



**rijksuniversiteit
 groningen**

campus fryslân

How can public policy better support flood resilience in the tourism sector in Friesland?

Niels L. de Jong

University of Groningen - Campus Fryslân

CFBGR03610.2024-2025.1: Capstone Bachelor Thesis

Tim Huiskes

20 June 2025

Abstract

Climate change has increased the frequency and intensity of extreme precipitation in the Netherlands, putting inland regions such as Friesland at risk of flooding. Coastal regions and islands in Friesland are likewise at risk for flooding, but additionally as well from the sea. As a key economic sector in the Netherlands, tourism is in these areas highly exposed to the risks of climate change, but still often marginalised in adaptation strategies.

This study investigates how public policy can more effectively support flood resilience within Friesland's tourism sector, focusing on the alignment of governance structures, local implementation, and sector engagement. Drawing on a qualitative mixed-methods approach, the research combines a literature review, policy document analysis, and seven semi-structured interviews with policymakers and tourism consultants across Friesland.

The findings of the research reveal relatively weak integration of tourism in flood adaptation policies and inconsistent local implementation of national frameworks in the municipalities. Decision-making is restricted by several institutional barriers such as unclear mandates, fragmented responsibilities, and limited municipal capacity. Further linked and identified with theories including Institutional Theory, Policy Integration Theory, Norm Activation Theory, and the Multi-Layered Governance Theory. Furthermore, tourism entrepreneurs seem to underestimate the urgency of future climate risks. Cross-sector coordination remains ad hoc and insufficient.

The thesis highlights the need for stronger public-private coordination, clearer mandates, and targeted support to strengthen flood resilience in the tourism sector. It contributes to climate governance by applying a region-specific analysis to identify actionable policy gaps and institutional reforms.

How can public policy better support flood resilience in the tourism sector in Friesland?

Introduction.....	4
Theoretical Framework.....	6
Literature review.....	8
Public Policy Frameworks.....	11
Methodology.....	15
Findings.....	17
Policy Awareness and Local Adaptation Efforts.....	17
Institutional barriers and obstacles.....	19
Engagement with the Tourism Sector.....	21
Sectoral perspective: Tourism Consultancy Insights.....	21
Discussion.....	23
Public policy alignment and local relevance.....	23
Capacity and implementation gaps.....	24
Explaining inaction in the tourism sector.....	24
Institutional fragmentation and Governance Obstacles.....	25
Recommendations.....	26
Limitations.....	27
Conclusion.....	28
References.....	29

Introduction

Flood resilience is an increasingly urgent issue in the Netherlands, a region that faces the growing climate risks, due to both rising sea levels and changing precipitation patterns (IEA, 2022). While coastal flooding often receives national attention, inland regions are increasingly vulnerable to flooding due to increased heavy rainfall and rising river levels (Van Alphen et al., 2022). One of the key economic sectors in this region is the tourism industry. Given the sector's dependence on stable environmental conditions, ensuring its resilience to flood risks is essential for the long-term sustainability of the sector. However, adaptation efforts require coordinated action across multiple levels of governance, raising questions on how public policy can effectively support flood resilience in the tourism sector. In this research, I seek to answer the question: *How can public policy better support flood resilience in the tourism sector in Friesland?*

To achieve this, the study will research the following sub-questions: (1) *How do current climate adaptation policies at different governance levels address flood resilience in the tourism sector?* (2) *What are the main barriers (institutional, economic, or regulatory) that limit adaptation efforts?* (3) *To what extent do tourism businesses perceive public policy as relevant or helpful in their flood adaptation measures?* (4) *What policy improvements or governance strategies could enhance flood resilience?* The findings of this last question, and the entire paper, will contribute to the broader discussion on climate adaptation by offering insights into how policymakers can design and implement more effective adaptation strategies tailored to the tourism sector.

The research is grounded in several theoretical frameworks that help explain the complex dynamics of climate adaptation, focused on tourism. *The Place Attachment Theory* and *the Norm Activation Theory (NAT)* provide insight into why municipalities and businesses may feel a moral or emotional obligation to engage in climate adaptation. While the *Institutional Theory* and the *Policy Integration* theory assess potential mismatches between governance levels and private-sector adaptation efforts, further identifying whether institutional constraints hinder or facilitate flood resilience.

The structure of this thesis will be as follows: Chapter 1 presents the theoretical frameworks, explaining how the selected theories guide the analysis. Chapter 2 describes the literature review, outlining existing research on climate adaptation, with a focus on the tourism sector and measures taken in the Netherlands. Chapter 3 will showcase the relevant public policy frameworks that are applicable to Friesland. Chapter 4 describes the research methodology, including the data collection. Chapter 5 presents the findings and the discussion, highlighting the key findings related to policy effectiveness, governance challenges, and adaptation efforts. Lastly, Chapter 6 provides the recommendations, limitations, and the conclusion, summarizing the research findings, discussing policy implications, and offering recommendations for future research. In this answering the research question: *How can public policy better support flood resilience in the tourism sector in Friesland?*

In examining the intersection of public policy and flood resilience in the tourism sector, this thesis aims to contribute to both academic discussions and practical policymaking. Strengthening climate adaptation strategies in the tourism industry is not only crucial for mitigating flood risks but also for ensuring the long-term sustainability of the tourism sector in Friesland. Insights from this research can inform policymakers in designing more effective sector-specific adaptation measures that improve resilience in the face of the climate crisis.

Theoretical Framework

This study is done on a multi-theoretical approach, to examine flood resilience in the tourism sector in Friesland. The theoretical framework uses the *Place Attachment Theory* and *Norm Activation Theory (NAT)* to explain why governmental institutions and businesses may feel a moral or emotional obligation to engage in climate adaptation measures. The theories of *Institutional Theory* and *Policy Integration Theory* will be used to assess potential mismatches between governance levels and private sector adaptation efforts.

Firstly, the theory explaining the activation of municipalities and businesses, the *Norm Activation Theory (NAT)*. The *Norm Activation Theory (NAT)*. This theory explains how personal moral norms influence prosocial behaviour, including behaviour towards climate adaptation (Schwartz, 1977). NAT suggests that individuals and organisations take action when they; at first recognise the consequences of their inaction, the awareness of consequences (AC). Secondly, feel personally responsible for addressing the issue, ascription of responsibility (AR). To finally, feel an internal/intrinsic moral obligation to act, personal norm activation (Onwezen et al., 2013; Setiawan et al., 2021). NAT is relevant to this study in providing a framework for understanding how business and (local) governments may voluntarily implement flood adaptation measures, beyond the regulated requirements (Steg & De Groot, 2010). More so if they perceive the risks as significant and feel morally obligated to protect their communities.

Lastly, we will discuss the theory focussed on how there is a possible mismatch in formal and informal institutional structures by looking into the *Institutional Theory* and *Policy Integration*. This theory provides a framework for understanding how (formal) regulations, governance structures, and (informal) norms shape policies and other climate adaptation efforts (Arranz & Arroyabe, 2023). In the context of this research, specifically flood resilience, the theory helps assess whether existing institutions enable or hinder effective adaptation within the tourism sector. Government institutions have a reputation for holding on to old ineffective methods, which are often outdated and unable to keep up with the developments around, for example, climate change. By applying Institutional Theory, this research evaluates whether tourism businesses in Friesland face institutional constraints that prevent them from accessing support or implementing flood resilience strategies effectively. Besides this the Institutional theory can also help us further assess if the local governmental institutions in the Northern Netherlands are lacking behind in their structures and norms or if they are providing applicable and well coordinated support.

The theory of *policy integration* is one of the central frameworks used to analyse the coordination of climate adaptation across governance levels, developed by Candel and Biesbroek (2016). The theory states that policy integration is a multidimensional and dynamic process, not final and static. It involves four key dimensions: policy frame, subsystem involvement, policy goals, and policy instruments. These dimensions represent how environmental objectives such as climate adaptation are gradually internalised into broader policy frameworks. For example, the degree to which tourism policy incorporates flood resilience depends not only on aligned goals, but also on the extent of actor engagement and the availability of supportive instruments. The authors emphasised that progress across these dimensions often occurs asynchronously. A policy framework may adopt the framing of climate adaptation without fully aligning its tools or objectives (Candel & Biesbroek, 2016). The processual approach enables identifying where integration

succeeds or stalls, offering a particularly useful lens to assess whether public policies in Friesland support meaningful flood resilience in the tourism sector.

In conclusion, by integrating these theoretical perspectives, this study aims to develop a comprehensive understanding of flood resilience in Friesland's tourism sector. *The NAT* explains why businesses and municipalities might engage in adaptation efforts. While *Policy Integration Theory* and *Institutional Theory* clarifies governance challenges and policy misalignments that may hinder adaptation efforts. This multi-theoretical approach will ensure a holistic analysis of flood resilience in the tourism sector, offering both academic insights and practical policy recommendations.

Literature review

This chapter reviews relevant academic literature to contextualise the research question: *How can public policy better support flood resilience in the tourism sector in Friesland?* The aim is to explore how flood adaptation, impact of governance, and institutional support have been studied in relation to the tourism sector, and to further identify the existing knowledge gaps that this thesis seeks to address. The review is structured around three main themes. Firstly, I will examine research on climate adaptation in the tourism sector, particularly in flood-prone areas. Secondly, I will explore governance and policy integration, focussing on how different levels of government collaborate on climate adaptation. Thirdly, I will investigate institutional barriers and enabling conditions for local adaptation, especially in relation to the tourism sector.

