (2012) it analyses the influence of historical narratives and discourses around dike displacement, such as those related to the 1953 North Sea Flood, shape policy integration outcomes. This also contributes to the need for understanding on how informal norms and practices, such as discursive elements and traditional values, shape climate adaptation governance as outlined by Jaisridhar et al. (2025). By connecting discourse analysis to policy integration outcomes, it aims to add political and social nuance to governance and policy integration processes.

1.4: Societal Relevance

Rising sea levels and storm surges are increasingly occurring consequences of climate change, which reinforces the need for effective flood risk management strategies (European Commission, n.d.). This is particularly relevant to the Western Scheldt Basin, an ecologically diverse estuary hosting a diverse range of protected species and habitats, and facing significant challenges, such as low water quality, declining species populations, and the loss of intertidal shallow areas (Interreg North Sea Region, n.d.). These challenges exacerbate the need for flood risk management strategies that integrate ecological benefits. Such measures, while utilizing climate services and improving biodiversity, can also mitigate long-term negative impacts on economic sectors such as fisheries and tourism.

Beyond offering a pathway to contribute to the restoration of the Western Scheldt, various scientific articles have underpinned the advantages of the integration of environmental measures for achieving sustainable change. Firstly, integrating environmental objectives into sectoral policies may be more cost-effective, as windows of opportunity can be used for the implementation of environmental measures (Kok & De Coninck, 2007). This also relates to the second advantage, which is about creating synergy effects, for example, restoring a rivers' natural floodplains, aside from reducing flood risks, can also improve biodiversity and spatial quality (Runhaar et al, 2021). Finally, the integration of environmental aspects may improve innovation in sectoral policies and plans (Adelle and Russel, 2013).

Modelling studies suggest the long-term sustainable potential for alternating polders as flood risk management strategy (Terpstra et al., 2025). The integration of alternating polders as a catalyst between flood risk management- and environmental policies specifically could also offer significant societal benefits. Cost-benefit analyses conducted by van Belzen et al. (2021) have demonstrated how the benefits of alternating polders, such as improved water- and soil quality potential for recreational activities and agriculture outweigh the costs for implementation.

The insights from this thesis can contribute to the understanding of enablers and barriers to integrating long-term ecologically beneficial flood risk management measures into flood risk management policies. Often, barriers and enablers are embedded in institutional and societal contexts, which will be the focus of this thesis. These findings can help policymakers

and practitioners to develop more effective policies that can balance environmental restoration and long-term sustainable change with economic and social benefits.

2. Theoretical Framework

2.1: Concepts

2.1.1: Policy Integration

Policy integration is explained by Mickwitz et al. (2009) as the integration of certain policies into other (relevant) policy fields. The concept of policy integration (or PI) emerged in response to the limitations of siloed dedicated policymaking, leading to fragmented policy fields and inefficiencies. The concept was introduced by Underdal (1980) who defined integrated policy as meeting three criteria: comprehensiveness, aggregation and consistency. In the 1990s, it was adopted by international governmental organisations as well as different authors in reference to the integration of environmental issues in adjacent or relevant policy areas (Braunschweiger & Pütz, 2021., Tosun & Lang, 2017).

Tosun & Lang (2017) emphasize the fragmentation of policy integration literature, not only due to the multitudes of different designations used for very similar concepts, but also because of the tendency to use these different terms in different policy domains. An examination of the literature around PI found at least nine different names for relatively similar approaches. Examples include horizontal governance, policy coherence or holistic government. Given that this thesis seeks to examine the integration of alternating polders into flood management policies, this thesis will continue using the term Policy Integration for the remainder of the research process, as it is most widely used in the literature (see Tosun & Lang, 2017) and as it concerns "policy-making in certain domains that take policy goals of other, arguably adjacent, domains into account" (Tosun & Lang, 2017, p. 8).

As mentioned earlier, the concept of policy integration is increasingly used in the context of environmental issues. According to Braunschweiger & Putz (2021) this led to the development of the EPI concept, or Environmental Policy integration. According to Runhaar et al., EPI refers to the "incorporation of environmental concerns in sectoral policies outside the traditional environmental policy domain" (Runhaar et al. 2014, p. 1). This definition will be utilized for this thesis.

2.2: Theoretical Frameworks:

2.2.1: Degree of Policy Integration

In terms of assessing the *degree* of policy integration of environmental policy measures in any given sector, Kivimaa and Mickwitz (2006) provide a framework using four criteria derived from definitions of policy integration. These criteria are as follows; *inclusion*, *consistency*, *weighting* and *reporting*. The first criterion, policy *inclusion,* is included in order to assess the degree of coverage of environmental aspects in policy documents, either generally or by placing the focus on specific environmental issues. This criterion also serves as a requirement for the other criteria used in this framework. Meaning that a certain degree of inclusion is a necessary prerequisite for the following criteria. The second criterion is *consistency*, and is used to determine how the issue of consistency is represented in policy documents when addressing environmental issues. This criterion is not directly used to evaluate consistency in the documents, but rather to determine whether the policies themselves take its importance into account. The third criterion, *weighting* of the environmental aspect in regard to other aspects, can be used to assess the importance

given to an environmental issue. The fourth criterion is *reporting*, which is based on the importance of feedback and iteration for the effectiveness of a policy. In terms of policy documents, this criterion focuses on the degree to which guidelines are included on how the environmental aspects in these documents are to be followed up and reported on. Additionally, this criterion addresses whether the assessments or evaluations of policies include environmental aspects (Kivimaa & Mickwitz, 2006).

This framework has been adapted for the use in multiple adjacent sectors to coastal environmental restoration, such as biodiversity policy integration (Zinngrebe et al., 2018). While retaining the original criteria of inclusion and weighting, the framework incorporates additional elements to address newer considerations and priorities. The adapted framework by Zinngrebe et al. (2018) contains five criteria, two of which are the aforementioned *inclusion* and *weighting*, while the remaining three are newly defined.

The first of these new criteria is *operationalization*, which addresses the extent to which policies are adapted to achieve mandated targets, through the adaptation or adjustment of policy instruments, and the implementation of monitoring and enforcement mechanisms. The second newly defined criterion is *coherence*, which determines the extent to which objectives and policies instruments complement each other rather than being contradictory. As an example, an article by Runhaar et al. (2024) mentions Dutch agricultural policy as a sector in which EU-level mandated conservation policies are mostly 'add-on' elements next to national sectoral policies that reinforce or at the least maintain drivers of biodiversity loss. As such, interventions should address driving forces of environmental issues within the sector, as well as adapt policies which worsen or maintain these issues. The third criterion mentioned by Zinngrebe et al. (2018) is defined as *capacity*, which addresses the provision of resources to ensure the operationalization of an environmental issue. These resources can vary from knowledge, people and monetary resources to institutional capacities and political mechanisms. Figure 1 shows the criteria by Zinngrebe et al. (2018) as well as aspects of policies that can be analyzed in order to address each criterion.

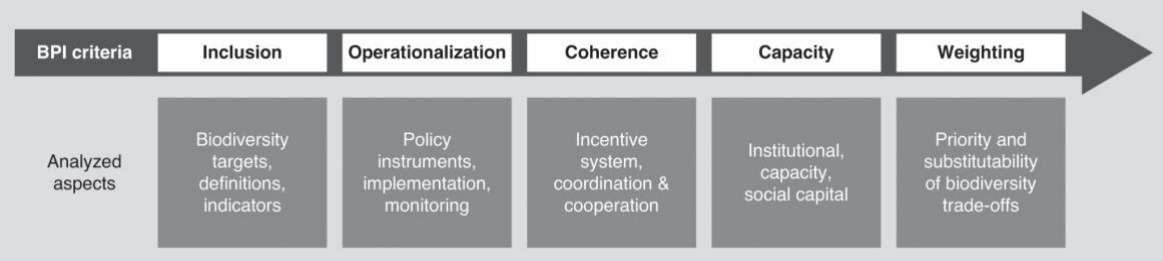

Figure 1: Five criteria of biodiversity policy integration (Zinngrebe et al. 2018).

The criteria by Zinngrebe et al. (2018) will be adapted to the sector of environmental restoration for this thesis as opposed to the original framework by Kivimaa and Mickwitz (2006). The reason for this is the focus of the five criteria by Zinngrebe et al. (2018) on the level of operationalisation, and the focus on coherency, or synthesizing policies at a national level with international policies, such as EU directives. Given the focus of this study on the degree of operationalisation of alternating polders and the synthesis between policies on different levels, the adapted framework by Zinngrebe et al. (2018) is a better fit for the scope and topics of this study. These five variables that aim to assess the degree of policy integration will be applied to policies on alternating polders.

2.2.2: Governance Processes
This first selection of variables on enablers and barriers is adapted from Zinngrebe et al. (2022). These criteria analyse how collaborative processes are applied to improve the degree of integration of alternating polders, they include *joint-planning*, *consistent policy revision*, and *adaptive learning*

Firstly, joint planning and collaborative vision making is listed as the integration of interests and objectives among different relevant stakeholders, and defining a clear mandate for relevant stakeholders, in order to induce a sense of ownership among stakeholders. Next, consistent policy revision refers to phasing out elements that are contradictory or harmful, empowering the support for environmental policies consistently across political sectors. Lastly, adaptive learning relates to the identification of suitable strategies for operationalization and capacity building. This can be done by engaging in joint monitoring and evaluation processes that strengthen accountability and align policy goals (Zinngrebe et al, 2022). These variables will be adapted as governance processes, in order to clarify the distinction between structural conditions and dynamic processes for the context of integration within the Western Scheldt.

2.2.3: Barriers and Enablers: Structural Conditions
Hegger et al. (2020) provides a second selection of variables, a list of several structural conditions that represent explanatory factors, which means that they can have either a constraining or enabling effect on certain modes of governance. These conditions or explanatory factors are derived from a collection of frameworks addressing change and stability in public policy sciences. These structural conditions are listed as: Physical circumstances, physical infrastructures, institutional settings, discourse, agency, and shock events. They will be further explained below.

Firstly, *physical circumstances* represent natural environmental features such as altitude, river system complexity or rainfall seasonality. They can also represent gradual changes in an ecosystem with direct consequences for policy sectors, for example due to human interference. These circumstances are a vital element in determining baseline constraints and opportunities for policy changes. Next *physical infrastructures* include both physical, tangible defense systems such as dikes, as well as intangible assets such as warning systems or education. Such infrastructure is often a stabilizing element in governance, and may reinforce path dependency, limiting future opportunities for different flood risk management methods. As such, it is viewed as a constituting element of a policy context. Third, *institutional settings* relate to the "*rules, norms and strategies adopted by individuals operating within and across organisations*" (Ostrom, 2007, in Hegger et al., 2020 p. 5) and form "*recurrent patterned arrangements, which limit the choices and opportunities available, as opposed to agency that is the capacity of individuals to act independently and to make their own free choices*" (Hegger et al., 2020: 5). Institutional settings tend to reinforce stability through embedded legal and institutional standards, such as safety standards for dikes. The next factor, *discourse*, is defined as "*the views and narratives of the actors involved (norms, values, definitions of problems and approaches to solutions)*" (Liefferink, 2006, in Hegger et al. 2020, p. 5). This factor acknowledges the importance of a more social-constructivist approach through which problems are framed. As such, discourse plays a vital role in shaping political legitimacy and deciding which policies are widely accepted. An

example for this concerning flood risk management is the ´Room for the River´ project, demonstrating a shift from the discourse of ´fighting´ or ´controlling the river´ to restoring the river's original floodplains (Immink, 2006). *Agency* encompasses key organisations and individuals in driving policy and governance change. These agents are able to strategically leverage opportunities through windows of opportunity, in order to both encourage or resist change. The last explanatory factor mentioned by Hegger et al. (2020) is *shock events*. These are often unexpected events which can come from either inside or outside of a policy sector, or internal and external shocks. Internal shocks may relate to conflicts between actors while external shocks may include focusing events such as floods, or contextual changes such as changing discourses or economic crises. According to literature studies by Hegger et al. (2022). They may be the main cause for changes in modes of governance.

2.3: Conceptual Framework

The conceptual framework for this thesis presents how the structural conditions and governance processes jointly shape the degree of policy integration (PI). The degree of policy integration is determined by variables listed by Kivimaa and Mickwitz (2006) and Zinngrebe et al. (2018) as inclusion, weighting, operationalisation, coherence, and capacity The framework is shown below. This variable reflects the extent and the ways in which alternating polders are integrated into flood risk management policies. The structural conditions, adapted from Hegger et al. (2020) include physical circumstances, physical infrastructures, discourse, agency, shock events and institutional settings. These variables represent the relatively stable contextual landscape in which policy integration takes place. In contrast, the third set of variables, governance processes, are seen as dynamic and actor-driven, these variables reflect how stakeholders respond to and work within these structural conditions. These governance processes, adapted from Zinngrebe et al. (2022) are listed as joint planning, adaptive learning and policy revision. Both sets of independent variables, structural conditions and governance processes, can serve as both potential barriers and opportunities for the degree of policy integration.

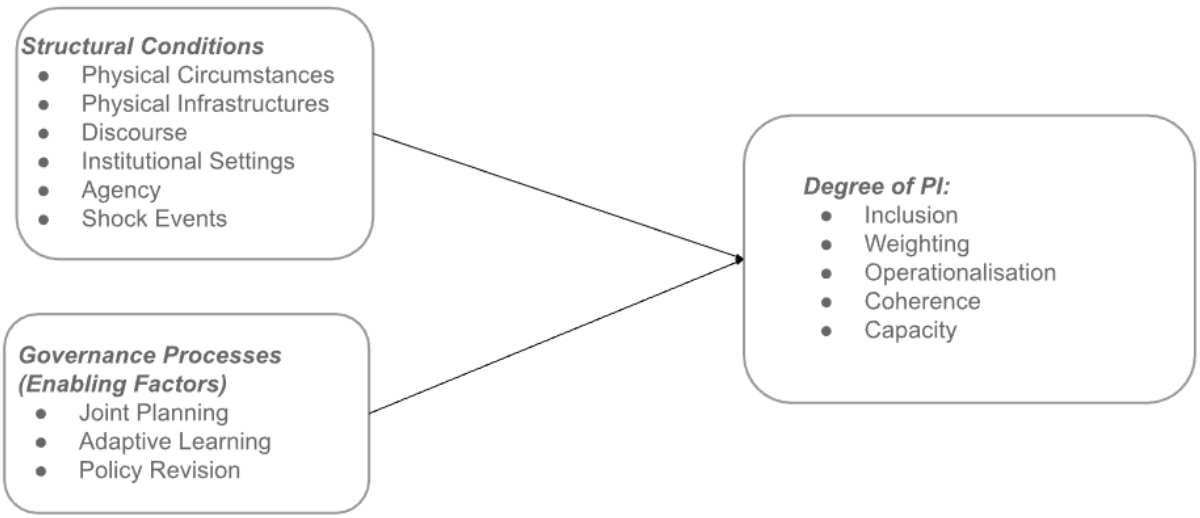

Figure 2.: Conceptual Framework.

2.3.1: Operationalisation

The operationalisation table at the end of this section illustrates the various variables used in the conceptual framework, including the variables on the degree of policy integration, the structural conditions, and governance processes. For each set of variables, several indicators have been provided, adapted from their respective sources.

