

From Plan to Reality(?): The Influence of Informal Soft Planning on Climate Adaptation

Learning lessons from past informal soft plans through plan-evaluation to enhance the relevancy of future plans



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Ruben Matthijs Laman, S2976897
dr. ir. J. Kempenaar
Faculty of Spatial Sciences

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Author: Ruben Matthijs Laman
S2976897
r.m.laman@student.rug.nl / rubenmatthijslaman@gmail.com

Study program: MSc Environmental and Infrastructure Planning
University of Groningen
Faculty of Spatial Sciences
Landleven 1
9747 AD Groningen

Thesis supervisor: dr. ir. J. Kempenaar

Second assessor: dr. ir. T. van Dijk

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Preface

Writing this last piece of text concludes the carrying out of my master thesis research and thereby an era. Over the past six years I studied many spatial planning subjects in various compositions, this one, however, was by far the most challenging. Despite this, the research also provided me with a kind of study-related pleasure that I had not experienced before. Every research has its ups and down and while this research had some, I am delighted with the final result. Moreover, being awarded the title 'Best Presentation' during the Graduate Research Day of January felt like a great appreciation for the effort that I have put into this study.

Of course, I could not have done all of this without some support. I would like to express my gratitude towards my supervisor, Annet Kempenaar. Although we were only able to meet in person one time about a year ago, her constructive feedback, suggestions and critical questions have been really helpful throughout this period. Additionally, I would like to thank Terry van Dijk for taking the time to fulfil the role of second assessor. I also feel a great deal of thankfulness towards the interviewees that took the time to talk about spatial plans with me during the lockdown of this winter. These conversations made the conducting of the study much more exciting and their insights have meant a great deal for the research findings.

Lastly, I would like to thank my family, girlfriend and friends for their encouragements and, at times, 'tough love'. The past year has shown how important these people are to me and I realize that without such amazing people to surround you with, the writing of a thesis is much tougher.

I look forward to bringing the knowledge that I have collected at the University of Groningen over the past years into practice. Conducting this research has revealed that I am fascinated by climate adaptation and sustainable development and I hope to find a challenging job in this field of work in the upcoming months.

For now, I would like to wish you as the reader of my work, an intriguing reading experience.

Sincerely,

Ruben Laman

Abstract

The climate crisis pressurizes Dutch living environments and livelihoods. Because climate mitigation approaches have proven insufficient and more severe climate change is imminent, more climate-adaptive measures and investments must be implemented. Spatial planning can play a critical role herein because of the strong spatial component of climate adaptation. Within the spatial planning spectrum, different approaches can be distinguished, in which informal soft planning and formal hard planning are opposites. Formal hard plans such as the Delta-programmes result in direct outcomes in the outside world and hereby contribute to climate adaptation. Informal soft plans on the other hand cannot do so and are dependant on their proposals being translated, transferred or implemented into formal hard plans. To achieve this, informal soft plans must be used and they, therefore, have to land in the policy- and decision-making discourse. In contributing to climate adaptation, informal soft plans thus attempt to influence formal hard plans. Through the evaluation of informal soft plans for the Northern Netherlands region, this research has determined the influence of past informal soft plans on climate adaptation. With the derived insights, the relevancy of future plans can be enhanced. Informal soft plans have been analysed and discussed in in-depth interviews with governmental policy- and decision-makers from the Northern Netherlands. The findings show that plans have been influential, but their relevancy can be enhanced by proposing concrete regional measures, involving authorities, aiming to be useful, making use of atelier sessions, and capitalizing on outspoken ambitions.

Keywords: climate adaptation, informal soft planning, strategic spatial planning, plan-evaluation, plan influence, the Northern Netherlands, policy-making, decision-making, plan-making.

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List of abbreviations

BOVI – Blauwe Omgevingsvisie (Blue Environmental Vision)

ESDP – European Spatial Development Perspective

GOVI – Gemeentelijke Omgevingsvisie (Municipal Environmental Vision)

ISSSP – Informal Strategic Spatial Soft Plan

POVI – Provinciale Omgevingsvisie (Provincial Environmental Vision)

NAP – Normaal Amsterdams Peil

SEA – Strategic Environmental Assessment

Chapter 1: Introduction of the subject under study

1.1. Background relevance

Climate change is the challenge of a lifetime for current and oncoming generations. The causes of climate change are clear and the scientific community has stressed the major consequences and risks that come with it. Moreover, the changes to the climate system are irreversible, meaning that once the damage is done, there is no way back (Davoudi et al., 2009; IPCC, 2014). National leaders and governments have pleaded to prevent further climate change from global warming by setting challenging reduction goals for the emission of greenhouse gasses. This approach of climate change mitigation aims to prevent further deterioration of the climate system. Despite these efforts, the emission of greenhouse gasses has increased by an average of 1,5% per year since 2010 (Olivier & Peters, 2020).

Climate change has a devastating influence on human and natural systems, and the predicted consequences of climate change are increasingly becoming noticeable (IPCC, 2019). For the Netherlands, major climate change induced consequences are sea-level rise (Hinkel et al., 2010; Van Koningsveld et al., 2008), periods of drought and rainfall (Kuiper et al., 2007; Ministerie van Infrastructuur en Milieu, 2015), and the occurrence of extreme weather events (Kuiper et al., 2007; Ministerie van Infrastructuur en Milieu, 2015; Van Koningsveld et al., 2008). The year 2020 has shown that the Netherlands is already undergoing the consequences of climate change with the occurrence of extreme weather events, a period of drought, and pluvial flooding (NOS, 2020a; NOS, 2020b; NOS, 2020c). All have resulted in material damages, and even the loss of life. The pressure of climate change on living environments is evident, making it an extremely relevant issue.

It remains uncertain whether climate mitigation measures will be sufficient enough to neutralize the changing process. Moreover, the severity of climate change consequences will become apparent over time due to the lock-in effect. This means that the world is currently undergoing the effects of greenhouse gas emissions from decades ago, while the effects from emissions of today will become apparent decades from now (Global Commission on Adaptation, 2019).

This has been the reason for the Global Commission on Adaptation, an international organization that aims to accelerate the adaptation to climate change, to publish the report 'Adapt Now' in which they state that more intensive climate adaptation action must be taken in the short term to prevent astronomical damages in the near-future (Global Commission on Adaptation, 2019). They state that climate change is imminent and the consequences and risks that come with it will become more severe over time. Since the change of climate cannot be reversed, the global population should accept this and prepare itself through adaptation. The scientific debate has stressed that adaptation is complementary to climate mitigation and that both must be pursued (Biesbroek et al., 2009; IPCC, 2014).

Increasing climate change-induced damages in the Netherlands, in addition to the call for more climate-adaptive measures and investments by the Global Commission on Adaptation, show a clear necessity for climate adaptation. There have been arguments that spatial planning can play a critical role in climate adaptation (Biesbroek et al., 2009; Hurlimann & March, 2012). Climate change adaptation has a strong spatial component because of its impact on living environments. Spatial planning is concerned with the policy- and decision-making for these environments and can therefore prepare these for climate change consequences by implementing projects, regulation and policies that contribute to climate adaptiveness.

1.2. The problem in question

The Dutch government has established Delta-programmes and -plans to contribute to climate resilience (Ligtvoet et al., 2015). These present strategies and ideas for adaptive measures, set regulations, enable the requesting of subsidies, and impose the making of climate plans by lower governments. This part of the spatial planning spectrum can be described as the formal hard side of planning, which has a clear and direct influence

on outcomes in the outside world (Faludi, 2010; Mastop & Faludi, 1997; Purkarthofer, 2016). On the opposite side of the spectrum is the informal soft side of planning. In contrast, this part cannot impose other actors to take measures, and it therefore generally does not focus on areas with hard boundaries, but rather on soft spaces like regions or territories (Purkarthofer, 2016, 2018).

A relationship has been identified between the different sides, in that hard- and soft planning, and formal- and informal planning, have a way of influencing each other (Mäntysalo et al., 2015; Mastop & Faludi, 1997; Purkarthofer, 2016). However, this has not received much research attention in academia. Several researchers call for further research on how these hard- and soft sides (Purkarthofer, 2016), and formal- and informal sides (Mäntysalo et al., 2015) of spatial planning interact. This research should result in a clearer understanding of the functioning, and legitimacy of these planning approaches. When this functioning is understood better, the spatial plan-making profession can be improved.

Thus, an urgent need for climate adaptive measures and investments exist (Global Commission on Adaptation, 2019), in which spatial planning can fulfil a critical role (Biesbroek et al., 2009; Hurlimann & March, 2012), but uncertainties exist concerning the functioning of the various spatial planning approaches. When the functioning, i.e. the interaction that formal hard planning and informal soft planning have, is understood better, the influence they have on the climate adaptation of living environments can potentially be improved. Because the influence of formal hard plans herein is known, the influence of informal soft plans is of interest.

Formal hard plans concerning climate adaptation have been established with the Delta-programmes and -plans. Also on the provincial and municipal level have climate adaptation addressing plans been established. These can be expected to directly result in outcomes in the outside world. Informal soft plans, on the other hand, have no legal basis and their proposals must find their way into formal hard planning. This can be described as the 'landing' of these plans in the policy- and decision-making discourse concerning climate adaptation. By improving the understanding of this landing-process can future informal soft plans be made more relevant, thereby potentially contributing to their influence which should ultimately result in more climate adaptive measures and investments.

1.3. Research objective and -questions

This research studies informal soft plans concerning climate adaptation to gain insight into their functioning. These insights can potentially be derived through the analysis and evaluation of such plans. The study hereby builds on and contributes to plan-evaluation theory. Gathered insights are useful to improve the relevance of future informal soft plans, which makes them better able to influence formal hard planning. To do so, the research seeks to answer the following question:

'What lessons can be learned from past informal soft plans concerning climate adaptation and their influence, to improve the relevance of future informal soft plans for climate change adaptation?'

Conducting such a study for the entire Netherlands is unfeasible within the temporal constraints of this research. Moreover, informal soft plans generally focus on regions and a regional focus is, therefore, more suitable. The Northern Netherlands is a region that is faced with various climate change-induced risks. It is susceptible to sea-level rise, its agricultural sector can be harmed by drought and salination, and extreme weather events endanger its society with the risks of fluvial and pluvial flooding. To have a well-defined scope for this research, it is focussed on the Northern Netherlands region.

The following sub-questions must be answered to substantiate a conclusive answer to the central research question:

1. *What is climate adaptation and what does it entail in the Northern Netherlands?*
2. *How can the influence of informal soft plans be determined?*
3. *How do informal strategic spatial soft plans influence policy- and decision-making, and thereby formal hard planning?*
4. *What has been the influence of informal soft plans concerning climate adaptation in the Northern Netherlands?*

1.4. Scientific and societal relevance

The scientific relevance of this research lies in its contribution to the scientific debate by further exploring the functioning of informal soft planning. The research makes use of plan-evaluation theory which has been argued to be useful in improving the overall spatial planning profession, enabling the learning of lessons about spatial planning efforts, and justifying the usefulness and effectiveness of spatial planning approaches (Guyadeen & Seasons, 2016). Moreover, by applying established plan-evaluation concepts and approaches to an unexamined approach in planning (informal soft planning for climate adaptation), a sophisticated plan-evaluation framework has been developed. The research hereby contributes to the available plan-evaluation methodology.

Additionally, the study contributes to climate adaptation plan-evaluation literature. The majority of such studies have focused on the formal hard side of spatial planning (Araos et al., 2016; Baker et al., 2012; Preston et al., 2011). Although soft plans and -planning have been studied by Haughton & Allmendinger (2007), Purkarthofer (2016, 2018), Purkarthofer & Granqvist (2021), Stead (2011) and Walsh et al. (2012) and informal planning has been studied by Bäcklund et al. (2018) and Mäntysalo et al. (2015), the combination of these concepts applied to climate adaptation has remained unexamined.

The study also benefits society. The urgency of the climate crisis is clear, counteractive measures are well-known, and it is widely acknowledged that action must be taken. Despite this unanimity practice lags behind (Global Commission on Adaptation, 2019). Plan-, policy- and decision-makers benefit from the study because plans can be made more efficient. With the derived insights can the efficiency of informal soft plans be enhanced which should contribute to its influence on climate adaptation in the outside world. The legitimacy of the plan-making profession is hereby justified. Society as whole benefits from their climate-adaptive living environments because these will ensure safety, limit economic damages and create employment opportunities.

1.5. Reading guide

This chapter has presented a general introduction to the research. Chapter 2 'Theoretical Framework' presents the theories and concepts that form the foundation of the study. The foundation and relevant concepts have been collected and presented to appropriately view, and study the subject under study. Building upon this, a research design and -approach were established, these are presented in chapter 3 'Methods'. The chapter gives an elaborate explanation and justification of the applied research methods. The results that were gathered with these methods are presented in chapter 4 'Results'. To understand the meaning of these results, these are interpreted in chapter 5 'Discussion'. This chapter moreover presents recommendations for further research inquires. With the interpreted findings have the four established research questions been answered in chapter 6 'Conclusion'. Together, these answers substantiate the formulated answer to the central research question. The overall study is additionally reflected upon which concludes the research. Appendixes that are referred to in-text can be found at the end of the document.

Chapter 2: Theoretical Framework

2.1. The climate change crisis

Over the past decades, the influence that humans have on the global climate systems has become evident. Anthropogenic alterations made to natural systems, as well as the emission of greenhouse gasses, have deteriorated the earth's ozone layer and resulted in the greenhouse effect, ultimately causing global warming. Recent emissions of greenhouse gasses have been the highest in history, making the anthropogenic influence evident (IPCC, 2019). These changes of increased temperatures (have) result(ed) in the disruption of climates, and thereby climate change. Continuing the emission of greenhouse gases will cause further global warming and changes to the climate system with severe and irreversible impacts on people and ecosystems (IPCC, 2014).

2.1.1. Consequences of climate change for the Northern Netherlands

Sea-level rise forms a great danger for a low-lying country like the Netherlands, especially in the long term (Hinkel et al., 2010; Van Koningsveld et al., 2008). With sea-level rise, the risk of flooding becomes greater (Global Commission on Adaptation, 2019). This can potentially lead to the permanent inundation of low-lying coastal areas (Hinkel et al., 2010) such as a large part of the Northern Netherlands. Currently, 27% of the total Dutch landmass lies below sea-level (Baart et al., 2019), and 60% of the country would be regularly flooded (including fluvial flooding) without defensive infrastructure (Ministerie van Infrastructuur en Milieu, 2015). Sea-level rise also creates difficulties for the discharging of fluvial water, which can result in fluvial flooding (Kuiper et al., 2007). Moreover, sea-level rise contributes to the salination of soils (Pauw et al., 2012).

Additionally, climate change results in Dutch summers that are drier because of higher temperatures and less precipitation, and winters that are wetter because of increased precipitation (Kuiper et al., 2007). During periods with high temperatures and reduced precipitation, droughts can occur. Periods of drought result in diminishing freshwater resources, salination, subsidence, and damage to ecosystems. Periods of increased, more intense rainfall can result in water-related risks like fluvial flooding (IPCC, 2019).

Furthermore, the changing of climates is related to the increased occurrence of extreme weather events (Global Commission on Adaptation, 2019; IPCC, 2019). Major dangers are heatwaves, intense rainfalls and storms. Heatwaves are characterized as periods with excessively high temperatures and are projected to increase in frequency, intensity and duration (IPCC, 2019). During intense rainfall, a downpour unleashes a large sum of water over a short period of time. Especially in an urban environment, this can result in water disturbance or pluvial flooding (Brockhoff et al., 2019). Storm (surges) are expected to become more intense and occur more frequently, endangering coastal environments (Global Commission on Adaptation, 2019).

2.1.2. Approaches towards climate change

Mitigation and adaptation are complementary strategies for reducing and managing climate change consequences and risks (Biesbroek et al., 2009; IPCC, 2014). There has been a strong focus on mitigative measures, while adaptive investments are postponed until climate change impacts become more apparent. Addressing the cause of climate change can be accomplished by a substantial reduction in the emission of greenhouse gasses, this is climate mitigation (IPCC, 2014, 2019). Limiting the impact of the consequences and risks that climate change induces requires climate adaptation (IPCC, 2014, 2019). The catalyst of this approach is the argument that mitigative action is slow and climate change is inevitable, and thus investments should be made that adapt living environments to expected conditions (Global Commission on Adaptation, 2019).

2.1.3. The critical role for spatial planning in climate adaptation

Various authors have acknowledged that spatial planning can play a critical role in the mitigation of, and adaptation to, climate change (see Biesbroek et al., 2009; Davoudi et al., 2009; Greiving & Fleischhauer, 2012; Hurlimann & March, 2012; Roggema et al., 2012; Wilson, 2006).

Both mitigation and adaptation have a strong spatial dimension, its actual role in the climate change debate however remained limited (Biesbroek et al., 2009). A paradigm shift in thinking amongst spatial planners, and the understanding of the link between climate change and sustainable development, resulted in a more transdisciplinary and sustainable development perspective for both mitigation and adaptation. This meant that spatial planners gained a more prominent role in implementing mitigation and adaptation strategies at local and regional scales. While mitigation and adaptation are complementary this research is focused on adaptation.

Hurlimann & March (2012) argue that spatial planning can play an essential role in climate adaptation and identify six capacities that make it suitable to do so. These are summarized as follows: spatial planning can “act on matters of collective concern; manage competing interests; cut across scales; reduce and act on uncertainty; act as a knowledge repository; and be oriented to the future while integrating a range of diverse systems” (Hurlimann & March, 2012, p. 477).

2.2. Spatial planning and -plans

Spatial planning is carried out by institutional entities such as government authorities, which vary per nation or jurisdiction, and are dependant on the spatial planning system in place (Hurlimann & March, 2012). In the Netherlands, spatial planning is embedded in national and local practices and institutions, while also being influenced by European policies (Evers & Tennekes, 2016). For spatial planning to have an impact, it is dependant on the ability to make plans and implement these (Hurlimann & March, 2012). To accomplish this, it generally has to rely on a form of statutory power.

Especially spatial planning actions of local governments have been argued to influence climate adaptation (Adger et al., 2005; Greiving & Fleischhauer, 2012; Storbjork, 2007; Urwin & Jordan, 2008). According to Evers and Tennekes (2016), most spatial planning in the Netherlands takes place at the local level, while at the national level it is ensured that the overall planning system functions.

2.2.1. Planning types and their interaction

Faludi and Mastop (1997) distinguish two types of planning, project- and strategic planning. They elaborate on the distinguishment between project plans and strategic plans made by Faludi and Van der Valk (1994). The type of planning that is encountered is dependant on the subject of matter, the status of the situation, the set time horizon, and the comprehensiveness of the issue (Mastop & Faludi, 1997). Despite this, do all plans have the same purpose, they aim to provide guidance for future decisions and measures, and thus guide action (Faludi, 1989; Mastop & Faludi, 1997). Mastop and Faludi (1997, p. 819) describe both:

Project planning “provide(s) blueprints of the intended end-state of the physical environment, including the measures necessary to achieve that state. The only important social interaction is when the plan is being adopted. Thereafter the plan forms an unambiguous guide to action precisely because the measures to be taken are routine so that we 'know' the outcomes. Adopting the plan thus implies closure of the image of the future. ... A project plan is expected to have a determinate effect.”

Strategic planning “deals with the coordination of a multitude of actors. Such coordinating is a continuous concern. As all actors want to keep their options open, timing is of central importance. Rather than a finished product, a strategic plan is a fleeting record of agreements reached. It forms a frame of reference for negotiations and is indicative. The future remains open. For a strategic plan, subsequent action does not follow automatically. Each decision needs to be justified separately.”

The focus of project plans on the intended end-state that must be achieved with the presented blueprint and necessary measures can be described as the material object (Faludi, 2000). Strategic plans, on the other hand, have their focus on the coordinating of decisions and actions, through the plan itself, this is the planning object (Faludi, 2000). Mastop and Faludi (1997) present flow charts to clarify how the two planning types influence outcomes. To understand the interaction between project- and strategic planning these flow charts have been altered and combined in Figure 1.

Project plans aim to directly result in outcomes through their material object. Strategic plans aim to influence the material object indirectly through the planning object, and thereby ultimately result in outcomes in the outside world (Mastop & Faludi, 1997). The material object is subject to external influences, and as it results in outcomes, it also creates new external influences. It can be expected that the realized outcomes, as well as the newly induced external influences, eventually result in the drawing up of new project- and strategic plans.

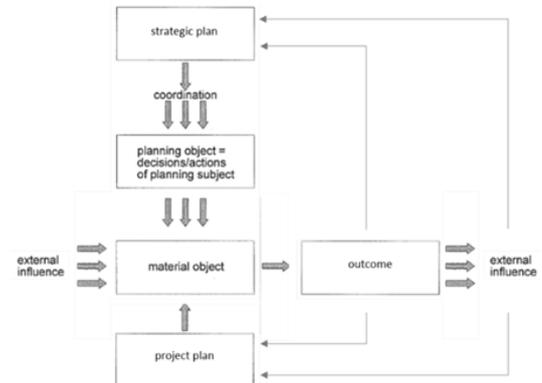


Figure 1: Schematic display of project- and strategic plans and their interaction (Adapted from Mastop & Faludi, 1997).

2.2.2. Available spatial planning tools

Building upon the work of Forester (1999), Hurlimann and March (2012) identify five planning tools that can address climate adaptation. These tools correspond with the modes in which plans can work according to Hopkins (2001). Their works have been combined in Table 1, showing how each can be used to address climate adaptation.

Faludi (2000) and Mastop and Faludi (1997) refrain from referring to any spatial planning tools in their distinction between project- and strategic planning. The identified tools can however be applied in both, because one or more tools can be applied in all plans (Hopkins, 2001; Hurlimann & March, 2012). They are although more logically connected to one or the other. Taking into consideration the information presented in Figure 1 and Table 1, it is more logical for a project plan with a material object to present a design or policy, that aims to result in the desired outcome. On the other hand, a strategic plan with a planning object is more likely to present a strategy or vision that aims to influence decisions and actions regarding the desired outcome.

2.2.3. Evolution of planning: hard- and soft planning

Over time spatial planning challenges have evolved to become more complex, resulting in new planning approaches, as well as the attribution of new terminology and concepts. In their study of planning processes in the Thames Gateway regional development project, Houghton & Allmendinger (2007) use the term soft spaces to describe the “highly complex setting of actors and institutions” which led to “the emergence of entirely new planning scales, taking the form of soft spaces with fuzzy boundaries” (Purkarthofer, 2016, p. 6). Walsh et al. (2012, p. 2) claim that soft spaces refer to “the emergence of ‘alternative administrative geographies’ in the context of new governance arrangements for spatial planning and regional development in the UK”. These soft spaces have been introduced to stimulate cross-sectoral and multi-level governance approaches of strategic spatial planning, by breaking away from the traditional hierarchy of the planning system (Walsh et al. 2012).

PLANNING TOOL TYPES (HURLIMANN & MARCH, 2012, P. 482)	DESCRIPTION (HOPKINS, 2001, P. 36-37)	WORKS BY (HOPKINS, 2001, P. 36-37)	BENEFITS FOR CLIMATE ADAPTATION (HURLIMANN & MARCH, 2012, P. 482)
VISION/MISSION STATEMENT	Image of what could be, an outcome	Motivating people to take actions they believe will give the imagined result	+ Useful as a starting point for stating intent, organizing and finding common ground between large sets of differing views or stakeholders
STRATEGY PLANNING	Contingent actions (path in decisions tree)	Determining which actions to take when and where depending on situation when actions are taken	+ Provides the ability to change the direction of decision-making to new and more sustainable paths + Allows for understandings to be developed, and gathering and analysis of evidence at wider scales, appreciating the role of many inter-dependent 'systems' + Provides a base for decisions that may be unpopular for some, but are justified collectively or in the long term
AGENDA/PROJECT BASED	List of things to do; actions, not outcomes	Reminding; if publicly shared, then commitment to act	+ Provides ability for direct and decisive action
POLICY/REGULATION/CODE	If-then rules for actions	Automating repeat decisions to save time; taking same action in same circumstances to be fair	+ Can ensure relative consistency and fairness over an entire system, particularly when 'hard' rules provide clear tests of achievement + Can provide means of coordinating many individual incremental changes over long time periods toward goals
DESIGN	Targets, describes fully worked out outcome	Showing fully worked out results of interdependent actions	+ Locally tailored and specific solutions can deliver high quality and situation-specific outcomes + Ability to draw on a range of professionals and range of other expertise

Table 1: Spatial planning tools for climate adaptation (Adapted from Hurlimann and March, 2012; Hopkins, 2001).

According to Purkarthofer (2016), soft spaces can be explained institutionally and geographically. Institutionally, soft spaces are not limited by administrative boundaries, they are rather functional units that have a geographical relation and are faced common challenges. This is argued to be valuable in dealing with place-specific challenges. Geographically, soft spaces are different from traditional administrative boundaries, they can overlap, change over time and be fuzzy in their demarcation. They can therefore better reflect the actual geography of certain, traditional boundary-crossing issues (Walsh et al. 2012).

In contrast, hard spaces are claimed to be clearly defined spatially, legally and institutionally (Haughton & Allmendinger, 2007; Purkarthofer, 2016; Purkarthofer and Granqvist, 2021). They are "the formal, visible arenas and processes, often statutory and open to democratic processes and local political influence (Purkarthofer and Granqvist, 2021, p. 3). Institutionally, as well as geographically, they are represented by traditional authorities and boundaries. Faludi (2010) uses the metaphor of containers to describe them, referring to their clear boundaries and their ability to fit into one other, representing the hierarchical structure of governments in general.

The increased attention to the concepts found its way into planning theory and practice, resulting in the introduction of 'soft planning' (Purkarthofer, 2016). Faludi (2010) argues that soft spaces need soft planning, which relies on the joint formulation of a strategy, while making use of its dissemination, and therefore flexible power to take action. The opposite is hard planning which invokes statutory powers, making it unsuitable for the addressing of soft macro-regions. He explains that contemporary spatial planning problems are not 'hard', and that therefore the containers that spatial planners were given, no longer fit. Similarly, Stead (2011) claimed that planning has a hard, and a soft side, implying the existence of hard- and soft planning.