The tourism sector has been identified as one of the economic sectors most vulnerable to climate change, particularly due to its dependence on a stable environment and predictable weather patterns (Scott et al., 2019; Wilkins et al, 2017). While rising temperatures may initially seem to benefit northern destinations by extending tourist seasons, this shift places increased strain on local ecosystems, infrastructure, and water systems (Wilkins et al, 2017). A research conducted by David Scott (2021) found that current policies, on national tourism, are inadequate to the scale of the challenge, both in mitigation and adaptation. This research was conducted in member countries to the Organisation for Economic Co-operation and Development (OECD), one of them being the Netherlands, whose tourism sector was found ill-prepared. In examining case-specific climate adaptation endeavours in the Netherlands, or Western Europe, a significant gap was found in research focusing on initiatives within the tourism sector. This does not mean that there are no examples of climate adaptation in this sector, these will be discussed later in this research, but there is a severe lack of academic research to the current scale and effect of these adaptation strategies of private actors. Significant research has however been done in the implementation and effectiveness of the role of governance and multilevel coordination in the Netherlands (Trell & Van Geet, 2019).

In this absence of tourism-specific adaptation research, examining how flood resilience is governed through the Dutch multilevel governance systems provides valuable insights into how public policy might support adaptation from the national to the municipal level. Since 2009, the Netherlands has implemented a more polycentric and adaptive approach in climate governance, most notably through the Multilayered Safety (MLS) strategy. This approach consists of three layers: 1) preventative-structural measures, 2) resilient spatial planning, and 3) effective disaster management. Historically, the primary focus has always been on layer 1, static flood defences such as dykes and storm surge barriers, reflecting the long-standing Dutch reliance on engineered structural resistance to flooding (Molenveld & Van Buren, 2019; Bosoni et al., 2021). However, in recent years there has been a shift in governance priorities towards layer 2, emphasising spatial planning and adaptation that works within the natural limitations of the landscape, rather than attempting to dominate it (Deltacommissaris, 2020; Doorn-Hoekveld et al., 2022). This strategic shift acknowledges that long-term resilience cannot rely solely on hard-infrastructure, but requires proactive and place-based adaptation strategies (Deltacommissaris, 2020; Overheid, 2022).

The implementation of layer 2 relies on coordination across multiple levels of governance, between national ministries, provincial authorities, municipalities, water boards, and increasingly, private actors (Doorn-Hoekveld et al., 2022). Unlike layer 1, which largely fell under the sole domain of the national government and the water boards, spatial planning engages directly with local development policies, local vision, and economic sectors, including tourism. Municipalities play a central role in executing their strategies, yet often face limited resources or institutional support. The Netherlands has institutionalised public participation in spatial planning; by law, new spatial projects must be made public and be opened to a six-week period of public deliberation (Uitenbroek et al., 2019). While this system is not without its flaws, it reflects a national commitment to participatory governance, which is particularly relevant to climate adaptation that affect multiple sectors, including tourism. A study done by Uitenbroek et al. (2019) comparing three different municipalities found that the degree of citizens and stakeholders participation in climate adaptation planning was influenced by the administrative capacity and resources of the municipality, reinforcing the importance of local context in effective governance.

Although the MLS framework encourages decentralisation and increased public participation, it also introduces challenges: uneven coordination, varying priorities between actors, and the risk that sector-specific needs, such as those of tourism, are overlooked in broader adaptation planning (Engbersen et al., 2024; Uitenbroek et al., 2019; Bosoni et al., 2021). Participants in one of the case studies were dissatisfied and increasingly unwilling to participate, because their input was not taken seriously or actively used in the implementation (Uitenbroek et al., 2019). By looking at NAM the reasons for this unwillingness can be deduced in the loss of their ascription of responsibility and a reduction in the awareness of consequences, due to their input being ignored and not implemented in the final version of the adaptation projects (Schwartz, 1977; Uitenbroek et al., 2019). Understanding where this multilevel governance system succeeds or falls short in supporting flood resilience for tourism is therefore essential in developing more integrated and effective adaptation strategies in flood-prone regions like the Netherlands.

However, translating multilevel flood adaptation strategies into effective action remains hindered by a range of institutional and coordination barriers. Municipalities are expected to lead on spatial adaptation, yet they face limited administrative capacities and resources while getting an increased amount of responsibilities, which makes effective policy making on long-term change difficult. As the Institutional Theory suggests, established routines and bureaucratic structure often discourage innovation and cross-sectoral collaboration, especially when climate adaptation remains the responsibility of the environmental departments alone (Arranz & Arroyabe, 2023). This is particularly problematic for the tourism sector, which is rarely the first to be considered in municipal adaptation strategies. In many cases, policies related to different sectors (e.g. tourism, spatial adaptation, water management) often operate in parallel rather than in coordination. Reflecting low levels of vertical and horizontal *policy integration* (Candel & Biesbroek, 2016).

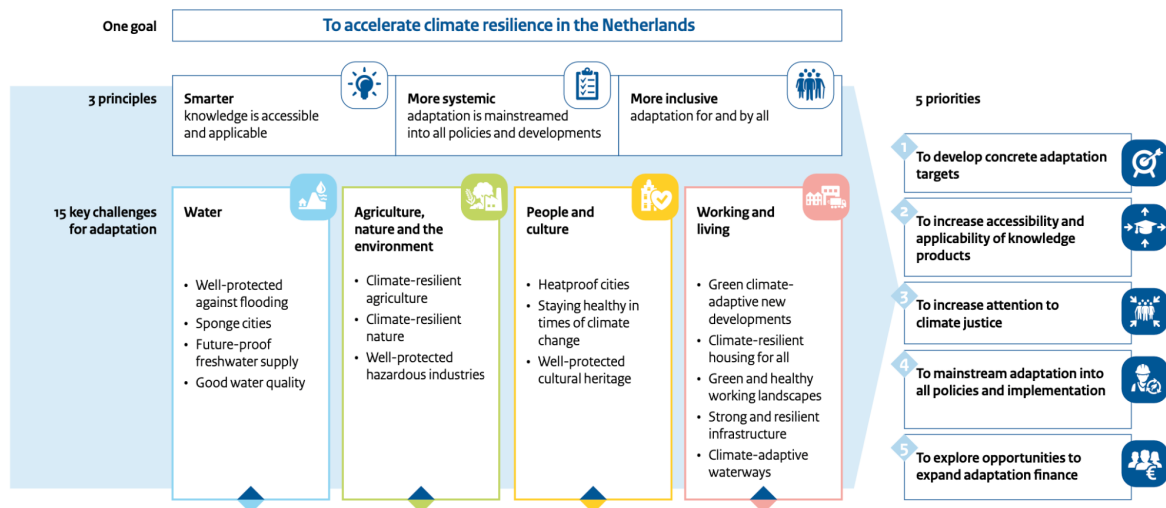
The literature so far describes multiple frameworks that can be used to overcome the struggle in flooding resilience. The tourism sector is identified to be ill prepared and often overlooked in spatial planning (Trell & Van Geet, 2019). The second layer of MLS, spatial planning, is increasingly seen as a guiding hand in making municipalities, towns, and businesses climate resilient, assisting private actors in the tourism sector to gain a voice in the implementations of measures in climate resilience (Molenveld & Van Buren, 2019). This multi-layered governance strategy is the typical governance approach in the Netherlands, and significantly increases participation among private actors and stakeholders in making their surrounding areas climate resilient (Uitenbroek et al., 2019). Institutional obstacles are however still evident, shown in the Institutional Theory by Arranz and Arroyabe (2023) and the process of policy integration by Candel and Biesbroek (2016). Practical barriers and enablers in the climate adaptation projects, especially in participation rate, are described in the case studies presented by Uitenbroek et al. (2019), other enablers to increase participation during adaptation projects can be seen in the Place Attachment Theory (Bonaiuto et al., 2016). This theory, explained in the chapter above, can be seen in flooding and drought adaptation efforts on the Dutch Caribbean island of Bonaire. The adaptation projects on the island focus on a return of the traditional adaptation to peak rainfall and water retention. The utilisation of traditional local knowledge is related to local support, due to the concept of local identity (UNESCO, n.d.).

Taken together, the academic literature provides a strong foundation for understanding the challenges and opportunities in strengthening flood resilience within the tourism sector. While these theoretical perspectives and case-based findings provide critical insight into the barriers and opportunities for climate adaptation, they also prompt a key question: to what extent do these theories and ideas align with the actual public policy frameworks currently shaping spatial and climate planning within the Netherlands? The next chapter examines these frameworks, national to municipal, to evaluate their coherence and depth to local flooding adaptation and its relevance to the tourism sector in the province of Friesland.