2.3.2: Degree of Policy Integration

The first set of variables contribute to understanding to what extent environmental measures are integrated into sectoral flood management policies. These five variables are adapted from Kivimaa and Mickwitz (2006) and Zinngrebe et al. (2018). The first variable, inclusion, will be operationalised by whether alternating polders are both specified and substantially addressed, and whether they are included in decision making processes. The second variable, weighting, can be measured through the extent to which alternating polders receive priority over other flood risk management options. The operationalisation variable is operationalised through whether desired behaviours of sectoral actors are specified, and whether policy instruments towards the implementation of alternating polders are implemented. The coherence variable measures the extent to which different objectives and policy decisions within the flood management sector are internally consistent and complementary to each other without producing conflicting incentives or compromising the effectiveness in causing one outcome in favour of another. The last variable, capacity, is operationalized through the extent to which resources are reasonably sufficient and made ready for the operationalisation of alternating polders (Kivimaa & Mickwitz, 2006., Zinngrebe et al., 2018). The variables and their indicators are shown in the table below.

Degree of Policy Integration. Adapted from Kivimaa & Mickwitz (2006) and Zinngrebe et al. (2018)	**Indicators**
Inclusion	● Financial allocation ● Decision making
Weighting	● Environmental measures experiences priority and dominance in policy documents and policy domain (Kivimaa & Mickwitz, 2006)
Operationalisation	● Clear knowledge base ● Outcomes specified ● Policy instruments to work towards the targets ● Monitoring and follow-up
Coherence	● Internal consistency between analysed policies
Capacity	● Money, personnel, knowledge, organisational structures

	etc. to ensure "operationalisation”

Table 1: Operationalisation table of degree of policy integration variables. Adapted from Kivimaa and Mickwitz (2006) and Zinngrebe et al. (2018).

2.3.3: Structural Conditions

The second set of variables shown in the table below, adapted from Hegger et al. (2020) concern mostly external and contextual factors influencing the policy process, either limiting or enabling the integration of policies. This set contains variables, each of which will be analyzed in a short narrative. The first variable, physical circumstances, addresses the conditions of ecosystems with direct consequences for policy sectors. These conditions can range from species diversity to water quality, as mentioned in the operationalisation table. The second variable, physical infrastructures, concerns physical flood defenses, as investments in both grey and green infrastructures may cause a path dependency effect (Hegger et al., 2020). The variable of institutional settings will be measured through various institutional characteristics, such as legislation, policy and legal principles, degree of integration of rules, constitutional procedural and substantive norms. The next variable concerns discourse, which can be analyzed through the norms and values of stakeholders and the ways in which policies on alternating polders are framed. Next, agency can be analysed through the presence of change agents, and which strategies to employ to enable or limit change. The influence of shock events can be viewed through the presence and intensity of both internal and external, or physical and non-physical shock events. Lastly, institutional settings are recurrent arrangements which constrain the choices and opportunities available for integration. Various relevant institutional settings may include legislation, policy and legal principles, degree of integration of rules, constitutional procedural and substantive norms (Hegger et al., 2020).

Structural Conditions.	**Indicators**
Physical Circumstances	● tidal movements ● sediment levels ● salinity ● water quality ● vegetation & species diversity ● erosion patterns ● sea-level changes
Physical Infrastructures	● dikes and Levees ● controlled Flood Areas ● depoldered Areas (e.g., Hedwigepolder)
Discourse	● norms of various stakeholders

	● values of various stakeholders ● definitions of problems ● approaches to solutions
Agency	● Presence of individuals and organisations that use specific strategies to invoke or resist change ● (e.g. network building; (re)framing policy issues; promoting specific policy options).
Shock Events	● physical shocks ● non-physical shocks ● internal shocks (e.g. conflict expansion) ● external shocks ● (e.g. focusing events such as floods)
Institutional Settings	● content of policies (including a characterisation of the policy instruments present) - policy ● actor constellations – politics

Table 2: Operationalisation table of structural condition variables. Adapted from Hegger et al. (2020).

2.3.4: Governance processes

The last set of variables shown in the table below represent three governance processes, adapted from Zinngrebe et al. (2022). These criteria analyse how collaborative processes are applied to improve the degree of integration of alternating polders, as outlined in the theoretical framework.The first of these is *joint planning*, which will be analyzed through the presence of integration processes and engagement of environmental policy sectors. Next, *policy revision* will be assessed through whether there are processes for adapting policies, and whether current policies are being reviewed and adapted in terms of contributions to environmental restoration, and phasing out of harmful activities. It refers to formal updates of existing policies, programmes or regulatory frameworks. The last variable, *adaptive learning*, concerns identification of suitable strategies for operationalisation and capacity-building. It is an iterative learning process that allows for policies to be altered over time (Zinngrebe et al, 2022).

Governance Processes . Adapted from Zinngrebe et al. (2022)	**Indicators**
Joint Planning	Existence of processes to integrate planning processes across sectors, engagement of coastal flood risk sector in environmental policy development.

Policy Revision	Existence of processes for evaluating and adapting policies with policies being assessed to what extent they contribute to environmental restoration. Policies are reviewed - phasing out harmful subsidies and support, while empowering support for effective measures.
Adaptive Learning	Identification of suitable strategies for capacity building and operationalisation

Table 3: Operationalisation table of governance processes. Adapted from Zinngrebe et al. (2022).

3. Methodology

In this section, the methodology of the study will be explained. First, the research philosophy of the thesis will be specified, followed by a description of the research strategy. Next, the methods of data collection and data analysis will be explained, concluded with a specification of the validity and reliability.

3.1: Research Philosophy

Specifying the research philosophy or research paradigm constitutes an important aspect of any study, as the research paradigm serves as a starting point for the rest of the research design. In the Handbook of Qualitative research, Guba & Lincoln explain a research paradigm as representing "*a worldview that defines, for its holder, the nature of the "world," the individual's place in it, and the range of possible relationships to that world and its parts"* (Guba & Lincoln, 1994., p. 107). Four research paradigms are defined by Guba & Lincoln (1994); positivism, post-positivism, constructivism and critical theory. This thesis adopts a constructivist approach as a research paradigm. A constructivist paradigm emphasizes how knowledge and understanding of reality is shaped through cognitive processes, meaning that knowledge is shaped by an individuals' interaction with their environment. In this paradigm, one 'construction' of reality is not more true than the other, there is no one objective reality, and realities can change over time with altering societal contexts (Guba & Lincoln, 1994). There are several reasons as to why the paradigm of constructivism is fitting for this study. Firstly, policy processes, especially around environmental issues are effectively constructs shaped by human interests, values and experiences, as well as contextual factors (See Hegger et al. 2020). The constructivist approach allows for an analysis of how relevant stakeholders construct and interpret their world and translate them into policies. Secondly, the emphasis of constructivism on context is particularly relevant for the analysis of policy integration of environmental measures such as alternating polders. The constructivist paradigm helps to explore how contextual environmental and social aspects, such as those specified by Hegger et al. (2020) and Zinngrebe (2022) influence environmental policy integration. Lastly, as constructivism focuses on the multifaceted nature of realities, it is useful in the analysis of discourse and framing of problems and the role they play in the policy integration process.

In short, constructivism provides a nuanced, contextual view to analyzing policy integration of coastal flood risk management and environmental policies in the Western Scheldt. Constructivism captures the inherently subjective nature of policies as constructs of reality, the importance of contextual factors and a detailed view on the role of discourses.

3.2: Research Strategy

In this section, the research strategy will be discussed. First, the research approach of this thesis is specified as being deductive in nature. After which the research strategy is explained.

3.2.1: Deductive or Inductive

In this thesis, a deductive research approach is adopted. According to Van Thiel (2014) deductive research begins with a general theory and seeks to test its validity through observations and data collection. This thesis applies several theories on (environmental)

policy integration, using several theoretical frameworks as a starting point (see Hegger et al, 2020., Kivimaa & Mickwitz, 2006., Zinngrebe et al, 2022). The research questions and conceptual framework are deductive in nature, as they are grounded in existing literature and theories.

3.2.2: Research Strategy

The research strategy used in this thesis is case study research. Case research is, according to Harrison et al. (2017), consistently described as a largely qualitative approach for a holistic, detailed and comprehensive assessment of a complex issue or unit of analysis in a certain context. Krusenvik (2015) underpins various benefits of case study research. Firstly, one of the biggest advantages applicable to this study is that a case study design provides detailed insight in the individual case, testing theories directly in relation to the case study as they unfold in practice. Secondly, Krusenvik argues that case study research provides great insight into complex social events, and investigating units consisting of large variables, which allows for researchers to adopt a more holistic view of specific events. Both of these points are of significance to this study. The ability of case studies to address real-life phenomena aligns with the aim of the thesis to explore the integration of environmental policies in a complex social environmental context such as the Western Scheldt. Additionally, case studies have the capacity to analyze complex phenomena in a holistic way, involving a large number of variables. In this thesis, the interplay between EU directives, national policies, and local implementation represents a multifaceted issue that requires a holistic approach. Although case study research has many advantages, Krusenvik (2015) also underlines the various disadvantages of case studies. Firstly, it is mentioned that one cannot generalize from a single case, given that case studies are highly specific, and are therefore said to have a low external validity. However, Krusenvik (2015) argues that a low sample may not always be a problem, and the strength of case studies lie in generating detailed insights that, on an aggregate level, can still inform broader theoretical frameworks.

Yin (1981) specifies three types of case studies; exploratory, descriptive and explanatory. Exploratory case study research is intended to examine a subject of little to no established theories or scientific knowledge, as a result it often uses open-ended research questions. The descriptive approach describes a phenomenon and its characteristics in order to understand it. Explanatory research aims to explain a phenomenon, or why certain conditions or behaviours have led to a certain situation, analyzing the causes and circumstances of a phenomenon (Van Thiel, 2014). As this thesis aims to explain and analyze the degree of, and the barriers and opportunities to policy integration, based on existing theoretical knowledge and concepts around policy integration, this thesis employs an explanatory approach to case study research.

3.2.3: Case Study Selection

The case study adopted in this thesis takes place in the context of the Dutch Western Scheldt estuary, which was officially made a Natura2000 area in 2009 (Rijkswaterstaat, 2007). According to van Buuren et al., (2012), the Western Scheldt has three core functions; economic, in terms of making the port of Antwerp, accessible; ecological, in terms of providing habitats for unique plant- and animal species; and in terms of safety, which pertains to preventing flooding in the hinterland. However, balancing and integrating these functions presents a challenge. For example, maintaining the accessibility of the port of Antwerp requires frequent dredging of channels as sediment continuously builds up.

However, these activities are harmful for both other core functions of the Western Scheldt, leading to ecological degradation and loss of important habitats such as intertidal habitats and salt marshes. These habitats are essential for regional biodiversity, supporting endangered bird and aquatic species.

Additionally, the deepening of the channels and the resulting increase in the volume of water presents risks for safety, and the removal of sediment lowers the ecological value of the Western Scheldt. As such, these three functions have been integrated in the development of the Western Scheldt system, as was decided by the Dutch and Belgian governments in the Long Term Vision for the Scheldt Estuary between 1999 and 2000 (Slinger, 2023). These competing societal demands for the Western Scheldt make for fierce policy debates between actor coalitions.

As a response to this increasing ecological deterioration, coastal realignment projects, such as the Hertogin Hedwigepolder, were implemented. This project included deliberately depoldering and reopening a former agricultural area to tidal influence, in order to compensate for habitat loss caused by dredging operations. Although the project's implementation was controversial and opposed by many societal actors, it represents a shift towards more risk-based, nature based flood risk management approaches (Bax et al, 2023).

Within this governance landscape, alternating polders, which are areas that are periodically raised by the build-up of sediment, have emerged as a promising policy option for adaptive, nature-based flood risk management. According to modelling and cost-benefit analyses (Terpstra et al., 2025, Van Belzen et al., 2021) these zones have the potential to serve both agricultural and ecological purposes, possibly offering a middle-ground for these competing interests. However, the integration of alternating polders has met resistance on several sides, as institutional barriers, political resistance and discursive contestation continue to shape the debate around alternating polders. This thesis aims to better understand the emergence of alternating polders within the Western Scheldt as well as which barriers and opportunities hinder or enable the integration of alternating polders into flood risk management policies.

3.3: Data Collection

This section of the methodology chapter will describe and discuss the various methods in which data for this thesis will be collected.

3.3.1: Document Analysis

According to Bowen (2009) document analysis is a systematic procedure for reviewing or evaluating documents, for example organisational reports, policy documents or public records. Several possible advantages to document analysis are mentioned. Firstly, it is an efficient method of research, Bowen mentions document analysis as being a cost-effective and widely available method of data collection. The non-reactiveness of document sources is also highlighted, as they are unaffected by the research process and the investigator's presence does not alter what is being studied. However, there are also several disadvantages to document analysis. As documents are created independently of the research process, they potentially do not provide enough details to single-handedly answer research questions. Additionally, document sources may be prone to biased selectivity, with any given source often reflecting organisational guidelines, as such, information may be incomplete or selective. As such, in this thesis, document analysis is mostly used as a complementary source of data to the interviews. However, document analysis is invaluable for the thesis, as the first and the second sub-question require the analysis of various policy documents, for the coastal flood protection policies as well as national and EU-mandated environmental policies. Additionally, the document analysis can provide a basis for the design of the semi-structured interviews (Bowen, 2009).

3.3.2: Semi-structured interviews

The second research method that this thesis uses as a part of the case studies are semi-structured interviews, in order to gain more detailed knowledge on how policy integration is limited or enabled. Semi-structured interviews have been chosen as opposed to open interviews, which are more suitable for exploratory case study research, or structured interviews, which do not allow for much flexibility to ask further, more in-depth questions. Semi-structured interviews are loosely structured around a list of general topics or set interview questions, leaving room for potentially useful insights of the interviewee (Van Thiel, 2014). The flexibility and possibility of going more in-depth on certain topics is be a valuable addition to the case study. The document analysis is used as a basis for establishing relevant interview questions and topics that are applicable to the case study of the Western Scheldt.

In order to obtain in-depth and insightful data, the selection of interviewees is based on several criteria. The sample primarily consisted of participants involved with flood management and nature restoration within he Western Scheldt, as well as those familiar with the institutional or physical settings within the Western Scheldt. Additionally, interviewees were selected based on their affinity with alternating polders and the surrounding discourse. The table below shows a list of the interviewees.

Number	Position (at time of interview)	Organisation (at time of interview)	Interviewee date
1	Researcher on conflict and	Wageningen University	25/05/2025

	governance issues within the Western Scheldt		
2	Strategic Advisor	Province of Zeeland	10/06/2025
3	Political Representative	Province of Zeeland	19/06/2025
4	Strategic Advisor	Water Board Scheldestromen	03/07/2025
5	Estuarine Ecologist	Wageningen Marine Research, NIOZ	15/07/2025
6	Policy Officer	Ministry of Agriculture, Fisheries, Food Security and Nature (LVVN).	18/07/2025
7	Professor	University of Applied Sciences Zeeland	31/10/2025
8	Coordinator Water	Rijkswaterstaat Zee en Delta	24/11/2025
9	Policy Officer	Ministry of Infrastructure and Water Management	09/01/2026

Table 4: List of interviewees.

3.3.3: Participant observation (Policy workshop)

In addition to conducting document analysis and semi-structured interviews, this study draws information from an informal policy workshop day on the 21st of November, 2025, called the *Meegroeidag*. This event focused on exploratory discussions, readings and workshops on *meegroeilandschappen.* These are adaptive landscapes that utilize sediment deposition and tidal mechanics to gradually increase in height over time, as possible flood risk management methods. Alternating polders fall under this category. The researcher attended this workshop as a participant-observer and recorded notes of recurring themes, sentiments and concerns, and policy recommendations.