Purkarthofer (2016) stated that soft planning is usually adopted to describe processes that contribute to the development of an area while functioning outside of the statutory planning system. Soft planning is often associated with less state involvement, but public administrations and actors are not necessarily excluded. These soft planning processes take forms of cooperation, coordination, negotiation and learning between different actors and stakeholders. Soft planning is herein complementary to hard planning, which Purkarthofer

(2016) describes as the traditional approach to planning, consisting of statutory planning laws, instruments and institutions. Hard planning generally happens in hierarchical, top-down systems that are set in legislation and through a legally established framework makes decisions regarding spatial planning.



Figure 2: Hard- and soft plan continuum (Author, 2021).

To have a clear demarcation of what informal soft plans entail it is valuable to differentiate between hard- and soft plans. By placing these concepts on an axis, the degree of hardness or softness of a plan can be shown (Figure 2). This differentiation is similar to that of Mastop and Faludi (1997) as it allows to differentiate between plans depending on their characteristics.

2.2.4. Evolution of planning: formal- and informal plans

Additionally, a distinction between formal- and informal plans is crucial. The terms formal and informal have been used by various authors to explain the concepts of hard- and soft planning. To further define soft spaces, Allmendinger and Haughton (2010) refer to informal and soft interchangeably to indicate that a soft space is not a formal entity. Purkarthofer (2016, p. 2) claims that the European Union practices “soft, informal planning” and imposes “hard, formal regulations”. Later, Purkarthofer (2018) refers to informal approaches as opposed to statutory planning, which is thus formal. Kaczmarek (2018) refers to soft planning as informal planning, in the sense that it is non-statutory.

The use of the terms formal and informal concerning hard- and soft planning is not wrongful. However, the concepts have more meaning in describing the characteristics of a plan. The distinguishment is thus applied to the planning instrument, the plan itself.

Regarding soft planning by the European Union, Purkarthofer (2016, p. 3) claims that the EU makes use of three policy instruments: “strategic policy papers, regulations and directives, and funds and subsidies”. As an example of strategy policy papers, she refers to the European Spatial Development Perspective as an influential document. This document is not legally binding for member states, meaning that it can be considered informal. According to Purkarthofer (2016, p. 4), “countries can choose to pick up the ideas offered in these documents, give them a meaning in their national contexts and decide upon the way of their implementation”. Regulations and directives on the other hand are imposed and legally binding, and must therefore be complied with. Natura2000 is an example of such and can therefore be considered formal. In being influential, informal plans are thus dependant on being picked up and translated or implemented into formal plans. Mäntysalo et al. (2015) studied the appearance of informal strategic spatial planning outside of the statutory land-use planning system. These new informal strategic instruments include “ad-hoc think tanks, living labs and networks of key public and private actors working on development schemes, the hiring of planning consultancy firms to coordinate strategy work, the use of ideas competitions producing an array of visionary plans and the use of new ways and techniques of conceptualizing and visualizing urban structures and dynamics” (Mäntysalo et al., 2015, p. 350). To have legally binding momentum, the content of an informal strategic document must be transferred into the statutory planning system. Walsh et al. (2012) claim that soft planning can be done through the use of formal, and informal strategic planning instruments.

Thus, similar to the distinction between the hardness or softness of a plan, a differentiation can be made in the formalness or informalness of a plan. A plan can be placed on the continuum based on its characteristics, so i.e. the goal, the applied planning tools and methods, and involved actors (Figure 3). A strategic plan like the ESDP from the European Union (Purkarthofer, 2016, 2018; Purkarthofer & Granqvist, 2021) is informal and can be placed accordingly to the right. Strategic plans such as the Urbanisation Report (Mastop & Faludi, 1997) and the Fifth National Policy Documents on Spatial Planning (Healey, 2004) are formal and can be placed accordingly to the left.



Figure 3: Formal- and informal plan continuum (Author, 2021).

2.2.5. The Informal Strategic Spatial Soft Plan (ISSSP)

The above paragraphs have demarcated the concept of informal soft plans. This demarcation is essential in understanding how these plans contribute to climate adaptation. By combining the presented differentiation schemes, an overall plan-differentiation scheme is formed that allows indicating the hardness or softness, and formalness or informality of a plan (Figure 4). Informal soft plans are placed below-right of the scheme, opposite of formal hard plans.

Informal soft plans are strategic plans with a planning object, thereby aiming to influence decisions concerning the material object (2.2.1.). These plans can make use of various planning tools, but strategies and visions are most suitable (2.2.2.). By making use of their flexibility, and presenting a jointly formulated strategy these plans aim to address challenges that are not limited to traditional boundaries. They moreover aim to contribute to cooperation, coordination, negotiation and learning (2.2.3.). Due to their informality, these plans have no legal basis and to be influential they are therefore dependant on the translation, transferring or implementation of their ideas into formal plans (2.2.4.). Informal soft plans must land in the policy- and decision-making discourse.

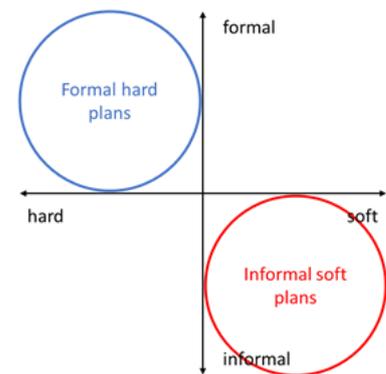


Figure 4: Plan differentiation-scheme (Author, 2021).

2.3. The application of plan-evaluation

Through plan-evaluation can the influence of a spatial plan be determined. The previous sub-chapter has shown that various types of plans exist. Not every plan should therefore be evaluated in the same manner. Here, an overview of plan-evaluation theory is given which provides the foundation for the ISSSP influence evaluation framework.

2.3.1. The goal of plan-evaluation

Evaluation is conducted for various reasons, concerning different subjects. Intending to evaluate spatial plans, the focus lies on plan-evaluation. Programme-, and policy-evaluation contain similar ideas and approaches (Laurian et al., 2010). Laurian et al. (2010, p. 741) describe plan-evaluation as the “systematic assessment of plans, planning processes, and outcomes compared with explicit standards or indicators”. With the evaluation of plans, lessons can be identified that can guide current and future planning (Faludi, 2000; Guyadeen & Seasons, 2016) which contributes to continuous learning and thereby ultimately improves the planning profession (Oliveira & Pinho, 2011). When this is achieved can planning processes, the implementation of plans, and the achievements of plans be improved (Guyadeen & Seasons, 2016).

2.3.2. Reasons for evaluating plans

By citing Alexander and Faludi (1989), does Baer (1997) argue that evaluation must enable planners to distinguish good planning from bad planning in terms of effectiveness. Similarly, other authors argue that evaluation can be a tool for determining whether a plan was a success or a failure (Alexander, 2009, 2011; Alexander & Faludi, 1989; Laurian et al., 2004;). Contributing such binary values is unsuitable for learning lessons about informal soft plans and aiming to determine plan influence, portraying a plan as bad, or successful is inappropriate. Moreover, Mastop and Faludi (1997) claim that from plans that have ‘failed’, lessons can still be learned about how planners can or cannot influence outcomes. In this same light but less binary, Berke et al. (2012) applied plan-evaluation to determine plan quality by identifying strengths and weaknesses.

Related to this, the implementation gap is put forward which Mastop (1997, p. 809) describe as the existence of “mismatches between plans and policy activities, and between the intentions of a plan and interventions in the real world”. In a plan-evaluation study into the quality of plans, Stevens (2013) concluded that plans are well able to lay out a vision for the future and policies to achieve this, but they are rather weak in terms of

implementation. Guyadeen and Seasons (2016) therefore argue that doubts can arise about the extent to which a plan's vision and objectives will be realized.

This relates to plan-evaluation for the justification of planning. Laurian et al. (2010) state that planning is often argued to be costly, highly regulatory and unable to make a considerable difference. Plan-evaluation can however be used as a tool to prove the legitimacy of planning (Guyadeen & Seasons, 2016; Oliveira and Pinho, 2010a). Moreover, the information that is produced by evaluation can be used to improve the understanding of a plan's impact (Guyadeen & Seasons, 2016).

Considering the various arguments for plan-evaluation, the keyword that summarizes their gist is effectiveness. However, effectiveness is also a specific reason for plan-evaluation, either in terms of making planners aware of the effectiveness of plans (Faludi, 2000; Laurian et al., 2004), in teaching planners how to make more efficient plans (Faludi, 1989; Needham et al., 1997), in justifying the effectiveness of the plan-making profession (Alexander & Faludi, 1989), and in improving the efficiency of plans with a strategic nature (Faludi, 2000; Van Doren et al., 2013).

In conclusion, planning theory conveys the impression that through plan-evaluation the effectiveness of a plan should be assessed. However, effectiveness might not be the right term for the evaluation of informal soft plans. Effectiveness is the degree to which something is effective (Cambridge dictionary, 2021). It can be argued that the object of informal soft plans is not to be effective, but rather to be influential in decision-making processes. Being influential means having a lot of influence on someone or something (Cambridge dictionary, 2021). What an informal soft plan achieves should therefore be explained in terms of influence.

2.3.3. Plan-evaluation strategy

The material object versus the planning object

The description of project- and strategic plans has made it clear these plans are made with different objectives (2.2.1). Mastop and Faludi (1997) state that it is important for plan-evaluation to clarify the object of a plan because this has implications for what evaluation must focus on, it is crucial for determining a suitable evaluation approach (Faludi, 1989).

A distinction can be made between a focus on the material- and planning object (Mastop & Faludi, 1997). The material object is the outside world that planners seek to change with their plans. Building upon 2.2.3 and 2.2.4, plans with a material object are generally formal hard plans, that aim for implementation. The object of strategic spatial planning is operational decisions. A strategic plan addresses actors with the power to intervene in society, physical development or social issues, and by doing so it aims to influence these decisions. Building upon 2.2.3 and 2.2.4, informal soft plans are assumed to have a planning object.

The difference in objects is essential for the evaluation of a plan because it determines how the plan must be evaluated (Faludi, 2000). Faludi argues that where indicative planning is concerned, which applies to informal soft planning, more subtle evaluation is needed. Strategic spatial plans should therefore not be evaluated primarily on their material outcomes but for how they have helped decision-makers understand future problems they might face.

Approaches to plan evaluation

Once the object of a plan is clear there are three available plan-evaluation approaches; the rational, the communicative and the integrative approach (Guyadeen & Seasons, 2016). The rational approach seeks to evaluate a plan in terms of its outcomes, it investigates to what extent linkages can be found between the plan and actual development (Laurian et al., 2004). It herein builds upon the idea that there are directly observable causal linkages between the objectives of a plan, activities and outcomes (Laurian et al., 2010). This rational approach to evaluation is based on conformance and determines to what extent actual outcomes conform to intended outcomes.

In contrast, the communicative approach focuses on the use of a plan in the planning- and decision-making process (Laurian et al., 2004, 2010). Whether the outcomes of the plan conform to its objectives is irrelevant in this view (Alexander, 2000; Laurian et al., 2004). This builds upon the assumption that plans are meant to function as a framework for decision-making and consensus-building (Alexander, 2009; Faludi, 2000), which is in line with the idea of the planning object. Faludi (2000) argues that plans fulfil their purpose when they help decision-makers understand the complex situations they operate in and that plans should therefore be evaluated in this regard. The communicative approach herein builds on the principle of performance, meaning that a plan performs when it is used by decision-makers. Determining performance requires “examining how a plan fares during negotiations, whether stakeholders use it, whether it helps clarify choices, and whether the plan forms part of the definition of subsequent decision situations (Guyadeen & Seasons, 2016, p. 219).

The integrative plan-evaluation approach combines the rational and communicative approaches and is therefore argued to be more pragmatic because it evaluates both conformance and performance (Guyadeen & Seasons, 2016). Given the complexity of contemporary planning problems, a single line of evaluation is unfeasible and the integrative approach is preferred (Guyadeen & Seasons, 2016; Oliveira & Pinho, 2010a).

2.3.4. Integrative plan-evaluation

Defining conformance

Conformance evaluation determines whether a plan's outcomes conform to its intentions (Faludi, 2000). Mastop and Faludi (1997) state that conformance is the extent to which the original plan and changes in the outside world match. In terms of influence, a plan has been influential when outcomes in the outside world conform to proposals made in a plan.

For the assessment of conformance, straightforward questions must be asked. Mastop and Faludi (1997, p. 825) present three questions, differentiating between three types of conformance:

“(1) Do the declared intentions of the recipients of a policy statement conform to that statement (formal conformance)? (2) Do the recipients behave in accordance with their declared intentions (behavioural conformance)? (3) Do the outcomes of the measures taken by recipients conform to the initial intentions of the plan-maker (final conformance)?”

Van Doren et al. (2013) have applied these in an integrative evaluation of strategic environmental assessment (SEA) effectiveness.

Levels of conformance

Van Doren et al. (2013) state that the three types of conformance together constitute a step-wise-scale, meaning that formal conformance is the lowest, and final conformance is the highest attainable level of conformance. They are defined as follows:

Formal conformance “occurs when policy statements are directly and literally adopted by (lower) governmental levels in their policies, plans, or projects” (2013, p. 3). Applied to SEA effectiveness this means that because of the SEA, a plan is changed to be more environmentally friendly by preventing, minimizing or offsetting environmentally harmful effects.

Behavioural conformance “occurs when “the recipients behave in accordance with their declared intentions” (Mastop & Faludi, 1997: 825) and thus implies that the decision is implemented as intended” (Mastop & Faludi, 1997, p. 825; in Van Doren et al., 2013, p.3). Applied to SEA effectiveness this means that because of the SEA, “environmentally friendlier policy measures that avoid, minimize, or offset adverse environmental effects described in the plan are implemented as decided” (Van Doren et al., 2013, p.4).

Final conformance occurs when a plan has reached its objectives, which can then be looked for in the material reality (Van Doren et al., 2013). Applied to SEA effectiveness this means that because of the SEA, a plan is

implemented that realized environmental protection by avoiding, minimizing or offsetting environmentally harmful effects.

Defining performance

Performance evaluation determines whether a plan has been used or consulted in decision-making processes (Laurian et al., 2004). How a plan is used is central to performance evaluation (Faludi, 2000) and gaining an understanding of how, and if, the plan was used is needed to determine its usefulness (Oliveira & Pinho, 2009). In terms of influence, a plan has been influential when it was used or consulted in a decision-making process.

The prime concern for questions about the performance of a plan is not whether the plan is followed, but whether it is used. According to Mastop and Faludi (1997, p. 820), critical questions are: (1) “Is it being used in the decision situations to which it relates?” and (2) “Does the plan shed light on those situations, that is, does it help in solving them?”. Faludi (1989, p. 140) identifies two conditions for a plan to perform. The necessary condition is that “the operational decisionmaker must know the plan” and the sufficient condition is that “he or she must accept it as part of the definition of operational decision situations”.

Levels of performance

Similar to the different levels of conformance, Herweijer et al. (1990) have identified different types of performance. They distinguish between acquaintance, consideration, and consent. Again, these have been applied by Van Doren et al. (2013).

Acquaintance is applicable when “the decision-makers become acquainted with the content of the plan. Detailed knowledge regarding the content and background of the plan is not required, but the respective actors must understand the content and visions of the plan” (Van Doren et al., 2013, p.3). Applied to SEA effectiveness this means that decision-makers that work on the plan that the SEA applies to have become familiar with the content of the SEA either by reading or consulting it.

Consideration is applicable when information that is presented in a plan functions as a frame of reference for decision-making actors, which can occur when the plan is referred to in subsequent decision-making processes (Van Doren et al., 2013). Applied to SEA effectiveness this means “that information provided by the SEA is used to develop, review and/or discuss the plan or plan alternatives during the decision-making process or subsequent decision-making processes” (Van Doren et al., 2013, p.4).

Consent is applicable when relevant actors acknowledge the content of a plan and more importantly allow themselves to be influenced by it (Van Doren et al., 2013). This can be achieved when decision-makers “use a problem definition, vision, or solution in line with the information provided by the plan” (Van Doren et al., 2013, p.3). Applied to SEA effectiveness this means that the SEA has; (1) enabled actors to learn about the environmental implications of the plan, and/or (2) changed their perceptions and visions regarding the plan in question.

An important notion is made by Faludi (2000) who states that there are two possibilities when decision-makers acknowledge a plan: they can decide to adhere to it, resulting in a form of conformance, or not to adhere to the plan, resulting in non-conformance. According to Van Doren et al. (2013), the different levels of conformance and performance together form a step-wise scale, which has been applied by Aardema (2002) (Figure 5). Building upon this theoretical framework, a deviation from this assumption is made in the ISSSP influence evaluation framework (see 2.5.).

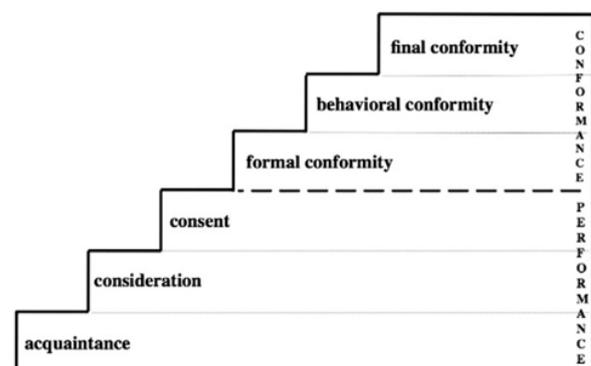


Figure 5: Step-wise-scale of conformance and performance (Aardema, 2002; Van Doren et al., 2013).

2.4. Conceptual model

Figure 6 presents a schematic overview of the theories and concepts that have been elaborated in this theoretical framework. The conceptual model shows how the world under study is perceived. It is assumed that because of climate change, informal soft plans are drafted that aim to contribute to climate adaptation. To achieve this, these plans must influence. They are herein dependant on formal hard plans, and must therefore land in these plans to ultimately result in the realisation of climate adaptative measures and investments. Through plan-evaluation can the influence of plans be assessed. It is argued that strategic plans with a planning object must be evaluated in terms of performance. However, to gain a comprehensive understanding of past informal soft plan influence, an integrative evaluation approach can result in the learning of more valuable lessons.

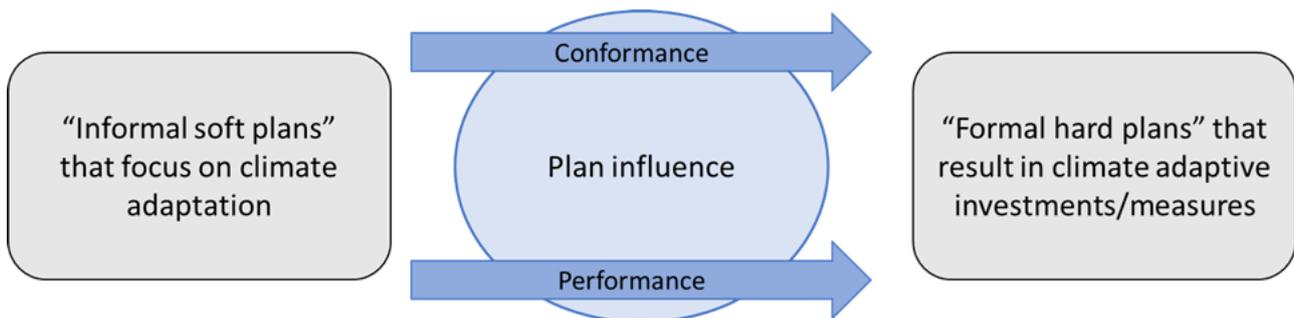


Figure 6: Schematic overview that summarizes the world view of the research (Author, 2021).

2.5. ISSSP influence evaluation framework

Deviating from established approaches

From the literature study and establishment of the theoretical framework, it became apparent that previous attempts to evaluate informal soft plans are absent. A ready-to-use plan-evaluation framework was therefore unavailable. To determine the influence of informal soft plans the 'ISSSP influence evaluation framework' has been constructed. With this evaluation framework, a birds-eye view of informal soft plan influence can be gained.

The evaluation framework used by Van Doren et al. (2013) had for both conformance and performance, three attributable levels. This built upon the works of Mastop and Faludi (1997) and Herweijer et al. (1990). Building upon the works of Faludi (2000) and Aardema (2002), Van Doren et al. (2013) claimed that together, the levels constitute a step-wise scale, which resembles the degree of influence.

In the ISSSP evaluation framework, this assumption is deviated from because this is necessary for the proper evaluation of informal soft plans. The reason for this is that conformance can be applicable, even if performance is absent. If elements presented in an informal soft plan have been realized (indicating a form of conformance), while the plan has not contributed to this realization (indicating the absence of performance), this does not mean that reality does not conform to the plan. This could indicate that the realized elements have been influenced by another plan, or that other external influences have led to the realization of the proposed elements (see Figure 2). Thus, in this framework conformance and performance are viewed independently of each other. By themselves, the different levels still represent a gradual shift in influence, wherein the first levels indicate limited, and the fifth levels really strong influence.

Categories for sophisticated evaluation

Additions and alterations to the attributable levels of conformance and performance have been made. With these added levels, more sophisticated evaluation can be conducted. Van Doren et al. (2013) made use of six levels, the ISSSP influence evaluation framework has a total of ten levels. Table 2 presents a side-by-side comparison of both.

Conformance			Performance		
Level	van Doren et al. 2013	ISSSP framework	Level	van Doren et al. 2013	ISSSP framework
1	N.A.	Non-conformity	1	N.A.	Unknown
2	N.A.	Unrelated conformity	2	N.A.	Recognized
3	Formal conformity	Formal conformity	3	Acquaintance	Acquainted
4	Behavioural conformity	Behavioural conformity	4	Consideration	Used
5	Final conformity	Final conformity	5	Consent	Consideration & Consent

Table 2: Comparison between plan-evaluation frameworks (Author, 2021).

For conformance, two levels have been added: *Non-conformity* and *Unrelated conformity*. The framework by Van Doren et al. (2013) just has categories that indicate a presence of conformity. Faludi (2000) however explains that in situations where actors decide not to adhere to a plan, this indicates non-conformance. In providing an overall assessment of the influence of a plan ‘Non-conformity’ is attributed to indicate that a plan, in terms of conformance, has had limited to no influence. The second category, ‘Unrelated conformity’, refers to the explanation above that a form of conformance is possible, even if a direct relationship between the plan under evaluation and reality is absent.

For performance, three levels have been added: *Unknown*, *Recognized* and *Used*. Furthermore, the levels ‘Consideration’ and ‘Consent’ have been combined into ‘*Consideration & Consent*’. The framework by Van Doren et al. (2013) just has categories that indicate the presence of performance. It is however possible that policy- and decision-makers are unfamiliar with a plan, and performance remains absent. In providing a sophisticated assessment of plan influence, ‘Unknown’ is attributed to indicate that a plan, in terms of performance, has had limited to no influence. The framework by Van Doren et al. (2013) begins with the category ‘Acquaintance’. Regarding the performance of an informal soft plan, there should however be a category that captures what is in between ‘Unknown’ and ‘Acquainted (with)’. This is captured in the category ‘Recognized’. The last addition is the category ‘Used’. The framework by Van Doren et al. (2013) refers to consideration which indicates that a plan is used as a framework for decision-making. Informal soft plans might however be used for other purposes than decision-making. If a plan is used for other purposes than decision-making, it is used differently from what ‘Consideration’ describes. This other form of using a plan is captured in the category ‘Used’, which is located between ‘Acquainted’ and ‘Consideration’. Finally, the categories ‘Consideration’ and ‘Consent’ have been combined into ‘Consideration & Consent’. In the framework by Van Doren et al. (2013), these categories indicate a medium and high degree of performance. Based on the information discussed in 2.2., these levels of performance are difficult to be achieved by an informal soft plan. If either of them is applicable, this indicates that the plan has had a really strong influence in terms of performance. Appendix A presents descriptions of the various conformance and performance levels. In the results, evaluation scores are presented as wheels (see Figure 7 and 8).

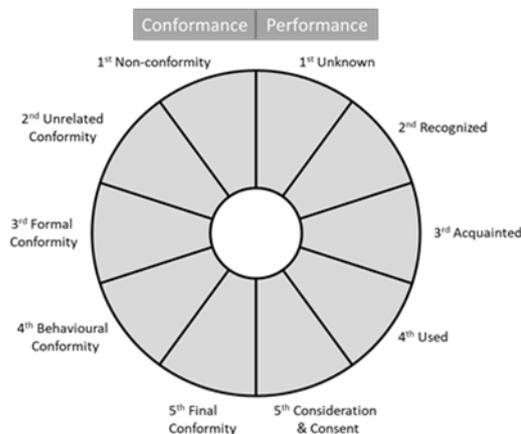


Figure 7: ISSSP influence evaluation wheel in its basic form (Author, 2021).

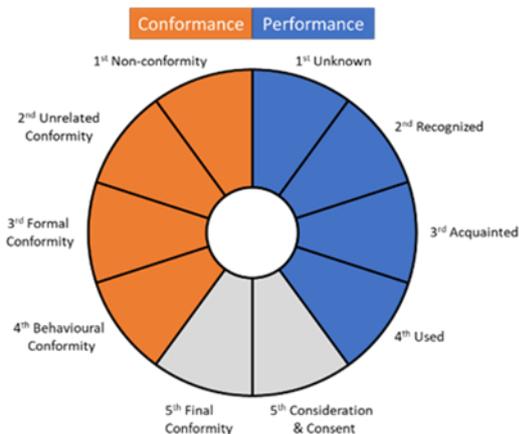


Figure 8: ISSSP influence evaluation wheel example for a plan that scores ‘Behavioural conformity’, and ‘Used’ (Author, 2021).