Public Policy Frameworks

There are already numerous public policies on climate resilience, both national and regional plans. They will be shortly explained and the possible advantages and implications that they may give the tourism sector will be further elaborated on. The policy frameworks that will be discussed will start on a national level and then be narrowed down to the regional policies. The national policies that we will focus on are: *Deltaplan Ruimtelijke Adaptatie (DPRA)*, the *Nationale Klimaatadaptatie Strategie (NAS)*, and *Omgevingswet*, (Environment and Planning Act). The regional policies that we will focus on are; *Fryslân Klimaatbestendig 2050+*, and *Omgevingsvisies* (Strategy on Spatial Planning and the Environment) of the municipalities.

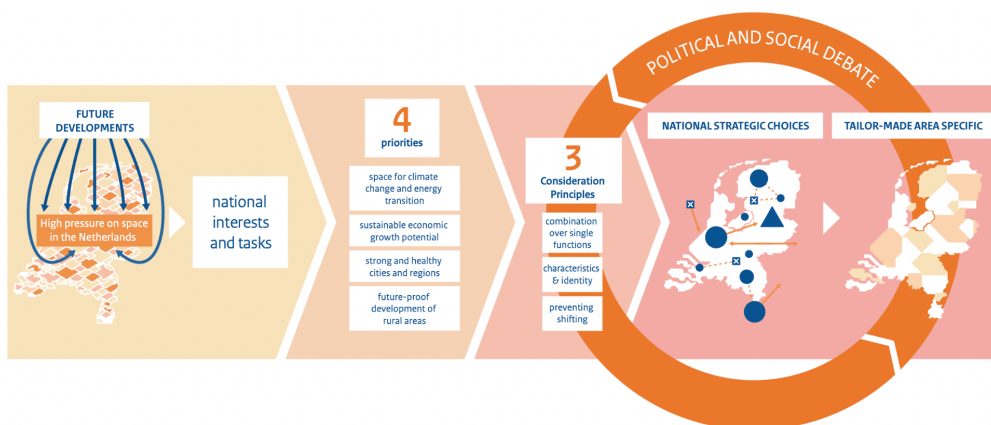
The first national public policy framework that we will discuss will be the *Nationaal Klimaatadaptatie Strategie (NAS)*, National Climate-adaptation Strategy. The NAS is, as the name suggests, the Dutch national plan of climate adaptation (Klimaatadaptatienederland, n.d.; Overheid, 2016). In 2022 the NAS was reevaluated to check if it was still on the right timeline to prepare the country for the effects of climate change sufficiently before 2026. In this report it was advised to accelerate the NAS, which was outlined in the National Implementation Programme Climate Adaptation 2023 (Nationaal uitvoeringsprogramma klimaatadaptatie) (Klimaatadaptatienederland, n.d.; Overheid, 2023). In the NAS of 2023 it is explained that the national strategy needs to be more systematic, inclusive, and smarter. The programme is built around four key domains; (1) Water, (2) Agriculture, Nature, and Environment, (3) People, and Culture, (4) Working, and Living. The new goals of the 2023 version of the NAS are further detailed in the figure below (Overheid, 2023).



(Overheid, 2023)

The overarching plans in making the Netherlands climate-resilient and water-robust are being made in the Delta Programme. This programme has three themes, the one that is most applicable to this study is the *Deltaplan for Spatial Adaptation (DPRA)*, or *Deltaplan Ruimtelijke Adaptatie* (Deltacommissaris, n.d.-c). It describes seven ambitions that are necessary in making the Netherlands water-robust and climate-resilient by 2050. The seven ambitions of the DPRA state how the different governmental authorities intend to accelerate and intensify the process of spatial adaptation, further detailed in the visualisation below. The planning process is in three different phases (analysis, ambition, and action) to make sure it is relevant and implementable. The development of the programme will go through these phases every six years to ensure its relevance to the changing climate (Deltacommissaris, n.d.-a; Deltacommissaris, n.d.-b). Sustainable spatial planning has already gained significant recognition requiring climate-resilient and water-robust planning to be embedded in all the actions and policies of the associated parties, since 2020 - other reports state before 2024 (Deltacommissaris, n.d.-b; Deltacommissaris, 2020). The delta programme provided financial support schemes to private actors to make it possible for them to transform their locations in becoming water resilient, through the Climate Adaptation Stimulus Scheme (Kennisportaal Klimaatadaptatie, n.d.).

The third national policy, the *Omgevingswet*, (Environment and Planning Act) serves as an efficient bridge between the national objectives and regional applications of climate adaptation. The *Omgevingswet* combined a number of existing, sometimes contradictory, laws and furthered rules on what you can hear, see, and smell outdoors (Overheid, n.d.). These rules and policies are further detailed for every municipality in their *Omgevingsplan* (Plan of Spatial Planning and the environment) (Omgevingsloket, n.d.; Overheid 2019). Most applicable to this research is the part of the *Omgevingsvisie* (Strategy on Spatial Planning and the Environment). The *Omgevingsvisie* serves as a framework to be followed by the different levels of government and other actors to create a sustainable long-term spatial planning. The National level is the *Nationale Omgevingsvisie* (NOVI), the provincial level the *Provinciale Omgevingsvisie* (POVI), and the municipal level the *Gemeentelijke Omgevingsvisie* (GOVI). With the *Blauwe Omgevingsvisie* (BOVI) as a secondary advisory framework that is solely focussed on the areas of water (Gemeente Leeuwarden, 2021; Gemeente Opsterland, 2023). The NOVI has been made a priority due to the lack of space in the Netherlands to combat all societal problems separately. Therefore, with the framework provided by NOVI, solutions can be combined to reduce the amount of space needed (Overheid, 2019). Which is further explained in the visualisation below.



(Overheid, 2019)

We will now focus on two regional policies that are centred on the province of Friesland. The first is focused on making Friesland climate resilient by 2050, Fryslân Klimaatbestendig 2050+. Developed by Wetterskip Fryslân and the Province of Fryslân, this strategy translates national goals, particularly those outlined in the policy letter “Water and Soil as Guiding Principles” (WaBoS) into a regional context (Provincie Fryslân & Wetterskip Fryslân, 2023). The central point is putting the water and soil systems at the core of spatial planning, ensuring long-term sustainability. This strategy emphasises the urgency of preparing for increasing pressures such as droughts, salinisation, flooding, and soil subsidence. The plan offers a tailored approach to each of the different landscapes in Friesland, such as peatlands, clay soils, sandy regions, Wadden islands, and urban areas. The plan of making the province of Friesland climate resilient by 2050 positions itself as a collaborative process in creating a dynamic framework for action, providing goals and further incentives for public and private actors across governance levels to embed climate resilience into future spatial development (Provincie Fryslân & Wetterskip Fryslân, 2023).

The second set of regional policies to be discussed are the *Omgevingsvisies* (Strategy on Spatial Planning and the Environment) of the municipalities. These documents were thematically analysed using the search terms: *klimaatadaptatie* (climate adaptation), *adaptatie* (adaptation), *wateroverlast* (excess of water), *toerisme* (tourism), and *overstroming* (flooding). The results from each municipal *Omgevingsvisie* are discussed below, the municipality of Terschelling did not have a published *omgevingsvisie* at the time of the research (gemeente Terschelling, n.d.).

The *Omgevingsvisie* of *Opsterland* concretely outlines local measures to reduce flood risk and enhance climate adaptation. It commits to separating rainwater and wastewater systems during sewer replacement and requires all new construction projects contribute to climate resilience. Residents and entrepreneurs are further encouraged to green their homes and businesses. Spatial redesigns will avoid automatically prioritising road users, instead seeking opportunities to improve climate resilience. The municipality acknowledges that climate change demands more space for greenery and open water to manage extreme rainfall, drought, and heat (Gemeente Opsterland, 2023).

In the *Omgevingsvisie* of *Ooststellingwerf* a dedicated paragraph was addressed climate adaptation, outlining a vision for spatial adaptation. Regarding flood resilience, it briefly states that more space should be reserved for water retention, not only in cases of extreme drought but also to manage periods of heavy rainfall. There was no relevant information in the section on tourism (Gemeente Ooststellingwerf, 2019).

No relevant results were found in the *omgevingsvisie* of *Weststellingwerf* by any of the selected search terms (Gemeente Weststellingwerf, 2019).

Finally, the municipality of *Heerenveen* presents the most extensive strategy on spatial planning and environment. The municipality aims to integrate climate adaptation into all spatial planning by linking multiple implementation programmes. Specific projects under municipal supervision are detailed in “*Uitvoeringsplan Klimaatadaptatie en Biodiversiteit*” (Implementation Plan Climate-adaptation and Biodiversity) (Gemeente Heerenveen, 2020-a). The municipality promotes an increase in green initiatives, guided by their principle “*green where possible, grey where necessary*”, and further explore underground water storage in densely built areas. Excess of water, due to rainfall, is primarily identified in paved areas, and is addressed in the 2022 Water Plan through updated drainage strategies and efforts to separate water from rainfall from the sewage system. An opportunity for the tourism sector is discussed in a proposal to repurpose peatland from agricultural to recreational use. This would offer farmers alternative income streams while enhancing climate resilience and slowing peat oxidation (Gemeente Heerenveen, 2021).