3.4: Data Analysis

3.4.1: Document Analysis

For the document analysis, the operationalisation and conceptual framework table serves as an important guideline.The information gleaned from the documents which is most relevant for elements of the operationalisation table is used as a contextual foundation for the thesis. This data also serves as a basis around which the interview questions are formulated. The analysed documents are shown in Appendix 1.

3.4.2: Open, Axial and Selective Coding

All interviews that are held have been recorded, transcribed and coded in Atlas.ti, with the explicit permission from the interviewee. The process of coding can be used to attribute value to data, and to and establish connections with other interviews. In order to analyse and combine data, the techniques of open coding, axial coding, and selective coding are used.

Open coding refers to breaking the data into smaller parts and identifying patterns, digging up concepts and dimensions within the data. Axial coding is about finding connections between concepts identified in the open coding photos and grouping them into broader categories. Lastly, selective coding refers to the identification of overarching core themes connecting the axial coding categories (Corbin & Strauss, 1990). After the selective coding process, the identified concepts themes from this process are compared to the transcripts in order to test whether they align with the raw data.

Similar to the document analysis, the conceptual model and especially the operationalisation table serve as a general guide to identifying relevant themes and concepts, meaning a deductive approach is used for analyzing the interview transcripts. This method helps identify barriers and opportunities to policy integration from the interviews.

3.5: Reliability and Validity

In order to verify the credibility of research results, it is always important to address or, if possible, avoid potential errors during the research process. Two important aspects of credibility of results are reliability and validity. Reliability refers to the stability of research, and whether the research will yield the same result if repeated (Creswell, 2009). In order to safeguard the reliability of this research, full transparency in regards to the methodology and results is conveyed, and any coding schemes and interview questions are included. Additionally, the interview questions and coding schemes will follow from the information used in the conceptual framework, therefore using existing frameworks, improving the reliability.

Another aspect used to verify the credibility of the research result is validity, in qualitative research, this means that the researcher verifies the accuracy of the results by employing certain procedures (Creswell, 2009). In terms of validity, there are various strategies to improve the validity of the results that are used in this thesis. First of all, data triangulation is applied to this case study, by using multiple research methods in order to improve the credibility of the data. Secondly, elaborate and detailed descriptions are used to convey the findings.

4. Results

This section will describe the results of the study in various sections. The first section describes the structural conditions around the policy integration of alternating polders in the Western Scheldt. The next section assesses the degree of policy integration of alternating polders, and the last section will outline the governance processes.

4.1: Structural Conditions

The first sub-question is as follows: *What are the structural conditions to the integration of alternating polders into flood risk management policies for the Western Scheldt?* This sub-question aims to explore the physical, institutional and discursive conditions that structure how alternating polders are debated and considered in the Western Scheldt. The results of this sub-question will be structured according to the Structural Conditions, adapted from Hegger et al. (2020). The first paragraph will provide a short, general description, after which the environmental conditions of the western scheldt will be further explained, in terms of water quality, habitats, and morphological dynamics, as well as existing flood management infrastructures. Second, this section will describe the *Discourse*, the discursive context of alternating polders, which will describe the norms and values of various stakeholders, how problems and solutions are defined, and the framings through which alternating polders are presented. Next the role of *Agency* is defined, describing how certain individuals can limit or enable the implementation of alternating polders, through the (re)framing and promotion of certain policies and the building of networks. After which the role of *Shock Events* will be explained, highlighting how sudden events can alter perceptions and open or close windows for action. Lastly, the *Institutional Settings* will be described, and the ways in which content of current policies provide possibilities for action and set boundaries on what can be pursued.

4.1.1: General Introduction

The Western Scheldt is located in the Scheldt estuary, covering a surface area of approximately 33,000 hectares and lies in the Flemish Region of Belgium and in the Netherlands. It is often divided in different areas based on physical traits. The mouth, which spans the northern and southern coastline; the Western Scheldt, which is a multiple-channel system from the border Breskens-Vlissingen to the Belgian border; and the Lower and Upper, Sea Scheldt, which forms the tidal river in Flanders (*Geopark Schelde Delta*, n.d.).

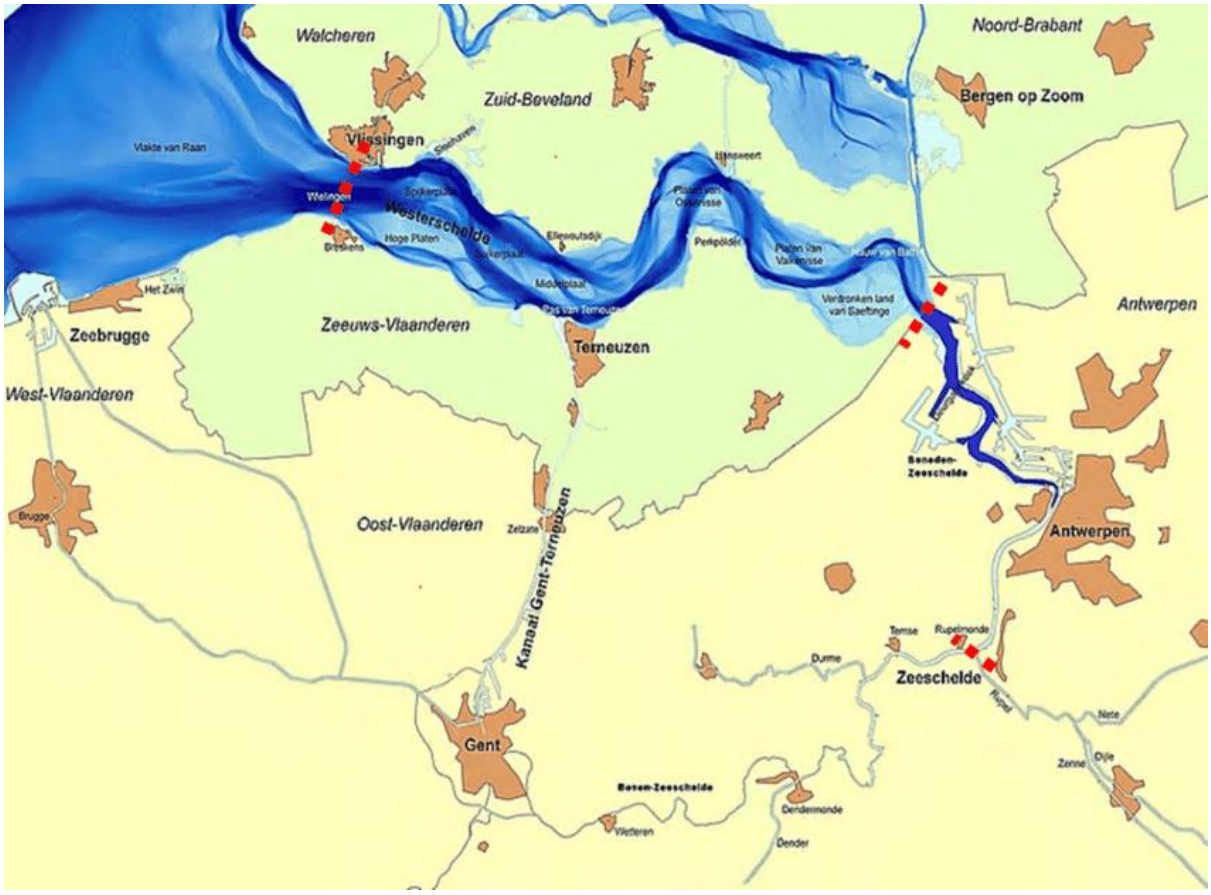

Figure 3: The Scheldt estuary. As the border between the mouth and the Western Scheldt, usually the line Vlissingen-Breskens is used (Deltares, 2013).

The Western Scheldt serves as the final section of the Scheldt estuary before it reaches the North Sea. The waterway itself has a length of around 70 kilometres, narrowing from about 6 kilometres at the rivermouth to about 500 metres near Antwerp (Deltares, 2020). It is characterised by a multiple channel system, including a flood and ebb-channel as well as large intertidal areas. These intertidal flats, along and between embanked shores, serve as ecologically valuable habitats, supporting diverse marine species and bird populations. The lateral boundaries of the estuary are shaped by dikes and bank protection. Until the late 1990s, it is presumed that the channel system of the Western Scheldt was primarily shaped by natural processes and estuarine dynamics, even after the deepening of the navigation channels between 1970 and 1975. However, after 2005, the morphodynamics have been significantly influenced by human activities such as dredging and disposal (Deltares, 2020., Van Dijk et al., 2021).

4.1.2: Physical circumstances

Water Quality:
The water quality of the Western Scheldt is known to be polluted as it receives effluents from industrial, agricultural and domestic sources, from upstream regions as well as local activities. One of the most significant issues is the concentrations of several heavy metals, such as cadmium and lead, which regularly exceed the maximum limits set by the Rijkswaterstaat (Jansen et al., 2015., Ministerie van Algemene Zaken, 2013). These metals

are of particular concern due to their persistence and potential for accumulation in sediments and their risks to both aquatic life and human health. Additionally, high levels of nutrients, particularly nitrogen from agricultural activity and untreated wastewater can lead to eutrophication, which can cause excessive growth of algae as well as depletion of oxygen (Ærtebjerg et al., 2001).

Perhaps the most pressing issue considering the quality of the Western Scheldt´s waters is PFAS (per- and polyfluoroalkyl substances) contamination. The Dutch government has formally held US chemicals company 3M responsible for polluting the Western Scheldt with these "forever chemicals," which have been dumped into the Scheldt River from 3M's facility in Belgium (*Provincie Zeeland*, 2023). These substances accumulate in the food web and exceed both the biota standards of the WFD and the reported effect limits. The PFAS concentrations in Western Scheldt biota are significantly higher than in the Wadden Sea. Recent research by the University of Wageningen has shown that, while the effects of PFAS are not immediately visible in the environment, they can over time weaken the immune systems of plants and species, which can lead to a decrease in resilience of populations and ecosystems to viruses or the effects of climate change (Van Den Heuvel-Greve, 2025).

Habitats and ecosystems:
The Western Scheldt, including Saeftinghe was first proposed as a protected Natura 2000 site under the EU Habitats Directive in July 1998. The area of 441 km2 protects 8 species and 11 habitat types of the Habitats Directive. (*EUNIS*, n.d.) Additionally, the area was designated as a Special Protection Area (SPA) under the EU Birds Directive in March 2000 (Marine Regions, n.d.). The estuarine system is home to several key habitats that provide essential ecological services.

Mudflats act as biological filters, removing excess nitrogen and phosphorus from the water and enriching it with oxygen, as well as supporting populations of benthic species that provide food resources for fish and bird species. Salt marshes contribute to carbon sequestration and sediment stabilization (Interreg, 2020). Additionally, low-dynamic shallows are particularly important habitats; due to the more stable sediment conditions they support a variety of benthic species, and represent important feeding areas for birds (Herman et al., 2011).

Most importantly, estuarine biodiversity relies on maintaining a fine-grained mix of habitats shaped by ecological, morphological and hydrodynamic gradients. An example of this is the gradual transition from salt to freshwater as the estuary runs further inland, but smaller gradients found in sediment composition and current velocity play an important role. These gradients create a mosaic of habitats that represent an essential part of the estuarine ecosystem, seeing as biodiversity within a single habitat type is often low, but the diversity of these habitats is high. Many species that inhabit the Western Scheldt depend on the existence of multiple types of habitats for the completion of their life cycles (Herman et al., 2011).

Morphological Changes
In the past decades, the most significant human interference in the morphology of the Western Scheldt is two-sided. On one side, there is the deepening and widening of the shipping channels in order to improve accessibility, and on the other, there is land

reclamation, for example for agricultural use. Embankments and land reclamations have played a role in the development of the Western Scheldt estuary since the twelfth century (Geopark Schelde Delta, n.d.), but human influence on the landscape became increasingly significant from the start of the 20th century. For the past century, consecutive enlargements of the shipping channels have deeply influenced the morphology and hydraulics of the estuarine system (Herman et al., 2011). Several categories of effects, identified by the *Vogelbescherming Nederland* (Society for the Protection of Birds Netherlands) can be seen.

The first effect, identified as *roughening*, relates to the intensified characteristics of the tide, describing the increased tidal range and stronger tidal waves due to deepening and widening of the channels. The tidal range has moved upstream, turning previously low-dynamic, shallow and intertidal areas into high-dynamic areas with stronger currents, putting pressure on species living in and on the sediments (Herman et al., 2011).

Secondly, *steepening* reflects the loss of transitional areas between channels and tidal flats. Low-dynamic shallow areas, which are particularly essential for biodiversity, have largely been absorbed into either channels and tidal flats (Herman et al., 2011).

Next, the effect of *simplification* refers to the decrease of estuarine dynamics. Channel deepening disrupts the balance between ebb and flood channels, favouring one over the other. In the case of the Western Scheldt, the ebb channel is used for transport and thus continuously dredged and maintained (Elias et al., 2023). This disrupts the processes that sustain secondary channels and tidal flats by supplying and breaking off sediment. As a result, tidal flats become more uniform in shape (Herman et al., 2011).

Lastly, *deepening* relates to the net loss of sediment from the estuarine system; between 1994 and 2005, particularly due to hydrodynamic processes or historical dredging practices, in which sediment was either removed completely or dumped in areas prone to remobilisation. As mentioned before, the deepening of the channels leads to stronger tidal waves (Elias et al., 2023, Herman et al., 2011).

Climate Change and Human Activity

Challenges in flood risk management are reinforced by the effects of climate change, such as sea level rise. If global warming remains below 2 degrees Celsius, as agreed in the Paris Agreement, sea levels in the Netherlands could rise by 1 to 2 meters by 2100. (Delta Programme, n.d.). This translates to a sea level rise of about 6 millimetres per year; three times more than the historical rate of 2 millimetres per year (Delta Programme, n.d.).

Another challenge worsening flood risks is land subsidence. It is estimated that, during the last century groundwater pumping has contributed to about a quarter of relative sea level (Sistermans & Nieuwenhuis, n.d.). Additionally, dredging activities have caused the Western Scheldt channel to deepen by 5 metres since 1955, which allows for stronger storm surges and tidal waves to enter the estuary (Elias et al., 2023). The aforementioned disappearance of shallow low-dynamic areas, salt marshes and tidal flats has implications for flood risks as well, as they are known to function as buffer zones, absorbing storm surge energy through friction (Ecoshape, 2020).

4.1.3: Physical Infrastructures

The 1953 North Sea flood played an important role in shaping current flood risk management strategies. This storm surge flood caused casualties in the Netherlands, England and Belgium. The disaster was a turning point in flood policy in the second half of the 19th century, leading to increased investments in monitoring systems, raising awareness, and flood protection infrastructure. There has been a progressive shift to a more risk-based flood strategy, as opposed to a mostly preventive approach employed before (Van Doorn-Hoekveld et al., 2022). This strategy is largely focused on minimizing damages, such as casualties and economic losses. The core principle of this approach is that the probability of casualties due to flooding should not exceed 1 in 100,000 per year, which applies to everyone living within the dikes.