Chapter 3: Research Methodology

To gain an in-depth understanding of the subject under study a multiple case study analysis was conducted for which eight informal soft plans served as input. The contents of these documents were analysed to comprehend their climate-adaptive proposals for the Northern Netherlands region. Their conformance and performance were evaluated based on in-depth interviews with governmental policy- and decision-makers. In addition to the knowledge that these actors had of the influence of these plans, their insights and comments revealed valuable insights for enhancing informal soft plan relevance.

3.1. Research design

The overall aim of this research has been to learn lessons from past informal soft plans concerning climate adaptation, to improve the efficiency and relevancy of future plans with these insights. A qualitative research approach was deemed most suitable to gain such insights.

Qualitative research aims to gain a deeper understanding of a subject by exploring subjective meanings, values and emotions (Clifford et al., 2010). Because the influence of a plan is mainly dependant on the use of it by people, there is a strong social, subjective component to this research. According to Flick et al. (2004, p.3), can the use of a qualitative research approach contribute to gaining a better understanding of social realities, while drawing attention to “processes, meaning patterns and structural features”. Qualitative research methods that have been applied in this research are document analysis and in-depth interviews. In contrast, a quantitative research approach would make use of numeral data, and by applying mathematical modelling or statistical techniques to these data, formulate an answer to the research questions (Clifford et al., 2010). This approach was deemed unfit because of the social component and the nature of the central research question.

More specifically concerning the adopted qualitative approach, the research makes use of a case study. Case studies are a form of qualitative research and can help to emphasize the ‘how’ and the ‘why’ of a process by providing in-depth information (Kothari, 2004). It is therefore reasonable to apply a case study to study the functioning of informal soft plans. Based on Kothari’s claims, it is likely that this approach will result in learning lessons that are useful for future informal soft plans. The case study design is further discussed in 3.2.

Furthermore, the study has an intensive design. The application of an intensive design is consistent with the adoption of the qualitative case study method. In an intensive study design, there is an emphasis on the describing of one or a small number of cases with maximum detail, in contrast to an extensive design that looks for patterns and regularity in large representative sets of data (Clifford et al., 2010).

For academia, the use of triangulation is desirable to optimise the understanding of the research subject (Clifford et al., 2010). Triangulation consists of the use of multiple research methods and data sources for the studying of a phenomenon. According to Yin (2017), triangulation strengthens the depth and breadth of research findings. While this study made use of multiple research methods, triangulation has not been achieved. Triangulation could have been accomplished if a second document analysis would have been conducted that studied formal hard plans from the Northern Netherlands region. These would have to be analysed for commonalities with informal soft plans. The results of this inquiry could confirm or refute the findings of the in-depth interviews. The execution of a quantitative study amongst government authorities to support the findings from the in-depth interviews too has been taken into consideration, however, the added workload of this inquiry would exceed the volume of this thesis.

To conclude, it is necessary to describe the types of data that this research is built on. Two types of data can be used in scientific research, primary data and secondary data. Primary data is data that has been collected by the researcher, intending to use this data for the research. Here, primary data in the form of in-depth interviews have been used. This data was collected in the months of December 2020 and January 2021. The research is therefore of the cross-sectional kind, data has been collected at one specific point in time (Salkind,

2010). Had the data been collected over a longer period, through multiple data collection moments, the study would have been of the longitudinal type (Yin, 2017). This has implications that must be taken into account. Collected data is dependant on the time at which it has been collected. If this research were carried out in the same manner, in one year from the time of writing, the collected data could be substantially different.

Secondary data is data that has not been collected by the researcher but by another researcher, company or organisation, intending to use this data for their intentions. These secondary data are available for others to use (White, 2010). Because the intentions with which secondary data has been collected are unknown, researchers are tasked with the assessment of the trustworthiness of this data. Secondary data in the forms of academic literature and informal soft plans documents were used for the construction of the theoretical framework and the document analysis.

3.2. Case study design and demarcation: a single embedded case study

The applied case study type must be justified because this has consequences for the research findings. The suitability of a case study type is dependant on the information that is sought. This study aims to formulate learning lessons with which the relevance of future informal soft plans can be improved. In this research, a single embedded case study has been applied (Yin, 2012). A single embedded case study consists of a single case in which multiple units of analysis are taken into consideration (Scholz & Tietje, 2002). These units of analysis are related to the overall case. Through the conducting of in-depth interviews, the influence of the units of analysis within the case is determined (see Figure 9).

The case central to this research is the Northern Netherlands region. Officially, the Northern Netherlands region consists of the provinces Groningen, Friesland and Drenthe. The case study would originally take into consideration all three provinces, however, during the preliminary scanning of the informal soft plans, it appeared that limited attention was paid to Drenthe. Additionally, in the search for interviewees who were familiar with the selected plans, government officials from Drenthe indicated not to be familiar with any of the plans. Therefore, it was decided to exclude Drenthe. The case ‘the Northern Netherlands region’ in this research thus consisted of the provinces of Groningen and Friesland (see Figure 10). All governmental authorities that operate within this region, were considered part of this case.

There was the possibility to consider Groningen and Friesland as independent cases, and evaluate the plans within the context of each independent province. This would have resulted in a multiple embedded case study. This approach was deemed unfitting because of the regional, soft focus of the plans. Most plans did not limit their proposed actions by administrative boundaries, they rather transcend these boundaries. To consider the provinces Groningen and Friesland as ‘the Northern Netherlands region’ was therefore deemed appropriate. The units of analysis that are studied within the case are the informal strategic spatial soft plans concerning climate adaptation. These plans pay attention to the whole, or parts of the Northern Netherlands region.



Figure 9: Single embedded case study design (Author, 2021).

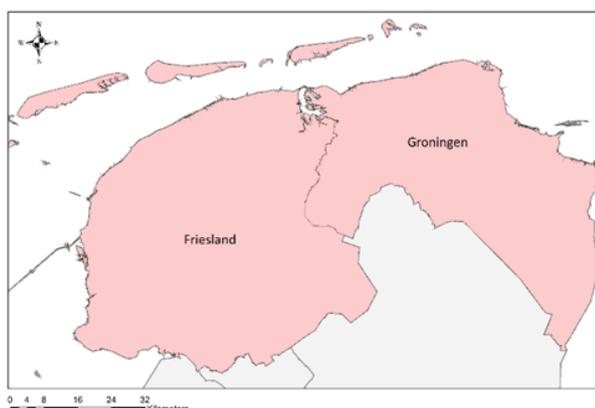


Figure 10: Map of the Northern Netherlands region case (Author, 2021).

To assess the suitability of the selected plans a global scan of the documents was conducted. By analysing the documents for terms like: ‘vision’, ‘future’, ‘climate (change)’, and ‘adaptation’, an overall image of what the plans entailed was established. Based on this it was decided that selected plans were relevant for this research. The plans displayed characteristics of informal strategic spatial soft plans which was the main requirement for their eligibility. To guarantee the independence of this research, the documents that were deemed unfitting by the research team were scanned too. While these documents showed similar characteristics, it was decided that they were unsuitable for this study because of a lack of attention to climate change or a too specific area-based focus. Taking into account the demarcation of ISSSP, excluding these plans from the research was justified. An overview of the eight plans is presented in Table 3.

DOCUMENT NUMBER	ORIGINAL TITLE	ENGLISH TITLE	FOCUS	YEAR OF PUBLICATION
DOC1	‘Nederland Nu Als Ontwerp’	‘Netherlands Now For Design’	The entire Netherlands	1987
DOC2	EO Wijers: ‘Aura’ and ‘Wadland’	‘Aura’ and ‘Wadland’	The Northern Netherlands region & Waddencoast	1997
DOC3	‘Hotspot Klimaatbestendig Groningen’	‘Hotspot Climate Robust Groningen’	Province of Groningen	2009
DOC4	‘Waddenland aan Zee’	‘Wadden land by the Sea’	The Waddencoast region	2012
DOC5	‘Economie van Water en Landschap’	‘Economy of Water and Landscape’	Provinces Friesland, Groningen, and Drenthe	2013
DOC6	‘De Nordic City’	‘The Nordic City’	Province of Groningen	2016
DOC7	‘Plan B: The Netherlands in 2200’	‘Plan B: The Netherlands in 2200’	The entire Netherlands	2019
DOC8	‘Nederland in 2120’	‘The Netherlands in 2120’	The entire Netherlands	2019

Table 3: Overview analysed informal soft plans (Author, 2021).

Analysis

The plan documents were lengthy and contained much information that was irrelevant to this study. Their contents were therefore summarized. Figure 11 explained that the document analysis results served as input for the in-depth interviews. The plan summaries hereby functioned as the basis for the in-depth interview questions about plan influence.

The software Atlas.ti was used for the analysis of the documents. This program allows researchers to allocate codes to sections of text. Coding enables the researcher to easily retrieve parts of information. This proved useful for the summarizing of the plans. Codes can be allocated in two ways: axial coding and open coding (Clifford et al., 2010; Strauss, 1987). Axial coding is performed when a set of codes is made before analysis. Open coding is performed when a set of codes is made during or after analysis, based on the content of the document. The techniques are complementary and their combined application is preferred (Strauss, 1987). Both techniques were applied. Axial coding was applied for the making of categories that were considered essential for the plan summaries. Open coding was applied to reoccurring themes and topics. This resulted in the codebook that can be found in Appendix B.

3.3.3. In-depth interviews with governmental policy- and decision-makers

Collection

The functioning of a plan is dependant on its use by the people it addresses. Questioning people about this usage can provide insight into the functioning of a plan. The literature study indicated that ISSSPs aim to influence decision-making processes. It was therefore decided that influence could best be assessed based on interviews with policy- and decision-makers from the Northern Netherlands region. These actors are familiar with the policy- and decision-making discourse, and formal hard plans concerning climate adaptation. Their insights, therefore, had to be able to shed light on the influence of past informal soft plans. Interviewees thus had to be policy- or decision-makers, and actively involved with climate adaptation or strategic planning.

Interviewee contact info was collected in three ways. First, a member of the research team was asked to provide the contact info of people that met the beforementioned requirements. Second, people that were

unwilling or felt unfitting for an interview were asked to provide the contact info of colleagues that could potentially be interviewed. Third, people were contacted via the social media platform LinkedIn. LinkedIn allows users to search amongst employees of government authorities, these were subsequently contacted about the conducting of an interview. Table 4 presents an anonymised overview of the policy- and decision-makers with whom interviews were conducted.

Because of government restrictions regarding the COVID-19 pandemic, the conducting of interviews in a face-to-face setting was impossible. Interviews were conducted via Google Meet video calls. One interview was conducted via a phone call, and while it was recorded with recording software, the file got corrupted and became inoperative. This interviewee was therefore asked to answer the central interview questions again via email, which he did.

All interviewees were sent a form of consent that informed them of their rights as an interviewee (Appendix D). This included their options to withdraw themselves from the interview at all times, to not answer or skip questions, and to change or nuance comments afterwards.

Different methods for the conducting of an in-depth interview exist. Options range from a full set of questions that are asked and answered, to the absence of any pre-set questions. It was decided to apply a technique that lies in-between, the semi-structured interview technique. Semi-structured interviews are conducted with a schedule of questions, however, this list is not strictly followed and can be deviated from. This freedom allows for flexibility to delve deeper into interesting responses from the interviewee. Semi-structured interviews are a qualitative research form that allows the research to address the wider context of the subject under study (Yin, 2009). The interview guide that was used can be found in Appendix E.

INTERVIEWEE ID	GOVERNMENTAL AUTHORITY	PROFESSIONAL ORIENTATION
INTERVIEWEE 1	Province	Policy advise "Water (safety), Spatial adaptation"
INTERVIEWEE 2	Municipality	Policy advise "Spatial policy and design; water, energy, climate, sustainability"
INTERVIEWEE 3	Water authority	Policy advise "Water (safety)"
INTERVIEWEE 4	Province	Architecture "Area development"
INTERVIEWEE 5	Province	Policy advise "Water"
INTERVIEWEE 6	Water authority	Programme-management "Climate adaptation"
INTERVIEWEE 7	Municipality	Policy advise "Spatial planning and area development"
INTERVIEWEE 8	Municipality	Ambassadorship "Water" and Catalyst "Spatial adaptation"

Table 4: Overview of interviewed governmental policy- and decision-makers (Author, 2021).

Analysis

The transcriptions of the interview recordings served as input for the analysis. Again, the data was coded with the use of Atlas.ti. Both available coding techniques were applied, resulting in the codebook presented in Appendix C.

First, the interview transcripts were analysed for comments that indicated conformance- and performance-related influence. These sections were subsequently coded using axial coding, according to the ISSSP influence evaluation framework. Then, the transcripts were studied more intensively for reoccurring subjects regarding the use of, and potential improvement of informal soft plans relevance. Relevant aspects were coded using open coding. Based on comments that indicated conformance- and performance-related influence, each plan was evaluated and allocated an ISSSP influence evaluation wheel. Valuable comments have been cited anomalously. The bibliography includes a list of the original comments in Dutch.

3.4. Ethical considerations

Researchers are representatives of the scientific community and should, therefore, throughout a study, act according to the rules of scientific research. To do so, this research has been conducted objectively by setting personal beliefs and perceptions aside.

The position of the researcher is moreover essential concerning the collection and use of primary data. This research to a great extent made use of information gathered in interviews with people. When people are involved in research, numerous ethical considerations and decisions must be made. Vanclay et al. (2012, p. 1), identified principles that must be taken into account when research with human participants is conducted:

“respect for participants, informed consent, specific permission required for audio or video recording, voluntary participation and no coercion, participant right to withdraw, ..., no harm to participants, ..., no use of deception, the presumption and preservation of anonymity, participant right to check and modify a transcript, confidentiality of personal matters, data protection, ..., appropriateness of research methodology, and full reporting of methods”.

Throughout the research, these principles have been closely taken into account. In doing so, the interests of participants have been prevented from harm.

Chapter 4: Research Results

This chapter presents the document analysis and in-depth interview results. Based on the document analysis have eight comprehensive summaries of the informal soft plans been made. These are presented in Appendixes F to M. The contents of these summaries have been summarized in Table 5. Here, the relevant climate adaptive ideas that the plans proposed are elaborated to give an impression of these envisioned for the future of the Northern Netherlands region. In addition, the results of the in-depth interviews and conformance- and performance evaluations are presented. The chapter concludes by presenting recurring aspects that came forward in the in-depth interviewees, that could improve the relevancy of ISSSP.

4.1. Eight ISSSPs on climate change and the Northern Netherlands

The eight informal soft plans that were analysed greatly varied in their objectives, approaches and envisioned futures. The analysis showed how attitudes towards climate change, and climate adaptation have changed over time. While the older plans to some extent include climate adaptive measures, is climate change, not a prime concern. Shrinkage and social decline are central. Later, plans focus more, or entirely on the adaptation to climate change. Overall can the climate adaptive approaches be characterized in three categories; 'Adapt', 'Defend' or 'Retreat'. Adaptive approaches focus on a transition to an adapted living environment, defensive approaches focus on the defence of the current living environment, and retreating approaches assume that in the battle against climate change land must be sacrificed.

Nederland Nu Als Ontwerp

Nederland Nu Als Ontwerp was an informal initiative in the 1980s to publicly discuss and debate the spatial future of the Netherlands. The plan presented four spatial scenarios for the Netherlands addressing various topics. Limited attention is paid to climate change and -adaptation. It was assumed that by 2050, the country will have found solutions for the effects of climate change, sea-level rise, subsidence and the securing of freshwater. In the entire document, only limited attention is paid to the Northern Netherlands region. One of the four visions, 'Kritisch' (Figure 12) presents detailed spatial interventions for the province of Groningen. Related to climate adaptation it is suggested that the areas the Drentse plateau, the Hondsrug and the Hunzedal are returned to nature through the retreat of its inhabitants, resulting in a landscape in which nature decides. Moreover, to guarantee the availability of fresh water and to enable the production of energy, a 'Watertrap' must be realized. This water management approach increases water levels up to 10 metres above NAP.



Figure 12: The vision for the Northern Netherlands presented in a map (DOC1, 1987).

PLAN TITLE	YEAR	BY WHOM WAS IT MADE?	GOAL	TIMEFRAME	ASSUMPTIONS	WHAT IS PRESENTED?	GENERAL FOCUS
NEDERLAND NU ALS ONTWERP	1987	Union of city planners, spatial planners and experts	To fuel future-oriented thinking; Creating an impulse	65 years (2050)	Global warming, a drier climate, sea level rise (0,5 - 1 meter), fresh water shortages	Four visions for the Netherlands in 2050, consisting of local, regional and national elaborations	The improving of the quality of Dutch living environment
EO WIJERS: AURA	1997	Planners, designers, amateurs; those interested in participating	To function as a source of inspiration; Reach and stimulate the political debate	50 years (2050)	Social, economical and environmental transitions; Sea level rise, subsidence, salination, and climate change	A vision for the Northern Netherlands region	Better spatial control over the regions landscape through water management zoning
EO WIJERS: WADLAND	1997	Planners, designers, amateurs; those interested in participating	To function as a source of inspiration; Reach and stimulate the political debate	Unspecified	Social, economical and environmental transitions; Sea level rise, subsidence, salination, and climate change	A vision for the Waddencoast region	The region should become a natural roughness by embracing decline and the retreat of inhabitant
HOTSPOT KLIMAAT-BESTENDIG GRONINGEN	2009	Government authorities, knowledge institutes and private parties	To generate knowledge about climate change (adaptation)	50/90 years (2060/2100)	Climate change is happening and induces dangers; Sea level rise of 5 meters	Two visions for the province of Groningen to become climate change robust	How the landscape of Groningen can be adapted to the consequences of climate change
WADDENLAND AAN ZEE	2012	Atelier Fryslân	To contribute to spatial quality by creating an impulse	Unspecified	Various challenges regarding decline; Climate change which will lead to sea level rise and salination	A vision for the Waddencoast region that addresses it's challenges while improving spatial quality	Three storylines that connect qualities, challenges and initiatives, which together function as an overarching vision for the future
ECONOMIE VAN WATER EN LANDSCHAP	2013	National and provincial government authorities	To explore the 'meekoppelkans en' (coupling opportunities) of large-scale water retention	30 years (2040)	Energy transition is needed; Climate change will have negative influences regarding water; Social and demographical decline	Two visions for the Blue-Green Belt region and an advice regarding future water management	How the Blue and Green infrastructure of the Northern Netherlands can be adapted to climate change while contributing to an economically and socially robust system

THE NORDIC CITY	2016	Design atelier, landscape architects, government authorities	To create a vision for the people to hold on to	Unspecified	Need for energy-transition; Economical and demographical decline; Earthquake damages; Climate change challenges	Four perspectives linked to an energy-transition that should be pursued in policy- and decision-making	How the energy-transition can be integrated in the province of Groningen while creating a more robust economy
PLAN B: NEDERLAND IN 2200	2019	Landscape architects, research institutes and private stakeholders	To contribute to the range of strategies that prepare the Netherlands for the future	180 years (2200)	Climate change will lead to sea level rise of 6 metres; Raising dykes will not be sufficient towards the future	A vision for the Netherlands	The Netherlands should let the sea water in and not focus on raising dykes and thereby adapt to sea level rise
NEDERLAND IN 2100	2019	Wageningen University & Research	To create a source of inspiration	100 years (2120)	Challenges of energy transition, sustainable agriculture, recovery of biodiversity, urbanisation and climate change adaptation	A vision for the Netherlands that distinguishes the different landscape types	The Netherlands must become robust for the future by relying on Nature-based solutions

Table 5: Overview of informal strategic spatial soft plan contents (Author, 2021).

EO Wijers: Aura and Wadland

The EO Wijers design competition organized in 1997 focussed on the North of the Netherlands and had two winners, Aura and Wadland. Aura presented an innovative water management- and land-use approach based on the division of the region into five types of sponges (Figure 13). Each sponge has a predetermined use of water, and not all sponge types are allowed to exchange water. This way of water management should produce ‘water, calmness and dark’ resulting in a more balanced landscape. Relevant climate-adaptive measurements are connected to the sponges in the form of natural coastal defence, large-scale water retention and the adding of greenery in cities for water storage.

Wadland visioned the Wadden coast to become an area of international allure (Figure 14). To realize this, the natural tidal effect should become the motor of development for the region. The sea-dyke will have to be breached at several locations, resulting in the sea reaching up far inland. The tidal effects and (re)connection of saline and freshwater will bring a new type of environment. For people to be able to retreat within the Wadland, the present infrastructure must be shrunk. While the opening up of the sea-dykes is not directly related to a rising sea-level in the plan, this approach is currently regarded to be a way of adapting to sea-level rise.



Figure 13: Map of Aura presenting a water management approach that divides the Northern Netherlands into sponges (DOC2, 1997).



Figure 14: Map of 'Wadland' presenting a Wadden coast region that embraces natural processes making the region attractive and climate robust (DOC2, 1997).

Hotspot Klimaatbestendig Groningen

Hotspot Klimaatbestendig Groningen is the result of research from 2009 by the province of Groningen that aimed to produce knowledge on climate adaptation and presented two future visions. The defensive vision foresees that most of the land of Groningen should be 'given back' to the sea, meaning that important functions and activities must retreat to at least 5 metres above NAP (Figure 15). Locations of which this is undesirable, such as the Eemshaven and the industry of Delfzijl, should be heavily protected and made robust. A new natural coastline is created with sand dunes and islands that function as a form of protection for the hinterland against storms and intense tidal waves. Tidal rivers arise from the Drents plateau which is directly connected to the sea. Near the coast, aquaculture is performed with the production of algae, seaweed, fish and shellfish. At sea, large-scale 'sea farms' are built for the production of food and energy.

The offensive vision foresees that the province of Groningen heavily defends itself against the rising sea-level (Figure 16). This means that the Wadden environment must receive large sand nourishments to retain its naturally defensive function. Moreover, a 'super dyke' should be constructed that is much wider than a regular dyke so that it can facilitate the performing of industrial activities. This dyke must be high enough to withstand the risen sea-level and higher tidal wave energy. Because of increased salination and drier summers, a large freshwater reservoir must be realized in the centre of the province. Agricultural areas near the coast will focus on the production of algae, while those in the Veenkoloniën focus on the production of arable crops, livestock and crops for energy production.



Figure 15: The defensive vision for adapting Groningen to climate change (DOC3, 2009).

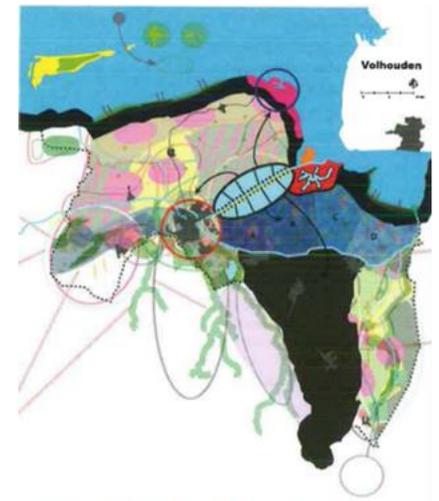


Figure 16: The offensive vision for adapting Groningen to climate change (DOC3, 2009).



Figure 17: Map of 'Waddenland aan Zee' visioning the Waddencoast region in a new perspective (DOC4, 2012).

Waddenland aan Zee

Waddenland aan Zee is an informal spatial vision for the Waddencoast region, published in 2012 by the landscape architecture bureau Atelier Fryslân (Figure 17). It argues that coastal defence should be put into a broader perspective by creating a robust coastal zone that includes defence, nature development and new forms of recreation. The Delta-dyke must be transformed into a wide, dynamical coastal zone. To restore the nature of the region, the connection between fresh and saline water should be brought back. The natural tidal process is used to create salt marshes that have a protective function (Figure 18). Saline water is given more space in predetermined areas. Agriculture adapts by adopting salty crops, shrimp farming and algae farming (Figure 19). Also, a robust water management system for the retention and drainage of fresh water must be realized to adapt to salination, sea-level rise, subsidence, periods of droughts, and the more frequent occurrence of short intense rain showers.

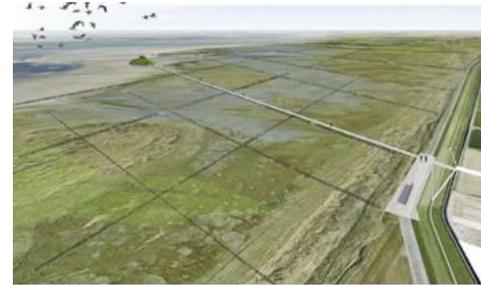


Figure 18: Salt marshes outside the Delta-dyke for coastal protection and nature (DOC4, 2012).



Figure 19: Adapted agricultural fields along the Waddencoast (DOC4, 2012).

Economie van Water en Landschap

Economie van Water en Landschap was established in 2013 at the request of the national government in collaboration with the Northern provinces and presents two future visions. The 'Schaarste' vision foresees a demographical and economical decline in the Blue-Green Belt (Figure 20). The water management system is underdeveloped and unable to deal with the consequences of climate change. Function follows water level becomes the norm, meaning that agriculture becomes impossible in lower-lying areas. Therefore large-scale farms must move to higher grounds, water retention and storage occurs locally, and parts of the landscape are given back to nature causing them to bewilder.

The 'Groei' scenario foresees that the Northern Netherlands will become self-sustaining through technological innovation (Figure 21). The region is prosperous and able to sustain its conventional water management approach. Water level follows function is the norm, and the agricultural sector thrives. Agriculture within the Blue-Green Belt flourishes because sensor technology allows for precise water management. In the Veenkolonieën there is large-scale biomass production for the bio-based industry of Emmen. Nature is no longer prioritized and follows other developments.