Methodology

This research adopts a mixed-methods qualitative approach, combining a literature review, public policy analysis, and semi-structured interviews. As Berrang-Ford, Pearce, and Ford (2015) argue, mixed-methods approaches are particularly effective in climate adaptation research due to their ability to integrate context-specific data with broader policy and institutional analysis. Further stating that while systematic approaches aren't naturally bad, adaptation research in particular is inherently interdisciplinary and often necessitates engagement in both human and physical sciences. A mixed-methods design allows to combine multiple perspectives between academic theory, national and regional policy intentions, and practical implementation at the municipal level. The goal is to assess how public policy supports flood resilience in the tourism sector in Friesland. With a focussed lens on how multilevel governance frameworks are translated into local adaptation strategies.

The literature review serves as an academic foundation for the research by identifying peer-reviewed journals and key theoretical papers. The literature was collected using targeted keyword searches in academic databases (e.g. Sciencedirect, Taylor&FrancisOnline, RUGsmartcat), focused on themes such as flooding adaptation in the tourism sector, multilevel governance, and barriers/enablers for local flooding adaptation. Additional research terms were used to capture related and relevant research themes, but still remained in the broader focus of flooding adaptation or governance. Papers on climate adaptation that were written before 2019 were mostly ignored. Due to an academic gap on this topic some papers before this date were included, but more carefully filtered on what still is relevant and accurate information and what since then has been disproven.

In addition to the academic literature, this research included an analysis of key public policy documents relevant to climate adaptation and flood resilience. These include:

- *Nationale Klimaatadaptatie Strategie (NAS)*
- *Deltaplan Ruimtelijke Adaptatie (DPRA)*
- *Omgevingswet*
 - *National, provincial, and municipal Omgevingsvisie*
- *Fryslân Klimaatbestendig 2050+*
 - *Water and Bodem Sturend (WaBoS)*
- *Municipal Omgevingsvisies*

A thematic content analysis was used, focusing on how the policies addressed tourism-related flood resilience. The analysis followed a 'national-to-local' structure. National strategies were examined first, to understand overarching visions and objectives, after which provincial and municipal policies were studied in greater detail. Several of these policy frameworks were cited during interviews, strengthening their significance for this research. However, it became evident that many of the national policies lacked specific, place-based strategies including instructions for the tourism sector. To address this gap, interviews with municipal policymakers provided valuable insights into local adaptation practices and needs.

Seven semi-structured interviews were conducted with policymakers, strategic advisors, and consultants in five different municipalities and one consultancy firm in Friesland. The municipalities selected are: *Opsterland, Ooststellingwerf, Weststellingwerf, Heerenveen, and*

Terschelling. The interviews were aimed to capture local policy insights, experiential knowledge on adaptation challenges, and the institutional context in which climate adaptation is implemented. Given the focus on local adaptation, municipal policy makers and climate advisors were identified as key informants due to their direct role in implementing climate adaptation measures.

Due to the multilevel governance system within the Netherlands, municipalities often have more autonomy in spatial planning than provincial authorities (Ten Brinke et al., 2022; Uitenbroek et al., 2019), making them particularly relevant to this study. The selected municipalities represent a wide range of landscape types. This diverse selection of geographical zones showcase the difference in vulnerabilities and adaptive capacities. Only one municipality was chosen with a coastline, since coastal protection falls under the authority of national agencies and waterboards, which limits local government influence in these areas.

Interviewees were approached based on their roles in climate adaptation or tourism and recreation. In each municipality one key informant from climate adaptation agreed to participate, typically someone identified by their peers as the most knowledgeable expert. However, municipal advisors in tourism and recreation were less inclined to participate. A limitation that may affect the balance of perspectives in the analysis.

Each interview lasted between 35 and 60 minutes. While all interviewees were informed on the overall topic, they were not shown the questions in advance. The interviews followed a consistent guide with more flexible follow-up questions, depending on the interviewees expertise. The three main questions of the interviews were: *How is (place) hit by the effects of climate change? How does (place) prepare for these consequences? How is (place) assisted in implementing climate adaptations?* Most interviews were automatically transcribed, with one requiring manual transcription. The transcripts automatically transcribed will be manually checked and all transcripts will be anonymised. Afterwards they will be thematically analysed focussing on tourism, flood adaptation strategies, and the influence of municipal governance on local implementation.

Findings

The interviews were conducted to get a better understanding of the municipalities' role in implementing climate adaptation efforts. During the interview the sub-questions were often directed towards the tourism sector, to direct the answers in answering the main research question; How can public policy better support flood resilience in the tourism sector in Friesland? The interviews will be thematically analysed into three themes; 1) *policy awareness and local adaptation efforts*, 2) *institutional barriers and obstacles*, and 3) *engagement with the tourism sector*. To reiterate the chosen municipalities were: Heerenveen, Ooststellingwerf, Weststellingwerf, Opsterland and Terschelling. In every theme the general findings from the interviews will be stated, not always referencing all the participating municipalities. Some of the findings may be skewed, due there being just one or two representative(s) from each municipality.

Policy Awareness and Local Adaptation Efforts

This section combines two closely related themes identified in the interview: *policy awareness* and *local adaptation efforts*. While analytically distinct, the interviews often revealed that municipal actors do not draw a clear line between the recognition of policy frameworks and the implementation of adaptation efforts. The findings are presented by municipality, beginning with the shared frameworks mentioned and moving toward specific local actions.

Across all studied municipalities, national and regional frameworks such as the *NAS*, *DPRA*, *Fryslân Klimaatbestendig 2050+*, and the municipal *Omgevingsvisie* (Strategy on Spatial Planning and the Environment) serve as key reference points for local climate adaptation efforts. While these frameworks provide guidance and possible financial support to the municipalities, the level of implementation and local uptake varied substantially. Firstly, *NAS* was not directly mentioned by any of the interviewees, possibly due to its general strategic character. Secondly, *DPRA* was mainly referenced in connection to the *Impulse Regeling*, by Heerenveen, Opsterland, and Weststellingwerf. Thirdly, *Fryslân Klimaatbestendig 2050+* was named by the interviewees of Heerenveen and Opsterland. However, it must be stated that the provincial climate adaptation framework can be considered as a guiding hand, in the same manner as the *NAS*. Therefore, it may still be used by the other municipalities, but simply were not considered in the direct responses during the interview. Furthermore, all municipalities have implemented policies aimed at transitioning from combined sewer systems, where rainwater and household wastewater are collected together, to separated systems. This shift is intended to reduce pressure during heavy rainfall and to avoid expending energy on filtering relatively clean rainwater. We will now analyse the individual policy implementations in the municipal *omgevingsvisie*. All municipalities, except Terschelling, have affirmed their vision on spatial planning in their *omgevingsvisie* (Strategy on Spatial Planning and the Environment).

In Heerenveen, the interviewee described a detailed local climate adaptation framework. The interviewee further explained that climate adaptation was already integrated into a large number of policies and would be further focussed on in future projects and policies. There is a strong preference for above-ground solutions such as green infrastructure, urban greening, and surface-level water buffering (e.g. wadis). One of which, in urban greening, is further detailed in the Centrum Program (Programma Centrum Heerenveen), a redevelopment plan of the town centre in Heerenveen. One of the goals of the project is to 'future-proof' the region by making it climate adaptive. These efforts are guided by the *Watertakenplan 2025-2029*, which outlines specific interventions for drought and flooding. Additionally, the municipality aims to combine parking with water retention functions in line with the multifunctional spatial planning goals. The locations for the projects are determined by the results of the '*climate stress test*'. A municipal subsidy scheme was also mentioned, providing support for private initiatives, such as green roofs, infiltration systems, and rainwater utilisation installations.

In Opsterland, the interviewee stated that the municipality's policies are still transforming in taking into account the necessity of climate adaptation. Some of the new policies have adapted, but not everywhere, stating that the financial side is of higher importance. There have already been a number of small-scale adaptation efforts. In one case, grass pavers (grasklinkers) were installed on a municipal camper site to prevent vehicles from getting stuck in wet conditions. Building upgrades have included energy efficiency and insulation improvements in several properties, such as the local museum and sport facilities. While these measures are not always explicitly labelled as climate adaptation, they were described by the interviewee as contributing to resilience. The projects with the highest priority were chosen by the results of '*climate stress tests*', this test was conducted in cooperation together with the municipalities of Ooststellingwerf and Weststellingwerf.

In Ooststellingwerf, the interviewee spoke of increased political and administrative attention to climate adaptation. In the short-term there will be a focus on the allocation of budget and staff to address the (future) issues caused by flooding and droughts. The interviewee stated that twelve zones have been marked as vulnerable to water entering buildings during peak rainfall events. Planned adaptations include elevated pavements and the use of green zones to absorb surface water. Adaptation to drought and heat is less developed, but increased planting and reduced surface paving were named as priorities in future redesigns. They noted however, that infrastructure upgrades, particularly sewer separation, are time- and resource intensive.

The interviewee from Weststellingwerf described their 'closed-system financing' for flooding and drought adaptation measures. In this system they mostly rely on the sewer tax and if adaptation processes need to be sped up national financing was used. The interviewee described a series of technical interventions aimed at buffering water in densely built areas. Wadis and drainage crates are used in low-infiltration clay soils, designed not for natural infiltration, but for temporary water storage. Adaptation in older built-up zones remains challenging due to a lack of space for green buffers. In some cases, street redesigns are used to direct water into shallow green depressions or multifunctional play areas that can briefly be flooded.