Unlike the Oosterschelde, the Westerschelde was not closed off as part of the Delta Works, or equipped with a storm surge barrier, in order to maintain the accessibility of the port of Antwerp from the North Sea (according to the Treaty of London of 1839). Instead, the estuary channel is lined by a series of reinforced dikes, these dikes along the Dutch portion of the Western Scheldt have been strengthened and reach 12 meters NAP (Amsterdam Ordnance Datum), in order to withstand flood events of a 4000-year return period (Cox et al., 2009). The dikes have been divided into several sections, each regulated through the Flood Protection Programme (Or HWBP). The HWBP is a programme aimed at reinforcing primary flood defenses to meet legally required safety standards, it is an alliance between water boards and the Rijkswaterstaat which focuses primarily on traditional dike reinforcement methods. There are currently 5 ongoing HWBP projects in the Western Scheldt, as shown in the figure below. One of these projects, Hansweert (67), is in an executory phase, and the four others, two in the Buitenhaven Vlissingen (69-70), one in the Zak van Zuid-Beveland (71), and one in East Zuid Beveland (72), are in initial and exploratory phases (HWBP, 2026).

Figure 4: Current HWBP projects in the Western Scheldt. (HWBP, 2026)

4.1.3: Discourse

This first paragraph will describe the discourse around alternating polders. It will explain the values and norms of proponents and opponents of alternating polders, and how problems and solutions are defined.

Wiering (2006) describes a discursive shift around Dutch water policies from a 'fighting against the water' perspective towards an accommodative set of methods that aim to integrate flood protection with other river values. Although this discursive shift has not yet been institutionalised on a deeper level, it has enabled the opportunity for more integrated methods of flood protection to be researched and discussed among policy makers, such as alternating polders. As such, the debate around alternating polders is very politically charged, which can be largely attributed to it overlapping with several other, more controversial policy domains, such as nature and agriculture.

Values of Stakeholders

An important part of the debate around alternating polders stems from different values on the problems in the Western Scheldt. Values around water are deeply ingrained in traditional values of the province of Zeeland. Interviewees often invoked historical memory in discussing alternating polders, emerging from both historical poldering efforts as well as catastrophical events such as the Watersnoodramp of 1953. The North Sea Flood that claimed over 1,800 lives constituted a defining moment in regional memory. A which has shaped a collective idea around 'fighting against the water', but also the identity of a hardworking and resilient community. The motto '*Luctor et Emergo*' ("struggle and emerge") featured on the arms of Zeeland has evolved to take on meanings of this fight against the water (Omroep Zeeland, 2014).

Another aspect of values around the debate of alternating polders in Zeeland that was often mentioned in interviews was general distrust, as well as exclusion of farmers and residents in water projects. Rather uniformly, respondents remarked on the 'top down' nature of previous regional water projects, creating distrust and shaping resistance against water-management plans. A striking example of this is the Hedwigepolder, a transboundary depoldering project for nature and flood protection. Despite staunch opposition by both farmers and residents, no suitable alternative was found and the Dutch government decided to go ahead with the works in 2012. This event was also documented in the book *Dit is mijn hof* by Chris de Stoop, telling the story of a son's anger as his family's farm is expropriated during the implementation of the Hedwigepolder (De Stoop, 2015). Various interviewees remarked how people are said to quickly 'make the link' to the Hedwigepolder when wisselpolders are mentioned, which brings up unpleasant emotions and memories.

Another interviewee noted how in debates around floods in the latest decades, little attention was given to voices from the agricultural sector (Interviewee 1, personal communications, May 25th). For example, during the collaborative process of drafting a 2030 long-term vision for the Western Scheldt, representatives of the agricultural community were not included, even though they were the interest group that was most disadvantaged by the package deal between canal deepening and nature compensation. As such, the Long-Term Vision for the Western Scheldt has sparked a lot of protest and opposition after its completion in 2006 (Van Buuren, 2012). Reportedly, the farmers were not involved in many of the Room for the River projects either, having little counterweight in decision-making. In interviews, the sense was clear: the agricultural community felt like it had been kept at arms length or even scapegoated, with one interviewee 4 remarking that agriculture is seen as the black sheep in debates around climate adaptation and flood management (personal communications, June 19th).

In contrast, stakeholders who are more inclined towards nature-based flood risk strategies such as alternating polders tend to highlight different values. These values include the importance of long-term resilience of the Western Scheldt, for which the use and safeguarding of natural processes and ecosystem is deemed necessary (Terpstra, 2025). These values align with the discursive shift described by Wiering et al. (2016) that promotes integration and the use of nature-based services.

Norms of Stakeholders

The discourse around alternating polders in the Western Scheldt is shaped by strong norms about what can be defined as legitimate flood management. The dominant norm shaping discourse in the Western Scheldt is that land should not be returned to the water, and has become highly institutionalised through the province's coalition accord and increasingly stark opposition in the media to measures that include depoldering, temporary or otherwise. Similarly, past shock events have entrenched a deep 'safety first' norm in the Western Scheldt, in which flood protection is seen as the primary objective of policies concerning water (Interviewee 1, personal communications, May 25th). As such, measures involving controlled flooding or purposefully breaching a dike are inherently seen as irresponsible and damaging, and alternating polders are judged not only by their technical and environmental benefits but as a deviation from established practices (Adviesgroep Borm & Huijgens, 2025). Additionally, the drastic nature of governmental interventions during the implementation of the Hedwigepolder have induced a deep-seated distrust of top-down governance.

Interviewees raised concerns on the prominence of the norm against alternating polders, and the sway it holds over their respective groups. One interviewee noted that *"at the individual level there are sometimes farmers who might be interested, but the overarching story from the agricultural sector is that farmland must be preserved"* (Interviewee 3, personal communications, June 19th, Interviewee 6, personal communications, July 18th).

This sector-wide stance, they added, can obscure more local opportunities. This interviewee remarked on how those who engage with governmental organisations on such initiatives may face stigma from their peers; *"that farmer, he doesn't get anywhere. He doesn't speak up either, because in principle he is also seen by his fellow farmers as someone who is helping the enemy"* (Interviewee 7, personal communications, October 31st). Farmers on a more individual level may be discouraged from voicing their interest or entering agreements because of social pressures such as these. The stigma around depoldering and alternating polders is reflective of the distrust and memories of government-led interventions such as the Hedwigepolder.

Proponents of nature-based flood-risk strategies stress the limitations of relying on dikes and other traditional flood-risk management strategies in the face of accelerated climate change. They emphasize that "we cannot keep this up forever" both in technical and financial terms (Interviewee 2, personal communications, June 10th). From this perspective, prioritizing short-term safety over long-term system resilience is deemed normatively problematic.

Definitions of Problems

Different perspectives on problems emerge from the discursive debates around alternating polders. Proponents of alternating polders often point towards ecological degradation and long-term safety of the Western Scheldt. Additionally, from the perspective of interviewed

researchers and water authorities, the knowledge gap is identified as a persistent problem for the integration of alternating polders. Outside of a small community of water policy authorities, researchers and ecologists, few know how an alternating polder functions or what its benefits are. One interviewee described it as an “internal discussion within our water bubble” (Interviewee 5, personal communications, July 15th) The shift towards more integrated flood policies requires the inclusion of more diverse actors , and means that there is also an increased need for communication and knowledge sharing. Yet interviewees reported the still niche character of alternating polders, and the need for targeted education and demonstration projects.

For stakeholders against the idea of alternating polders, the problem of integrating them largely revolves around concerns of land security and fear of expropriation. Within this frame, alternating polders are often met with accusations of simply being depoldering. The long-term rotational element of alternating polders presents an element of uncertainty and distrust, inducing doubts on whether governments will ‘keep their promise’ when the land is to be returned to its owner. (Interviewee 7, personal communications, October 31st). In any case, the idea of creating a breach in a sea dike is a sensitive topic in Zeeland, especially due to past events such as the North Sea Flood and the implementation of the Hedwigepolder. This can be seen both in media and politics, such as in an article by Omroep Zeeland (2015), in which Party for Zeeland member of parliament François Babijn says: "What it boils down to is expropriating dikes and making holes in them. That's simply depoldering, so stop this word game." (Omroep Zeeland, 2025).

Approaches to Solutions
The interviews questioned whether it is a deliberate choice to frame alternating polders in this manner, in order to increase opposition and compare the implementation of alternating polders to the Hedwigepolder, which elicits stark opposition. The term alternating polder (or wisselpolder) is, incidentally, not preferred. It's too reminiscent of depoldering. From the interviews it became apparent that members within the province have started using the term *opslibpolder* (or silt polder) instead, in an effort to reframe the discussion and create less of an association to potentially sensitive topics (Interviewee 2*,* personal communications, June 10th).

Some interviewees expressed frustration on how alternating polders are contested in the political sphere as well as in the media, and how potential benefits are often ignored or even refuted. For example, there is a widely ongoing debate on whether alternating polders contribute to or restrict salinization. The 2021 NIOZ report mentions that land raised by alternating polders is less prone to salinization (Van Belzen et al., 2021), but opponents doubt that allowing brackish water into the polders will limit salinisation (Borm, 2025). The same can be said for whether the quality of soil will be increased after being raised by the use of an alternating polder, which the report affirms to be true (Van Belzen et al., 2021). Opponents raise concerns about the pollution of the sediment, which holds PFAS and other contaminants, and is constantly stirred up by dredging operations (Borm, 2025).
These critical claims have become deeply institutionalised, even featuring in a motion presented to the Provincial Council of Zeeland, which opposes all forms of depoldering, as well as alternating polders. However, these claims are not substantiated with scientific references, technical data, or modelling studies. Instead, the explanatory section of the motion explicitly cites a regional newspaper article, *“Ontpolderen langs de Westerschelde is*

niet gewenst" (PZC, 5 July 2025), as its source. This article seems to be an opinion piece, stating normative ideas about coastal management in Zeeland, which suggests that these claims are emerging from advocacy perspectives rather than peer-reviewed empirical evidence (Borm, 2025). One of the interviewees affirmed this, expressing concern as to how such claims could be used as a basis for political decisions (Interviewee 7, personal communications, October 31st).

Opportunity through reframing

Various interviewees have discussed the reframing of alternating polders. Part of that reframing is the earlier mentioned change of the word alternating polder to silt polder, clearly defining its beneficial function. Moreover, the interviewees stressed the importance of proper communication in changing the debate around alternating polders and achieving its implementation. Communication of potential benefits and workings of alternating polders is an important part of it, as well as information about possible compensation or potential revenue models (Interviewee 5, personal communications, July 15th).

Participants often pointed to the importance of a multi-benefit narrative, a package that guarantees flood safety as well as a new perspective for agriculture and nature. One interviewee mentioned the importance of focusing on future generations and ensuring an attractive and economically viable landscape. As well as emphasizing that land is not permanently lost but cyclically raised, after which it can return to its original use (Interviewee 2, personal communications, June 10th).

Secondly, respondents emphasized the value of a transparent and inclusive approach. Involving farmers, landowners, local government, and water boards in decision/making processes from the start to co-develop a vision of how alternating polders could work in their region. Aside from this, showing transparent analyses such as cost-benefit calculations or sedimentation projections in public meetings so that stakeholders can see the data behind the ideas. One interviewee remarked "you have to make it calculable and transparent, that helps" (Interviewee 6, personal communications, July 18th). In short, co-producing knowledge in a bottom-up manner, and sharing it widely can help to gain the trust and support of stakeholders.

Third, on compensation and revenue models, interviewees noted that voluntary measures may not be enough unless there are significant economic results, at least comparable to current incomes. One interviewee said "How do you earn your bread in that 30-40 year period while the polders silts up?" (Interviewee 2, personal communications, June 10th). Possible answers from the interviews include aquaculture, such as mussels or shrimp, salt-tolerant crops, tourism or renewable energy installations on floating platforms. However, these possible revenue models are still quite abstract for many people, and involve drastic changes to the daily lives of farmers. Pilot projects where such experiments are actually tested could make these prospects more convincing.

Lastly, historical narratives can also be reframed in favour of alternating polders. An interviewee argued that sedimentation plays an essential role in Dutch delta history, saying "if you look at history, we've always had this (sedimentation) happening, and we sort of embraced it, and that's how we got a fertile, usable delta" (Interviewee 5, personal communications, July 15th). The land on which Zeeland stands was built up by centuries of

tidal sediment build-up. Framing alternating polders as an age-old dynamic communities have always profited from (rather than a new concept). Additionally, using local idioms (such as ‘scheppen van land’ or shovelling of land instead of raising land) and highlighting Zeeland’s deltaic history can make the concept feel less novel or alien.

4.1.4: Institutional Settings

This next paragraph will talk about the institutional settings surrounding the debate around alternating polders. The *policy* section will include regulatory, financial and temporal elements embedded in current policies for the Western Scheldt which may constrain or enable alternating polders, and the politics section will describe how alternating polders are considered in the political arena.

Policy

Several barriers for the implementation of alternating polders are embedded in policies, programmes or regulation. Although the rotational element of alternating polders enables opportunities for agriculture and other land-use, there are severe doubts on the political effectiveness of advocating for alternating polder areas as natural areas. One interviewee mentioned that, due to legal rigidity, an alternating polder, while being opened up to seawater and silt, cannot be readily designated as a Natura2000 area (Interviewee 8, personal communication, November 24th). This is because planned de-designation, or intentionally designing an alternating polder to be returned to agricultural use or other land-use is only allowed under very strict circumstances. Examples include correcting scientific errors, representing natural changes, or following a mandatory procedure requiring approval from the European Commission, and the implementation of compensatory measures (European Commission, 2019). As such, while an alternating polder might have ecological value during its operational phase, it cannot be officially delineated as a Natura2000 area under the current legal framework of the Habitats and Birds Directive (European Commission, 2019). This might further decrease political willingness to pursue alternating polders, as the task of establishing Natura2000 areas is already viewed as politically and administratively strenuous (Berkelder & Tuning, 2025). As such, even if ecological value is generated during the operational phase of an alternating polder, it cannot be formally recognised without triggering either a demanding administrative process or facing irreversible land-use restrictions.

The HWBP (or Flood Protection Programme), introduces several constraints for the implementation of alternating polders, most of them emerging from the fundamental design principle that the HWBP utilizes; sober en doelmatig (or sober and efficient). This design principle is used to determine whether a project can be subsidized. This sober component of this principle states that only those measures which are required to achieve the statutory flood protection standard are qualified as *wettelijke inpassing* (or legal embedding), and thus eligible for HWBP funding. Measures that are beneficial to ecological restoration, including alternating polders, fall outside of this statutory safety scope and are thus not subsidized. Interviewees confirmed that while there were preliminary analyses for the possible implementation of alternating polders, they were excluded on the basis of initial investments being too high. However, one interviewee expressed frustration at the fact that possible income models were not considered in these analyses (Interviewee 7, personal communications, October 31st).

Financing is a prevalent barrier concerning the implementation of alternating polders under the HWBP. Interviewees stressed the financial pressure that the programme is already in, and the unlikelihood of alternating polders fitting into the already limited budget of the HWBP. Additionally, current investments are focused on dike reinforcements, which causes more lock in (Hoogwaterbeschermingsprogramma, 2025). The rigid separation of funds for different programmes presents another barrier. As secondary functions to water safety measures cannot be financed by the HWBP, opportunities to couple goals between different policy programmes can be missed. Several interviewees have emphasized this type of coupling could be a potential solution in order to fund flood management projects that also improve ecological functions. Participants remarked on the possibility of coupling finances of different programmes, such as *the Programma Aanpak Grote Wateren* (or Programmatic Approach for Great Water). This programme, abbreviated as PAGW, is a joint-effort between the Ministry of Infrastructure and Water Management (IenW) and the Ministry of Agriculture, Nature and Food Quality (LNV), which aims to improve ecological water quality and strengthen nature and biodiversity in the Netherland's large water systems, including the Western Scheldt.