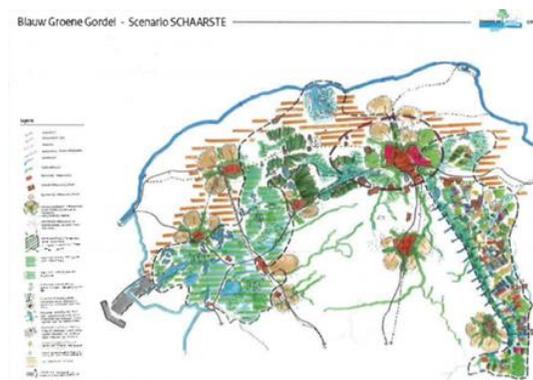


Figure 20: Map of 'Schaarste', the Blue-Green Belt bewilders and nature thrives (DOC5, 2013).

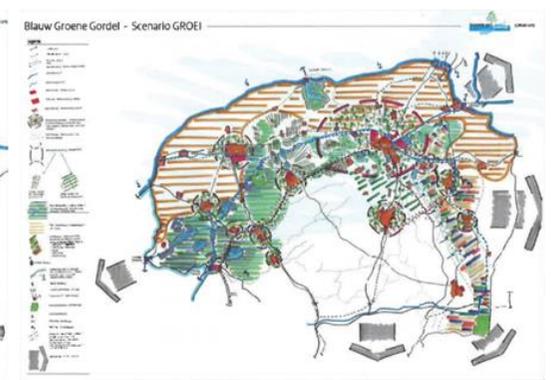


Figure 21: Map of 'Groei', the Blue-Green Belt is tamed and the agricultural sector flourishes (DOC5, 2013).

De Nordic City

De Nordic city was published in 2016 by the IABR design atelier and presents a vision in which the energy transition of Groningen is realized and benefits the region (Figure 22). The plan foresees that Groningen and its region can play a leading role in the energy transition, also in an international context. The region could develop itself into an energy hub, thanks to its high-quality knowledge institutions that are specialized in energy and logistics, and the availability of infrastructure for data and energy in the Eemshaven. The Groningen-Eemshaven-Delfzijl 'triangle' could develop itself into one of the most important energy hubs of Northwest Europe. The chemical industry of Delfzijl should become 'greener' and involve the agricultural sector. The city of Groningen should become an energy specialist. The earthquake plagued areas of Groningen must be equipped with energy neutral houses and buildings.



Figure 22: Map of De Nordic City, a sustainable energy using and producing region (DOC6, 2016).

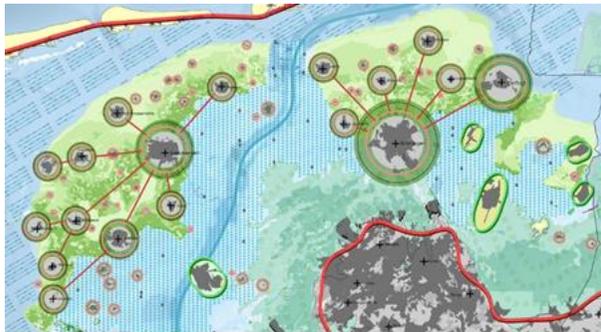


Figure 23: Map of Plan B: Nederland in 2200 in which the landscape is adapted by accepting sea level rise, moving to safe locations and protecting the essential (DOC7, 2019).

Plan B: Nederland in 2200

Plan B: Nederland in 2200 is an informal vision published in 2019 by the landscape architects of LOLA Landscapes (Figure 23). It presents a strategy that allows the Netherlands to adapt itself to sea-level rise. Coastal protection should be performed by making use of the driving forces of nature. The Dutch should therefore live in logical locations and thus above sea-level. This will require the population to move eastwards where a new, natural coastline will be formed. The land that is flooded by the sea will be transformed into a giant lagoon. Friesland and Groningen will undergo a massive transformation. The larger cities and towns are protected by circular dykes. They are moreover connected by straight lines of infrastructure. Approximately half of both is flooded and transformed into a lagoon, splitting the Northern Netherlands region in half. Residents will develop residential areas, fisheries, aquaculture, recreation, nature and energy in the lagoon.

Nederland in 2120

Nederland in 2120 is a plan from 2019, published by Wageningen University & Research and explored climate adaption possibilities utilizing Nature-based-solutions (Figure 24). The Wadden Sea and its environment should be transformed, the nature of the area must become a determining factor through preservation and stimulation. The coastal protection of Friesland and Groningen must change from the narrow Delta-dyke to a broad, water-robust landscape. The clay soils of the Northern Netherlands must change their water management, focusing on the transition towards circular agriculture, water retention, freshwater availability, and flood protection with wide (double) dykes and salt marshes. The peatlands must become much wetter to counteract salination, subsidence and peat-oxidation. This will allow for large water retention areas and saline crop farming. Also, the high sandy soils of Friesland and Groningen will serve a purpose in the new water management system as these will be used for the slowing down of the water system by improving infiltration.



Figure 24: Map of Nederland in 2120 in which the Netherlands adapts to climate change by embracing nature-based solutions (DOC8, 2019).

4.2. ISSSP influence according to policy- and decision-makers

The interview results have provided valuable insights into the use of informal soft plans in practice. With the comments of the interviewees, the conformance and performance of the eight plans have been evaluated according to the ISSSP influence evaluation framework. Allocated scores are diverse, the older plans score low in both conformance and performance, middle-aged plans score relatively high in both conformance and performance, and the most recent have appeared to be too new for conformance to be possible.

Nederland Nu Als Ontwerp (Figure 25)

Conformance

The conformance of Nederland Nu Als Ontwerp remained undiscussed. It can therefore not be excluded that elements from the plan have been implemented in the outside world and conformance-related influence thus is applicable. Nederland Nu Als Ontwerp was therefore not allocated a conformance score.

Performance

Analysis of the interview transcripts showed no indication of performance-related influence. The plan and ideas from Nederland Nu Als Ontwerp were unknown by the interviewees.

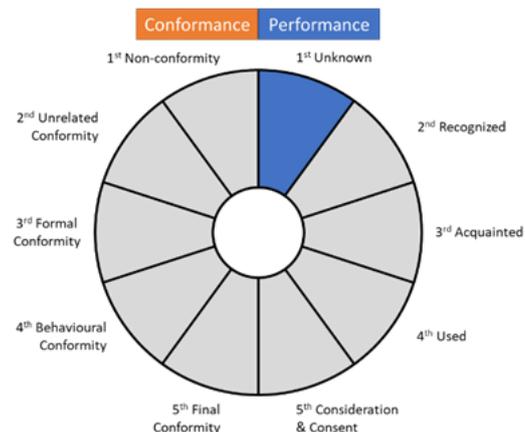


Figure 25: ISSSP influence evaluation wheel 'Nederland Nu Als Ontwerp' (Author, 2021).

EO Wijers: Aura and Wadland (Figure 26 + 27)

Conformance

Analysis of the conformance of Aura has shown one indication of conformance related influence, although this was based on a similarity in the use of 'sponges' in water management and turned out to correspond with non-conformity. The conformance of Wadland remained undiscussed. It can therefore not be excluded that elements from the plan have been implemented in the outside world and conformance-related influence thus is applicable. Wadland was therefore not allocated a conformance score.

After one of the interviewees indicated to be somewhat familiar with the plans Aura and Wadland, the similarities between plan Aura and the in January 2021 organised Climate Manifestation titled 'Het Sponsland' (The Spongeland) were discussed. Aura presents an approach that divides the Northern Netherlands region into sponges that determine how water management should be executed.

The interviewee stated that Aura and The Spongeland seemed to focus on similar things. However, currently in planning a multifunctional integrated area-based approach is adopted that takes into account the water system. Regarding Aura, the interviewee argued that it seems to give areas a different function with a different colour sponge as a name.

This implies that Aura and the recent manifestation were different in that Aura first determines what the function of an area can be and which water (management) system would then be appropriate, while The Spongeland reasons vice versa by first looking at the present water system and then searching for the most appropriate water management approach.

Performance

The interviews showed little to no indication of performance-related influence for Aura. One interviewee initially indicated that Aura did not sound familiar. However, when the content of the plan was discussed further, as described above in the

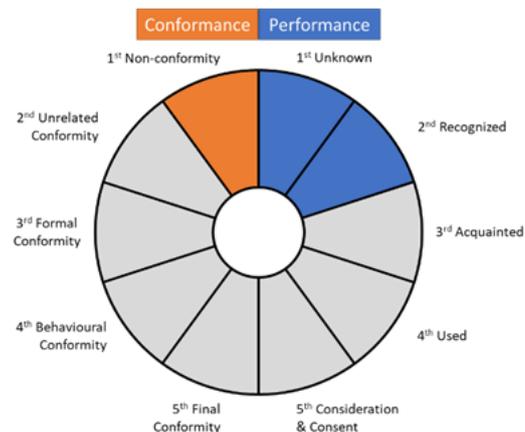


Figure 26: ISSSP influence evaluation wheel 'Aura' (Author, 2021).

section on conformance, the interviewee did recognize elements from the plan. Based on this information the performance score of Aura is 'Recognized'.

Related to Wadland, one of the interview transcripts showed an indication of performance-related influence and it was allocated the score 'Acquainted'. One interviewee stated that the plan was sometimes brought up by designers. It would be put forward as an example of how the Waddencoast has before been a subject of designing, and how it could potentially look like in the future. Building upon this the interviewee was asked in what type of setting this occurred. The interviewee responded that this had not happened recently, but that it had occurred in the past during large plan-making efforts. The interviewee added that design ateliers are a typical setting in which people bring up such plans. In addition, the interviewee said, "so you often see that in a group of people who sit around the table and think about 'what can we do for the future', there are always people who have some of those old plans in their mind, and then mention them again" (Citation A, 2020). Building on this it was asked whether in those situations the document in question would also be looked up and studied. The interviewee stated that it has occurred that people referred to a document in such a situation, but could not think of situations in which the document was then used in such a way. It rather happened to get a perception of the plan or document which could then stimulate the 'thinking'.

Hotspot Klimaatbestendig Groningen (Figure 28)

Conformance

The analysis of the interview transcripts has shown an indication of strong conformance related influence on two occasions, resulting in the allocation of the score 'Behavioural conformity'.

Interviewees were asked to indicate which of the plans they were familiar with, and if applicable, how the plan had led to changes in development or policy. One interviewee indicated to recognize 'Klimaat voor Ruimte', which was the programme that the plan was a part of, and continued by stating to think that "in terms of structure, that has been more or less been translated into what we are doing at the moment in the municipality" (Citation B, 2020). The interviewee furthermore referred to the energy programme of the municipality which was set up parallel its climate agenda and -adaptation strategy, and added that "the 'Klimaat voor Ruimte' document had contributed to the thought-process" about these mitigation- and adaptation strategies (Citation C, 2020). This indicates both conformance and performance.

Hence, the interviewee was asked which of the two approaches presented in the plan had been adopted. In response, the interviewee stated not to know this for sure because their work did not focus on coastal defence, but that,

"... the line currently being followed by the province and the water authorities is primarily that the current coastline, i.e. the dykes as they are now, should continue to function as they do now. I am also aware, for example, that a dike reinforcement project is underway along the northern coast, and that there have been experiments with double dykes and flood dykes, but not to the extent of considering the entire northern area up to the city as a kind of coastal zone. ... At the moment, the horizon for many involved is that 2050/2080 that coastline will still be preserved" (Citation D, 2020).

What the interviewee here describes broadly matches the presented offensive adaptation strategy. With the earlier statement that 'Klimaat voor Ruimte' contributed to the thought-process about the adaptation

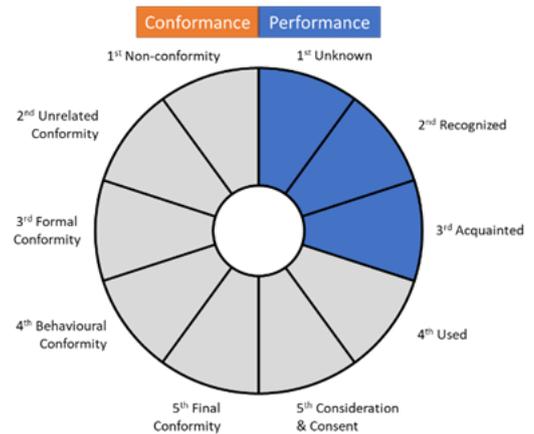


Figure 27: ISSSP influence evaluation wheel 'Wadland' (Author, 2021).

strategy, this indicates conformance-related influence. The interviewee however added that other documents, such as the national Delta-programme, had been more influential for climate adaptation policy because of the concrete handles that it presented.

Another interviewee was asked if she recognized elements from the presented defensive or offensive approaches, and saw commonalities with spatial planning the outside world. In response, she stated to find it difficult to trace such elements back to a plan, but then added the following:

“I think, for example, that such a double dyke, or viewing a dike as a zone, is something that is now much more common. The dyke section between Eemshaven and Delfzijl is being called ‘the rich realm’, in that you have a kind of combination with nature outside it, we are looking much more at salt marshes, what kind of function they have, also in reducing the risk of flooding. Can they dampen the waves? At the same time, we are also looking at letting water in. If you look, for instance, at how a double dyke works, then water that is rich in silt has to flow into it. So it’s a bit of a controlled defensive approach. So it does stick to the current coastline, but it also looks at ‘how can you, particularly from the point of view of the silt problem of the Ems-Dollard, capture silt inland as well?’. I think it hinges a little on both those thoughts.” (Citation E, 2020).

The interviewee here argues that elements from the plan can be found back in contemporary spatial planning, but that stating there is a direct connection between them, is too bold. Regarding this, she added that in her opinion the plans that thus far were discussed are explorations and studies that stimulate thinking. At some point, such ideas land in the minds of people, and then a plan for a double dyke arises she said. Tracing such ideas back to a certain plan is difficult unless one can ask the people that are still working on those plans daily. But these plans influence the thinking and the setting of a direction, even if it happens in small steps, building on many different plans and studies the interviewee concluded.

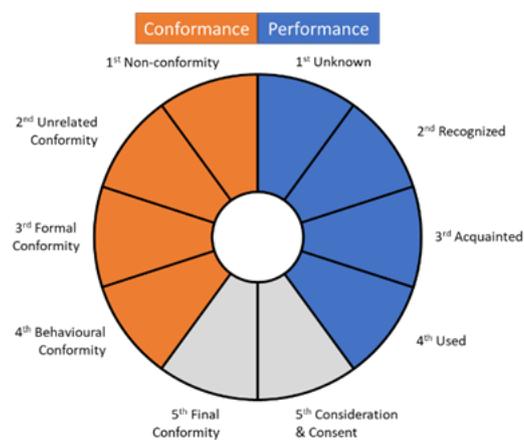


Figure 28: ISSSP influence evaluation wheel 'Hotspot Klimaatbestendig Groningen' (Author, 2021).

Thus, both interviewees indicate that it is likely that the plan contributed to the thought process on climate adaptation. Despite this, neither of the interviewees identified a direct relationship between the plan and actual development. Both 'Non-conformity' and 'Behavioural conformity' of the evaluation framework could therefore have been applicable. Because the comments of the interviewees indicated that the plan has influenced the thought-process concerning the climate adaptation strategy, it can be concluded that the plan has influenced decision-making processes. Taking into account the description of 'Behavioural conformity', this score is most suitable.

Performance

Concerning Hotspot Klimaatbestendig Groningen, the analysis of the interview transcripts showed an indication of strong performance-related influence and was allocated the score 'Used'.

After a short description of the eight plans, one interviewee indicated that the plan he felt familiar with was Hotspot Klimaatbestendig Groningen. He subsequently explained how it had contributed to the thought processes of a climate adaptation strategy. By doing so he showed to be aware of the existence of the plan and to some extent also know its content. One other interviewee showed to recognize some elements from the plan. A third interviewee stated to know the plan, to have discussed it with colleagues and to have used it for work.

Waddenland aan Zee (Figure 29)

Conformance

Analysis of the interview transcripts has shown that Waddenland aan Zee has had limited influence in terms of conformance, resulting in the allocation of the score 'Unrelated conformity'.

An interviewee recognized the plan and asked if it was related to the 'Kiek over de Diek' (Look over the Dyke) project. She explained that this project had aimed to improve the recreational access of the dyke area by providing a better bicycle network. This is broadly in line with one of the storylines from the plan which argues that the dyke should be less of a hard barrier between land and sea, and therefore should be made better accessible. Additionally, the interviewee stated that she "could imagine that a plan like 'Kiek over de Diek', which is about the bicycle network and improving the accessibility of the Waddencoast, could originate from it" (Citation F, 2020). About the plan's argument that the dyke should be less of a hard barrier, the interviewee stated that this had become "a sort of the main idea in how we want to deal with the coast in the future" (Citation G, 2020).

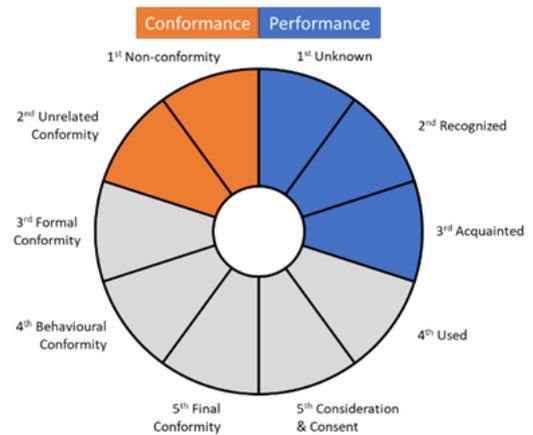


Figure 29: ISSSP influence evaluation wheel 'Waddenland aan Zee' (Author, 2021).

These comments indicate that elements in the outside world conform to what the plan presents. The interviewee however could not identify a direct relationship between the plan and these elements, this is in line with 'Unrelated conformity'.

Performance

Related to Waddenland aan Zee, the analysis of the interview transcripts has shown an indication of moderate performance-related influence. Three of the interviewees showed to be familiar with the plan.

One interviewee indicated to be aware of the existence of the plan because colleges that work on primary coastal defence had been involved in it. He was however not well-familiar with the content of the plan. Another interviewee recognized the name of the plan. This initiated the discussion of the similarities with and the 'Kiek over de Diek' project, which showed that the interviewee recognized the content of the plan.

A last interviewee stated to have been involved in, and thus to know the plan. She explained that the plan had performed well in creating an impulse, mainly because it focussed on involving people and highlighting what was happening to their landscape. By thinking about how 'we' want to continue, and in what kind of landscape 'we' want to live in the future, the plan paid great attention to spatial quality while taking into account the local challenges, which was useful according to the interviewee. Hereby, the interviewee showed to be acquainted with the plan.

Economie van Water en Landschap (Figure 30)

Conformance

Analysis of the Economie van Water en Landschap transcripts has shown an indication of strong conformance-related influence. The conformance of the plan was discussed on two occasions, resulting in the allocation of the score 'Behavioural conformity'.

Although one of the interviewees stated to not be familiar with the plan, he was well aware of the concept 'the Blue-Green Belt' and the 'function follows water level' versus 'water level follows function' dichotomy. Regarding the Blue-Green Belt and coupling opportunities, he stated the following:

“... so I think that the concept presented in that study is reflected in the current plans. It is no surprise that the locations where we now want to realise those water storage areas are indeed those areas. These are areas on a strip of the Groningen-Drachten line. Because in the landscape, that is actually the low part. ... In the southwest quarter, which is in the west of our management area ... we are going to construct water storage areas in various places there, but we have said that we are going to try to do that in combination with nature. So that is an example of a coupling opportunity. Because there was already a task from the province, who are responsible for the realisation of the nature network, and the water board also had a task for water storage, And that is what is happening now.” (Citation H, 2020).

The interviewee hereby indicated that water storage areas are realized in combination with nature, in locations that have been suggested by the plan. While he could not identify a direct relationship to the plan, he thought there is a connection. He added that the Blue-Green Belt mainly reminded him of the peat meadow areas, in which a water management challenge lies. When asked about the potential role of the water authorities concerning the regulation of water levels, he stated the following:

“It is extremely relevant. ... You notice more and more, especially with the latest insights, but also nationally, the question of whether this (water level follow function) is tenable. ... At a certain point, there are simply areas where you say 'guys, there's a limit'. To mention that, and to enter into that discussion, we did pick up on that in recent years. Because we as a water board are also working on a vision for the coming years, ... and then this point certainly comes up, but it is still quite a controversial one. ... So to 'shout' that it will not be 'water level follows function' but 'function follows water level' is, ... , going too fast. ... While there is a grain of truth in it, at a certain point you just have to look at what is tenable and maybe say 'hey guys you're in a very low area, you have to accept it'. And in practice we already do that, we always have the possibility to say, depending on the circumstances: 'the measures we have to take to meet the task, they have to be in proportion'. ... Then we say 'yeah guys it just doesn't make sense to put so many measures in there'.” (Citation I, 2020)

The interviewee here illustrates that the decisions concerning the dichotomy are actively made practice. It does however not happen as explicitly as described by the plan in which is either or adopted. Again, a direct connection between the plan and practice is not identified.

The second interviewee initially did not recognize the plan, however as the content was discussed further, she showed to be familiar with 'the Blue-Green Belt' concept. Building on the comments from the other interviewee, it was asked whether she knew of water storage projects that could be related to the Blue-Green Belt. The interviewee responded that in the lower-lying areas “there is water storage linked to nature development” in “the Westerkwartier and in central Groningen” and that you there “see the water-nature link very strongly” (Citation J, 2020).

Both interviewees indicate that developments and approaches in practice are to some extent happening in conformance to the plan. While neither of the interviewees identifies a direct relationship between them, their comments indicate that the plan has had a strong conformance-related influence on developments. The allocation of 'Behavioural conformity' is therefore suitable.

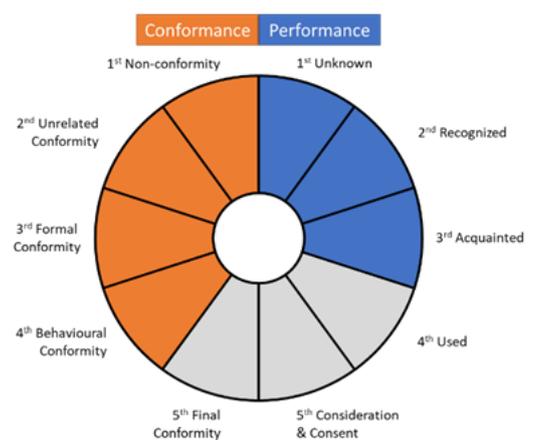


Figure 30: ISSSP influence evaluation wheel 'Economie van Water en Landschap' (Author, 2021).

Performance

Concerning Economie van Water en Landschap, the analysis of the interview transcripts has shown an indication of moderate performance-related influence. On three occasions the plan was recognized and discussed, resulting in the allocation of 'Acquainted'.

All three interviewees that were familiar with the plan initially indicated not to know it. After receiving a description of the plan's content, the Blue-Green Belt concept and the water level dichotomy, they recognized these elements. One of the interviewees only superficially recognized the plan, while with the other two more in-depth discussions of the plan were held. These interviewees showed to be acquainted with the content of the plan.

De Nordic City (Figure 31)

Conformance

For De Nordic City the analysis of the interview transcripts has shown an indication of strong conformance-related influence, resulting in the allocation of the score 'Behavioural conformity'.

One interviewee indicated to have been involved in the atelier sessions that were held prior to the establishment of the plan. He stated that elements of De Nordic City had come back in policy concerning the energy transition. He added, that the plan was used in the making of the 'route map' for the energy transition of the municipality, which is established policy. He continued by giving the following examples:

"What you see now, for instance, is that Groningen is being positioned as an energy province. Within the framework of the regional energy strategy, several proposals have been made in which Groningen takes up a fairly progressive position in the field of energy. This means in wind and sun, but hydrogen is also a track that is being actively pursued. These are also elements that are included in the Nordic City study in one way or another. I also think that linking the strengthening of villages and areas where there are earthquake problems, the strengthening of these in relation to making them energy-neutral, is a track that is at least included in the plans. I don't know if that will work out completely, but that line of thought is still there." (Citation K, 2020).

Thus, commonalities between De Nordic City and actual policy exist. The interviewee was asked if he would say that the plan was actively used and if it would be possible to see parallels between the plan and outcomes in the outside world. In response, he stated: "Yes. I think, in particular, that De Nordic City, if you put it next to the municipality's current energy policy, that there are then a lot of elements that emerge in both stories" (Citation L, 2020). This indicates strong conformance-, and performance-related influence.

Another interviewee who indicated to have been involved in 'De Nordic City' noted that it had limitedly found its way into plan-making but that it was commonly referred to. The interviewee stated:

"... now you notice that they often refer back to it, like 'as was also thought up in De Nordic City'. So this one too has very much influenced thinking. But there was no immediate translation or anything like 'okay if you want to translate this into policy, this is how you should do it'. It does provide a lot of inspiration." (Citation M, 2020).

This contradicted the comments from the other interviewee, and the interviewee was made aware of this. In response, the interviewee stated that seen from the provincial point of view, the document was not deemed

as shared property. The reason for this was that not many people from the province had been involved in the study. In contrast, the interviewee stated that:

“... the municipality ... also had a different seat at the table. They made their designers part of this process. So they used it for their planning for the municipality. And the province was a little more distant; we were represented in the organisation of it, but that was only one main person ... But we didn't use it as our own trajectory, so to speak. But if you were to link it to an environmental vision, if you then say we have to make such a new environmental vision and we use this as a kind of study for that, then it often gets more impact in the end. So there is a big difference between the way the municipality came to the table and the way we did it as a province” (Citation N, 2020).

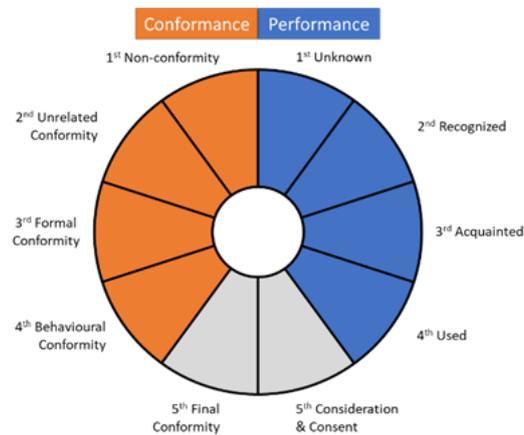


Figure 31: ISSSP influence evaluation diagram 'De Nordic City' (Author, 2021).