On Terschelling, the interviewee stated that the municipality is mostly bound by *Staatsbosbeheer* (state forestry department). They explained that *Staatsbosbeheer* owns 90% of the island. Additionally, there are agreements and there is cooperation with the *Waterschap* (water board), for further policies on spatial planning on the island. Almost all other plans in climate adaptation were still in development at the time of conducting this interview. The current plans to protect the island against flooding is to give the dunes their natural space to adjust to the rising sea level. The interviewee mentioned that implementation of climate adaptation measures is currently dependent on external support. While large-scale adaptation efforts were not mentioned, there is growing awareness of the need for contingency planning. The interviewee also noted that some recreation entrepreneurs were already questioning whether they could remain at their current locations due to increased water retention in dune areas.

Institutional barriers and obstacles

Despite growing awareness and a gradual rollout of adaptation measures, municipalities face persistent institutional barriers that limit their capacity to act. These obstacles include fragmented responsibilities and priorities between levels of government, limited financial capacity, or geographic obstructions. Interviewees often pointed to the difficulty of aligning local priorities with national objectives or overlapping jurisdictions. In what follows, we examine each of these obstacles with examples from the municipalities that struggle most with these.

The fragmented responsibility between levels of government can be seen in two different ways, there is a clear distinction between what the interviewees on Terschelling shared and the interviewees from the municipalities in Friesland. The interviewee from Terschelling highlighted a clear struggle in coordinating climate adaptation with other governmental institutions, the state forestry department and the water board. The former reportedly considers increased rainfall beneficial for natural ecosystems and is therefore unwilling to intervene, while the latter refuses to take action in designated nature zones. The municipality itself is only small and is therefore reliant on outside help for implementing major adaptations. The geographic difficulties on the island, as stated by the interviewee, are due to three main reasons: 1) topographical, the dune areas trap water which heavily affects the tourism accommodations, 2) spatial, limited land and heavy external ownership severely restricts interventional capacity, 3) coastal exposure, the increased exposure due to rising sea levels has been amplified because of the government's decision to leave some areas unprotected.

The interviewed municipalities in the south of Friesland have similar issues on the three identified fields of obstacles. The fragmented responsibilities and priorities between different levels of government was identified by most interviewees. Some of these being certain powers falling outside of their jurisdiction or the creation of large bodies of water retention areas being something that the water board is responsible for. The interviewee of Heerenveen highlighted that there is no strict legal requirement for climate adaptation, it is taken into account in new construction projects, but still no defined requirements have been put in place. In Opsterland the integration in adaptation measures of certain sectors, such as the tourism sector, is unsystematic. The interviewee stated that there is no clear framework and the decisions on adaptation in these sectors are made case-by-case.

Limited financial capacity was discussed in all interviews, though the nature of the challenges varied. In several cases, interviewees emphasised that staff shortages, not just budget constraints, are a key barrier to timely implementation. Most municipalities rely on closed financing systems, e.g., sewer taxes, which restrict flexibility and make them dependent on national subsidies to accelerate or scale up projects. The interviewee in Ooststellingwerf identified twelve flood-risk zones, but each requires tailored solutions, raising both financial and staffing demands. In Weststellingwerf the interviewee described staff shortages as the greatest obstacle. Meanwhile, in Opsterland, financial considerations sometimes override long-term adaptation goals. The interviewee noted that without legal requirements for climate adaptation, measures must be advocated for on a case-by-case basis. This lack of structural support contributes to delays and inconsistent implementation across sectors.

Topographic conditions directly influence the feasibility and design of climate adaptation efforts, a point raised in all interviews. The geographical and topographical constraints mentioned ranged from soil type to elevation. In many cases, municipalities must engineer around these limitations, adapting or supplementing nature-based solutions to suit local conditions. The interviewee in Ooststellingwerf pointed to areas with keileem layers, a dense soil type that hinders water infiltration and results in prolonged surface water retention. Similarly, in Weststellingwerf, the clay-rich soil limits the effectiveness of conventional infiltration-based measures. According to the interviewee, wadis in the area now function primarily to temporarily store water, rather than infiltration zones. To improve their performance, they are supplemented with drainage crates and artificial infiltration layers, ensuring excess water is redirected to drainage systems or nearby surface water.

Engagement with the Tourism Sector

The municipalities are acting in different ways to become climate resilient. Just as they are suffering from different obstacles and implications. So how is the tourism sector involved in the plans of the municipalities? Across the five municipalities, active engagement with the tourism sector on climate resilience is limited. In most cases the responsibility for adaptation was placed on the entrepreneurs themselves, without clear structural support or collaboration. Some of the interviewees showed some partial exceptions, which will be detailed below.

The interviewee of Heerenveen did not directly mention any engagement with the tourism sector on adaptation. There are general support measures (e.g. subsidies for green roofs, water buffering, etc) technically available to businesses, but not communicated to them as such or directly mentioned by the interviewee. The interviewee of Ooststellingwerf noted a similar level of limited engagement. The ongoing and planned climate adaptation efforts are likewise focused on residential risk zones. In Weststellingwerf the interviewee didn't report any collaboration with tourism business. The climate adaptation was similarly target to residential zones, like Ooststellingwerf, the adaptation efforts were guided by the climate stress test, not sectoral vulnerabilities or needs.

The municipalities of Opsterland and Terschelling demonstrated relatively higher levels of engagement with the tourism sector, although direct consultation on climate adaptation measures remains limited. In Opsterland, the interviewee described an example in Gorredijk where tourism infrastructure, specifically a camper site, benefited from climate-related interventions, even though these measures were not targeted to enhance climate resilience, such as the sustainability efforts of "Green-Key" accommodations. In contrast, Terschelling provided a more explicit link between tourism and climate adaptation. The interviewee highlighted that flooding in dune areas has already begun to disrupt businesses, leading some entrepreneurs to question the long-term viability of their current locations. However, as described before, the municipality faces significant challenges in responding, due to overlapping land ownership and limited jurisdiction over key nature areas.

Sectoral perspective: Tourism Consultancy Insights

In addition to the municipal interviews, an additional interview was conducted with a regional consultancy firm that advises tourism business across Friesland. This actor provided a broader, cross-municipal perspective on how climate change is affecting the tourism sector directly, as well as how businesses are responding to these emerging risks. The interviewee offered detailed observations concerning adaptation behaviours, infrastructural limitations, guest preferences, and the tensions that arise between sustainability goals and financial feasibility. The following section outlines the main findings from this interview, with a particular focus on the climate-related challenges encountered by tourism entrepreneurs and the consultancy's perspective on the level of governmental support and sector-wide attitudes.

The climate impacts on tourism in Friesland were described as having both negative and positive consequences. The interviewee stated that the sector is increasingly affected by wetter and less predictable seasons. This results in a decline in early bookings and more frequent disruptions to operations, particularly due to heavy rainfall. Drought-related impacts were also noted, primarily in the form of rising prices for certain goods, especially locally produced food. However, the interviewee stated that rising average temperatures could enhance Friesland's attractiveness as a destination for tourists, especially in comparison to Southern European regions that are suffering more frequent and extreme heat during the summer months.

The interviewee emphasised that guest preferences remain the primary driver of change within the tourism sector. Developments in sustainable accommodations appear to be more motivated by consumer demand than by regulations or environmental concern. For example, despite increasing awareness of water scarcity, amenities such as hot tubs and swimming pools continue to be prioritised to meet expectations for luxury. The interviewee further noted that sustainability initiatives are frequently employed as marketing tools aimed at attracting a specific type of guests, rather than reflecting a deeper commitment to environmental responsibility.

The interviewee also highlighted several barriers to proactive climate adaptation within the tourism sector. According to the interview, many entrepreneurs continue to view extreme weather events, such as flooding, as incidental rather than structural challenges, leading to limited urgency in adapting their facilities. Efforts to improve the resilience of existing buildings are often constrained by spatial planning regulations. In addition, current government subsidies and other support mechanisms were described as unclear or difficult to access. The interviewee further pointed to conflicting priorities in adaptations. For example, campsites increasingly require paved areas due to wetter seasons, but this will hinder water retention and infiltration efforts. Older facilities face challenges in implementing structural changes.

Discussion

This chapter reflects on the findings presented in the previous section through the lens of relevant theoretical frameworks to evaluate how public policy can more effectively support flood resilience in the tourism sector of Friesland. The findings already revealed uneven implementation across the selected municipalities, but the discussion goes beyond descriptive analysis. It connects these patterns to broader governance challenges, implementation gaps at the local level, and behavioural insights of the tourism sector. By drawing on the *Institutional Theory*, *Policy Integration Theory*, *Theory of Planned Behaviour*, and *Multi-Level Governance*, this chapter will identify structural and behavioural barriers that currently hamper effective climate adaptation in the tourism sector. These insights provide the foundation for the policy recommendations that follow.