Moreover, many interviewees stressed the limited temporal scope of the HWBP programme, which requires the reinforcements of all dikes before 2050, thus favouring methods that are effective on the short-term. As a result, innovative, long-methods of flood management often did not get a chance, even though they could prove to be more effective in the long run, which various interviewees have emphasized. These worries expressed in the interviews are reflected by an advisory report submitted to the program management of the HWBP and the Minister of Infrastructure and Water management, by the board of Government Advisors (Ministerie van Binnenlandse Zaken, 2020). The advice given in the advisory is threefold, first, it urges the management of the HWBP to increase the temporal and spatial scope of the project. Secondly, the report emphasizes the importance of combining functions as opposed to only planning for flood management, encouraging a more integral approach. Thirdly, choosing a more regional, context-grounded approach and establishing strategic alliances between actors such as municipalities and water boards can save costs and deliver higher quality end products, according to the report. Additionally, taking into account local characteristics and needs allows for a more bottom-up approach in which local residents and land owners can participate in decision-making processes (Ministerie van Binnenlandse Zaken, 2020).

During a policy workshop on adaptive landscapes (Further specified in section 3.3.3) several participants noted that the perceived cost-effectiveness of nature-based flood defense strategies are partly shaped by how costs and benefits are assessed and regulated by policies such as the HWBP. The participants argued that current budgetary frameworks can not sufficiently include the long-term and integrative benefits of such approaches, which constrains their viability. Explicitly incorporating these benefits could significantly improve cost-estimates (Informal policy workshop, November 2025). Similarly, participants discussed how extending the temporal scope of the HWBP could enable financial and strategic benefits for nature-based flood risk management approaches. One attendee reasoned that if the benefits of alternating polders would be considered over a longer timeframe, the need for repeated, and exponentially more expensive rounds of dike reinforcement could be reduced or prevented. Additionally, planning over this extended timeframe would enable investing in

nature-based solutions that would become more ecologically valuable over time (Informal policy workshop, November 2025).

Politics

From the interviews it became apparent that any discussion of alternating polders is strongly shaped by the political climate and decisions. One major aspect of this is that the regional coalition agreement explicitly rules out any type of depoldering. While previously it was debated how alternating polders would fit into this, in September 2025, the provincial government has formally declared that the implementation of an alternating polder is unacceptable in Zeeland, after the Party for Zeeland, JA21, and Forum for Democracy submitted a motion (Wisse, 2025). That means that regardless of technical or ecological analysis, this political barrier has become formally institutionalised, which strongly contributes to path dependency and reducing institutional windows of opportunity.

As mentioned before, marking alternating polders as depoldering allows opponents to draw on existing aversion to depoldering and use the emotional and ideological framing ("land is lost forever") to ignore even the cyclical concept, further reinforcing lock-in. This shift is reflective of a wider challenge of overcoming entrenched governance structures, Vitale et al. (2025, p. 19), who notes that in Zeeland "socio-political narratives… prioritize land reclamation and economic interests over ecological restoration," so that projects like depoldering only move forward under external pressure, as seen with the Hedwigepolder, and not under societal pressure.

Interviewees noted that, despite the growing evidence emphasizing the potential of alternating polders, political discussions tend to center around agricultural values and the avoidance of depoldering. These subjects carry substantial emotional, socio-economic and electoral weight at the regional level and dominate the current public and political debate. Because agricultural and traditional values carry such a weight, measures that require sacrificing land or shifting land-use patterns are often perceived as too sensitive to address and often underrepresented, even when they align with other values, such as safety and ecology. Without broad support from the public sphere, political actors will be hesitant to lobby for drastic land-use changing measures such as alternating polders, and funds for nature agendas will remain limited. One interviewee reinforced this, adding how the current governmental configuration might mean a more nationally oriented approach to water-management in which international agreements, particularly EU mandated nature policies, may carry less weight (Interviewee 1, personal communications, May 25th).

Additionally, one interviewee noted the low trust in politics due to unfulfilled promises, which further hinders acceptance of innovative, long term solutions. This is especially prominent for alternating polders, as this interviewee stressed that residents doubt that the land would actually be reclaimed and returned to its owners after use, making the concept politically and socially difficult to legitimize (Interviewee 3, personal communications, June 19th). However, interviewee 7 mentioned how the process of returning land could be legally formalised through a type of lease agreement. Moreover, the interviewee stressed how this had been done before (Interviewee 7, personal communications, October 31st). In a comparable Dutch case, the double dike near Bierum in the province of Groningen, entered into a twenty-six year leasehold arrangement with the farmer owning the land rather than a full purchase (Tiekstra, 2022). After the contractual period, the land would be returned to the farmer. This

case shows that there is legal architecture in place to return land to the owner after the polder has silted up, and that land-use rights can be tied to specific conditions, timeframes and obligations concerning restoration.

4.1.5: Agency

Agency is described by Hegger et al. (2020) as the presence of individuals and organisations that invoke or resist change. Actors might do so using different strategies, such as network-building, framing or reframing a debate or promoting specific policy options. In the case of the debate around alternating polders, change is invoked or resisted in different institutional contexts, such as politics, research and consultancy, or policy-making. This section will describe these contexts, actors and organisations as well as which strategies are used.

Firstly, scientific and research organisations play a key role in positioning alternating polders as a viable alternative to traditional flood defenses. Alternating polders became a prominent subject of debate in Zeeland after the publication of the 2021 NIOZ report (Van Belzen et al., 2021) which lays out the concept of alternating polders and researches its potential benefits. Additionally, the research project *Geen Zee te Hoog* investigates the spatial integration of flood-defence strategies, coastal safety and large-landscape change in the Westerschelde region (HZ University of Applied Sciences, 2026). Aside from conducting and sharing research, it became that these actors play an important role in shaping the alternating polder debate. Several interviewees remarked how emphasizing economic and quality of life benefits of alternating polders in research reports might help to gain more acceptance and legitimize alternating polders as viable flood defense options. This shows that individuals and organisations working in a research context are not neutral actors, but have the ability to take an active, shaping role in policy landscapes.

In the policy context, governmental organisations at different levels as well as water boards are central in the implementation of alternating polders. According to an interviewee, whether a project such as this can be implemented is heavily dependent on administrative willingness of those working in the policy domain, which varies across and within organisations (Interviewee 4, personal communications, July 3rd). They remarked that within the water board of Zeeland (Waterschap Scheldestromen), a majority considers more traditional flood management methods as preferable. An interviewee working in the province of Zeeland remarked that although the coalition accord states that the Western Scheldt will not be depoldered, simultaneous internal discussions acknowledge the need for alternatives that will be feasible for the longer term (Interviewee 2, personal communications, June 10th). Another interviewee from the Ministry of Agriculture, Fisheries, Food Security and Nature, notes the importance of collaboration between governmental programmes and organisation, stating how *"*There are already two people who are also involved in the various programmes, but who also regularly collaborate and share knowledge. Yes, sometimes it's just as small-scale as being willing to think more broadly at the employee level*'* (Interviewee 6, personal communications, July 18th) Actors within these organisations can resist change by ruling out alternating polders in policy programmes, such as in the HWBP. But, according to interviewees, these strategies often manifest as procedural delay; slowing momentum, demanding further studies, and reasserting institutional boundaries.

Societal interest lobbies can also influence policies and often act to resist or invoke change

depending on whether policies align with their interests. In an article in an agriculture sectoral newspaper, a representative of the regional farmers' association ZLTO states that the implementation of an alternating polder is 'unthinkable,' and that there is no reassurance whatsoever that it is feasible (Nieuwe Oogst, 2024). In terms of nature organisations, Natuurmonumenten has granted permission for a pilot project in Hoedekenskerke on their land.

In the political context, alternating polders are a highly contested subject. Right-wing parties, such as Partij voor Zeeland and FvD, oppose the implementation of alternating polders, with these parties proposing to officially define them depoldering (Staten van Zeeland, 2025). Strategies of these parties often include deliberate framing using past events such as the Hedwigepolder and tying the debate into the traditional values of Zeeland concerning land reclamation. Proponents point towards the infeasible and costly nature of continuing to reinforce and raise the dikes, and emphasize the importance of gaining experience now, for example by conducting a pilot project.

It is important to note that the roles of opponents and proponents are not static. The representative of the agricultural party BBB in Zeeland, Arno Vael is an actor that exemplifies this. While initially being resistant to the idea of alternating polders, as per the coalition accord in Zeeland, he later took a more conversational, exploratory approach to alternating polder concepts (Nieuwe Oogst, 2024). Mr. Vael opposed the motion to consider alternating polders as depoldering, and after it was accepted, expressed frustration and a newfound motivation to explore the approach. Due to this, he received a motion of censure for pursuing the "wisselpolder" idea despite the provincial motion opposing depoldering (Wisse, 2025).

4.1.6: Shock Events

Shock events are influential events which can come from inside and from outside a policy domain. According to Hegger et al. (2020), these shock events can be both physical or non-physical in nature, as well as internal or external. A conflict between actors might be defined as an internal, non-physical shock event while a natural event such as a flood might be described as an external, physical shock event (Hegger et al., 2020). In the case of the Western Scheldt, there are several events influencing the debate around alternating polders that could be seen as shock events.

The 1953 North Sea flood was a physical shock event that had a massive influence on flood management policy, leading to securitization and large-scale flood management infrastructure implementations. According to Husby et al. (2014), one of the long-term effects of the 1953 flood and its aftermath is a moral hazard effect of flood mitigation, leading to more people locating in areas that are prone to flooding. In current debates, it is still often invoked by both opponents and proponents of alternating polders. Proponents point towards increasing flood risk over the coming decades due to climate change, and emphasize the need for long term flood protection. Moreover, it is used as a measure of comparison to create urgency. A researcher at the HZ university of Applied Sciences says in a news article: "The consequences are much greater than in 1953, if the dike in Zuid-Beveland breaks at a higher sea level, the breach in the dike will become much wider" (Berkelder, 2025). According to an interviewee, opponents reason that precisely because of the 1953 flood, climate measures such as depoldering should not be pursued. Instead, their position is that

we must continue strengthening our dikes and maintain full protection under the status-quo (Interviewee 1, personal communications, May 25th).

4.2: Degrees of Policy Integration

The second sub-question is as follows: *To what extent are alternating polders currently integrated?* This next section will assess the degree of policy integration of alternating polders according to five variables by Zinngrebe et al. (2018). As outlined in section (2.2.1), these variables consist of: inclusion, weighting, capacity, operationalisation and coherence. The following sections will analyse each criterion in relation to alternating polders, drawing on relevant policy documents, administrative decisions, research reports, news sources and insights from the interviews.

4.2.1: Inclusion

The most influential policy programme driving dike implementations in the Western Scheldt is the Flood Protection Programme or HWBP. However, this policy programme is strictly limited to traditional flood protection methods such as dike reinforcements, ruling out most other options under its subsidiary principle 'Sober en Doelmatig' (Or sober and efficient), as mentioned in the *Institutional Settings paragraph*. Additionally, the province of Zeeland has stated to be strictly against any measures classified as depoldering in their coalition accord for 2023 to 2027. This coalition accord also emphasizes that new nature areas can only be created on a voluntary basis (Provincie Zeeland, 2023). A more recent motion within the province of Zeeland has made it clear that alternating polders should be considered as a form of depoldering. This motion was adopted on the 19th of September, 2025, as a response to a concept document the future perspective Zeeland 50, in which alternating polders were named as a viable option to keep Zeeland safe (Staten van Zeeland, 2025).

There have been several calls to promote inclusion of alternating polders in water safety policy. For example, critiques have been raised on the limited scope of the HWBP. The Court of Audit has criticized its narrow view on dike reinforcements as the only viable method (Rekenkamer, 2023). It concludes that the HWBP must address the development of multi-layered safety in his policy by looking further ahead, beyond 2050. It must also look more broadly, beyond the dike, to "flood-defense landscapes" in which flood protection is a combination of measures in front of, on, and behind the dike (Rekenkamer, 2023). Similarly, as mentioned above in the *Institutional Features* section (4.2.2) the Board of Government Advisors has submitted an advisory report to the executive board of the HWBP, emphasizing the need for collaboration between responsible governmental organisations (Ministerie van Binnenlandse Zaken, 2020). If the HWBP were to follow this advice and adopt a longer-term, sectoral and multifunctional approach, alternating polders would be considered as a far more viable option within the HWBP. Although alternating polders are not yet as well represented in policy, they have been researched thoroughly and their potential for the Western Scheldt has been emphasized, (Terpstra et al., 2025, Van Belzen., 2021). Moreover, they fit conceptually into more ecologically centered policies, such as the *Programma Aanpak Grote Wateren*, which revolves around restoring tidal dynamics, sediment balance, and creating more natural areas. However, alternating polders have not explicitly been included in this programme. In the Room for Sea Level Rise report, an exploratory scenario study part of the Sea Level Rise Knowledge Programme, alternating polders are mentioned as solutions for

low lying and estuary landscapes (Delta Programme, 2024). Overall, alternating polders are most often left unincluded, and current provincial arrangements prevent this inclusion.

4.2.2: Weighting

In terms of weighting, or the extent to which alternating polders receive priority over other methods of flood defense or policy objectives, there is little priority being given to alternating polders, or the values they align with, such as safety and nature. One of the interviewees stated that nature is considered as the 'capstone' of political debates, noting that values associated with Natura2000 task, sediment balance, and water quality are weighed systematically low in political considerations. The interviewee noted that this low weighting has continuously resulted in operationally weak and sometimes vague policies, insufficient budgets as well as cautious and often minimal and nationally non-binding enforcement (Interviewee 8, personal communications, November 24th). As such, when it comes to water management, interviewees noted how there is still a strong focus on cost-efficiency and probability instead of risk, and natural values are not included all that often in the case of the Western Scheldt. This is reflected in the HWBP, seeing as current design principles prioritize conventional dike reinforcements, as well as short-term cost effectiveness and meeting legal requirements via the cheapest route, which is represented by the sober and efficient logic employed by the HWBP. One interviewee noted that for one of the dike reinforcement projects by HWBP, in Zuid-Beveland alternating polders were weighed as an option, but ultimately discarded as they were deemed unpromising, even though one of the major landowner, Natuurmonumenten, was open to the idea and willing to collaborate (Interviewee 7, personal communications, October 31st). This shows that even in favourable conditions, alternating polders struggle in feasibility assessments compared to more conventional dike reinforcement measures.

On an institutional level, the low weighting of alternating polders is also apparent in sectoral governance dynamics. Water management policies such as the HWBP and ecological policies such as the Programmatic Approach to Great Waters and Natura2000 are governed through separate programmes with vastly different objectives, logics, and capacities. Interviewees noted how the low weighting of alternating polders manifests in how these programmes are coordinated; as these programmes usually employ a sectoral focus in which its own objective is weighed first. As a result, opportunities to integrate nature-based solutions such as alternating polders often occur too late in the programme, when decisions are already locked in. One interviewee states how "If you are very focused on your own programme, you may sometimes miss chances to make that connection" (Interviewee 6, personal communications, July 18th). In conclusion, the values aligned with alternating polders, such as long-term safety and ecology are weighted low, and sectoral dynamics prevent the enabling of giving priority to both dimensions of values.