Together, these comments indicate that there is a relationship between the plan and outcomes in the outside world.

Performance

Analysis of the interview transcripts has shown an indication of strong performance-related influence, resulting in the allocation of the score 'Used'.

Two interviewees showed to be well-acquainted with the plan, its content and how it influenced policy- and decision-making. The discussion of the plans conformance indicated that the plan has been actively used for the making of policy. The comments by these interviewees are in line with 'Used' and 'Consideration & Consent'. However, the interviewees did not state that the plan was actively used as a frame of reference, therefore the score 'Used' is more suitable.

Plan B: Nederland in 2200 (Figure 32)

Conformance

The conformance of Plan B: Nederland in 2200 remained undiscussed. It can therefore not be excluded that elements from the plan have led to outcomes in the outside world and conformance-related influence thus is applicable. The plan was therefore not allocated a conformance score.

Performance

The analysis of the Plan B: Nederland in 2200 interview transcripts has shown an indication of moderate to strong performance related influence, resulting in the allocation of the score 'Used'.

Two interviewees stated to know about the plan and to some extent its content. These interviewees however indicated not to have studied or discussed the content of the plan. Two other interviewees showed to be more familiar with the plan. One of these interviewees did not recognize the name of the plan but was familiar with the proposed strategy of retreating to higher grounds when sea-level rises. The other interviewee indicated to know the plan and the presented vision well. He argued that

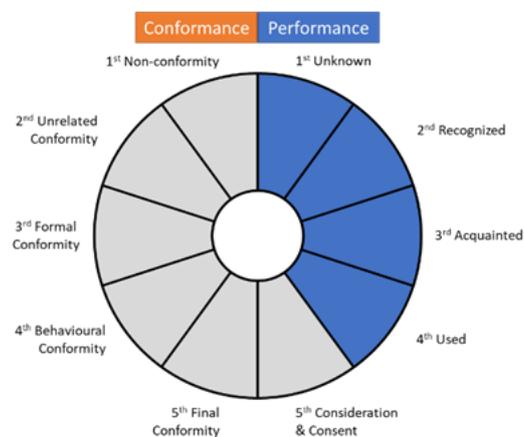


Figure 32: ISSSP influence evaluation wheel 'Plan B: Nederland in 2200' (Author, 2021).

the presented images had appeared everywhere and unleashed a discussion in doing so, which he thought had been the objective of the plan.

One last interviewee indicated to know and use the plan for work-related activities. The interviewee stated to use the plan in presentations to provoke audiences and to show how drastically the Northern landscape could change in the future. While what the plan proposes is provoking, it does show opportunities and it is therefore great for starting discussions the interviewee claimed. The comments of this interviewee show that the plan is actively used to influence decision-making.

Nederland in 2120 (Figure 33)

Conformance

The conformance of Nederland in 2120 remained undiscussed. It can therefore not be excluded that elements from the plan have led to outcomes in the outside world and conformance-related influence thus is applicable. The plan was therefore not allocated a conformance score.

Performance

Concerning Nederland in 2120, the analysis of the interview transcripts has shown an indication of strong performance-related influence. Comments by the interviewees have indicated the applicability of the score 'Used'.

One interviewee indicated to know the plan and the presented map, but not its content. While the plan is well-substantiated, it is not often referred to, the interviewee stated. Another interviewee showed to recognize the plan and stated that it was referred to regularly. He was asked to elaborate and added the following:

"... that's about outlining the future, ..., but it's mainly about realising, as a water authority, that you also have to look far ahead, and I think that this is also a learning moment for the water authorities, that we only look far ahead to a limited extent. We are very much focused on the short term. ... by nature, we are very focused on 'if there is a problem we are going to solve it'. That is our history, that is how we work. We are still too limited in really looking ahead, And a WUR study like that can just help. ... it does make you think carefully about it. Because what does it mean, for example, for the sea barriers that we have? How tenable will it be in the future to have them in the landscape? Well, we are including that in the future vision of the water authority. We are now talking about wide coastal zones, for example. ... there are, of course, more studies of this kind, but I think we are now using them much more, and certainly based on last year, to indeed outline that perspective for ourselves" (Citation O, 2020).

The interviewee here indicated that within the water authority, growing attention is paid to studies like Nederland in 2120 which explore the future. Moreover, the interviewee stated that these visions are used for the development of the BOVI, in which water authorities present their visions for the future. The interviewee hereby indicates that the plan is actively used as a source of inspiration. The last interviewee stated that he used the map that the plan presented as an example of a well-worked out vision. The interviewees hereby show that the plan is actively used in the policy- and decision-making discourse, hence this plan is strongly influential in terms of performance.

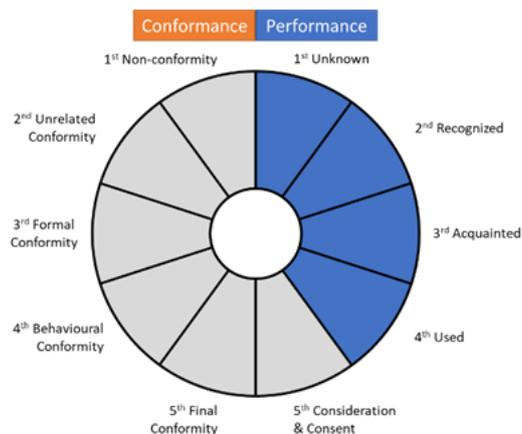


Figure 33: ISSSP influence evaluation wheel 'Nederland in 2120' (Author, 2021).

4.3 Pathways for improving relevancy

Besides the evaluation of conformance and performance of the informal soft plans, the interviews revealed several valuable insights for informal soft plan-making.

Communicating and establishing ambitions

The evaluating of ISSSP led to several discussions of the environmental visions (omgevingsvisies; GOVI, BOVI, POVI) that the Dutch government authorities must establish. In addition, the importance of ambitions was emphasized in several interviews. One interviewee argued that the establishment of these visions is helpful in the sharing of viewpoints, and possibly have ideas land in visions of other authorities. Another interviewee claimed that while having a shared vision and strategy is important, the internal ambitions of authorities are of most importance. This includes the establishment of a shared general ambition, in which an executive board is decisive. The interviewee refers to questions that are essential to establish what ambitions are, such as: “What is it that we want?”, “How far do we want to go in doing so?”, and “How much may this cost?” (Citation P, 2020). The next challenge is then to tune these different ambitions in a way that is beneficial for climate adaptation. According to one interviewee can the various environmental visions ideally function as tools in helping to tune ambitions. By discussing them could government authorities find out how ambitions differ, which can open a conversation about how they can be met.

Usefulness: creating impulses, providing inspiration and starting conversations

One interviewee claimed that Hotspot Klimaatbestendig Groningen mainly contributed to awareness about climate change and adaptation. For the establishment of climate strategies, the Delta-programmes and -plans had been more influential. The interviewee was therefore asked if the plan had functioned as an impulse. He confirmed this and added that he also considered De Nordic City and Plan B: Nederland in 2200 as inspirational documents.

With another interviewee, the quantity published informal soft plans was discussed. This interviewee too indicated that these plans might be more useful in creating an impulse, as opposed to the development of policy, mainly because many of them make use of varying scenarios and assumptions. The interviewee added that while the plans are useful as an impulse, there then still is a challenge of translating the proposed ideas to measures that can be taken in the short term. Furthermore, the interviewee claimed that plans like Nederland in 2120 are good sources of information and useful in providing an image of the potential future.

Interviewees also deemed informal soft plans useful as conversation starters. Waddenland aan Zee had been useful in getting people involved by showing what was happening in the landscape, Wadland helped to stimulate thinking, and Plan B: Nederland in 2200 is used to initiate discussions about the future.

Two last interviewees indicated that ISSSPs, and especially the visions that they presented, are useful for starting conversations with executive boards. One of them indicated that Nederland in 2120 could be useful to provoke such boards, but that this was not attempted enough in practice. To show ‘what is coming at us’ and starting a conversation about this, these plans can be helpful he argued. Similarly, the other interviewee stated that the imagined futures that are presented are good for asking direct questions like “What do you see in it, what are the positive elements in it that we want to keep, and what do you think is utter nonsense or frivolity?” (Citation Q, 2020).

Aspects for improving ISSSP relevancy

Some interviewees were asked how in their opinion the influence of informal strategic spatial soft plans could be enhanced. An interviewee with whom De Nordic City was discussed, stated that the plans strong influence could possibly be explained by how it was created. The interviewee mentioned the atelier sessions that were held prior to the making of the plan. During these sessions, design-oriented research was conducted which involved people from various disciplines. According to the interviewee, this can contribute to the usefulness

of plans. Furthermore, the interviewee compared De Nordic City to Plan B: Nederland in 2200 and claimed that the latter was probably established differently, by exploring the long-term future. Because of this visionary approach, the concrete actions that can be taken based on such a plan are different from what can be done based on a plan that makes use of design-oriented research and atelier sessions.

These comments can be connected to comments by another interviewee who claimed that ownership concerning an informal soft plan is a determining aspect in its usefulness to a government authority. According to this interviewee, to achieve such ownership, especially the involvement in the establishment of a plan is of importance. This ownership is beneficial for the landing of a plan and makes it more likely that ideas find their way into policy. A stand-alone product like Nederland in 2120 is, therefore, more difficult to act on the interviewee stated.

Regarding the presenting of concrete actions that can be taken, one interviewee argued that informal soft plans can be lacking in this concreteness. These plans have to include an extra chapter in which an analysis is made of measures that should, and should not be taken in the short term he claimed. Furthermore, the contribution of these measures to the realization of the presented future must be explained. The organizations that have a stake in these plans should subsequently test if the presented measures contribute to the presented future.

Chapter 5: Discussion and Interpretation

The previous chapter has presented the findings of the document analysis and in-depth interviews. In this chapter, the overall conformance and performance of the informal soft plans under study are reflected upon by addressing how the plans scored on the ISSSP influence evaluation framework, how this can be explained, and what this means.

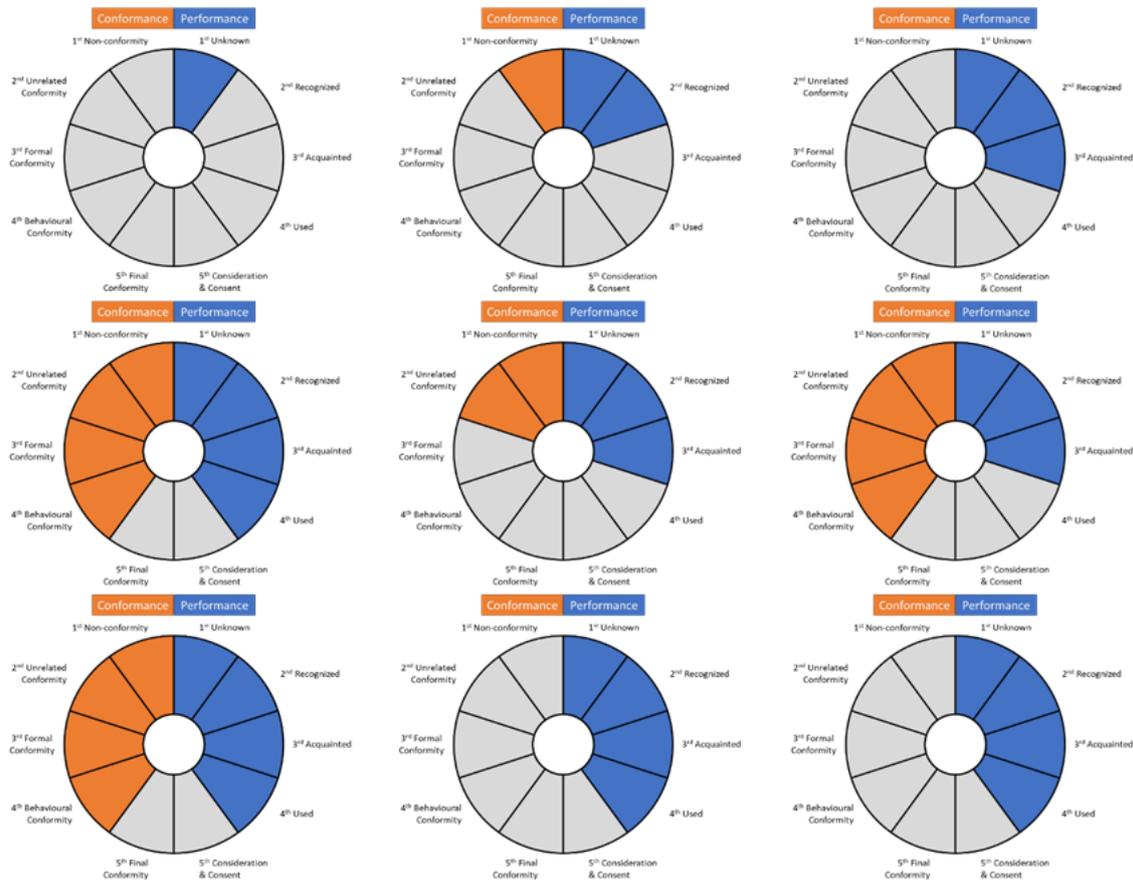


Figure 34: ISSSP influence evaluation wheel overview. From top left to bottom right: *Nederland Nu Als Ontwerp*, *Aura*, *Wadland*, *Hotspot Klimaatbestendig Groningen*, *Waddenland aan Zee*, *Economie van Water en Landschap*, *De Nordic City, Plan B: Nederland in 2200*, and *Nederland in 2120* (Author, 2021).

Plan-evaluation: conformance and performance

Figure 34 presents an overview of the ISSSP influence evaluation wheels. The plan evaluations have shown that the three oldest plans (counting *Aura* and *Wadland* independently), have had limited to no conformance- and performance-related influence on climate adaptation in the Northern Netherlands. *Nederland Nu Als Ontwerp* was unknown by interviewees, while one interviewee was familiar with *Aura* and *Wadland*. The limited influence in terms of conformance can be attributed to their modest attention to climate adaptation. While the plans propose measures that fit the climate adaptation strategies of today, these were not presented as such. In terms of performance can the limited influence be attributed to the age of the plans. Published over 20 years ago, it can be presumed that the plans have not landed in the climate adaptation discourse. Since they have lost their relevancy, the plans have gone into oblivion. In contrast, the more recent plans *Plan B: Nederland in 2200* and *Nederland in 2120* have not yet had the time to land. The evaluation wheels show that these plans have had a strong performance-related influence which can be explained by their recentness and sole focus on climate adaptation. Being new and reaching far into the future, the ideas of these plans have most likely not settled in the discourse yet. Their evaluation has however shown that these plans are actively used by policy- and decision-makers, thereby making it likely that the landing process is still taking place. Purkarthofer (2016) and Mäntysalo et al. (2015) explained this landing as the translating,

transferring and implementing of ideas from informal soft plans into formal hard plans. For the middle-aged plans, this process has taken place, resulting in relatively strong conformance- and performance-related influences. On average, these plans have been most influential. They were published between five and twelve years ago and have thus had the time to be land in the policy- and decision-making discourse concerning climate adaptation. This has contributed to their usage in terms of performance, and the handling in accordance to them in terms of conformance.

5.1. ISSSP influence: conformance

Various interviewees indicated to find it challenging to identify relationships between a plan and outcomes in the outside world. This was not surprising, because ISSSPs do not present blueprint designs that are ready for implementation. This is due to their strategic nature, which makes them frameworks for decision-making and not implementation (Mastop & Faludi, 1997). The identifying of relations is therefore difficult, what a plan proposes must first be developed into something that can be implemented. It can be assumed that just the people that have read the plan, interpreted it, let it influence their perceptions, and eventually bring these ideas into practice can identify such a one on one relationship. This can partially explain why the evaluation has largely indicated forms of 'Behavioural conformity'. For this type of conformance to be applied must policy- and decision-makers act in accordance with what a plan prescribes. To identify this, interviewees only had to identify commonalities between the plan and approaches in the outside world, they needed no knowledge of actual one-on-one implementations.

When an informal soft plan is directly referred to in a design-, policy-, or decision-making document, a relationship can be identified. Because this is rare, Mastop and Faludi (1997) argued that strategic spatial plans should be evaluated in terms of performance instead of conformance when measuring the success of a plan. Because this study focussed on plan influence, the evaluating of conformance was not misplaced, it has given a more comprehensive image of what ISSSPs are capable of.

The plans Nederland Nu Als Ontwerp, Wadland, Plan B: Nederland in 2200 and Nederland in 2120 could not be evaluated in terms of conformance because this remained undiscussed in the interviews. The presence of conformance-related influence on climate adaptation could not be excluded and the allocation of evaluation scores would be unsubstantiated. The lack of such data brings several interesting ideas for further research in mind, which are elaborated in 5.4.

EO Wijers: Aura was allocated the score 'Non-conformity', indicating that it has not influenced the material object in terms of conformance. It is expected that the arguments about Nederland Nu Als Ontwerp and Wadland are also applicable to Aura. The plan has not found its way into the discourse and the presented water management approach is outdated, making the plan irrelevant to contemporary policy- and decision-makers.

Waddenland aan Zee was allocated the score 'Unrelated conformity' because commonalities between the plan and the outside world were identified, but a direct relationship was not. This concerned a mobility project for the Delta-dyke. While the plan has thus possibly influenced the outside world, influence on climate adaptation is non-existent. The plan did present climate adaptive measures such as salt marshes for coastal protection, these were however not referred to by the interviewees.

Three plans were allocated the score 'Behavioural conformity'; Hotspot Klimaatbestendig Groningen, Economie van Water en Landschap, and De Nordic City. Comments by the interviewees indicated that Hotspot Klimaatbestendig Groningen has contributed to the establishment of adaptation strategies and that the adopted climate adaptation approach was in accordance with one of the presented visions. The plan aimed to generate knowledge that showed how Groningen could be adapted to climate change. Interviewees were able

to relate the plan to the climate adaptation strategies which shows that the plan has had a strong influence on climate adaptation in terms of conformance.

Similarly, comments concerning Economie van Water en Landschap indicated that interviewees saw commonalities between the proposed measures and climate adaptation projects that were realized in the outside world. Interviewees confirmed that water retention projects were implemented in the Blue-Green Belt and that these were combined with the development of nature. Furthermore, one interviewee stated that water authorities increasingly make decisions about water levels and the performing of functions, while taking into account climate change. Therefore, this plan can too be considered to have had a strong influence on climate adaptation in terms of conformance.

The strongest indications of conformance-related influence applied to De Nordic City. One interviewee indicated that elements of the plan had found their way into established policy. Another interviewee confirmed this by stating that the municipality had been closely involved in the atelier sessions prior to the establishment of the plan because it wanted to use these sessions as input for its policy-making. These comments identified a direct relationship between the plan and outcomes in the outside world. Despite this, the influence of the plan on climate adaptation has been non-existent because it concerned climate mitigative policy.

In conclusion, Hotspot Klimaatbestendig Groningen and Economie van Water en Landschap have been most influential for climate adaptation in terms of conformance for the Northern Netherlands. Together with Plan B: Nederland in 2200 and Nederland in 2120, these plans had the strongest focus on climate adaptation, making them the most relevant to the discourse. In contrast to the more recent plans, did these plans have a more zoomed-in scope by looking at Groningen and the Northern Netherlands. This probably made them better able to contribute to climate adaptive measures and investments. Moreover, both plans have been established with the strong involvement of government authorities from the region. It can be assumed that this contributed to their acceptance and usage, making the landing in the climate adaptation policy- and decision-making discourse more convenient. The involvement of government authorities in the establishment of these plans has possibly contributed to their conformance-related influence. Compared to the other plans, Hotspot Klimaatbestendig Groningen and Economie van Water en Landschap, are therefore the least informal.

5.2. ISSSP influence: performance

It was possible to evaluate all ISSSPs in terms of performance, which confirms Mastop and Faludi's (1997) claim that performance evaluation is the appropriate evaluation method for strategic spatial plans. In providing a bird-view perspective of ISSSP influence on climate adaptation, the evaluation has resulted in clear findings concerning their functioning.

Nederland Nu Als Ontwerp scored the lowest in terms of performance-related influence, all interviewees with whom the plan was discussed indicated not to know the plan. This can be explained by the age of the plan, it was published over 35 years ago. As a plan ages, chances of its content becoming irrelevant and outdated increase, eventually resulting in it not being used anymore. Moreover, at a point in time will the people that were familiar with the plan leave the work field, resulting in the plan not being in the minds of people anymore. Furthermore, the plan paid limited attention to climate adaptation, making it clear that for climate adaptation the plan has had no performance-related influence.

Also Wadland and Aura have had limited to no influence on climate adaptation in the Northern Netherlands. Just one interviewee showed to be familiar with the plans. While these plans received a higher performance score than Nederland Nu Als Ontwerp, their influence has been similar. One interviewee indicated that Wadland was sometimes referred to in discussions, but that this had not happened for some time. The

proposed actions that the plans presented have become outdated and it can be assumed Aura and Wadland are too old to be of influence on climate adaptation.

Evaluation of Waddenland aan Zee indicated that the plan has not been influential in the Northern Netherlands. The limited familiarity with the plan can be explained by its specific focus on the Waddencoast region. For most interviewees, this area lied outside the scope of their work. Additionally, the plan mainly paid attention to spatial quality. Although salt marshes and a more balanced water management network were proposed, it can be presumed that the limited attention to climate adaptation has kept the plan from landing in the discourse.

De Nordic City has been influential in terms of performance for another topic than climate adaptation. Several interviewees were familiar with the plan and one interviewee indicated that the plan was used for policy-making. This was climate mitigative policy and therefore not relevant to the study. The atelier sessions that were held prior to the plan, as well as the involvement of government authorities, can explain the strong performance related influence.

Although interviewees were only limitedly familiar with Economie van Water en Landschap, it has been influential for climate adaptation. The limited familiarity can be attributed to the plan's setup, it was namely published as advice instead of a plan or vision. Comments by the interviewees showed that ideas and concepts from the plan have landed in the discourse. While interviewees did not state that the plan was used as a framework for decision-making, their comments indicated that elements from the plan have influenced the planning object concerning water management. Hence, the plan has had a moderate influence on climate adaptation.

The plans Plan B: Nederland in 2200 and Nederland in 2120 have had a similar influence in terms of performance. Interviewees indicated to have used the plans for the starting of discussions about the future and as an example of a well-worked out vision. While this does not indicate that the plan is used as a framework for decision-making, it does mean that they are used in a way that can influence policy- and decision-making. The plans are actively used which will contribute to the landing of their content in the discourse. Moreover, Nederland in 2120 was used as a source of inspiration for the making of an environmental vision. It requires further research to find out whether elements have been translated, transferred or implemented into this vision, but this does indicate that the plan can become highly influential. Various other interviewees showed to be familiar with the plans, which indicates there is potential for the further landing of the contents of the plans. So far, they have had a moderate influence on climate adaptation, they are recent however and could still become more influential in the future.

The most influential plan in terms of performance has been Hotspot Klimaatbestendig Groningen. The evaluation has shown that the plan has contributed to thought-processes about climate adaptation strategies. This indicates that the plan has influenced the climate adaptation planning object, and was used as a framework for decision-making. One of the interviewees partially confirmed this by stating that he had used Hotspot Klimaatbestendig Groningen in his work. Moreover, he had discussed its content with colleagues. The strong focus on climate adaptation, together with these comments indicated that the plan has been strongly influenced climate adaptation in the Northern Netherlands.

5.3. Aspects for improving efficiency and relevancy

The plan-evaluation of conformance and performance revealed several valuable lessons with which the relevancy of informal soft plans to policy- and decision-makers can be improved.

Usefulness to policy- and decision-makers

For informal soft plans to reach their full potential in being influential, it is essential for a plan to be received by, and land in the policy- and decision-making discourse. This is more likely to occur when a plan is deemed

useful by these actors. Interviewees revealed that there are three main ways in which ISSSPs can be useful; creating an impulse, providing inspiration and starting conversations. Table 5, which provides an overview of the objectives of the plans, shows that most plans aimed to be influential in one of these ways. In this regard, ISSSPs are on the right track. The evaluation has shown that some of the plans have influenced climate adaptation in the Northern Netherlands and that these approaches can thus be successful. While the actual contribution of the plans has not been quantified in this study can this potentially be achieved in future research inquiries. Formulated as a lesson, informal soft plans should focus on creating impulses, providing inspiration and being useful in conversations. In doing so, an ISSSP is more likely to influence the planning object, and thereby ultimately influence the material object (Mastop & Faludi, 1997).

Establishing and communicating ambitions with the help of ISSSPs

Several interviewees indicated that ambitions are extremely important. For actual climate adaptive measures to be taken, and investments to be made, a shared ambition to do so must be present. If ambitions are lacking, climate adaptive visions and programmes will not lead to outcomes in the outside world. The communicating and tuning of ambitions between the various authorities is therefore essential.

Informal soft plans will not be able to pursue an authority to raise its ambitions or make multiple authorities tune ambitions. ISSSPs can however attempt to influence ambitions, which is what they are already trying to achieve by imagining what the future could look like in visions, and presenting solutions that work towards these futures. To become more influential in the raising of ambitions, can informal soft plans attempt to capitalize on outspoken ambitions. By showing the benefits or possibilities of raising such an outspoken ambition, a plan can potentially 'open the eyes' of authorities and make them raise their ambitions. Moreover, the integration of outspoken ambitions from several authorities into a combined vision can be useful in the tuning of ambitions. This builds upon the idea that ISSSPs are useful as conversation starters.