Public policy alignment and local relevance

While national and provincial policy frameworks exist, their relevance at the municipal level is uneven, and tourism is often excluded. At the national level the lack of specific policies targeted at tourism is evident (Overheid, 2019). In the provincial *omgevingsvisie* there is this same clear lack of guidance to the tourism sector. There is small reference to the difficulties on water the islands at the Waddenzee endure, furthered by the increase in the number of tourists, but no clear direction in how these issues can be mitigated (Provincie Fryslân & Wetterskip Fryslân, 2023). The previously introduced *Policy Integration Theory* is an effective lens to analyse this misalignment. According to the theory, successful integration of climate goals into sectoral policy requires alignment across the four dimensions: framing, goals, actor involvement, and instrument (Candel & Biesbroek, 2016). In the municipalities studied, flooding adaptation is often framed as a spatial or technical challenge (e.g. water buffering, water infiltration systems), but not yet consistently translated into actionable goals within tourism or economic policy. Actor involvement is similarly narrow, in most municipalities, tourism entrepreneurs and officials were only minimally engaged in climate planning, if at all. Even if some municipalities offered more engagement compared to others, in all interviews there seemed to be a lack of clear coordination with the different actors. Instrumentally, municipalities like Heerenveen show more advanced alignment, applying tools such as the *Watertakenplan*, *Redevelopment Town Centre*, and subsidy schemes that offer pathways for action (PCH, n.d.; Gemeente Heerenveen, 2020-b; Gemeente Heerenveen, 2025). However, in some other municipalities, policy support for climate adaptation in tourism remains informal or undefined. This inconsistency may create uncertainty for entrepreneurs and hinder long-term adaptation planning.

Moreover, the local relevance of national policy frameworks is constrained by limited sector-specific attention. The interviewed municipalities have stated that some national policies, such as NAS and DPRA, are used in obtaining more funding, by their subsidies. The missing reference to tourism in the adaptation documents leave municipalities without guidance tailored to the sector's needs. Public policy runs the risk of being aspirational rather than operational in promoting flood resilience in the tourism sector in the absence of greater consistency across governance levels and more explicit incentives and obligations. The findings of Uittenbroek et al. (2019), which show that sectoral specificity and contextual sensitivity are commonly absent in municipal implementation, further support this.

Capacity and implementation gaps

Policy awareness is slowly growing across municipalities in Friesland. However, there remain substantial capacity and implementation gaps that hamper effective climate adaptation. These gaps are not solely financial, they also relate to personnel, technical knowledge, and the fragmentation of responsibilities across actors. This gap, found in the interviews, is well documented in broader literature. According to Runhaar et al. (2018), a lack of political will, organisational capacity, and fragmented responsibilities are some of the reasons why adaptation is frequently not well integrated into local policy. According to Uittenbroek et al. (2019), Dutch municipalities may be aware of the threats posed by climate change, but many are still reluctant to take proactive measures unless adaptation fits in with their already planned urban development projects. This pattern was partially evident in the interviews. For example, Ooststellingwerf and Weststellingwerf both rely on the timing of infrastructure replacement (e.g. sewer systems) to implement flood adaptation measures. However, since the research of Uittenbroek et al., regulations and policies on spatial planning have changed in the Netherlands, and the data collected from the interviews proves that most municipalities are active in improving climate adaptation, even if some municipalities are slower in this change. These findings resonate with the *Institutional Theory*, which emphasises how existing norms and regulatory frameworks shape the responsiveness of public organisations (Arranz & Arroyabe, 2023). A number of the interviewees indicated that adaptation efforts are hampered by weak cross-sectoral coordination and fixed budget structures. For example, Heerenveen finances both drought and flood adaptation through sewer taxes, but lacks similar mechanisms for addressing heat stress. In such showing the institutional inflexibility in financing adaptation as a whole. Moreover, Opsterland's lack of a formal subsidy framework on climate adaptation, e.g. for the tourism sector, illustrates how institutional uncertainty can restrict both internal action and external engagement with other actors.

Explaining inaction in the tourism sector

The data from the interviews found that tourism entrepreneurs show limited initiative in adapting to flood risks, despite the mounting climate pressures. In the findings, especially of the consultancy firm, reasons for the inaction in the tourism sector surfaced. The NAM will provide a fitting theoretical lens to analyse the findings by using its three key physiological variables (Schwartz, 1977; Onwezen et al., 2013; Setiawan et al., 2021). Firstly, *Awareness of consequences*, currently business owners still often underestimate climate risks or view them as rare incidents. Therefore, the motivation to invest in preventative measures is limited. Even when changes are made, such as paving flood prone areas, they are framed more as operational fixes rather than climate adaptation. Secondly, *Ascription of responsibility*, entrepreneurs typically do not seem to feel a moral duty to act, unless forced by regulation or incentivised financially. The consultancy firm echoed this, noting that while sustainable certifications like the Green Key exist, they are still more used as a marketing tool, instead of a commitment to sustainability or adaptation. Thirdly, *Personal norms* which drive pro-environmental behaviour are often overridden by pressures from the consumer. An example hereof was noted by the interviewee of Terschelling in the increased demand for comfort and luxury by the consumer, such as hot tubs or pools, even in water-scarce areas. Without clear structural support or guidance businesses will prioritise profitability over sustainability. The NAM helps in explaining the intention-action gap. Even when climate

change is acknowledged and recognised, moral engagement and behavioural change remain low.

Institutional fragmentation and Governance Obstacles

The awareness of flooding risks, including the inland regions, is increasing, however the multi-layered governance (MLG) system of the Netherlands has the risk of hindering the flood adaptation efforts. This is further explained by Saito-Jensen (2015), he states that it can create both problems and opportunities in transferring the state's decision-making in multiple directions, upwards, downwards, and sideways. The opportunity herein is that local layers of government can use resources more effectively to target the specific local problems in context appropriate ways. The issue is unclear responsibility and limited enforceability. Another observation of MLG is the increased importance of mobilization at the local governance level. To intertwine local levels of governance with civil society itself, while simultaneously intertwining state governance with civil society (Saito-Jensen, 2015). This is evident in the Dutch context, where local adaptation is incentivized by state planning and subsidies (DPRA, NAS, Impulseregeling), but not yet by binding regulation. Which results in relying on soft power rather than legal obligation. It was identified in most of the interviews that mobilising local civil society or actors in the tourism sector is still a missing piece in the current state of MLG.

This governmental vagueness is particularly problematic in the implementation of Multilayered Safety (MLS) strategy. Layer 1 (prevention) is largely managed by the national government and water boards. Layer 2 (spatial adaptation) and layer 3 (crisis management) require active involvement of local governments (Bosoni et al., 2021; Molenveld & Van Buren, 2019). However, the interviews revealed that local governments face significant obstacles in fulfilling these roles. For example, the interviewee in Heerenveen highlighted that unlike energy efficiency standards (e.g. BENG), there is no legal obligation to implement climate adaptation. The absence of legal obligations, especially in layer 2, contributes to policy inertia and inconsistent spatial adaptation across municipalities. A similar fragmentation is evident in affecting the tourism sector. The absence of a dedicated funding stream for tourism-related adaptation means that actors must rely on general-purpose subsidies, as was noted by the interviewee from Opsterland. These general-purpose subsidies are however not always accessible or relevant. Without stronger coordination across government layers and clearer inclusion of tourism in adaptation frameworks, the MLS remains only partially implemented.

The results indicate that there is significant space for immediate policy improvement, even though long-term reform will be necessary to remove structural obstacles in governance and implementation. The objectives of public adaptation and the real-world requirements of Friesland's tourism actors can be more closely aligned with strategic action. Specific proposals aimed at different governmental levels are outlined in the section that follows. In order to develop a more flood-resilient region, these recommendations seek to improve institutional friction, increase policy alignment, and better incorporate tourism into climate adaptation planning.

Recommendations

To better support flood resilience in the tourism sector within Friesland, this research recommends policy improvements at three key levels: national/provincial, municipal, and within the tourism sector itself. These suggestions draw from the findings presented earlier and are grounded in theoretical frameworks used in this thesis, especially *Policy Integration Theory*, *Institutional Theory*, *Multi-Layered Safety (MLS)*, and *Norm Activation Theory (NAT)*.

It is essential that at the national and provincial level the tourism sector is integrated into existing climate adaptation strategies. The currently used national and provincial frameworks of NAS, DPRA, and Fryslân Klimaatbestendig 2050+ offer broad guidance but lack sector-specific instruments which can be used for the tourism sector. As Candel and Biesbroek (2016) argue, full policy integration requires alignment in problem framing, subsystem involvement, policy goals, and policy instruments. This implies that adaptation strategies should explicitly address dangers to entrepreneurs in the specified sector, how actors can get involved, potential contributions to climate resilience, and subsidies or other instruments which can assist. Making climate adaptation legally binding in spatial and construction policies, such as the mandatory energy-neutral building requirements (e.g. BENG), would reduce the indefiniteness for municipalities and private actors alike. Making it legally binding would likewise stop policy inertia on climate adaptation, as was specified by the interviewee in Heerenveen.