4.2.3: Capacity

Within the dimension of capacity, several relevant types of capacity can be identified, financial; institutional; temporal and informational. While some types of capacity were relatively strong, such as the knowledge base, the interviews point towards a structural insufficiency of institutional, temporal and financial resources.

Financial capacity emerged from the interviewees as the most restricting factor. The most important contributor to this barrier is that alternating polders will not be funded by the

HWBP, seeing as it falls outside of their subsidiary principle of sober and efficient, which focuses solely on achieving the statutory standard of flood protection. Alternating polders provide ecosystem services which are not eligible for funding, meaning that there is no clear financing pathway for the implementation of alternating polders. Moreover, the initial investment costs of an alternating polder are higher, despite cost benefit analyses that show they are more profitable in the long run (Van Belzen, 2021).

The temporal capacity is two sided; on the one side, alternating have a certain run-up time, in which the landscape needs several years to grow enough to be able to retain sediment, and then another three to five decades for the area to be raised as sediment builds up, in addition to permit and planning procedures. Scientists have emphasized the urgency with which alternating polders should be implemented to be effective in the long-run, as climate change-induced sea-level rise is projected to start around 2050. On the other hand, however, the scope of existing policy cycles is limited, with the HWBP setting the deadline for their projects at 2050. This creates a temporal mismatch in which alternating polders are not integrated due to not being effective rapidly enough. As such, many interviewees have emphasized the importance of looking further ahead in the future, which would enable opportunities for both temporal and financial capacity. One interviewee explicitly criticized the idea of a small-scale alternating polder pilot project due to temporal constraints. They warned that, if such a project were to be implemented, discussions around implementing alternating polders on a larger scale could be 'shelved' for decades, under the justification that more information is needed. Such delay tactics, they reasoned, would make the implementation at a later time redundant, given the needed run-up time (Interviewee 8, personal communications, November 24th).

Institutional capacity to implement alternating polders is similarly severely lacking. In its current state, neither the HWBP, nor the province can provide an institutional basis for its implementation, due to their design principles and coalition accord, respectively. Nor does the PAGW have the capacity to implement the measure. As such, some interviewees have expressed how alternating polders fall in between the administrative domains of ecology and water safety, with potential to provide benefits for both but belonging to neither. Various interviewees have similarly lamented the sectoral perspective that is employed in current policies, and moreover, the contradictions in interests; with flood safety policies promoting dike reinforcement, and ecological restoration policies promoting sediment balance, tidal dynamics and habitat recovery, and navigation policies driving dredging operations. While the need for integrative policies has been underwritten by interviewees, a uniting factor is missing. As one interviewee puts it: "If you fail to seize coupling opportunities, it remains a kind of conflicting interest that you cannot unite" (Interviewee 5, personal communications, July 15th). Currently, no actor can take the lead responsibility, no programme can take ownership, and a mandate to initiate land-use change for the implementation of alternating polders is missing.

As opposed to the other forms of capacity, informational capacity was perceived as strong, though inadequately distributed. Interviewees referenced extensive modelling work and long-term research underwriting the benefits of alternating polders for the Western Scheldt by NIOZ and the HZ University of Applied Sciences (Terpstra et al., 2025, Van Belzen, 2021). Some uncertainties remain on the practical workings of alternating polders, such as sedimentation build-up timescales and long-term maintenance. Nevertheless, both during

the policy workshop and in several interviews, many speakers expressed a sentiment of theoretical knowledge on alternating polders being saturated enough to take practical action. One interviewee expressed how “It's no longer like 10, 15 years ago, when we didn't know. Right? we still had to do research, but now (…) we know exactly what to do” (Interviewee 8, personal communications, November 24th., Informal policy workshop, November 2025) However, although sufficient theoretical knowledge is present, interviewees stressed that the difficulty now lies in the distribution of knowledge, especially with local communities and decision-makers. Overall, aside from informational capacity, institutional, financial, and temporal capacity are insufficient and currently prevent the implementation of alternating polders.

4.2.4: Operationalisation

The dimension of operationalisation is defined as the presence of (policy) instruments to work towards the targets. For the Western Scheldt case, as explained in the capacity section, there is a very solid knowledge base for the workings of alternating polders and the benefits they have for flood defense and ecological restoration. In terms of operationalisation, scenario modelling for various locations, financing opportunities, preliminary cost-benefits analyses have been conducted by the NIOZ and the University of Applied Sciences Zeeland (Terpstra et al., 2025, Van Belzen, 2021). Unresolved doubts on financing and compensation mechanisms, as well as uncertainties on sedimentation speeds prevent these studies from being fully operationalised into actionable policies or plans. In terms of policy, as with the inclusion section, the design principles of the HWBP present a barrier for operationalisation, and as of yet there are no plans for the implementation of alternating polders in the Western Scheldt. Currently, operationalisation remains limited to discussions around using the dike stretch at Hoedensekerke as a pilot project site, despite very favourable outcomes in modelling studies (Terpstra et al., 2025).

There are legally established instruments to designate and rotate polders, as with the double dike example in Bierum, where land ownership was regulated through a leasehold arrangement, in which the farmer retained ownership of the land but sold the usage rights for a 26 year period. However, this land deal has since come under scrutiny because the transaction was negotiated without an independent land valuation, and the investment was deemed disproportionate to expected outcomes (Tiekstra, 2022). As such, if a similar method were to be used, it would need to be adapted to be more transparent as well as tailoring it to local needs. In conclusion, operationalisation remains exploratory and mostly embedded in research rather than concrete policy instruments.

4.2.5: Coherence

This section analyzes the coherence between environmentally mandated policies and sectoral policies, as well as the coherences of action between key governmental actor groups in the Western Scheldt.

The interviews have shown that, at the moment, there is little coherence between EU mandated environmental policies and action being taken on the national level to meet these restoration goals. As part of the *Natuurpakket Westerschelde*, an ecologically required restoration of an additional 3,000 hectares was initially recommended, after negotiations, the area of nature was reduced to 600 hectares (Vlaams-Nederlandse Scheldecommissie, 2024). These hectares were achieved with a collection of projects, including the

Hedwigepolder. On paper, according to recent progress reports, the 600 ha estuarine nature target has been achieved. However, critical assessment by the *Omroep Zeeland* has stated that counting methods were adjusted to make it appear that enough new nature areas had been created. According to the *Omroep Zeeland* and *Rijkswaterstaat*, these methods include inclusion of areas that are not part of the estuarine system, applying weighting factors and conversion of existing habitat types instead of creating new nature. Critics have argued that the current configuration does not guarantee ecological recovery, and that the degradation of the larger estuarine system remains unaddressed (Berkelder & Tuning, 2025).

The newly adopted EU's Nature Restoration Law requires member states to restore degraded ecosystems, it sets percentage targets for habitats in poor conditions (including estuarine habitats), 30% in 2030, 60% by 2040 and 90% by 2050. It also requires the prioritization of Natura2000 areas (Ministerie van Algemene Zaken, 2025). As the Western Scheldt is designated as Natura 2000 area, nature policies must ensure a favorable conservation status. Document analyses' and interviews have shown that, in practice, the scale of restoration is inadequate. Environmental Impact Assessment for a new Natura2000 management plan that is currently in development shows that various habitat types already fail to meet quality standards, and for various protected species, ecosystem quality and area, conservation targets are unmet (Rijkswaterstaat, 2025). An interview participant noted that the Programma Aanpak Grote Wateren, is also insufficient to significantly change the degradation of the estuarine system, as they put it: "Yes, the policy targets are set very high, so you can't really match them with each other. That's kind of the position Rijkswaterstaat finds itself in" (Interviewee 6, personal communications, July 18th).

Several interviewees also noted the discrepancies between and within governmental actors in seeing potential to implement flood-defense measures that also advance ecological goals, such as alternating polders. He remarked how Rijkswaterstaat cannot compel water boards and provinces to incorporate such approaches in their plans. An interviewee from the water board emphasized that there is no lawful obligation for the water board to incorporate alternative, innovative approaches, but the participant did agree that the 'toolbox' of the water board should be expanded to include such measures (Interviewee 4, personal communications, July 3rd). Another interviewee noted the electoral and discursive pressure present in the province of Zeeland to stick to traditional flood defense measures, and the conflicting interests between the coalition accord and motions that resist depoldering, and national ecological commitments (Interviewee 2, personal communications, June 10th). This fragmentation leads to a situation in which, as several experts, both in interviews and in policy discussions agree, "we know what we need to do, but we cannot do it" (Interviewee 8, personal communication, November 24th).

In addition to the incoherence observed between organizations, there appear to be internal discrepancies on the commitment to implement alternating polders within organizations. Within the province of Zeeland, provincial motions against depoldering appear to conflict with future visions for the province that included the use of alternating polders (Zeeland 2050, n.d.). An interviewee noted the difference between formal and informal commitments within the province: "Strictly speaking, my board states that we oppose depoldering… and right now, my board is slowly starting to think, well, actually, we should" (Interviewee 2, personal communications, June 10th). This section shows that commitment to alternating polders is present but incoherent at both organisation and policy level.

4.2.6: Conclusion

Taken together, the assessment of the degrees of inclusion, weighting, capacity, operationalisation and coherence of the integration of alternating polders shows that alternating polders are systemically underrepresented within policies on flood-risk management. While there is a strong empirical foundation underwriting the potential of alternating polders for the Western Scheldt, this has not been translated into actionable policies, included into existing policy programmes or nor prioritized in decision-making processes and political discourse. Low weighting of values that align with alternating polders and sectoral programmatic structures limit institutional ownership as well as financial and temporal capacity. Consequently, operationalisation is mostly limited to extensive scientific research, discussions on potential pilot projects, and mentions in conceptual reports. Incoherence between EU agreements and national ambitions, as well as between conceptual maturity and practical representation weaken the possibility of alternating polder implementation. These dimensions interact and influence each other; a low weighting of nature restoration measures reduces inclusion and capacity for alternating polders, which limits operationalisation, while incoherence sustains fragmentation across and within organisations. As a result, alternating polders seem unattainable under the current governance framework, despite their alignment with ecological needs and long-term flood management potential.

4.3: Governance Processes

The fourth sub-question is as follows: *To what extent do governance processes improve the integration of alternating polders?* The process variables are listed by Zinngrebe et al. (2022) as *joint planning*, policy revision, and *adaptive learning*. The factors are described as methods and strategies that can facilitate and improve the policy integration of alternating polders (Zinngrebe, 2022). Typically, governance processes are analysed in a context where policy instruments are already being implemented or are beyond the exploratory stage. In the case of the Western Scheldt, however, the widespread integration or implementation of alternating polders has not yet taken place. As such, these governance processes can not be considered as fully operational. However, they can be assessed as absent, emerging or contested mechanisms that shape the current governance landscape.

4.3.1: Joint Planning

In the literature on policy integration, joint planning is often highlighted as a key element for the coordination of objectives and facilitating collaboration across sectors (Zinngrebe, 2018., Zinngrebe, 2022). From the interviews, it seems that joint planning, especially for alternating polders, plays a vital role, both between organisations as with local communities. Currently, alternating polders fall in-between policy domains with neither being able to provide an institutional foundation for its operationalisation.

The findings indicate that joint planning as a process specifically aimed at the implementation of alternating polders is largely absent, as well as highly contested. Coordinating and communicative efforts between actors are primarily aimed at aligning activities within sectoral mandates and current policy goals, such as the HWBP and the provincial coalition accord. These are trajectories shaped by legally established obligations and long-term pathways, which makes exploring with integrative solutions challenging. As

such, alternating polders are mostly considered in informal or exploratory settings. Interviewees noted on multiple occasions the sectoral focus of both flood risk planning and nature restoration. Responsibilities and capabilities for the implementation of alternating polders are distributed across flood-risk management, nature and spatial domains. Interviewee 5 noticed “It is all very sectoral, everyone has their own tasks and responsibilities and the concept of alternating polders requires organisations to look further” (personal communications, June 15th). One interviewee did report coordination between the HWBP and the PAGW taking place on a small scale “There are already two people who are also involved in the various programs, but who also regularly seek help and share knowledge. Yes, sometimes it's just as small-scale as being willing to think more broadly at the employee level” (Interviewee 6, personal communications, July 18th). This suggests that joint planning is emergent at a personal, informational level. Additionally, the presence of informal policy workshop events on adaptive landscapes, such as the *Meegroeidag*, points toward an emergent pattern of joint planning that is aimed at the implementation of integrative flood-risk management methods such as alternating polders.

Knowledge exchange was reported to mostly take place at an expert level. During an informal policy workshop on adaptive landscapes, participants concluded that knowledge generated by policy advisors, planners and ecologists rarely reaches local communities and residents (Informal policy workshop, November 2025). Participants stressed the importance of collaborative stakeholder processes in which data is presented understandable, well-visualised and resonating with local values. A participant stressed that information on the benefits of alternating polders as of now is mostly voiced by ecologists and scientists, and it needs to be adopted by politicians to be ultimately effective, because as of now the dominant frame in politics opposes depoldering (Interviewee 7, personal communications, October 31st). Moreover, in many cases, interviewees considered knowledge sharing as synonymous with creating support, with one participant stating that: “As people become more informed of what such a polder or flood-retaining landscape can achieve, their attitude will also become more positive” (Interviewee 7, personal communications, October 31st). Concluding, while joint planning takes place on small, informal scales, it struggles to reach local communities or take place on a larger, institutionalised scale.

4.3.2: Adaptive Learning

Zinngrebe (2018) describes adaptive learning as the identification and revision of context specific governance strategies. The emergence of alternating polders as a flood-risk management method can be understood as a process of adaptive learning. This was understood both from the interviews and from broader scientific evidence. The sentiment that the current method of continuously raising dikes is unsustainable was clear, and the limits of hard-infrastructure were widely recognized by interviewees. One participant noted “...it is in a knowledge development phase where we now actually know that it is indeed possible and that it can also make a contribution” (Interviewee 8, persoonlijke communicatie, November 24th), emphasizing that technical feasibility is no longer the central uncertainty.

And yet, while this technical knowledge has led to a broader recognition of integrative methods’ effectiveness, the uptake of these methods remain limited. Many interviews point towards the challenging political landscape and highlight the role of process learning in the institutionalisation of alternating polders. Interviewees often refer to learning from past experiences, and how prolonged conflicts like that of the Hedwigepolder can entrench

opposition. This case has created lasting sensitivities and historical trauma around depoldering, and has quickly become associated with alternating polders. One of the elements of process learning that interviewees highlight is how to navigate the negative framing of alternating polders, one respondent notes that it is “not really a very rational negotiation process in all areas” (interviewee 1, persoonlijke communicatie, May 25th) as discussions are nearly always shaped by underlying emotions and sentiments.

As such, actors have often reflected on how certain terminologies influence acceptance. Several interviewees reported to have used or heard other terms for alternating polder, and have increasingly avoided the use of the word alternating polder or *wisselpolder*. Alternative framings, such as *opslibpolder* or *meegroeilandschap* are often invoked to shift the associations with the concept more towards long-term safety and sediment dynamics. In some cases, these associations shift the substantive meaning of the concept, as the alternating element is not always a defining feature anymore. This shows how the concept of alternating polders is shaped and altered by political landscapes and societal perceptions in order to promote capacity-building.