Improving the relevancy of ISSSPs

Several suggestions for ways in which ISSSPs could be made more influential and thus relevant were made. The use of atelier sessions has the most potential. In plan-making literature concerning strategic-, informal- and soft-planning this subject is underexposed. Mantalyso et al. (2015) referred to the use of ad-hoc think tanks in informal planning which lies closest to atelier sessions. One of the interviewees argued that the atelier sessions held prior to the establishment of De Nordic City contributed to the production of useful elements for policy- and decision-making. The plans Waddenland aan Zee and Economie van Water en Landschap too have made use of atelier-like sessions, however, this did not come up during the interviews.

The main strength of atelier sessions is the great amount of knowledge that becomes available. This can be used to come up with ideas that can be translated into an integrated plan, that is more likely to land because of its usefulness. Moreover, atelier sessions can contribute to the feeling of ownership. A plan is more likely to land in a government authority if this organization has a feeling of ownership concerning the plan. With the inclusion of authorities in the establishment of the informal soft plans, this feeling of ownership can be boosted.

The last potency for improvement is argued to be the proposing of concrete actions that should be taken. While ISSSPs can present attractive images of what could be, it is essential for the policy- and decision-making discourse that a plan presents concrete actions for the short-term that contribute to the realization of this future. With the use of atelier sessions prior to the establishment of a plan, stronger feelings of ownership and the production of more concrete actions can be realized. Future informal soft plans should therefore pursue the organizing of atelier sessions to improve the landing of their ideas. This will positively affect ISSSP efficiency and relevance.

5.4. Recommendations for further research

The integrative evaluation approach that has been adopted has provided a comprehensive idea of the influence of past informal soft plans on climate adaptation. The applied research methods of analysing these plans and discussing them with policy- and decision-makers have proven to be suitable in gaining such insights. However, the study has shown room for improvement and ideas for new research inquiries.

It will be worthwhile to conduct further research into the plans that have been most influential according to the study. The evaluation has shown that Hotspot Klimaatbestendig Groningen and Economie van Water en Landschap have on average been the most influential plans for climate adaptation. To better understand the actual influence of these plans in practice, a study should be devoted to either of these plans. This study has provided an overall idea of their influence, additional in-depth insights can be derived by solely focussing on one plan.

More in-depth interviews with actors from governmental authorities that have used these plans can provide more detailed information on how processes of translation, transferring and implementation work. How are the ideas that the plans propose adopted, is this a conscious decision or does this happen naturally? This will provide a more detailed insight into how ideas land which is relevant for the social aspect of planning and plan-making.

Additionally, a more intensive document analysis of governmental plans, designs and policies can provide more detailed information on the conformance of ISSSP. While it has been acknowledged that conformance evaluation might not be the best evaluation method for evaluating strategic spatial plans, this study has shown that conformance between ISSSPs and the outside world exists. Such a study could too provide a better understanding of how informal soft plan proposals are translated, transferred or implemented into formal hard plans.

Furthermore, the use of atelier sessions and the importance of ownership are of interest. While De Nordic City has not been influential for climate adaptation, its evaluation has shown these aspects contribute to the useability of informal soft plans. It is interesting whether the involvement of governmental authorities in atelier sessions significantly contributes to the landing of the content of a plan. Concerning ownership, it is interesting how the feeling of ownership is built up or boosted. Is the sole involvement in the plan-making process sufficient or must an organisation have a decisive voice? In short, this study has uncovered the tip of the iceberg that is informal soft plan influence on formal hard planning and further research inquiries should further look into the topic to understand it even better.

Chapter 6: Concluding the Research

In this chapter, the research is finalized with the formulation lessons in response to the central question. These are substantiated by the answers to the four sub-questions that the research has revolved around. The central research question to the study has been:

‘What lessons can be learned from past informal soft plans concerning climate adaptation and their influence, to improve the relevance of future informal soft plans for climate change adaptation?’

By answering this question, the research has attempted to contribute to the available scientific knowledge on informal soft plans concerning climate adaptation. It produced insights that can be used to improve the relevancy of such plans.

6.1. Towards a conclusive answer

The first sub-question, *‘What is climate adaptation and what does it entail in the Northern Netherlands?’*, had to be answered to establish the challenge that the region under study is faced with. The literature study and document analysis served to answer this question. The main climate change consequence that the Northern Netherlands region is susceptible to is sea-level rise. This brings the risks of coastal flooding, fluvial flooding and the salination of soils (Hinkel et al., 2010; Kuiper et al., 2007; Pauw et al., 2012). Adaptation of coastal defence is required and can be done by adapting land use to new conditions, improving defence works, or the giving up of land and retreating people and facilities to higher laying soils.

Furthermore, Dutch summers will become drier while become winters wetter (Kuiper et al., 2007). With these come droughts and intense rainfalls, which require water management systems to be adapted to ensure safety. During periods of intense rainfall, flooding safety is of concern, while freshwater availability must be guaranteed in times of drought. The better draining and retaining of pluvial water is therefore necessary.

Related to this is the more frequent occurrence of extreme weather events. These take the form of heatwaves, downpours and storms(surges) (Brockhoff et al., 2019; IPCC, 2019; Kuiper et al., 2007; Ministerie van Infrastructuur en Milieu, 2015). The adaptation to these events is closely related to the draining and retaining of water, as well as coastal defence. For the Northern Netherlands region, the studied informal soft plans mainly focussed on the large-scale challenges such as coastal defence, water management and the adaptation of the agricultural sector.

The second sub-question, *‘How can the influence of informal soft plans be determined?’*, had to be answered to find out how the influence of an informal soft plan could be determined. This question was essential because it determined the suitable research methods. According to the literature study, the appropriate method to measure such influence is through plan evaluation. Earlier efforts to conduct a similar study were missing, therefore the ISSSP influence evaluation framework was developed. Spatial plans can be evaluated in terms of conformance and performance. Conformance shows to what extent a plan has influenced the material object or the outside world that planners seek to change (Faludi, 2000; Laurian et al., 2004; 2010, Mastop & Faludi, 1997). Performance shows to what extent a plan has influenced the planning object or the decision-making concerning the material object (Alexander, 2009; Laurian et al., 2004; Mastop & Faludi, 1997). To understand the functioning of informal soft plans and their capabilities, it was decided to adopt the integrative evaluation approach. The evaluation results have shown that the evaluation of ISSSP conformance is challenging, but possible with in-depth interviews. For the evaluation of performance, this method has proven to be able to provide deeper insights into the way that informal soft plans are established, used, and potentially improved.

The third sub-question, *‘How do informal strategic spatial soft plans influence policy- and decision-making, and thereby formal hard planning?’*, had to be answered to understand in what way informal soft plans can

contribute to climate adaptive measures and investments. This question could be answered by combining findings from the literature study and comments from interviewees about the landing of these plans. In the formulating of lessons, this information functioned as a point of departure for what these plans can do. Ideas presented by informal plans must be translated, transferred or implemented into formal plans to result in climate adaptive measures or investments (Purkarthofer, 2016; Mäntysalo et al., 2015). Strategic spatial plans can influence the coordination of decisions and actions by influencing the planning object (Faludi, 2000; Mastop & Faludi, 1997). Strategic spatial plans should therefore function as a framework for decision-making and are dependant on their use in this way (Alexander, 2009; Faludi, 1989, 2000; Mastop & Faludi, 1997). Soft plans are considered to be valuable in addressing region- or area-specific challenges (Faludi, 2010; Purkarthofer, 2016) and therefore suitable for addressing climate adaptation. By addressing spatial challenges in this way do these plans take distance from statutory boundaries which makes them able to contribute to cooperation, coordination, negotiation and learning (Purkarthofer, 2016).

Together, these plan types form the informal strategic spatial soft plan, which makes use of strategies and visions to present a desired image of the future, aims to influence the planning object by functioning as a framework for decision-making, address challenges that are not bound to statutory boundaries, and have no legal basis. In influencing formal hard planning, these plans must land in the policy- and decision-making discourse concerning climate adaptation. This landing seems to work as a two-way street. First, to land must a plan be accepted and used, and second, when a plan is accepted and used it is more likely to land.

Informal strategic spatial soft plans are deemed useful in providing inspiration, creating impulses and starting conversations about the future. By making use of atelier sessions can they increase the sense of ownership and improve the ability to produce concrete actions. This will make the plans more useful to policy- and decision-makers, which will increase their chances of being influential.

The final sub-question, '*What has been the influence of informal soft plans concerning climate adaptation in the Northern Netherlands?*', had to be answered to understand how ISSSPs function in practice, and to find out which factors contribute to their influence. Based on the evaluation of conformance and performance, the influence of ISSSPs on climate adaptation in the Northern Netherlands was determined.

The two oldest plans (Nederland Nu Als Ontwerp and EO Wijers: Aura and Wadland) which were published over 20 years ago have had no influence. Due to their limited attention to climate change (adaptation) they did not land and went into oblivion. Two plans received average conformance and performance scores but had limited to no influence on climate adaptation (Waddenland aan Zee and De Nordic City). Nonetheless, evaluation of the latter revealed valuable insights that showed how a plan can be made more likely to land. Other plans scored high in terms of performance but could not be assessed in terms of conformance, because of how recently they were published (Plan B: Nederland in 2200 and Nederland in 2120). These plans however already have a moderate to high influence on climate adaptation because of their contribution to discussions about climate adaptation possibilities towards the future. They are herein expected to influence the planning object. The two most influential plans for climate adaptation have been Hotspot Klimaatbestendig Groningen and Economie van Water en Landschap. The evaluation of the former indicated that it has had a strong influence on climate adaptation strategies. Regarding the latter, it was established that climate-adaptive efforts regarding water management happened largely in accordance with the plan. In comparison to the other plans, these plans have hereby had the strongest influence on climate adaptation in the Northern Netherlands. The influence that these plans have had can be explained by their strong focus on climate adaptation, the involvement of government authorities, and the amount of time they have been around. This has favoured their landing in the policy- and decision-making discourse, thereby enabling them to influence climate adaptation planning object in the Northern Netherlands region.

6.2. Take-away lessons for future ISSSPs

Together, the answers to the sub-questions can be formulated into take-away lessons with which the relevancy of future informal soft plans can be improved. These are:

1. Plans that solely focus on climate adaptation within a specific area or region are more likely to become influential. This has been portrayed by the two most influential, and two most recent plans. Plans that did not specifically focus on the subject have been influential too but in other ways. By having a clear focus on climate adaptation a plan becomes more likely to land in the policy- and decision-making discourse.
2. The involvement of government authorities in the establishment of a plan can contribute to the conformance of a plan. The involvement of these authorities increases the likeliness that the plan is accepted and used, which will make it land. When the plan lands, it will be accepted and used more, which will result in it being more influential.
3. For an ISSSP to be influential in terms of performance, it should be useful in providing inspiration, creating an impulse or starting conversations. In doing so it is more likely to influence the planning object. If an informal soft plan can influence the planning object in this way, it can also eventually influence the material object. This can ultimately contribute to the realization of climate adaptive measures and investments.
4. By making use of atelier sessions in the establishment ISSSPs can the sense of ownership be improved. Moreover, this will contribute to the production of concrete actions that can be taken in the short term by institutions with executive powers. This will increase the usability, and thereby the relevance of a plan.
5. Future plans could attempt to capitalize on and raise outspoken ambitions regarding climate adaptive measures and investments. The environmental visions that are established by the government authorities are argued to help get ambitions 'on the table'. By capitalizing on and attempting to tune these ambitions, a more coherent approach to climate adaptation can be realized.

6.3. Reflecting on the research

The overall study is considered to have been a meaningful research inquiry. The lessons that have been formulated align well with the research objective and central question. Future informal soft plans could benefit from these insights and improve the plan-making profession. Moreover, the findings of this study provide an appealing point of departure for further research inquiries.

The theories and concepts applied in the theoretical framework have formed a strong basis throughout the research. Especially plan-evaluation literature has been essential for the conducting of the study. The literature concerning evaluation is vast and the development of a suitable evaluation strategy was challenging. Although earlier evaluation efforts of informal soft plans were unavailable, by clearly demarcating ISSSP with plan-making literature and building upon previous evaluation efforts, this study has established an evaluation framework that is suitable for evaluating these plans. Its establishment took a considerable amount of time and finetuning but the result is a ready-to-use framework, that has been capable of determining a clear image of plan influence.

Likewise, the applied research methods have had a valuable contribution to the derived insights. While it has been mentioned that the application of other methods could have resulted in more in-depth, possibly confirmation-providing insights, the applied methods have been great for gaining an overall understanding of the functioning of informal soft plans. Additionally, the semi-structured interviewees showed valuable insights for the landing of plans which are important for improving ISSSP relevancy.

Potential aspects for improvement have been identified too. The combination of the performance categories 'Consideration' and 'Consent' has reduced the preciseness of the evaluation framework. This has not been

influential for the results of the research, the framework could therefore however benefit from further fine-tuning. Furthermore, the inclusion of the plan De Nordic City can be considered doubtful in hindsight. The plan's focus on climate mitigation instead of adaptation makes it unsuitable for this study. This should have been detected during the global scan of the documents resulting in the exclusion of the plan. Fortunately, the evaluation of the plan has provided valuable insights concerning the use of atelier sessions.

All things considered, the results of the research are what was pursued. The evaluation of informal soft plans through in-depth interviews provided valuable insights into how these plans contribute to climate adaptation in the Northern Netherlands. While it cannot be stated that the findings can be generalized for all planning, it is assumed that the formulated lessons apply to Dutch spatial planning and plan-making because of the similar context. The research has hereby laid the foundation for further informal soft plan evaluation research and the enhancement of future ISSSPs relevancy.

Chapter 7: Bibliography

7.1. Literature

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- a. Dus je ziet vaak dat in een groep mensen die dan om tafel zit en die met elkaar bedenkt “wat kunnen we voor de toekomst verzinnen”, dat er dan altijd wel mensen zijn die iets van die oude plannen in hun gedachten hebben zitten, en dat dan nog eens aanhalen.
- b. Ik denk dat dat qua opzet wel redelijk doorvertaald is naar wat we op dit moment in de gemeente ... doen.
- c. In die zin denk ik dat dat document “Klimaat voor Ruimte”, dat dat in ieder geval in de gedachtevorming daar wel aan bij gedragen heeft.
- d. Nee, volgens mij is de lijn die nu gevolgd wordt vanuit de provincie en de waterschappen vooral dat de huidige kustlijn, dus de dijken die we nu kennen, dat die gewoon functie houden zoals ze die nu hebben. En ik weet ook bijvoorbeeld dat er een dijkversterkingsproject loopt langs de noordkust, er is wel geëxperimenteerd met dubbele dijken en met overspoeldijken, maar dat is niet zovergaand dat er gedacht wordt om het hele noordelijke gebied tot aan de stad als een soort kustzone te zien. ... maar op dit moment is voor veel betrokkenen de horizon dat 2050/2080 die kustlijn nog wel behouden is.
- e. ... ik denk bijvoorbeeld dat zo’n dubbele dijk, of het bekijken van zo’n dijk als een zone is wel iets wat nu wel veel gewoner is. Het stuk tussen Eemshaven en Delfzijl wordt dan de rijke rijk genoemd, dus dat je ook een soort combinatie hebt met natuur daarbuiten, we kijken veel meer naar de kwelders, wat voor een functie hebben die, ook in het reduceren van het risico van overstroming. Kunnen die de golfslag dempen. Tegelijkertijd wordt er ook wel gekeken naar het water binnen laten. Als je bijvoorbeeld kijkt hoe zo’n dubbele dijk functioneert, dan moet daar wel water in stromen dat slibrijk is. Dus het gaat een beetje gecontroleerd defensief. Dus het houdt wel vast aan de huidige kustlijn maar er wordt ook wel gekeken van “hoe kan je nou”, ook met name vanuit de slib-problematiek van de Eems-Dollard, “ook slib invangen landinwaarts”. Die hinkt een beetje op beide die beide gedachten denk ik.
- f. ... kan ik me voorstellen dat zo’n plan als ‘Kiek over Diek’ wat dus gaat over het fietspaden netwerk en om plekken om de waddenkust te ontsluiten, daar wel uit voortkomt.
- g. ... een soort hoofdgedachte in hoe we met de kust om willen gaan naar de toekomst toe.
- h. Dus ik denk dat het concept wat daarin gepresenteerd is wel iets wat terugkomt in de huidige plannen. Het is niet voor niets, de locatie waar wij nu die waterbergingsgebieden willen realiseren, dat zijn inderdaad die gebieden. Dat zijn gebieden op een strook van de lijn Groningen-Drachten. Want dat is in het landschap ook eigenlijk een beetje het lage deel. Want in het verleden heeft veen zich daar opgehoopt en dat is gaandeweg geoxideerd en daar zie je dus een relatieve laagte in het gebied. ... in het zuidelijkwestkwartier, dat is in het westen van ons beheergebied Daar gaan wij op verschillende plekken waterbergingsgebieden aanleggen, maar we hebben gezegd dat we dat gaan proberen te doen in combinatie met natuur. Dus dat is een voorbeeld van een koppelkans. Want er lag al een opgave vanuit de provincie, die zijn verantwoordelijk voor het realiseren van het natuurnetwerk, daarnaast had het waterschap een opgave voor de waterberging, En dat is dus wat er nu ook gebeurt.
- i. Ja, absoluut, het is ontzettend actueel. ... En je merkt steeds meer, helemaal met de laatste inzichten, maar ook landelijk, de vraag of dat houdbaar is. ... Er zijn op een gegeven moment gewoon gebieden waarvan je zegt “jongens, er zit een grens aan”. Om dat te noemen, en om die discussie aan te gaan, dat hebben we de afgelopen jaren wel weer opgepakt. Want we zijn als waterschap ook bezig met een visie voor de komende jaren ... En dan komt dit punt ook zeker naar voren, alleen is het nog best wel een controversiële. ... Dus ‘roepen’ dat het niet wordt “peil volgt functie” maar “functie volgt peil”,

... , dat is te kort door de bocht. ... Nee precies, terwijl er gewoon een kern van waarheid inzit, je moet op een gegeven moment gewoon kijken naar wat is houdbaar en moet je op een gegeven moment niet gewoon zeggen "he jongens je zit daar op een heel laag gebied, je moet het accepteren". En in de praktijk doen we dat al, we hebben altijd de mogelijkheid om te zeggen "gegeven de omstandigheden: de maatregelen die we moeten nemen om zeg maar die opgave te halen, die moeten wel in verhouding zijn. ... Dan zeggen we "ja jongens het is eigenlijk helemaal niet logisch om daar zo veel maatregelen in te stoppen". Maar om dat soort dingen 'aan de voorkant' zo expliciet te noemen als "functie volgt peil" dat is dan te gevoelig, dat is een stap te ver.

- j. ... daar wordt vooral aan de natuurontwikkeling gekoppelde waterberging uitgevoerd. In het Westerkwartier en in midden-Groningen. Dus daar zie je de koppeling water-natuur heel sterk.
- k. Kijk wat je nu bijvoorbeeld wel ziet is dat Groningen eigenlijk wel wordt gepositioneerd als energieprovincie. In het kader van de regionale energiestrategie zijn er nog een aantal voorstellen gedaan waarin Groningen een vrij vooruitlopende positie inneemt op het gebied van energie. Dus in wind en zon, maar ook waterstof is ook een spoor wat heel voortvarend en actief wordt opgepakt. En dat zijn ook wel elementen die in de verkenning van de Nordic City op de een of andere manier daar wel inzitten. Ik denk ook de koppeling van het versterken van dorpen en gebieden waar aardbevingsproblematiek is, de versterking daarvan in relatie met het energieneutraal maken dat is wel een spoor dan in ieder geval in de plannen wel wordt meegenomen. Of dat helemaal gaat lukken weet ik niet, maar die gedachtelijn zit er nog steeds wel in.
- l. Ja. Ik denk met name dat die Nordic City, als je dat naast het huidige energiebeleid legt van de gemeente dat daar dan heel veel elementen naar voren komen die in beide verhalen terugkomen.
- m. ... nu merk je wel dat er toch wel heel vaak weer op teruggegrepen wordt, zo van 'zoals ook al in de 'Nordic City' is bedacht'. Dus ook deze heeft het denken wel heel erg beïnvloed. Maar er is niet gelijk een vertaling gekomen ofzo van "oke als je dit in beleid zou willen vatten dan zou je dat zo moeten doen". Het biedt wel veel inspiratie dit document.
- n. ... de gemeente ... heeft hier ook heel anders aan tafel gezeten. Die hebben hun eigen ontwerpers onderdeel gemaakt van dit traject. Dus die hebben dit eigenlijk benut voor hun eigen planvorming voor de gemeente. En de provincie was iets meer op afstand, we waren wel vertegenwoordigd in de organisatie hiervan, maar dat was eigenlijk maar één hoofdpersoon Maar we hebben het niet als ons eigen traject benut zeg maar. Maar als je dat zou koppelen aan een omgevingsvisie, als je dan zegt we moeten toch zo'n nieuwe omgevingsvisie maken en we gebruiken dit als een soort van studie daarvoor, dan krijgt het vaak wat meer doorwerking uiteindelijk. Dus daar zit wel een groot verschil met hoe de gemeente daar aan tafel heeft gezeten en hoe wij dat als provincie hebben gedaan.
- o. ... dat gaat erover dat je een toekomstbeeld schetst, ... , maar het gaat er vooral om dat je je als waterschap ook realiseert dat je ook ver vooruit moet kijken en ik denk dat dat ook wel een leermoment is voor de waterschappen, dat wij te beperkt nog ver vooruit kijken. Wij kijken eigenlijk heel erg sterk naar de korte termijn. ... van nature zijn we heel erg gericht op 'als er een probleem is dan gaan we oplossen'. Dat is onze historie, zo werken wij. We kijken nog te beperkt echt vooruit, En zo'n WUR studie kan daar gewoon bij helpen. ... het maakt wel dat je daar goed over nadenkt. Want wat betekent dat bijvoorbeeld voor die zeekeringen die we kennen? Hoe houdbaar is dat ook naar de toekomst toe, om dat zo in het landschap te hebben? Nou dat nemen we nu wel echt mee in de toekomstvisie van het waterschap. We praten nu bijvoorbeeld ook over brede kustzones. ... er zijn natuurlijk meer van dat soort studies, maar we gebruiken dat soort studies nu veel meer denk ik, en zeker op basis van afgelopen jaar, om inderdaad dat vergezicht voor onszelf te schetsen.
- p. Dus kortom hebben wij ook gezegd 'wat willen we nou eigenlijk, hoe ver willen we daarin gaan, wat mag het kosten?'

- q. Dus deze plaatjes zijn best goed, want je kunt hier gewoon hele directe vragen over stellen aan bestuurders en een discussie over voeren van 'wat zie je erin, wat zijn nou de positieve elementen erin die we willen vasthouden en wat vind je nou volstrekte onzin of luchtfietserij?'

Chapter 8: Appendixes

Appendix A: ISSSP influence evaluation framework descriptions

Conformance

Level 1: Non-conformity

Signs of implementation or conformance between the plan and material reality are absent. Interviewees indicate that what the plan presents has not become reality. The plan has thus not led to material developments and its influence herein is thus limited to non-existent.

Level 2: Unrelated conformity

Elements proposed in the plan have been realized in reality, signs of a relationship are however missing. Interviewees indicate that ideas/elements proposed in the plan have been implemented or realized through physical development. They do however not identify a direct relationship between the plan and this form of conformance. The plan might have had influence but this cannot be confirmed, its influence is therefore limited to moderate.

Level 3: Formal conformity

Elements proposed in the plan have been realized in reality, and signs of a direct relationship are present. Interviewees indicate that elements discussed in the plan have been implemented or realized through policy or physical development as a consequence of the plan. A direct relationship is identified which indicates a form of conformance. The plan's influence is moderate.

Level 4: Behavioural conformity

Elements and information that is proposed in the plan are received and accepted. Interviewees indicate that actions are taken following what the plan proposes. Decision- and policy-makers act according to the plan and elements from the plan, policy and physical proposals, have found their way into policy- and decision-making. The plan's influence is moderate to strong.

Level 5: Final conformity

Objectives of the plan are met as a consequence of the plan. The plan is being realized in the way in which it is presented. Interviewees indicate that these elements can be found back in material reality, either in policy or the physical domain. The plan's influence is really strong.

Performance

Level 1: Unknown

The plan is unknown to policy- and decision-makers. Interviewees are unaware of the existence of the plan. The plan is thus not used as the framework for decision-making it was intended as and its influence is limited to non-existent.

Level 2: Recognized

Policy- and decision-makers recognize the plan and/or its content. Interviewees indicate that they have heard of a plan or know that a plan has been made when the content is described. They however do not know the exact content of the plan or what it proposes. While the plan might not be used as a framework for decision-making, it has not gone into oblivion. The plan's influence is limited to moderate.

Level 3: Acquainted

Policy- and decision-makers are acquainted with the plan and/or its content. Interviewees indicate that they are aware of the existence of the plan and that they to some extent know its content. They are aware of what the plan is about and what it proposes. The plan thus to some extent have landed in the policy- and decision-making discourse. The plan's influence is moderate.

Level 4: Used

Policy- and decision-makers have used the plan for working activities. Interviewees indicate that the plan has been used the plan for their work, thereby indicating that the plan functions as a frame of reference. This does not directly mean that the plan is used for decision-making (processes). It might be used like this, but this is not mentioned indistinctively. The plan has landed in the policy- and decision-making discourse. The plan's influence is moderate to strong.

Level 5: Consideration & Consent

Policy- and decision-makers actively use the plan as a frame of reference in decision-making processes. Interviewees indicate that the plan is used in this way and that the plan is also referred to. Information or elements proposed in the plan are explicitly adopted. The plan is used as the framework for decision-making it was made for as it has landed and conquered a position in the discourse. The plan's influence is really strong.