More targeted engagement with the tourism sector is needed at the municipal level to strengthen local flood resilience. A promising starting point would be to utilise the often referenced climate stress test to identify tourism zones at risk and incorporate these insights into spatial planning instruments such as the *Omgevingsvisie* (Kennisportaal, n.d.). Some municipalities have outlined their ambitions on climate adaptation stated in their *Omgevingsvisie*, these documents often remain quite unclear about specific measures that can be taken by private actors to increase climate adaptation. Municipalities, such as Opsterland, have developed more detailed strategies for fulfilling their commitments under the DPRA. However, these strategies tend to function more as internal policy references than as actionable guidance for private actors such as tourism entrepreneurs (Gemeente Opsterland, 2021). Municipalities should expand multifunctional adaptation strategies, such as green parking or water-buffering recreational areas, that serve both tourism and resilience goals. Multifunctional adaptation is key in making the municipalities and province climate resilient. As emphasised in *Fryslân Klimaatbestendig 2050+*, such integrated approaches are not only more spatially efficient but also essential. The province would need to be 1.8 times larger to realize all adaptation objectives separately (Provincie Fryslân & Wetterskip Fryslân, 2023). Underscoring the urgency of close coordination and efficient use of space in local policy implementation. The degree of municipal coordination with the tourism sector varies significantly. In Heerenveen, the interview indicated active coordination with entrepreneurs to improve climate adaptiveness, even if the tourism sector was not specified. Whereas in Opsterland the effectiveness of cross-sectoral coordination was limited. Strengthening the cooperation between the domains of climate adaptation and tourism is therefore essential. Furthermore, inter-municipal cooperation through regional adaptation networks like GAVO can help in coordinating the efforts and overcome capacity limitations noted in interviews.

Within the tourism sector adaptation efforts are largely absent due to low risk perception and a lack of behavioural drivers or incentives. According to the Norm Activation Model, individuals are unlikely to act without feeling that they can make a difference or have a moral obligation (Schwartz, 1977). Therefore, to establish a sector-wide recognition of climate risks, awareness campaigns should be established. Lastly, structural collaboration between tourism entrepreneurs, municipalities, and water boards would facilitate context-sensitive solutions. In such bringing more efficient methods and incentives to the tourism sector on climate adaptation. As by Sairo-Jensen's theory on MLG (2015) the importance of mobilization at the local level can not be understated in this system of governance. In providing this efficient collaboration between (local) governance and civil society both behavioural and infrastructural adaptation will become more effective in reducing the tourism sector's vulnerability to future flooding.

Limitations

While this research effectively showed how public policy may support flood resilience in the tourism sector in Friesland, several limitations must be acknowledged.

The methodological limitations can be seen in how this research relied on interviews with municipal policy advisors, meaning that most of the insights were seen from the public policy perspective. The interviewees often had greater knowledge on infrastructure than tourism adaptation, making some of the findings harder to link to tourism adaptation. This still aligned with the objective of the research, but private actors in the tourism sector were only indirectly represented through the interview with the consultancy firm. As a result, the behavioural attitudes, perceptions, and priorities of individual entrepreneurs were inferred rather than directly measured. In future research a larger sample of private actors would add further depth to a study on this topic, especially in applying theories such as the Place Attachment Theory or NAT. Furthermore, this study focused on five municipalities, including one coastal island (Terschelling) and four inland areas in Southeast Friesland. While this allowed for diverse geographical and institutional conditions, it limits the generalisability of the findings to other provinces, highly urbanised areas, or tourism-dense coastal regions in the Netherlands. Coastal defence and dune preservation on Terschelling, for example, are context-specific issues that may not reflect the challenges faced by municipalities without significant natural landscapes or major tourism presence.

Thematic limitations in this thesis was the focus being specifically on flood resilience. The research acknowledged but did not systematically examine the various other aspects of climate adaptation, such as drought, heat, and biodiversity loss. Future research could examine how adaptation strategies for multiple climate risks interact and how tourism businesses navigate such complexities.

Lastly, it was challenging to verify some claims by the interviewees because key institutional and policy documents were not publicly available. However, referencing through multiple interviews and policy framework analysis helped mitigate this limitation.

Conclusion

This research set out to answer the question: *how can public policy better support flood resilience in the tourism sector in Friesland?*

Drawing on literature in climate adaptation, policy integration, and behavioural theory, the research combined policy document analysis, municipal- and consultancy interviews. The findings reveal a structural gap in implementable climate adaptation measures and the awareness to and within the tourism sector. At the national and provincial levels, frameworks such as the NAS, DPRA, and Fryslân Klimaatbestendig 2050+ guide climate adaptation, but rarely mention tourism directly. The *Policy Integration Theory* suggests the problem framing and operational goals of these frameworks lack sectoral specificity, because of this municipalities and private actors can interpret these frameworks differently, depending on local capacity, perceived priorities, and institutional norms (Candel & Biesbroek, 2016).

The institutional context, analysed through *Institutional Theory*, highlights how adaptation is hindered by regulations, strict governance structures, and institutional norms (Aranz & Arroyabe, 2023). Governmental inactivity isn't absolute, systements and departments have been set up to create and guide climate adaptation. The link between these departments in government is however still weak. This governance ambiguity is especially visible in multi-actor contexts like Terschelling, where Staatsbosbeheer and water boards influence spatial decisions but hold different adaptation priorities.

Meanwhile, the tourism sector remains largely inactive in addressing future climate risks. This passivity can be explained by applying the *Norm Activation Theory* in recognising the weak internalised responsibility, low perceived vulnerability, and structural barriers such as spatial planning restrictions and a lack of targeted support (Schwartz, 1977). The consultancy interview highlighted that even businesses aware of risks often prioritise guest comfort and revenue, reinforcing the need for authorities to both offer the stick (restrictions) and the carrot (incentives).

In sum, public policy currently underperforms in addressing the tourism sector's potential and inactivity in implementing climate adaptations. The key in changing this sectoral passivity lies in changing existing frameworks into more enforceable and cross-sectionally coordinated tools. This includes strengthening legal directives for adaptation and clarifying responsibilities across governance levels. These clarifications need to include a comprehensive cooperation between municipalities and private actors. As the theory of Candel and Biesbroek (2016) state: "integration challenges emerge particularly when complex societal issues are confronted with traditional forms of [...] policymaking within hierarchic governance systems." Emphasizing that flood adaptation in tourism cannot rely solely on individual entrepreneurial initiative or general policy encouragement. Instead, more structured, binding and participatory governance approaches are needed, ones that align national ambitions with local capacities and sectoral realities.

References

- Arranz, C. F. A., & Arroyabe, M. F. (2023). Institutional theory and circular economy business models: The case of the European Union and the role of consumption policies. *Journal of Environmental Management*, 340. <https://doi.org/10.1016/j.jenvman.2023.117906>
- Berrang-Ford, L., Pearce, T., & Ford, J. D. (2015). Systematic review approaches for climate change adaptation research. *Regional Environmental Change*, 15(5), 755–769. <https://doi.org/10.1007/s10113-014-0708-7>.
- Bonaiuto, M., Alves, S., De Dominicis, S., & Petruccelli, I. (2016). Place attachment and natural hazard risk: Research review and agenda. *Journal of Environmental Psychology*, 48, 33-53. <https://doi.org/10.1016/j.jenvp.2016.07.007>
- Bosoni, M., Tempels, B., & Hartmann, T. (2021). Understanding integration within the Dutch multi-layer safety approach to flood risk management. *International Journal of River Basin Management*, 21(1), 81–87. <https://doi.org/10.1080/15715124.2021.1915321>.
- Brown, B. B., Altam, I., & Werner, C. M. (2012). Place attachment. *International Encyclopedia of Housing and Home* (pp. 183-188). Elsevier. <https://doi.org/10.1016/B978-008047163-1.00543-9>
- Candel, J.J.L., Biesbroek, R. (2016). *Toward a processual understanding of policy integration*. Policy Sci 49, 211–231. <https://doi.org/10.1007/s11077-016-9248-y>.
- Deltacommissaris. (2020). *National Delta Programme 2021 - Staying on track in climate-proofing the Netherlands*. <https://english.deltaprogramma.nl/binaries/delta-commissioner/documenten/publications/2020/09/15/dp2021-eng-printversie/DP2021+ENG+printversie.pdf>
- Deltacommissaris. (n.d.-a). *Delta Decision for Spatial Adaptation*. <https://english.deltaprogramma.nl/three-topics/spatial-adaptation/delta-decision>
- Deltacommissaris. (n.d.-b). *Delta Plan for Spatial Adaptation*. <https://english.deltaprogramma.nl/three-topics/spatial-adaptation/delta-plan>
- Deltacommissaris. (n.d.-c). *Three topics explained*. <https://english.deltaprogramma.nl/three-topics>.
- Engbersen, D., Biesbroek, R., Termeer, C.J.A.M. (2024). Between theory and action: Assessing the transformative character of climate change adaptation in 51 cases in the Netherlands, *Global Environmental Change*, Volume 89, <https://doi.org/10.1016/j.gloenvcha.2024.102948>.
- Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources*, 30(1), 441-473. <https://doi.org/10.1146/annurev.energy.30.050504.144511>
- Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environmental Change*, 16(3), 253–267. <https://doi.org/10.1016/j.gloenvcha.2006.04.002>