The formulation of policy recommendations during informal policy workshops on integrative flood-risk approaches such as the *Meegroeidag* also further demonstrates adaptive learning and capacity-building at the expert level. Speakers from diverse backgrounds reflected on and discussed lessons learned and how to adapt process-design and framing strategies to the current political landscape. This illustrates that, although flood-risk approaches such as alternating polders have not been embedded in binding policies or programmes, being shaped by political will and programmatic constraints, adaptive learning is actively taking place in a policy context.

4.3.3: Policy Revision

Policy Revision is defined by Zinngrebe et al. (2022) as the existence of processes for evaluating and adapting policies, with policies being assessed to what extent they contribute to environmental restoration. Evidence from the interviews, policy documents and grey literature suggests that policy revision remains in a largely exploratory and early state. Policy revision is not yet institutionalised and mostly takes place on a project-level. Several sources have highlighted shortcomings of the HWBP and the broader focus on dike reinforcement rather than exploring alternatives. Both the Court of Audit and the board of Government Advisors have called for a revision of the planning processes and the scope HWBP. Both parties criticized the narrow temporal and sectoral outlook of he HWBP, and have critiqued the unsustainability of reinforcing dikes as a flood-risk management method, as well as emphasizing the importance of insufficient integration of methods that address both risks and probability (Algemene Rekenkamer, 2023., Ministerie van Binnenlandse Zaken, 2020). Although neither of the reviews explicitly mentions alternating polders in their reviews, they do point towards a need for more integrative, long term approaches.

Formal procedures such as the *Notitie Reikwijdte en Detailniveau* (or Memorandum on Scope and Level of Detail) demonstrate the manifestation of broader policy discussions in smaller, project-level appraisal processes such as the environmental impact assessment. The Memorandum on Scope and Level of Detail for the dike reinforcement project at the Zak van Zuid-Beveland, explicitly calls for the possibility of alternative design option, including a variant with alternating polders, as one of the alternatives to be investigated in the

environmental impact assessment (Waterschap Scheldestromen et al., 2025). This suggests an expansion of the scope of the HWBP beyond traditional reinforcement strategies, albeit occurring within a single project appraisal rather than evidence of a broader policy revision at a programme level.

There is little indication that these non-binding and recommendatory reviews will grow into formal, institutionalised revision processes. Ongoing investments and implementation pathways reflect the continued prioritisation of traditional reinforcement approaches in core decision making (*Hoogwaterbeschermingsprogramma*, 2025).

5. Discussion

This thesis aimed to analyse the barriers and opportunities for integrating policies on alternating polders with a specific focus on alternating polders. The findings have given insights on governance processes, structural conditions and degrees of integration of alternating polders. This chapter aims to reflect on the findings and on their meaning for the broader context of the Western Scheldt as well as their alignment with theory utilized in this study.

5.1: Syncing time horizons

A significant challenge presented in the results for alternating polders, as well as all other nature-based approaches, revolves around timelines. Alternating polders, as well as many other nature-based approaches, require several decades for an area to naturally develop its sediment-trapping capacities. Evidently, this does not align with shorter political- and programmatic cycles. This temporal mismatch discourages investments with uncertain or little short-term payoffs, and reduces the opportunities for systemic change(Informal policy workshop, November 2025). Furthermore, many enabling elements for alternating polders lie in the extending of timelines, as described in the results chapter. This could reduce the pressure of short-term performance metrics, allow for a better fit with the HWBP programme, and align better with ecological processes. Navigating the discrepancies between long-term flood-risk approaches and short-term planning requires deliberate governance reforms.

5.2: Towards a nature-based approach?

Empirical literature of flood risk management in the Netherlands frequently points towards a gradual paradigm shift towards approaches that focus on nature-based services, and flood risks instead of flood probability (Wiering, 2006) This evidence does not seem to hold up as much for the Western Scheldt. As Vitale et al. (2025) notes, for Zeeland, dominant socio-political narratives prioritize economic and agricultural values over ecological restoration and long-term approaches.

The findings affirm this perspective, as political barriers seem to be the most prominent for the integration of alternating polders, with dominant narratives against depoldering and loss of agricultural land. Furthermore, interviews have affirmed there is little capacity for nature policies and goals are often vague (Interviewee 8, personal communication, November 24th). In some aspects, rigidity of nature policies also seem to limit the opportunity for adaptive experimentation, such as the rules on designation of the Natura2000 policy (Interviewee 8, personal communication, November 24th). Additionally, projects initiated by the HWBP mostly follow traditional flood-risk management methods. While exploratory studies under the HWBP aim to integrate nature into their practices, these are often still an addition to dike reinforcement, and not a different, nature-based method altogether.

A deeply embedded element of the flood risk governance context of the Western Scheldt is the historical trauma of the North Sea Flood 1953. This flood disaster continues to shape flood-risk governance today, instilling a zero-flood-tolerance mindset that resists strategies perceived as reducing protection levels, and anchoring a securitised risk frame. Vitale et al. (2025) similarly mentions how shock events can entrench narratives that oppose solutions that utilize nature-based services, mentioning how the 1953 North Sea Flood and the Delta Works that followed have caused a lock-in effect for dike reinforcement methods. In addition

to this, the implementation of the Hertogin-Hedwigepolder suggests a similar effect, reinforcing existing opposition against land-loss and depoldering, which contributes to a persistent opposition against nature-oriented flood risk management methods that utilize controlled flooding. Both events are an important explanatory factor for the opposition against risk-based approaches today, and integrating it into research on flood-risk governance provides a better contextual understanding.

In this policy and political context, alternating polders are widely discussed as an option for the Western Scheldt, but are not institutionalized. In the larger context, risk and nature-based approaches seem more secondary and symbolic, and not replacing dominant narratives of traditional flood-risk management methods. Current results suggest that economic and agricultural values as well as deeply entrenched opposition are guiding policy decisions. This raises questions as to what extent adaptive flood-risk management approaches can be implemented under the current dominant narrative, and furthermore, what changes are needed to shift the narrative towards more nature-based approaches.

6. Conclusion

This study aimed to identify and explain the barriers and opportunities to the integration of policies on alternating polders in the Western Scheldt. The Western Scheldt is a complex and diverse estuarine system where economic, ecological and flood-risk land-use claims intersect and compete. As such, integrative approaches such as alternating polders are presented as potential long-term, nature-based flood risk management strategies that aim to unite these interests and values. However, despite promising empirical evidence, they remain politically sensitive and discursively contested. To understand the discussions behind and the reasons for this limited uptake, this study employed a policy integration perspective. It set out to assess the degree of policy integration, as well as the governance processes and structural conditions. The study used document analysis, semi-structured interviews and participant observation in order to explain the ways in which alternating polders are positioned within existing policy frameworks, discourses, and governance processes.

The central research question guiding this thesis was: What are the barriers and opportunities to the integration of policies on alternating polders in the Western Scheldt?

6.1: Sub-questions

6.2.1: Environmental Conditions and Flood Risk in the Western Scheldt

The Western Scheldt faces both ecological degradation problems as well as increasing flood risks. Dredging activity has deepened navigational channels and eroded ecologically valuable shallow and intertidal zones, causing biodiversity concerns. Meanwhile, water and soil quality concerns persist due to concentrations of PFAS, metal and nitrogen emissions. dike reinforcement causing lock-in and reducing adaptive capacity. All the while, climate change projections indicate rising sea-levels and increasingly severe storm surges and flood risk management strategies remain mostly focused on traditional strategies such as dike reinforcement. These practices cause effects that increase vulnerability in the long-term, due to loss of estuarine dynamics and stronger tidal waves, as well as cause lock-in. In this context, alternating polders are increasingly seen as suitable alternative flood-risk management methods, but they have not yet been adapted into plans or policies.

6.2.2: Structural Conditions

The integration of alternating polders is shaped by various structural conditions, such as discourse, institutional settings, agency and shock events. Discursively, alternating polders are greatly restricted, associated with depoldering, land-loss and historical trauma, greatly influencing political acceptance, and often utilized as a political tool. On an institutional level, the integration of alternating polders are constrained by legal frameworks, programmatic constraints, and fragmented responsibilities. Agency is scattered, with various policymakers, ecologists and experts showing administrative will for integration but with too little political sway. Shock events, in this case, work as quite a restricting factor, with memories of the North Sea Flood and the Hedwigepolder deeply entrenched in opposition to alternating polders. Aside from this, a shock event to incentivize action towards nature-based solutions is absent. While climate change and sea-level rise is recognised as a threat, it lacks the immediate urgency required to create opportunity windows for the integration of alternating polders.

6.2.3: Degree of policy integration

The degree of policy integration chapter shows that alternating polders are still in an early and exploratory phase. While included in research agendas, long-term visions and exploratory policy documents, the weighting variable shows that in general, traditional flood-risk management methods retain priority. Alternating polders are often excluded due to the low weighting of associated values, such as long-term safety and ecological restoration, and the sectorality of adjacent policy fields. In terms of operationalisation, there is a solid empirical foundation for alternating polders, but translation into concrete policies, plans and timelines is lacking. Due to the contested discourse around alternating polders, coherency is limited, with flood risk management and nature policies continuing to operate largely in parallel. Lastly, capacity restricts further integration, with especially financial and temporal capacity considered lacking.

6.2.4: Governance Processes

Governance processes such as joint planning, adaptive learning and policy revision play an important but as of yet, limited role in the integration of alternating polders. Joint planning initiatives, such as policy workshops, incentivizes and encourages collaboration across sectors and governance levels, although participation is still selective, and there is little dialogue between proponents and opponents of alternating polders. Adaptive learning is actively taking place, with interviewees emphasizing reframing efforts and increasing shared understanding. However, these adaptive learning practices largely take place in expert and policy-maker circles, with little engagement of political actors or local communities. In terms of policy revision, although alternating polders are being explored as an alternative to one of the HWBP´s dike reinforcement projects, and policy revision encouraged by several governmental actors, these processes have not been translated into formal processes.

6.2: Barriers and Opportunities to policy integration

The results of this research demonstrate how the emergence and integration of alternating polders as a policy option in the Western Scheldt is shaped and limited by various long-standing barriers and some emerging but weakly institutionalised opportunities.

A key barrier to the integration of alternating polders lies in the institutional rigidity and capacity of various policy programmes relevant to alternating polders. For the most part, these programmes are organised along very sectoral lines and legal frameworks constrain the possibilities for the implementation of alternating polders. One example of this is the way in which subsidiary design principles of the HWBP are organised, ruling out integrative approaches that include secondary functions to flood protection. Another example are the constraints of the designation requirements for the establishment of Natura2000 areas, which effectively rules out the rotational element of alternating polders, if they were to function as Natura2000 areas. At the moment, alternating polders effectively fall between policy fields, with neither nature restoration policy nor flood-risk management policy able to provide an institutional foundation for its integration. Aside from these programmatic constraints, limited capacity and financial pressure for these programmes was also mentioned as a major barrier, in particular for nature policies such as the PAGW.

Integration efforts are further complicated by discursive barriers. Narratives around land reclamation, agricultural identity and historical trauma due to the 1953 North sea floods

continue to influence debates around flood risk management. The 1953 can be viewed as a shock event seeing as these narratives still shape public and political perspectives today, which reinforces resistance to any measures that are interpreted as giving land back to the water. Consequently, the nuance between depoldering and alternating polders is often lost. As such, associations of depoldering and top-down implementation despite societal resistance have become deeply entrenched with the concept of alternating polders, and many discussions on alternating polders also link back to the implementation of the Hertogin Hedwigepolder. In short, the dominant narrative around alternating polders remains negative, embedding emotions and collective memory into political debates and in practice often limiting the space for neutral discussions. Additionally, political influence of agricultural interests also forms a significant barrier. Electoral pressure to oppose alternating polders is high, and the current provincial council's coalition largely consists of parties opposing alternating polders. This is reflected by the province's current coalition accord, which explicitly rejects depoldering and thereby restricts the opportunities for policy experimentation with alternating polders.

While at the moment, the integration of alternating polders is heavily constrained by various persistent factors, several opportunities were also identified. One important opportunity lies in the increasing recognition of the limits of traditional dike reinforcement as a flood risk management strategy. Both on an expert level as well as in the media, dike reinforcement is increasingly seen as unsustainable as a long term strategy, as this method will become more costly and resource intensive over time. Consequently, recognition for long-term strategies that are more equipped to deal with accelerated sea-level rise is growing. Alternating polders fall under this category. The favourable potential of alternating polders in extensive modelling studies and cost-benefit analyses for their implementation presents another opportunity. While alternating polders have been considered effective in mitigating flood probability as well as flood risks, they may also provide benefits for ecological restoration and soil-quality. This credible knowledge base as well as further ongoing knowledge development can support possible future integration efforts.

Another emerging opportunity is the increasing urgency for alternating polders caused by accelerated sea-level rise climate change. Although it is unclear to what extent appropriate measures to deal with accelerated sea-level rise will be taken, it might create an opportunity window for alternating polders, as policymakers are encouraged to explore adaptive and long-term strategies. However, an important factor when considering the window of opportunity for alternating polders is their run-up time, in which the area needs time to develop sediment-retaining vegetation, after which several decades are needed to account for the building up of the sediment.

6.3 Concluding Remarks

The results for this thesis on the policy integration of alternating polders have shown that they act more as a boundary concept at the moment rather than an institutionalised policy option. It is as of yet unclear whether alternating polders will be implemented in the Western Scheldt. A lack of technical knowledge is not the issue, although there are a few uncertainties regarding the practical workings of alternating polders in any given area. Governance tensions rooted in political sensitivity, institutional limits and capacity constraints represent the primary hindrance for the integration of alternating polders. The outcomes

have illustrated that the process of integration is not a linear or always rational process, but contested and discursively shaped. However, increasing awareness of climate risks and recognition of the limits of traditional flood defense strategies create opportunities for integration. Therefore, understanding governance processes and the factors that constrain them is crucial for the development and integration of adaptive flood-risk management strategies.

7. Reflection and Recommendations

This final section provides a reflection on the theoretical choices and methods, followed by a set of policy recommendations. First, the relevancy and suitability of the chosen theoretical framework and research methods will be reflected on. The recommendations which have emerged from this thesis' findings and aim to address the question of how long-term and integrated flood risk management strategies can be advanced in the Western Scheldt.

7.1: Reflection on theory

In this thesis, I chose to utilize a policy integration framework which aims to explain the degree of integration using structural conditions and governance processes as explanatory variables. Throughout the research process, it became clear to me that this framework may have been meant for relatively more mature cases in which the object of study is undeniably present and explicitly mentioned in operational policies. Alternating polders are currently in a very exploratory and contested stage, and despite its solid research foundation, may yet be discarded as a policy option altogether. While the chosen theoretical framework proved to be useful in identifying and explaining the contextual barriers and opportunities to integration, it may have been less appropriate to identify the early-stage elements that mostly make up for the current integration process. As a result, several of the indicators that were included in the operationalisation of the theoretical framework did not apply to this case and thus could only be explained or assessed through the absence of the indicator in question. This was especially relevant for the variables on governance processes and degrees of integration. On the other hand, some variables were not operationalised thoroughly enough to fully encapsulate their complexity in the case of the Western Scheldt, which I found to be true for the *Discourse* variable, for example, as it is very prominent in the current stage of alternating polders.

In practice, the concept of alternating polders is only sporadically mentioned in formal policy, and mostly present in research, exploratory policy, workshops and political, public and media discourse. A framework that accounts for this pre-policy phase, for example, by more thoroughly operationalising discursive dynamics and framing may have been better suited to analyse the current exploratory stage of alternating polder integration and the emotionally charged nature of the debate.