Appendix B: Document analysis codebook

Axial codes	Open codes
Climate change	Agriculture
- Mitigation	Coastal defence
- Adaptation	Drought
Context	Economical
- Goal	Energy
- Assumptions (climate, growth, etc.)	Environment
- Reason	Fresh water supply
Vision	Nature
What (is suggested)	Salination
- Physical	Sea level rise
- Governance	Subsidence
Where	Temperature rise
- Groningen	Water
- Friesland	Water management
- Northern Netherlands	
Why (was it made)	

Appendix C: In-depth interviews codebook

Axial Codes	Open Codes
Conformance	Claim of using plans
Non-conformity	Climate adaptation challenges
Unrelated conformity	Decision-making framework
Formal Conformity	Deltaplan/programma
Behavioural Conformity	Governance
Final Conformity	Importance of visioning
Performance	Work activities
Unknown	
Recognized	
Acquainted	
Used	
Considered & Consent	
Plan	
Nederland Nu Als Ontwerp	
EO Wijers: Aura & Wadland	
Hotspot Klimaatbestendig Groningen	
Waddenland aan Zee	
Economie van Water en Landschap	
De Nordic City	
Plan B: Nederland in 2200	
Nederland in 2120	

Appendix D: Form of consent

Ten eerste hartelijk dank voor uw interesse en deelname aan dit onderzoek naar de invloed van strategische plannen op klimaatadaptatie in Noord-Nederland. Dit interview dient als input voor mijn afstudeerscriptie, welke ik uitvoer ter afsluiting van de master Environment & Infrastructure Planning binnen de Faculteit Ruimtelijke Wetenschappen, aan de Rijksuniversiteit Groningen. Dit document dient ter kennisgeving van uw rechten betreft de uitvoering van, en het gebruik van de verzamelde antwoorden tijdens, het interview. Daarnaast kunt u aangeven of u de verzamelde antwoorden, en/of afgeronde document, te zijner tijd ter inkijk wilt ontvangen.

Bij deze wil ik u op de hoogte stellen van het volgende:

- U kunt te alle tijde besluiten het interview te beëindigen. Ook na afloop kunt u besluiten dat de verzamelde antwoorden niet in het onderzoek gebruikt mogen worden.
- U kunt te alle tijde besluiten een vraag niet te willen beantwoorden of een onderwerp over te willen slaan.
- De antwoorden die u tijdens het interview geeft zullen enkel en alleen worden gebruikt voor dit onderzoek, en dus niet voor andere doeleinden.
- De (geluids)opname van het interview wordt alleen afgehuisterd door de interviewer. Dit dient ertoe dat de gegeven antwoorden uitgeschreven en geanalyseerd kunnen worden. De (geluids)opname zal niet met derden worden gedeeld.

Zou u daarnaast de volgende vragen willen beantwoorden door het antwoord dat niet van toepassing is door te kruisen:

- Gaat u akkoord met de (geluids)opname van het interview ten behoeve van de analyse van de gegeven antwoorden?

JA / NEE

- Mogen de functie waarin u werkzaam bent, alsmede de organisatie waarbij u werkzaam bent, worden genoemd in het onderzoek? (Uw naam wordt niet gebruikt)

JA / NEE

- Mogen door u gegeven antwoorden worden geciteerd in het onderzoek, gekoppeld aan uw functie en organisatie? (Uw naam wordt niet gebruikt)

JA / NEE

- Ik wil de verzamelde antwoorden ontvangen. Ik wil het afgeronde onderzoek ontvangen.

JA / NEE

JA / NEE

Ondergetekenden verklaren dit document gelezen te hebben, begrepen te hebben, en vrijwillig ingevuld te hebben.

Onderzoeker/interviewer:

Deelnemer/geïnterviewde:

Naam:

Naam:

Handtekening:

Handtekening:

Appendix E: Semi-structured interview guide

Onderwerp	Vraag	Tijd
Algemeen	<ul style="list-style-type: none"> Mijzelf en het onderzoek introduceren, verwijzen naar het toestemmingsformulier. Zou u uzelf kort willen introduceren? <ol style="list-style-type: none"> Opleiding, interesses, vorige banen 	5 min
Functie	<ul style="list-style-type: none"> Kunt u iets vertellen over de organisatie waar u werkt en waar u zich in uw dagelijkse werkzaamheden mee bezig houdt? <ol style="list-style-type: none"> Waar bestaan dagelijkse werkzaamheden uit Aan wat voor type projecten werkt u momenteel 	5 min
Klimaatadaptatie	<ul style="list-style-type: none"> Wat zijn klimaatverandering gerelateerde problemen waar binnen uw organisatie aandacht wordt besteed? In hoeverre bent u bekend met klimaatadaptatie? Hoe houdt u zich bezig met klimaatadaptatie? Op wat voor manieren wordt er aan klimaatadaptatie gewerkt binnen uw organisatie? <ol style="list-style-type: none"> Climate initiative Verschillende onderwerpen 	5 min
Plannen	<p>Om de invloed van plannen te beoordelen zijn er twee maatstaven. De Performance (bekend met, overwogen en erkenning) gaat daarbij over het gebruik van het plan. De Conformance (formele overeenstemming, gedragsmatige overeenstemming en uiteindelijke overeenstemming) gaat daarbij over elementen van het plan die we daadwerkelijk terugzien.</p> <ul style="list-style-type: none"> Met welke van de plannen bent u bekend en met welke niet? <ol style="list-style-type: none"> Noteren van benoemde plannen <p>Per plan</p> <ul style="list-style-type: none"> Op wat voor manier bent u bekend met plan ... ? Hoe bent u bekend geraakt met het plan ... ? Wat vindt u van de inhoud van het plan? <ol style="list-style-type: none"> Zaken die worden voorgesteld etc. Bruikbaarheid Heeft u plan ... ook gebruikt bij uw werkzaamheden? <ol style="list-style-type: none"> Indien ja, op wat voor een manier heeft u het plan gebruikt? Indien nee, kunt u redenen beschrijven waarom u het plan niet heeft gebruikt? Zou u kunnen benoemen wat we van plan ... terugzien in huidig beleid? Zou u kunnen benoemen wat we van plan ... terugzien in de huidige ruimtelijke ordening? 	30 min

	<p>Indien niet bekend met plannen</p> <ul style="list-style-type: none"> • Hoe worden binnen uw organisatie plannen gemaakt die zich bezig houden met klimaatverandering en/of klimaatadaptatie? <ul style="list-style-type: none"> ○ Waar wordt inspiratie vandaan gehaald (andere organisaties, kennisinstellingen, eigen onderzoeken)? ○ Climate adaptation week van 2021 	
Onderzoeksdoel	<ul style="list-style-type: none"> • Hoe zou de invloed van strategische plannen / toekomstvisies zoals we hier hebben besproken naar uw mening vergroot kunnen worden? <ul style="list-style-type: none"> a) Waarom? • Hoe zou volgens u de klimaat adaptiviteit van het gebied waarin uw organisatie zich bezig houdt verbeterd kunnen worden? <ul style="list-style-type: none"> a) Waarom? 	10 min
Afsluitend	<ul style="list-style-type: none"> • Zijn er nog uitspraken die u tijdens het interview die u zou willen nuanceren of aanpassen? • Zijn er verder nog dingen die u zou willen toevoegen? • Zijn er nog personen die u kent waarvan u denkt dat zij mogelijk een interessante bijdrage kunnen leveren aan mijn onderzoek? • Verwijzen naar toestemmingsformulier; bent u nog geïnteresseerd naar de uitgeschreven antwoorden en/of uitkomsten van het onderzoek? Zo ja, dan zal ik u die toesturen. • Bedanken voor medewerking. 	5 min

Appendix F: Nederland Nu Als Ontwerp

Why was it made?

The report 'Nederland Nu Als Ontwerp' was part of a four-year trajectory to present an exposition in which possible futures for the Netherlands in 2050 were designed and visualized. The idea for the exposition was born in the early 1980s and was proposed by the union of city planners. For the idea of an exposition to be developed further into an actual project, a foundation was composed in 1984, called: Nederland Nu Als Ontwerp. The goal of the foundation was to organise a future-oriented exposition, focussed on the spatial planning of the Netherlands. This exposition aimed to act as an impulse for creativity and to fuel energy into this future-oriented thinking about spatial planning in the Netherlands. It should function as a source of inspiration. If this impulse would find ground in the world of planning, then the foundation would have reached her goal and it would be terminated.

In what context was it made?

Goal

The impulse the exposition aimed to achieve was to ultimately create a common viewpoint to collectively be able to think about possible futures for the Netherlands. As a point in the future, the year 2050 was chosen to be able to involve slow-changing processes that influence spatial planning and to think 'freely' about what would be possible without being attached to current beliefs.

Assumptions

The assumptions that are central to the report are extensively described. The report consists of two parts, of which the first part is concerned with the backgrounds underlying the different designs. Central to the exposition is the quality of the Dutch living environment. The initiators of the project identify the Netherlands as a problem-focused society, that is stuck in this problematic way of thinking. Central problems that are relevant here are environmental pollution, economic stagnation and cultural deadlock. According to the authors, this approach has damaged the pleasure of living in the Netherlands and they, therefore, want to, more consciously, try to form the Dutch future.

To fuel this way of forming the future and creating an impulse for the problem-focused society, four different future scenarios were designed. These scenarios are called Zorgvuldig, Dynamisch, Kritisch and Ontspannen (Carefull, Dynamic, Critical and Relaxed; own translation). The first three scenarios were based on different social movements that were predominantly present in the country, the fourth was experimental. All scenarios had different assumptions about how the Netherlands would continue to develop itself as a country in terms of demography, economy, culture and various other subjects. Based on these assumptions, different approaches were developed for the scenarios. The Zorgvuldig scenario for instance, pays special attention to agriculture and food production, while the Ontspannen scenario pays special attention to the production of energy and the facilitation of recreation. Likewise, the Kritisch scenario focuses on transportation via railways while the Dynamisch scenario assumes that transportation will largely happen through the air. Due to these considerable differences in basic assumptions are the scenarios quite unlike.

Reasons

In addition to the main goal of the exposition to create an impulse for the Dutch society, to step away from its problem-focused way of thinking, the initiators also ask a question that shows their awareness of what was going wrong: "in what state do we hand our country over to our children?" This shows that the authors were aware of the fact that the decisions that they made at the time would strongly influence what the future would look like. Despite this awareness though, only limited attention is paid to climate change.

Attention to adaptation and mitigation

Striking about the attention that is paid to climate change and climate adaptation in the report, is the lack and acknowledgement thereof. Subjects related to climate change (adaptation) are discussed, but the specific mentioning of it is limited.

Talking about water management in the section that discusses the basic assumptions for the different scenarios, is it assumed that in 2050 the Netherlands has found a solution for the effects of climate change, sea-level rise, subsidence and the securing of drinking water. Whether this solution for these effects is assumed to be in the mitigation of climate change effects or the adaptation to these effects, is not specified.

Also in a section about water management in 2050, is it assumed that the greenhouse effect as a consequence of increasing carbon dioxide concentrations in the atmosphere will lead to generally dry summers in 2050. These would be comparable to an extremely dry summer from 1987. Moreover, will this lead to a sea-level rise of 0,5 to 1 meter. It is also assumed that the demand for water from the agricultural sector will increase by factor 3.

In a chapter on energy use in the Netherlands in 2050, one of the authors discusses the greenhouse effect. He notes that the use of fossil fuels unavoidably contributes to climate change (through the greenhouse effect) and that this could lead to water management related problems. This in itself is an important conclusion as it shows awareness of the effects of fossil fuel use. He continues however by stating that it is very unlikely that the alarming stories about many degrees of temperature and meters of sea-level rise will become reality, but that they are a reason for caution.

Interesting is a transcript of a discussion by some of the designers. In this discussion, attention is paid to the water management of the Kritisch scenario. The designers and experts discuss the amount of water that is added in the overall scenario for the Netherlands. It is stated that the uncertainty that comes with climate change is substantial and that it would be interesting to explore a scenario in which the sea level decreases because of climate change. As of today, such a suggestion would be instantly dismissed, however, the fact that this was put forward, and then seriously discussed, gives a valuable insight into the thinking of people at the time that the report was made. The suggestion to assume a sea-level decrease was denied because this would create a difference in assumptions between the four scenarios.

A short section in the description of the Kritisch scenario does point towards (a form of) climate adaptation. It mentions that in this scenario, people will try to emancipate nature relative to humans. This would mean that a new synthesis should be set in which nature functions as a cycle and humans are subordinate. It is mentioned that this will influence how energy is generated and how the environment is treated, it is however not discussed how this will influence climate change.

What is suggested?

The report does not give hard suggestions on what changes should be made in Dutch spatial planning by the 2050s. It rather gives some ideas that could be implemented in this far away future. Unfortunately, these are limited because only the Kritisch design focussed on this region.

Physical

The Kritisch scenario visions that the Netherlands will have to endure some crises in the years before 2050, both ecologically and socially. After these crises, it is decided to try things differently. It is assumed that in 2050 most of the energy that is used, is produced by windmills. Another important source of energy will be biomass. Both of these energy sources have a significant influence on the spatial design of the Netherlands.

For the east of the province of Groningen, the scenario visions a new start. For the area between Groningen and Delfzijl, a design is presented. It argues that the area between these cities, including the Veenkoloniën to

the south, should be recolonized. With this recolonization, a new city called Fivelgo should be supported. The area makes use of its connection to Groningen and Delfzijl, the Eemskanaal and the rail connection with Hamburg in Germany. The area should be characterized by the presence of forest strips, channels and avenues. The urban areas are divided into quadrants of 800 by 800 metres. The intensively used agricultural areas in the Veenkoloniën are divided into quadrants of 4 by 4 kilometres. Together this results in a blueprint-like design. Lastly, it is mentioned that areas of the Drentse plateau, the Hondsrug and the Hunzedal should be given back to nature through the retreat of its inhabitants. This should result in an uninhabited landscape in which nature decides. In the north of Groningen, in the Waddencoast area where the soil is largely determined by the presence of nutritious sea-clay grounds, intensive agriculture is performed.

The plan also visions a new water management approach for the Veenkoloniën. With the so-called 'Watertrap' (*Water-staircase*; own translation), water levels in the region are increased up to 10 metres above NAP. This new approach to water management should guarantee the presence of plentiful potable water, water for agriculture and the provision of the region rich nature with attractive lakes and waterways, also in times of drought. It is mentioned that the Watertrap can also be used for the production of energy by pumping water up in times of energy abundance, and then using the difference in height in combination with the gravitational flow to retract energy during times of high demand.

Governance

Concerning the quadrants that are discussed in the section of physical suggestions above, it is mentioned that the quadrants are issued by the government with very few limitations for the users. The quadrants should be issued to urban individuals, collectives of farmers, and 'everything between those'.

Moreover, does the discussed vision assume that farmers collaborate in cooperative agricultural organizations. These types of initiatives are expected to contribute to the productivity and efficiency of agriculture, thereby resulting in a significantly different working environment in which farmers have more spare time. This should allow them to focus on the production of other goods or to spend more time on recreation, which will contribute to their well-being.

Appendix G: EO Wijers: Aura and Wadland

Why was it made?

The EO Wijers Stichting is an organization that organizes design competitions on a regional scale in the Netherlands. Before the 5th competition that is discussed here, the competition produced the plan “Plan Ooievaar” which deeply influenced river management in the Netherlands. With the 5th competition, titled “Who is afraid of the empty programme?”, the foundation invited planners, designers, artists and everyone that had the interest to present their plans and ideas for the North of the Netherlands. The best designs that were submitted could win a cash prize. With the competition, the EO Wijers foundation hoped to act as, and to produce, a source of inspiration for the future of the Northern Netherlands region. Two designs were crowned as winners, Aura and Wadland, these will here be discussed. The actual designs were not available for analysis, only the jury report discussing them. Just the text and information referred to or reproduced by the report was therefore available. Because the winning designs received the most attention, the analysis of these two designs was more feasible. Moreover, because they won the competition, these designs were also likely the two best designs.

In what context was it made?

Goal

The competition aimed to reach and stimulate political debate. The lack of future vision for the Northern Netherlands had to become discussable. The jury of the competition expected that, due to the pictorial quality of the designs, the report would make the discussion of the North of the Netherlands well accessible to all. In the report, the jury urges politicians, decision-makers and other interest groups, in both the north and in The Hague, referring to the central government, to study the results of the competition.

Assumptions

The Northern Netherlands is characterized by the presence of some slow, creeping, but drastic changing processes. Some of these processes are considered to be the result of the withdrawal or decentralization of the central government. The central point of the competition was that instead of a programme that is deduced from Randstad oriented programmes, the Northern Netherlands should be appointed a programme that makes use of the region’s potencies. The jury noted that the agricultural sector of the region was undergoing changes leading to the disappearance of the ‘esdorp’ landscapes. Moreover, it is mentioned that environmental measures are implemented without taking into account their spatial consequences. Lastly, there is the shrinkage of the economy, demography and facilities. These processes have a negative influence on space, but they generally happen autonomously. The jury however notes that the involvement of designers on the regional level can be valuable for the guiding of such large transformations, thereby influencing them positively.

Reason

Spatial planning in the time of the competition seemed to be largely focussed on the central nodes of the Dutch society, while the more peripheral regions, such as the Northern Netherlands, are in desperate need of attention. This, in turn, results in a lack of vision for this region. The jury argues that instead of seeing the north’s place in the shadow of the Randstad as problematic, this should be considered to be an opportunity. This could allow the region to function as a laboratory for the transition towards a sustainable society.

Attention to adaptation and mitigation

In the report that discusses the overall competition results, the jury notes that very limited attention is paid to subjects as sea-level rise, subsidence, salination, and climate change. Only three designs discussed these subjects intentionally. While it is noted that these processes are, or will be very influential in the region, they are not discussed further. The jury furthermore notes that solutions should be sought for coastal defence and the dependence on the IJsselmeer for freshwater.

The Wadland plan, seemingly unintentionally according to the jury, could work well in terms of coastal defence. This can mainly be realized because of the added water retention capacity. It also works with the 'living with water' approach instead of 'fighting against water', which is extremely relevant in the Netherlands today. While it might thus not have been an intentional climate change adaptation strategy, it does work as such an approach.

What is suggested?

The authors of Aura make a distinction between two types of landscapes, the 'slow emptiness' and the 'fast fullness'. The 'slow emptiness' landscape is characterized as the living environment of people where they work, meet and generally live. This living environment is closely connected to the physical space. The 'fast fullness' landscape is where telecommunication and the dynamic 24-hours-economy have resulted in the detachment of the living environment and the physical environment. It is argued by the authors that both landscapes are increasingly colliding due to their land uses and activities. Despite the contradictory interests of both types, they can be developed side by side. According to the authors, this development may result in the establishment of an 'invisible city'. This invisible city description is rather vague, however, on the presented poster a map shows other 'invisible cities' in the Netherlands which are practically authority boundary-spanning regions such as the Randstad. The plan sets out a route for the year 2050.

Unlike the plan Aura, which is mainly bound to restrictive rules and land uses, Wadland foresees large spatial interventions. The plan argues that instead of growth, decline should be the leading principle in the spatial planning of the Northern Netherlands. Through this ambitious approach, the region could add itself to the list of attractive, rough European nature areas such as the Pyrenees or the Scottish highlands.

Physical

The design Aura presents a new water management and land use approach, based on the division of the region into five different types of 'sponges'. This way of water management should produce 'water, calmness and dark' resulting in a more balanced landscape, and counteracting the quick developments of the fast fullness. It is argued that with this approach the signatory landscape of the north can be recovered. It herein provides a future perspective that can be worked towards.

In the Fries-Drentse "streams land" area, the plan visions a green sponge where dairy farming is performed, and therefore no groundwater polluting activities can be done. The only water that is allowed into the green sponge, is water from the blue sponge in the peat bog area. In this blue sponge, freshwater storage is combined with nature, living, recreation, water purification and collection. The Fries-Groningse lowland is visioned as a brown sponge. In this area, crop farming, bulb growing and energy-producing crops are supplied with clean water from the blue sponge. For the lands that are connected to the IJsselmeer and Wadden sea, a yellow sponge with natural coastal defence is suggested. This form of natural coastal defence will allow wind, rain and tidal effects to influence the land, which will result in dynamic coasts and salt marshes. Infrastructure in the blue and yellow sponges should be limited so that "silent areas" can form. Lastly, in cities and villages, parks should function as red sponges. According to the authors, cities will decrease in size in the future, allowing for red sponges to be expanded thereby resulting in a better living- and working environment. Especially the connection to the sponge is expressed to be important. The jury of the competition valued the attention paid to subsidence, water management and the environment.

The authors of Wadland argue that for the Waddenkust to become an area of international allure the natural tidal effect should become the motor of development for the region. To realize this, the sea dyke will have to be breached at several locations, resulting in the sea reaching up to the cities Alkmaar, Leeuwarden, Dokkum, Groningen and Oldambt. This creates new conditions for the expansion of these cities. For nature, the tidal effects and (re)connection of saline and freshwater will bring a new type of environment. While the plan for Wadland mainly focuses on the Wadden coast itself, it is argued that other regions like the farming areas, de

Friese Meren (Frisian lakes), the growing province of Drenthe and cities have a stake in the plan too. For people to be able to retreat within the Wadland, the present infrastructure would have to be shrunk.

Furthermore, the plan foresees large ranches at which cattle are held, energy being won from natural gas, the Eemshavencentrale (currently coal and biomass) and windmill farms. For recreation, the plan argues for the development of a place called Zomerstad on the coast of the Lauwersmeer, which will become the Lauwerszee.

Governance

The sections that discuss the assignment that the designers are tasked with, mention two points that can be related to governance. First, it is questioned what kind of “game rules” should be imposed with the design. These rules should aim to control or accompany the underlying changing processes. Second, it is asked who the client of these rules should be. Should it be the government? Or are there other actors that should be involved in the spatial planning of the Northern Netherlands?

The authors of Aura argue that for the discussed landscape types to be developed further, restrictive rules regarding spatial planning should be implied. Autonomous development of telematics and high-quality infrastructure should be allowed too, however, so that the region can be connected to the global economy. It is argued that the board of the invisible city Aura can develop projects based on the presented designs. This board would also collaborate with private individuals, authorities and market parties to potentially realize their wishes. The plan also presents a plan for Groningen-Hoogezand, accompanied by a “negotiation map” that suggests what the board should pay attention to. This board itself, however, is not discussed elaborately. How it works, who can be involved and what kinds of power it has is not mentioned.

No clear governance-related strategies or approaches are discussed in Wadland.

Appendix H: Hotspot Klimaatbestendig Groningen

Why was it made?

The report 'Hotspot Klimaatbestendig Groningen' is the result of research into the effects of climate change on the province of Groningen. It aimed to produce knowledge on climate change, and how this could be translated into climate adaptation measures that could be used in spatial issues. To produce a wide range of integrated knowledge, several knowledge and research institutions were involved. Special attention is also paid to the importance of exploring uncertainty and planning ahead of time. The report mentions that at the time of the project, plans usually only look about 10 years ahead. To tackle climate change it is argued, we must plan 30 to 50 years into the future. This is also what the presented designs of the plan do. The report describes the overall process of the project as a whole, but also the decision-making processes, brainstorm sessions, and the findings and realizations about the growing support for climate adaptation during the project amongst those who worked on it.

In what context was it made?

Goal

The Hotspot Klimaatbestendig Groningen was part of the 'Klimaat voor Groningen' programme. This programme aimed to produce knowledge on climate change that could be used in spatial issues. In the report, this knowledge is translated into spatial planning adaptation measures on a provincial scale. The outcomes and results of this study could be used by authorities for the construction of climate-resistant regional plans, environmental plans (omgevingsvisies), structural visions (structuurvisies) and water management plans. The produced knowledge could function as frameworks for the making of policy. Findings of the project were initially also intended to be used in the environmental plan of Groningen, however, as the research took longer than expected only results gathered at the start were used.

The project also had the methodological goal of finding out how long term developments such as climate change could be integrated into spatial planning and the political decision-making process. It herein focused on how policy-makers and directors could be made aware of the effects that climate change has on spatial planning now and in the future. Lastly, the project aimed to strengthen and broaden the network that deals with climate adaptation.

Assumptions

In 2006 a storm hit the north of the Netherlands causing parts of the lands near Delfzijl to be flooded and parts of the sea dyke to be taken away by the sea. It led to awareness in the province to take climate change seriously. This awareness, in turn, led to the wish within the province to pay attention to climate adaptation. Finally, this led to the involvement in the 'Ruimte voor Klimaat' programme.

The Hotspot project assumed a sea-level rise of 5 metres. While this was at the time a rather extreme and maybe unlikely scenario, it was applied to guarantee the robustness of the plan. The future does not end in 2050 and it neither does in 2100, so it is argued that assuming an extreme situation can help prepare for the unexpected. In doing so, the project also wanted to distance itself from conventional plan-making that was more probabilistically and extrapolatably-oriented. For the development of policy, the exploration of uncertain futures through extreme scenarios is argued to be valuable.

Reason

The complexity and uncertainty that are related to climate change are strongly emphasized. It is mentioned that even during the project, insights about climate change had changed due to new perceptions and findings. This is interesting because this still happens as of today. Almost yearly, scientists conclude that climate change happens differently from what they initially thought. To account for this uncertainty the report argues that it is important to discover the possible scenarios, also the extreme ones. This allows us to design robust plans that work, even if the most extreme scenario becomes reality.

Attention to adaptation and mitigation

The report stresses the important notion that climate change is a process that only becomes visible and tangible in the long term. Waiting until this moment is there, however, is undesirable because of the intensity and costs. Policy for climate adaptation at the time of the research was still in its infancy. With their involvement in the programme, the province of Groningen was the first to act within this theme. The report discusses the possibilities for the province to adapt to climate change in five different themes; water and nature, the coast, energy, water supply and agriculture.

What is suggested?