- Gemeente Heerenveen. (2020-a). *Uitvoeringsagenda Klimaatadaptatie & Biodiversiteit 2020-2022*. <https://lokaleregelgeving.overheid.nl/CVDR665333?>
- Gemeente Heerenveen. (2020-b). *Watertakenplan Heerenveen 2021-2024 Samenwerken aan de wateropgaven*. <https://lokaleregelgeving.overheid.nl/CVDR651821?&show-wti=true>.
- Gemeente Heerenveen. (2021). *Omgevingsvisie Heerenveen 1.0 - naar een gezonde, ondernemende en duurzame gemeente in 2040*. <https://www.heerenveen.nl/wp-content/uploads/2018/08/2021-07-08-Vastgestelde-Omgevingsvisie-1.0-Heerenveen.pdf>.
- Gemeente Heerenveen. (2025). 'Groener (be)loont' subsidies ook in 2025 beschikbaar. <https://www.heerenveen.nl/nieuws/groener-beloont-subsidies-ook-in-2025-beschikbaar/>
- Gemeente Leeuwarden. (2021). *Omgevingsvisie Gemeente Leeuwarden*. https://www.leeuwarden.nl/wp-content/uploads/import/2021222_omgevingsvisie_leeuwarden_-_vastgesteld_webversie_extra_klein.pdf.
- Gemeente Ooststellingwerf. (2021). *Omgevingsvisie Ooststellingwerf*. https://cuatro.sim-cdn.nl/ooststellingwerf/uploads/Omgevingsvisie%20Ooststellingwerf%20-%20vastgesteld%2023%20november%2021_web.pdf?cb=LteAl7-V.
- Gemeente Opsterland. (2023). *Omgevingsvisie Gemeente Opsterland*. <https://cuatro.sim-cdn.nl/opsterland/uploads/omgevingsvisie-definitief-juli-2023-digitale-versie.pdf?cb=PwmlrN6m>.
- Gemeente Opsterland (2021). *Uitvoeringsplan Ruimtelijke Adaptatie*. <https://storymaps.arcgis.com/stories/6dba43ecbd694ecf8353fae47e671a7d>.
- Gemeente Terschelling. (n.d.). *Omgevingsvisie Terschelling*. <https://www.terschelling.nl/omgevingsvisie>.
- Gemeente Weststellingwerf. (2019). *Omgevingsvisie Weststellingwerf - ruimte voor kwaliteit*. <https://cuatro.sim-cdn.nl/weststellingwerf/uploads/omgevingsvisie-weststellingwerf-2019.pdf?cb=Dys-8BSe>.
- Hatfield-Dodds, S., Nelson, R., Cook, D.C. (2007) *Adaptive Governance: An Introduction and Implications for Public Policy*. <https://ageconsearch.umn.edu/record/10440/?v=pdf>.
- IEA. (2022). Netherlands Climate Resilience Policy Indicator. <https://www.iea.org/articles/netherlands-climate-resilience-policy-indicator>
- Katsman, C.A., Sterl, A., Beersma, J.J. et al. *Exploring high-end scenarios for local sea level rise to develop flood protection strategies for a low-lying delta—the Netherlands as an example*. *Climatic Change* 109, 617–645 (2011). <https://doi.org/10.1007/s10584-011-0037-5>
- Kennisportaal Klimaatadaptatie. (n.d.). *Impulsregeling Klimaatadaptatie*. <https://klimaatadaptatienederland.nl/beleid/nationale-aanpak/dpra/deltaplan/stimuleren-faciliteren/impulsregeling-klimaatadaptatie/>.
- Kennisportaal Klimaatadaptatie. (n.d.) *Klimaatstresstest*. <https://klimaatadaptatienederland.nl/stresstest/>.
- Molenveld, A., & van Buuren, A. (2019). *Flood Risk and Resilience in the Netherlands: In Search of an Adaptive Governance Approach*. *Water*, 11(12), 2563. <https://doi.org/10.3390/w11122563>
- Omgevingsloket. (n.d.). *Regels op de kaart*. <https://omgevingswet.overheid.nl/home>.

- Onwezen, M. C., Antonides G., Bartels, G. (2013). *The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour*. Journal of Economic Psychology, (39), 141-153.
<https://doi.org/10.1016/j.joep.2013.07.005>.
- Overheid. (2016). *Nationale Klimaatadaptatiestrategie 2016 (NAS)*.
https://klimaatadaptatienederland.nl/publish/pages/120542/nas_rapport_5_2-1-1.pdf.
- Overheid. (2019). *National Strategy on Spatial Planning and the Environment, A sustainable perspective for our living environment*.
<https://open.overheid.nl/documenten/ronl-d58c7b3d-57b8-42b9-9a1d-bba2a54d4992/pdf>.
- Overheid. (2022). *Kabinet maakt water en bodem sturend bij ruimtelijke keuzes*.
<https://www.rijksoverheid.nl/actueel/nieuws/2022/11/25/kabinet-maakt-water-en-bodem-sturend-bij-ruimtelijke-keuzes>.
- Overheid. (2023). *Nationaal Uitvoeringsprogramma Klimaatadaptatie*.
<https://open.overheid.nl/documenten/dpc-2f1a2258b86c19919999b03a927ca9e3ba0498af/pdf>.
- Overheid. (n.d.). *De Omgevingswet*.
<https://www.rijksoverheid.nl/onderwerpen/omgevingswet>.
- PCH. (n.d.). *Programma Centrum Heerenveen*.
<https://www.programmacentrumheerenveen.nl/>.
- Provincie Fryslân & Wetterskip Fryslân. (2023). *Fryslân Klimaatbestendig 2050+*.
https://cuatro.sim-cdn.nl/fryslan/uploads/visie_fryslan_klimaatbestendig_2050_versie_20_juli_2023.pdf?cb=Qp1DbBhw.
- Runhaar, H., Wilk, B., Persson, Å., Uittenbroek, C., & Wamsler, C. (2018). *Mainstreaming climate adaptation: taking stock about “what works” from empirical research worldwide*. Regional Environmental Change. 18. 1-10. [10.1007/s10113-017-1259-5](https://doi.org/10.1007/s10113-017-1259-5).
- Saito-Jensen, M. (2015). Multilevel Governance Theory. In *Theories and Methods for the Study of Multilevel Environmental Governance* (pp. 2–6). Center for International Forestry Research. <http://www.jstor.org/stable/resrep02152.5>.
- Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology*, 10, 221–279. [https://doi.org/10.1016/S0065-2601\(08\)60358-5](https://doi.org/10.1016/S0065-2601(08)60358-5).
- Scott, D. (2021). *Sustainable Tourism and the Grand Challenge of Climate Change*. *Sustainability*, 13(4), 1966. <https://doi.org/10.3390/su13041966>.
- Scott D., Hall C. M., Gössling S. (2019). *Global tourism vulnerability to climate change*, *Annals of Tourism Research*, Volume 77, 49-61,
<https://doi.org/10.1016/j.annals.2019.05.007>.
- Setiawan, B., Afiff, A. Z., & Heruwasto, I. (2021) "PERSONAL NORM AND PRO-ENVIRONMENTAL CONSUMER BEHAVIOR: AN APPLICATION OF NORM ACTIVATION THEORY" *ASEAN Marketing Journal*: Vol. 13 : No. 1 , Article 3.
<https://scholarhub.ui.ac.id/amj/vol13/iss1/3>.

- Steg, L., & De Groot, J. (2010). *Environmental psychology: An introduction*. British Journal of Social Psychology, 49, 725-743. <https://www.rug.nl/staff/e.m.steg/stegdegroot.pdf>
- Trell, E. M., & van Geet, M. T. (2019). *The Governance of Local Urban Climate Adaptation: Towards Participation, Collaboration and Shared Responsibilities*. *Planning Theory & Practice*, 20(3), 376–394. <https://doi.org/10.1080/14649357.2019.1629573>.
- Ten Brinke, N., Kruijf, J. V. de, Volker, L., & Prins, N. (2022). Mainstreaming climate adaptation into urban development projects in the Netherlands: private sector drivers and municipal policy instruments. *Climate Policy*, 22(9–10), 1155–1168. <https://doi.org/10.1080/14693062.2022.2111293>.
- Uittenbroek, C. J., Mees, H. L. P., Hegger, D. L. T., & Driessen, P. P. J. (2019). The design of public participation: who participates, when and how? Insights in climate adaptation planning from the Netherlands. *Journal of Environmental Planning and Management*, 62(14), 2529–2547. <https://doi.org/10.1080/09640568.2019.1569503>.
- UNESCO - Nederlandse Commissie. (n.d.). *Culture and heritage for climate adaptation, four examples from the Kingdom of the Netherlands*. https://www.unesco.nl/sites/default/files/inline-files/Best_practice_klimaatadaptatie_ENG.pdf.
- Van Alphen, J., Haasnoot, M., & Diermanse, F. (2022). *Uncertain Accelerated Sea-Level Rise, Potential Consequences, and Adaptive Strategies in The Netherlands*. *Water*, 14(10), 1527. <https://doi.org/10.3390/w14101527>.
- Van Doorn-Hoekveld W. J., Gilissen H. K., Groothuijse F. A. G., & Van Rijswijk H. F. M. W. (2022). 'Adaptation to Climate Change in Dutch Flood Risk Management: Innovative Approaches and Related Challenges' 18(2) *Utrecht Law Review* 51–69. <https://doi.org/10.36633/ulr.860>.
- Wilkins, E., de Urioste-Stone, S., Weiskittel, A., & Gabe, T. (2017). *Effects of Weather Conditions on Tourism Spending: Implications for Future Trends under Climate Change*. *Journal of Travel Research*, 57(8), 1042-1053. <https://doi.org/10.1177/0047287517728591>.