Although the choice of this thesis' theoretical framework may have negatively impacted the analytical depth of the results, they have yielded some valuable findings. In a case such as this one, which is still in a very early stage, it may be useful to provide a more holistic overview of all the factors that make up its context. Such an overview can offer important insights into which areas may require further attention in future research, and subjects that otherwise may have been overlooked were now also covered. Additionally, explaining some indicators through their absence, has revealed aspects of how current institutional settings, such as the rigidity Natura2000 policy, HWBP design principles and sunk investments into traditional flood management strategies can reinforce sectorality and institutional lock-in.

7.2: Reflection on methods

This thesis relied on data triangulation by combining research methods such as interviews, document analysis and participatory observation at a policy workshop. The exploratory and still largely informal status of alternating polders made the interviews and the workshop

essential, in order to capture what is happening ‘behind the scenes’ of formal policy choices, such as informal perceptions, uncertainties and opportunities for alternating polders. While policy documents analysis proved particularly valuable to identify formal institutional settings, and explain how alternating polders are constrained between legal, financial and programmatic arrangements. However, throughout the research process, I identified several limitations in my methodological approach.

First of all, although the semi-structured interviews gave valuable insights, a clear limitation was in the limited diversity of the sample. The interviews were focused strongly on policy experts, institutional actors and researchers. While this sample of interviewees made sense given the governance-oriented research questions and objective, it resulted in limited representation of local residents and communities. Although I interviewed a representative of the agricultural community and read the book *Mijn Hof* by Chris de Stoop at the recommendation of several interviewees (De Stoop, 2015), the concerns and lived experiences of residents and the agricultural community may not have been appropriately analysed.

Another limitation to my research methodology stems from the variation in interview guides between interviews. I wanted to be able tailor each interview to the interviewees specific expertises and experiences, and to be able to follow up on themes and information that emerged throughout the interviews. However, by doing this, comparability between interviews is naturally reduced, which potentially negatively impacts reliability and internal consistency of the findings. A more standardised interview guide with a few potential follow-ups could have strengthened the research methodologically.

Additionally, the time period over which the interviews were conducted may present another limitation. As these interviews were conducted over a relatively long time-period (from around May 2025 to January 2026), to a certain degree, they all reflect different instances of an evolving and shifting policy landscape. Several events that have constituted the position of alternating polders within this landscape occurred during this time period. A few examples are the Notititie Reikwijdte en Detailniveau for the dike reinforcement project at Zuid-Beveland and the motion of the province of Zeeland that rejects alternating polders along with depoldering, as well as gradual shifts in how alternating polders were framed by interviewees. Although I have tried to actualise all information presented in this thesis, I may have missed some details.

7.3: Recommendations for further research:

Future research could build upon these findings in several ways. Firstly, this thesis analysed the discourses that shape the possibilities for integration of alternating polders, but its scope was relatively limited. Using a more discourse-oriented theoretical framework, future research could deepen insights into discursive dynamics around alternating polders by systemically analysing media coverage, political debates and choices and stakeholder narratives, furthering knowledge on the impact of shock events and dominant narratives on flood-risk management strategies.

Secondly, further research on the perceived legitimacy and uncertainty of alternating polders, as well as proposed revenue models and compensation schemes for landowners, could help create a more clear picture of what the implementation of alternating polders

might look like in practice. As mentioned before, the focus of the challenge of alternating polders is mostly on the socio-political aspects. As such, stakeholder support, as of right now, seems at least partly contingent on the perceived fairness and the voluntary nature of implementation, as it often draws connections to the implementation of the Hedwigepolder. As such, gaining information on how financial schemes and perceived fairness impact stakeholder support could provide insight into the conditions under which stakeholder support for alternating polders may emerge.

Next, future efforts could focus on longitudinal research to gain insights on how the concept of alternating polders evolve and are framed over time as political priorities shift and the threat of sea-level rise becomes greater. And lastly, future studies could build upon these findings methodologically, for example by including participatory or action-oriented research designs, such as focus groups. This could reveal further information on how policy integration can be actively facilitated and advanced in practice, moving beyond just studying the barriers and opportunities of integration. Together, these future research pathways could contribute to a more comprehensive understanding of the integration of alternating polders or nature-based flood risk management strategies in a complex political and societal landscape.

7.4: Recommendations for Practice

The findings of this thesis have suggested that the central challenge of the integration of alternating polders is no longer rooted in technical questions. As pointed out in interviews, the direction is increasingly clear, but the challenge lies in creating support, building capacity, and overcoming political and social barriers.

Firstly, alternating polders have the potential to create opportunities for coupling objectives such as flood safety, ecological restoration and financing mechanisms. Realising the implementation of integral flood-risk management requires the intentional design of intersectoral collaboration programmes, in which interests from both nature and flood management programmes, such as the HWBP and the PAGW are combined, and both programmes' objectives are taken into account when implementing flood-risk management strategies. This enables co-benefits and allows for the early involvement and collaboration of multiple sectors. Aside from broadening the scope of flood-risk management projects in terms of sectorality, longer timeframes should also be considered. Current programmes and policy-cycles tend to prioritise short-term, least-cost strategies, while potential long-term benefits often cannot be factored in due to a limited temporal scope. Backcasting from ecological restoration and safety standard objectives over a long time period can help to solidify these long-term benefits into policies and could strengthen the feasibility of nature-based solutions.

Third, communication and information provision should be strengthened in order to shift the dominant narrative that opposes nature-based strategies. Several of the interviewees noted how having a better understanding of nature-based solutions also leads to broader acceptance. As such, policymakers, engineers and knowledge institutions should invest in clear and accessible information provision while using visualisations and language that resonates with local contexts. An important part of this is also reducing the emphasis on polarising frames; interviewees emphasized how media attention often focuses on controversy rather than substantive evidence, as such, increasing information provision may

help shift public debate. Aside from more transparent communication, reframing strategies could include a focus on how the Netherlands has had a long tradition of using sediment dynamics as strategies for land reclamation, and the delta landscape of the Western Scheldt was shaped by the same conditions. Alternating polders can thus be framed as a continuation of this tradition. Finally, however, it is important to recognize that historical trauma, similar to that of the 1953 flood, cannot be countered or shifted merely by information provision. Resistance rooted in fear and loss requires empathetic dialogue that recognises those emotions as genuine starting points for dialogue. The design of participatory processes that recognize this fear without preconceived assumptions may create space for mutual learning and support.

Together, these recommendations aim to point Western Scheldt governance towards a more integrative and sustainable approach, enabling better navigation of the long term challenges of sea-level rise and ecological resilience.

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Appendix

Appendix 1: Document Analysis list

Actor	Source Name	Use in Analysis
Flood Protection Programme	Stappenplan beoordeling sober en doelmatig ontwerp	Used to verify and deepen information from the interviews about the HWBPs subsidiary principles.
The Ministry of the Interior and Kingdom Relations	Ministerie van Binnenlandse Zaken. (2020, August 18). Hoogwaterbeschermingsprogramma: van “sober en doelmatig” naar “slim en doelmatig.” Publicatie | College Van Rijksadviseurs. as	Used to illustrate external critique on current HWBP subsidiary principle.
Court of Audit	Rapport: Voorbij de dijk	Used to illustrate external critique on current HWBP subsidiary principle.
Province Of Zeeland	Coalition Accord Province of Zeeland	Used to illustrate the province's formal position on depoldering.
Province Of Zeeland	MOTIE: ‘Provinciale Staten van Zeeland zijn TEGEN ELKE VORM VAN ONTPOLDERING!’ (inclusief ‘Wisselpolders’ dus)	Used to illustrate the province's formal position on depoldering and alternating polders.
Province Of Zeeland	Motie: Afstand nemen van wisselpolders uit Zeeland 2050	Used to illustrate the province's formal position on depoldering and alternating polders in relation to exploratory policy.
Ministry of Infrastructure and Water Management	Natura 2000-beheerplan Westerschelde & Saeftinghe	Used to analyse and illustrate unmet quality standards and conservation targets for the Western Scheldt.
Flemish-Dutch Scheldt Commission	Langetermijnperspectief voor de natuur van het Schelde-estuarium	Used to analyse and verify interview information about the shortcomings of nature policies.
Netherlands	Dijkversterking Zak van Zuid-	Used to demonstrate alternatives

Commission for Environmental Assessment	Beveland Advies over reikwijdte en detailniveau van het milieueffectrapport	for the dike reinforcement project at Zak van Zuid-Beveland.
Society for the Protection of Birds	Improving the conservation status of the Western Scheldt estuary, an ecosystem approach	Used for information of ecological status of western scheldt and morphological dynamics.
Ministry of General Affairs	Natuurherstelverordening	Used to retrieve information on the Nature Restoration Law's targets.
European Commission	Natura2000: De-designation of sites or part of sites - conditions and justifications:	Used to verify and analyse interview information of Natura2000 de-designation conditions, which present a barrier to alternating polders.
Interreg North Sea Region	Smart Sediment Report	Used to gain information on physical circumstances of Western Scheldt.
Ministry of Infrastructure and Water Management	Room for Sea Level Rise report	Used to gain information on- and demonstrate the presence of alternating polder mechanics in exploratory scenario policy.
Ministry of Infrastructure and Water Management	Meegroeien met zeespiegelstijging Eindrapport	Used to gain information on- and demonstrate the presence of alternating polder mechanics in exploratory scenario policy.
Royal Netherlands Institute for Sea Research (NIOZ)	Dubbele dijken als robuuste waterkerende landschappen voor een welvarende Zuidwestelijke Delta.	Used for information about potential of alternating polders for the Western Scheldt.

Appendix 2: Interview Guide

Onderzoeker: Dominique Philipse

Interviewee:

Datum interview:

Duur: ± 45 minuten

Scriptie Master Spatial Planning: Cities, Water & Climate Change

Radboud Universiteit

Toelichting:

- Het interview is semi-gestructureerd: ik werk in principe met een aantal thematische hoofdvragen, maar er is alle ruimte voor toelichting, nuancering en onderwerpen die u zelf relevant vindt.
- Als er tijdens het interview vragen zijn die u om welke reden dan ook liever niet wilt of kunt beantwoorden, dan is dat uiteraard geen enkel probleem. U bent op geen enkel moment verplicht om op een vraag te antwoorden.
- Met uw toestemming zal het interview worden opgenomen en later worden getranscribeerd. Uw antwoorden worden vertrouwelijk behandeld en uitsluitend gebruikt voor mijn afstudeeronderzoek.
- Interviews worden na afname geanonimiseerd. Dit betekent dat uw naam en andere herleidbare informatie niet in het onderzoeksrapport zullen verschijnen.

1. Introductie

- Kunt u kort toelichten wat uw rol is binnen het beleid voor de Zuidwestelijke Delta?

2. Mate van beleidsintegratie

Inclusion

- In welke mate worden natuurherstelmaatregelen zoals wisselpolders meegenomen in beleidsvorming rond waterveiligheid?
- Worden maatregelen zoals wisselpolders expliciet benoemd in beleidsdocumenten of strategieën van LNV?

Weighting

- Hoe worden natuurbelangen (zoals ecologisch herstel) afgewogen tegen andere beleidsdoelen, zoals landbouwbelangen of veiligheid?

Operationalisation

- Bestaan er binnen uw beleidscontext concrete instrumenten of uitvoeringsmaatregelen die ecologisch herstel en veiligheid combineren?

Coherence

- Ervaart u spanningen of inconsistenties tussen natuurbeleid en waterveiligheidsbeleid?
- Hoe verloopt de afstemming tussen LNV en andere departementen zoals IenW?

Capacity

- Zijn er binnen het ministerie voldoende middelen (financieel, personeel, kennis) om deze integratie actief vorm te geven?

'

3. Structurele condities

Institutional setting

- Hoe zou u de samenwerking in de Zuidwestelijke Delta omschrijven tussen het Rijk, provincies, waterschappen en gemeenten?
- Zijn er institutionele barrières voor integratie van natuurherstel en veiligheid?

Physical Infrastructure

- Beïnvloeden bestaande dijkversterkingsprojecten of eerdere ingrepen (zoals Hedwigepolder) de mogelijkheden voor wisselpolders

Discourse

- Welke dominante beelden, waarden of beleidsdiscoursen ziet u terug in discussies rond wisselpolders of natuurherstel?

Agency

- Zijn er personen of organisaties binnen of buiten het ministerie die volgens u een doorslaggevende rol spelen in het bevorderen of blokkeren van integratie?

Shock events

- Zijn er recente gebeurtenissen (bijvoorbeeld overstromingen, stikstofcrisis, maatschappelijke druk) die invloed hebben gehad op beleidsprioriteiten?

'

4. Governance Processen

Joint planning

- Wordt er actief gewerkt aan gezamenlijke planning tussen verschillende beleidsdomeinen?
- Hoe wordt de samenwerking met andere overheden georganiseerd in dit verband?

Policy revision

- Wordt bestaand beleid geëvalueerd of bijgesteld om meer ruimte te maken voor integratie met natuuropgaven?

Adaptive learning

- In hoeverre wordt er geleerd van eerdere projecten of pilots (zoals Hedwige-Prosperpolder)?
- Is er ruimte binnen het ministerie voor experimenten of vernieuwende aanpakken?

'

5. Afsluiting

- Wat zou volgens u nodig zijn om beleidsintegratie tussen natuurherstel en waterveiligheid te verbeteren in de Zuidwestelijke Delta?
- Zijn er nog dingen die u relevant vindt om nog toe te lichten?
- Zijn er andere personen of organisaties die u zou aanraden om hierover te spreken?

Appendix 3: Codebook

Theoretical Framework Component	**Code Group**	**Code**
Structural Conditions	● Agency	● Political Validity

	● Discourse	● Presence of Individuals Invoking or resisting change ● Approaches to Solutions ● Definitions to Problems ● Knowledge Gap ● Compensation Measures ● Values of Various Stakeholders ● Dutch Identity ● Framing ● Nuance Depoldering and Alternating Polders ● Importance of reframing ● Dominant Narrative
	● Institutional Settings	● Sectoral Perspective ● Uncertainty ● Content of Policies ● Integration between Nature and Water Safety ● Land-Use Conflicts ● Legally Binding Policies ● Not Legally Binding Policies ● Nature Restoration policies ● Water Safety Policies
	● Physical Circumstances	● Procedural Delay ● Urgency of Implementation ● Alternating Polder Features ● Erosion Patterns ● Land Subsidence ● Nature Degradation ● Flood Risk ● Risk of Delay ● Salinization

	• Physical Infrastructures • Shock Events	• Sea-Level Changes • Sediment Levels • Tidal Movements • Water Quality • Vegetation and Species Diversity • Controlled Flood Areas • Depoldered Areas • Dikes and Levees • Features of Alternating Polders • External Shocks • Internal Shocks • Non-Physical Shocks • Physical Shocks
Governance Processes	• Governance Processes • Opportunities For Implementation	• Adaptive Learning • Joint Planning • Policy Revision • Policy or Implementation Processes • Bottom-Up Processes • Coupling Policy Budgets • Monitoring and Evaluation Processes • Creating Support and Knowledge Sharing • Creating Understanding • Holistic Perspective in Governance Processes • Importance of Long-Term Perspectives

		● Alternating Polders on Nature Areas ● Pilot Project ● Synergies Between Objectives