The suggestions that are made in the report are extensive. They were constructed in the following way. First, a large range of knowledge on climate adaptation possibilities within the five themes was collected through workshops and expert meetings. Based on this knowledge a map was constructed in which the different possibilities were integrated; the integral adaptation map. Next, three future scenarios were developed. The first two assume an extreme rise in sea level of 5 metres by 2100. These future scenarios are described as offensive and defensive. The third scenario is based on the least extreme assumption that the sea level will rise by 1.3 metres by 2100. The three scenarios all describe assumptions as to how the province could adapt to climate change. Next, the scenarios were combined with the integral adaptation map. This resulted in maps that were then rated on their degree of robustness. From these findings, the final two scenarios or visions were developed, called *Opgeven* (Give up, defensive) and *Volhouden* (Persist, offensive). The suggestions that are made in these plans are described below.

Physical

The plan argues that measures must be taken starting in 2010. A new super dyke must be constructed near the Eemshaven to protect this vulnerable area. It is mentioned that the natural demographical decline of this area is useful. This allows for the concentration of living in predetermined areas. Then, over the following 10 years several compartments are constructed with 'sleeper dykes'. These sleeper dykes are old sea dykes that are no longer in function. It is argued that with some relatively small adjustments these dykes can be made functional again, not to withstand the sea, but to guarantee more safety. In the year 2025, a decision would have to be made about whether the defensive or offensive approach is adopted. The main suggestions of both visions are discussed below.

The defensive scenario "Verdronken land van Groningen" (The drowned land of Groningen) (Give up)

In this scenario, most of the province of Groningen is given back to the sea. This means that the important functions and activities should retreat to locations at least 5 metres above NAP. Land that is not given to the sea must be protected against it. Functions that cannot be moved, such as the Eemshaven and the industry of Delfzijl must be made robust enough to survive a higher sea level. The new coastline that lies close to the city of Groningen is developed into a new Wadden area. This area is characterized by dune and island forming. It protects the hinterland storms and intense waves. Tidal rivers arise from the Drents plateau which is naturally connected to the seawater. Aquacultural agriculture is developed near the coast for the production of algae, seaweed, fish and shellfish. Also at sea large 'sea-farms' are created that produce food and energy.

The offensive scenario "Iets boven Groningen" (Something above Groningen) (Persist)

This scenario assumes that despite the growing threat from the quickly rising sea level, Groningen will defend itself heavily against these changes. In practice, this means that the Wadden environment will be nourished with sand replenishment to retain its defensive function for the Northern coast. Moreover will a super dyke be constructed. This dyke is much wider than regular dykes so it can also facilitate the performing of industrial activities for instance at the Eemshaven and Delfzijl. The dyke covers the whole of the coast and is built to be unbreakable and high enough to withstand the risen sea level, as well as higher tidal wave energy. The lower lands of the province are periodically raised through the natural force of sedimentation from seawater. In the centre of the province, a shared freshwater reservoir is realized that, also during dry summers, provides plenty

of water. The agricultural areas near the coast have become saline and will focus on the production of algae. Agricultural areas in the Veenkolonien will focus on the combination of arable farming, livestock breeding and energy crops. At specific locations agriculture clusters and sustainable greenhouses are located.

The plan also describes ten ‘iconic projects’. It is explained how these are iconic at the time that the research was conducted, as well as how they are likely to have changed in 2100. It is not explained how they become this way. While interesting, they seem rather optimistic. The six projects that are clearly demarcated are shown below, the more general ones (space and energy, nature, living and working) are left out.

Project	2009	2100
Lauwersmeer	Problematic because it could probably be safer in a more dynamic and robust form.	Reconnected to the sea robustly and dynamically. Large scale energy production through osmosis.
Waddengebied	Under pressure because of rising sea-level. How can its natural quality be preserved?	Increased in size through de-poldering of the sea. Transformed into an ecological paradise also functioning as a touristic attraction.
Middag-Humsterland	World heritage under pressure because of freshwater shortages, drought, and salination.	New water management building on drier summers and wetter winters have sustained its nature and agriculture.
Eemsdelta	Weakest dyke part with the highest risk. Possibilities for experimentation with a wider dyke.	The zone between Eemshaven and Delfzijl has transformed into an area where nature, saline water, freshwater, living, recreation and biodiversity thrive.
Fivelboezem	Cultural history is under pressure because of subsidence.	Through the storage of carbon dioxide in the natural gas cavities, subsidence has been reverse. Smarter water management for nature and agriculture.
Veenkoloniën	A region that is faced with a poor image.	By absorbing carbon dioxide instead of emitting it, the region has become an example to the world. Knowledge has become an export product.

Governance

It is argued that to make the ‘right’ decision between an offensive or defensive approach in 2025, well-substantiated reports about sea-level rise must be issued by the Delta commission. Moreover is it important that Groningen collaborates with Friesland and Drenthe more intensively, as well as with Germany. A description of governance-related interventions that must be made to realize the suggested physical interventions is lacking.

Not necessarily related to governance but an interesting result of the project that is mentioned is the arising of numerous networks between some of the participants of the project, inside the project but also outside of it. It argues that because of the increased expertise of the province on climate adaptation the authority has become an actor that organisations like to include.

Appendix I: Waddenland aan Zee

Why was it made?

The Waddencoast is argued to be the most dynamically and richest nature area of the Netherlands. In the lands behind the dykes lie some of Northwest Europe's oldest habitats with the 'terp' and 'wierden' villages. The landscape is characterized by its peacefulness, vastness, darkness and pretty views. On the other hand, the area has to deal with a small economical base and economical decline. The area is generally passed through by tourists on their way to the Wadden islands. According to the authors, this has resulted in a 'bypassed landscape'. The plan aims to research the possibilities to change this situation while making use of the existing qualities of the landscape. This should allow for the economic basis to be broadened while improving the spatial quality. This spatial quality is in essence linked to the change in economical decline and the dependant liveability of the smaller villages, but for cities like Dokkum and Delfzijl too. Another autonomous change is the highly influential climate change. It is argued that this will have severe consequences for the coastal defence and extensive agricultural sector through sea-level rise and salination. This new type of dynamic is linked with a financial component (coastal safety) that could potentially function as a motor for an integral use of possibilities.

In what context was it made?

Goal

The report describes that it aims to create an integral vision for the whole of the Waddenkust (from Den Helder to Statenzijl) from the viewpoint of spatial quality. This vision is built upon research by design, and bottom-up initiatives. It is argued that the region already knows a wide range of (local) initiatives, but that these are generally created sectoral, causing them to be fragmented. The authors identify a challenge here to make use of the present qualitative local knowledge and the numerous inspiring activities in the landscape, cultural history and tourism/recreation as building blocks for this vision. This combination should result in an overarching vision that is well-supported, inspires and brings an actual improvement to changes in the Wadden coast landscape. It should create an impulse. To do so, designs were created by three design bureaus for the three provinces (North-Holland, Friesland, Groningen). These were then combined into one overall plan.

Assumptions

For the basis of the report, an extensive analysis was conducted that resulted in an atlas. This document shows how the dynamic of the Waddencoast has changed over time and what kind of spatial effects this had. In the analyses, three conclusions are made that are of interest for the eventual plan that is presented. First, there is the change from a dynamic coast (soft) that is open to the Waddenzee and the natural effects it had, towards a 'hard' (closed) coastline that divides sea and land with a large Deltadyke. Second, is the change from a sea-oriented trading society towards an agricultural region. One of the reasons for this was the declining binding with the sea because of the embankment of the Wadden coast. Third and last is the shift of the region from a centrum to the periphery. While the west and south of the Netherlands put their efforts towards the service sector, the north lagged behind with its strongly developed agricultural sector. This has had its effects on the spatial pattern of (government) investments and thus the spatial character of the region. Friesland is characterized by the dispersion of small villages and the capital of Leeuwarden. Groningen is different in the way that its smaller villages have a strong connection to the, still growing, central city.

Moreover, challenges are identified that will have an impact on the spatial design of the region. According to the authors these challenges lie in the shrinkage of the region (economical and demographical decline), recreation, coastal safety, agriculture and nature. The last three are further discussed in the section about climate change adaptation and mitigation.

Reason

The report was made at the request of the 'Regie College voor het Waddengebied' (RCW, Direction for the Wadden environment). In this organisation, the national government, provinces, municipalities and water boards together work on the development of strategic directions for the Wadden environment. The organisation does so by drawing up a Management- and Development-plan and a Measures-programme. The RCW also fulfils a coordinating role for the enforcement of law and regulations. Lastly, they are also concerned with the coordination of government plans and local initiatives originated in the Wadden environment. According to the RCW can the advice that is presented in this report be used for determining how and where funds from the Wadden fund should be spent.

Attention to adaptation and mitigation

The report states that the climate is changing and that the sea level is rising increasingly faster because of this. It is argued that this will lead to higher water levels and more intense tidal waves, which will strongly influence Dutch coastal defence works in the North- and Waddensea. At the time of the report, the Dutch primary water defence systems were undergoing testing. These tests are performed over 5-year long intervals and determine whether the systems live up to the relevant safety norms. Results of testing in 2011 determined that parts of the system did not comply with the standards. It is argued by the authors that it was time for society to put coastal defence into a broader perspective by creating a robust coastal zone that includes coastal defence, nature development and new forms of recreation.

Besides the effect that climate change has on the sea level rise, does it also have important consequences for the so important agricultural sector of the North. The main stressor here is the salination of the ground because of sea-level rise and subsidence. Experiments are conducted with the cultivation of saline crops that can withstand the increasing saline concentration. It is stated that a major shift towards the adoption of saline crops seems possible, but also necessary. Also, the water management of the Wadden environment should be critically reviewed according to the authors. Longer periods of drought and short high-intensity rain showers will become more frequent due to climate change. Concretely these will result in a higher burden for freshwater retainment and the flushing capacity within the coastal region. It is argued that their capacities must be increased which can be achieved through the widening of waterways and the creation of natural embankments.

How nature should receive improvement is discussed too. Here, the largest challenge lies in the making of connections. An example of this is the restoration of the sweet-salt-gradient. Currently the Delta dyke forms a hard separation for the fresh inland water and the saline seawater. This hard separation can be overcome by adding fish passages or simply letting the saline water flow into the land. This can have a considerable contribution to the more diverse and richer flora and fauna of the Wadden coast. Because of sea-level rise, the lands behind the dyke are already undergoing salination. By the intentional design of the Wadden coast nature as a place where saltwater meets freshwater, the dynamic Wadden environment nature can be brought in. The authors argue that this can contribute to the quality of nature, but it also brings recreational opportunities.

What is suggested?

The plan is presented as a vision that aims to create coherence between qualities, challenges and local initiatives. When a better coherence between these can be achieved, support for, and the financial justification of plans can be improved.

Physical

Central to the vision is the approach that should be adopted. This approach should be focused on the embracing of the Wadden coast's dynamic character. It is stressed that this does not refer to the metropolitan type of dynamic (urbanisation and infrastructure), but that of the Wadden environment itself. The dynamic

between land and water, low tide and high tide, between nature and culture. A dynamic of people in a society that adapts itself to new circumstances in decline and climate change.

With the adoption of this new approach can the Wadden coast become the 'other' coast of the Netherlands (besides the Noordsea coast). This does not mean that it should become *like* the Noordsea coast. The Wadden environment is characterized by its vastness and emptiness, mass tourism would thus not fit here. Three 'story lines' have been created based on the exploring analysis, workshop sessions and the designs for the different provinces. These storylines functioned as the foundation for the overall design. Their spatial implications are discussed here.

A wide, robust coast

Currently, the coast is a narrow piece of land with the Delta dyke functioning as a hard barrier between land and water. This barrier should be transformed into a wide, dynamic coastal zone. In this new situation, the dyke becomes a connecting factor between the dyke's outer- and hinterlands. To achieve this, the plan argues for innovative dyke improvements. Instead of simply heightening dykes that do not live up to the safety norms of the Delta programme, a new approach should be adopted in which the solutions can grow as the sea level rises. The example of creating salt marshes in front of the Delta dyke through the natural process of slitting up. These salt marshes can have a defensive function as they have a breaking effect on incoming tidal waves. Moreover, could these salt marshes contribute significantly to ecology and recreation. It also brings possibilities for agriculture in the form of salty crop farming. Other coastal defensive solutions that are presented for the Lauwersmeer, the Eemshaven and Delfzijl are an 'overflow resistant- and double dyke'. The main argument for this approach is that it makes use of the dynamic of the water and the tidal effect instead of closing it out.

Also, it is argued that the sea should be allowed to become more influential in predetermined, controlled areas. This way the sweet-salt-gradient can be restored which contributes to the ecology and biodiversity of the Wadden coast. To achieve this, linkages between the sweet- and saltwater must be constructed which can be combined with fish passages, locks and harbours. A larger intervention is envisioned for the Lauwersmeer. Here, a 'gedempt getijde regime' (muffled tidal regime) should be re-introduced. This would result in a different composition of the water, adding ecological value and creating an interesting place for people. The authors argue that the Lauwersmeer could become the Biesbos of the north. It is stressed that such interventions must be part of an integral plan and special attention must be paid to water management and freshwater retention in other areas.

A welcoming, accessible coast

This storyline mainly argues for the development of the Waddencoast as a touristic attraction. The measures that are envisioned in this step are only limitedly connected to climate change adaptation and are therefore described shortly. It is argued that the networks on both land and water in the hinterland of the coast should be improved. The infrastructure that is currently present is of decent quality, however, the connections of networks, for instance between the waterways of Friesland and Groningen could be improved.

The present Delta dyke will gain the function of the backbone of the Wadden coast. Instead of the barrier that the dyke is now should it become the switch between the outerland and hinterland. Moreover, can it function as a backbone in the way that it connects the utmost east of Groningen, to Den Helder.

Also, the creation of touristic attractions is deemed important for the revitalizing of the region. These should be realized in different forms and sizes. They could take the form of leisure places located within the salt marshes, but also a museum for the Waddencoast is envisioned near the Lauwersmeer. The aim of these attractions is that they invite people to spend time in the area, they should thus be attractive. It is important for these attractions that they have a relation with the local culture and landscape. Moreover is there the

possibility for the region to present itself better. Herein could it be valuable to make use of the nomination of the Waddengebied as World heritage by UNESCO.

An innovative food-coast

This storyline stresses the strong agricultural function that the Wadden region currently has, and has had for some time already. Also for the future, the plan foresees a food-producing function for the region, although slightly different from what it looks like now. It is argued that the agricultural sector will produce two types of market in the future. The mass production of crops for the global and the quality-oriented production for the regional and national market.

Concerning effects on physical space, mainly the embracement of salty crop production will be impactful. In the short term, this will only happen on a local scale with shrimp farming on land and algae farming on the sea. As the demand for salty products increases globally, the market will grow in size too. This in turn will lead to the scaling up of this sector, especially in the Wadden coast region. The plan visions the realisation of several specialization centres for this sector, such as WADlab near Eemshaven and Potato-academy in Leeuwarden.

For this innovative food coast to become reality, the authors argue that a healthy water management system is of vital importance. This is mainly concerned with the availability and supply of freshwater. A robust system for the retention and drainage of water is required here. The widening of waterways and the creation of natural embankments could be valuable to realize this. The water drainage areas could be integrated with the earlier mentioned restoration of sweet-salt-gradients. It is also these areas where sweet water meets saline water where the development of the first salty crop production farms could be interesting.

Governance

The authors too present a strategy for the vision to become successful. It is not necessarily presented as a type of governance strategy, however, it can be characterized as such. This strategy is called 'Forging of coalitions'. It stresses the amount of local, bottom-up, initiatives which are considered to be a great strength of the region. At the same time, however, this is can be a pitfall because of the coherence between them that is missing. Moreover are the challenges (adaptation to climate change, improvement of coastal defence, economical development, changes in agriculture and recreation) that the region is faced with of a different, much larger, order. According to the authors here lies an opportunity. Through the linking of local initiatives to these large challenges, interesting coalitions can be forged that create additional value for the area. Here, it is essential that the relevant actors together search for integral solutions, whereby the ideas and interests of these actors can reinforce each other. Such actors could be authorities, water boards, nature managers, entrepreneurs and housing corporations, but many more. As an inspiring one-liner, the authors state that "in the Waddenland we must do it together."

With this forming of coalitions, a suggestion is made how the touristic sector of the Waddencoast could be improved. The authors here argue that the region could profile itself stronger. It should present itself as a touristic product by having a centrally coordinated information supply and a catchy message about what it has to offer. Examples of the Wadden islands, the Veluwe and the Vechtdal are given of places that put effort into such profiling successfully.

Lastly, the report gives recommendations for a form of leadership and governance that would benefit the vision. The authors argue that the region needs an organization that takes the role of forerunner (pioneer) and director (as in movie director). This actor must pay attention to the underlying coherence of the different developments and initiatives in the region. The RCW, the organisation that requested the draft of this report, is identified as the actor that would fit in this role. Primarily because this already was an organisation in which the central government, provinces, municipalities and water boards were working together. At the time that the report was made the name of the RCW was changed, and some other instances and organisations were

discontinued. In its new role, the organisation will focus more on the development of content-oriented agenda for the Waddencoast.

Attention is also shortly paid to a change for the Wadden fund. This monetary fund was the responsibility of the central government, however, in 2012 this was carried over to the three 'Wadden provinces'. These provinces will take a programme approach and appoint programme directors. The authors state that the storylines that have been presented in this report could function as guidelines in these programmes.

Appendix J: Economie van Water en Landschap

Why was it made?

The report Economie van Water en Landschap is the result of a MIRT research to come up with a piece of advice. This MIRT advice was requested to study the integrality of major challenges for the Blauw-Groene Gordel (Blue-Green Belt) of the Northern Netherlands. The Blue-Green Belt is an area of water and nature structures that consists of the Veenkoloniën, Frysian Lakes and Lauwersmeer environment, as well as blue and green bodies that connect these. 'The Belt' hereby covers Drenthe, Friesland and Groningen.

Identified major challenges for the Northern Netherlands region were climate change and its consequences for water, the energy transition, and demographical development of decline and ageing. Also, several ongoing transitions are identified. With these challenges and transitions came the possibility of 'meekoppelkansen'. For this word, no English translation exists but it assumes that multiple 'things' (problems, solutions, etc.) can be tackled, or realized, with the same interventions. Various authorities, knowledge institutes, consultancy firms, private stakeholders and experts were involved in 'sketching sessions'.

In what context was it made?

Goal

The expectation existed that the integrality of these challenges lied in the water system, and it was the goal of this report to figure out whether this was the case, and if so, how this could be translated into advice. This was the initial approach in 2009, at the start of the research. During the research as the first results were realized, this approach changed. In 2012 the research design was changed and broadened. The goal became to find out what spatial consequences the transitions in climate change, agriculture, energy, and demography would have for the Northern Netherlands; how these were mutually related and how they could reinforce each other and; what this would mean for the future water (management) system of the Northern Netherlands.

Assumptions

The main assumptions that the research is built upon are concerned with climate change and economical changes for the Northern Netherlands. Both assumptions are essential for the 'meekoppelkansen' that the report expects to discover.

It is explained that because of climate change, large-scale adjustments to the Dutch water management system are necessary. As the climate changes will periods of drought and water surpluses become more regular. At the time that the research was conducted was the North of Netherlands largely dependant on the IJsselmeer for the supply of water. It is mentioned that it is possible that in the future, as the country becomes drier, other regions of the Netherlands, like the economically essential Randstad might get first pick when freshwater is scarce. For the Northern Netherlands to become more robust, its water system should be adapted to the changing climate. Buffers are needed that allow for the retention and storage of water during wet periods (winters), which can, in turn, help out to be self-sufficient for the supply of water during dry periods (summers). A robust water system should be able to provide nature, agriculture and cities with water, while also guaranteeing safety.

Similar to the wish to develop a robust water (management) system is also the wish for a robust social-economical situation for the Northern Netherlands expressed. The north is faced with processes of decline and ageing. These have consequences for the liveability and accessibility of the region, thereby ultimately leading to the possibility of economical contraction. It is assumed the regional economical potencies of the north should be utilized. When this regional economy is used to its potency, it can be enforced, thereby resulting in a strong, robust social-economical system. This will contribute to the vitality of the regional society that can withstand the consequences of climate change and get through the different transitions that it faces.

Reason

The research was the result of the BO-MIRT request of the central government in collaboration with the northern Netherlands provincial governments. They identified the desire for a new way of thinking and expected that this could be found in the water (management) system and regional economy. With this approach they had the ambition to make use of and strengthen the distinctive characteristics of the north, being its knowledge-based economy, urban networks and unique landscape.

Because of the focus on the water (management) system, which is considered to be a system that can only be changed in the long term, the research was set to look out up to 2040. Several scenarios were explored in the research that has been developed into two ultimate scenarios that could function as 'points on the horizon'. Unlike the other documents that have been analysed in this research are these scenarios not presented as end-products. The end product of the research is the advice that is given. Despite this are the scenarios presented in the form of mapped plans and are they therefore similar to the visions presented in the other documents.

Attention to adaptation and mitigation

The report presents several developments and challenges that the Blue-Green Belt is faced with. The first notion, regarding the climate, is immediately the most important one. It states that the changing climate induces developments such as rising temperatures, sea-level rise, droughts, water nuisance and a general safety hazard. The challenge that is identified is that of formulating adaptation strategies. The awareness that climate adaptation is necessary and a valid strategy for the creation of a robust social-economical society is an important factor.

For water, developments lie in the increasing demand for, and price of, freshwater. With climate change and more frequent droughts ahead, will water become even more scarce, thus reinforcing these developments. Also is the water system of the Northern Netherlands 'unnatural' in the way that it is dependant on the IJsselmeer and the pumping-up of freshwater. This contributes to high prices for sweet water, which is another reason why the region would profit from a more robust water (management) system. Also, the use of water is identified as a factor that could be improved for infiltration in nature areas, recreational lakes and technologically sustainable agriculture. Meanwhile, cities should be adapted to the changing precipitation pattern which can be combined with the improvement of spatial quality.

Some attention is paid to subsidence too. It is mentioned that the low water levels lead to the settling of peat soils which results in subsidence. While this has its negative impact on agriculture itself as it gets increasingly necessary to pump away water (leading to further settling) does it also lead to the oxidation of the peat soils. In this process, the carbon dioxide that is stored in these soils is released into the atmosphere. The authors state that at the time of the research this amounts to several million tonnes of carbon dioxide. With this process also about 45 million euros of emission rights are involved. Specific challenges or a potential approach are not defined.

For nature and landscape, the main challenge lies in the preservation of the system. Partially this is related to the availability of water as mentioned before. The pumping of water is concerned with high costs and should be avoided. A more robust water system that makes better use of available freshwater can contribute to solving this problem. The region's biodiversity requires action too. Climate change leads to the displacement of plant- and animal species, while the uncontrolled use of fertilizers in the agricultural sector led to the over-succession of certain species. Both will have an impact on nature and landscape over time. The challenge that is identified, is to preserve the characteristic landscape by creating a more robust system of nature and biodiversity.

Also, the agricultural sector is expected to undergo some changes. Transitions are foreseen in the technological advancements of production, the production of energy-producing crops, and an animal-friendly livestock sector. Especially important for the research is the emergence of the biobased economy. How these challenges should be addressed is not explained elaborately. It is argued that a different economic model without, or with different types of subsidies is necessary. The link to the water management system lies in the challenge to cope with different water levels. Whether this means that the agricultural sector should expect higher or lower water levels is not defined.

Lastly, attention is paid to energy and how this may affect the Blue-Green Belt. It is expected that the energy sector of the Northern Netherlands is facing some significant changes. Identified developments are the changing global energy market that is currently largely dependant on Russian gas and Arabic oil. The Eemsdelta is expected to receive considerable investments. The signing of the Northern Netherlands Energy Agreement and the societal demand for sustainable energy are expected to be influential. Opportunities lie in the transition to a system that makes use of sustainable forms of energy and is self-sufficient. Suggestions are made for the use of biomass, solar energy, and blue-energy. Blue-energy is the energy that is produced through the process of osmosis. These forms of sustainable energy generally require more space than old-fashioned forms of energy production. It is argued that the Blue-Green Belt can play a role here because of the availability of space. It is stressed that such forms of (decentral) energy production must be well-integrated into the characteristic northern landscape. Also, infrastructural improvements must be made that allow for the decentral generation of sustainable energy.

What is suggested?

The research resulted in two products in which suggestions are made. The scenarios in which the 'meekoppelkansen' were discovered have been developed into two possible future scenarios in the form of maps. It is mentioned that these could function as 'points on the horizon'. In a way, these possible futures can be regarded as visions like the ones described in the other documents. They are not presented as such, most likely because this was not the goal of the research. The actual outcome of the research is the advice that is presented. This advice pays attention to both physical suggestions as well as governance suggestions. Both the maps and the advice are discussed below.

Physical

Scenario 'Scarcity'

This scenario foresees social and economical decline for the Blue-Green Belt. Youth and higher educated people take off to the cities and Randstad for work and facilities, leading to a regionally oriented society within the Blue-Green Belt. This shrinkage ultimately leads to a decrease in facilities and employment. The spatial quality of the landscape is considered to be of great importance. "Bankrupt, but happy" is the motto.

While population numbers in the Blue-Green Belt decrease do the demand for energy increases because people travel long distances for work and facilities. Moreover is there not enough innovation within energy production, together resulting in higher energy prices. Creative solutions for energy production can be found in the Blue-Green Belt. Spread over the Blue-Green Belt, small-scale energy landscapes are developed. Wind-, solar-, and bio-energy are produced and distributed locally, resulting in local, self-sufficient networks. The development of windmill parks should be performed in cooperation with local residents.

The region is faced with several water-related problems because of limited investments in water management infrastructure. The risks of water (surplus) nuisance and water shortages are large and the western part of the Blue-Green Belt has become a 'bathtub' where water flows to. The water management system is underdeveloped and therefore not adapted to climate change-induced circumstances. The retention and storage of water are performed locally and there is no need for a large-scale water supply anymore. 'Function follows water level' is the norm. This means that in the lower lain landscapes the practising of agriculture is

no longer possible. In the brooks valleys of the Hunze, water retention can be connected to the livestock sector as a replacement for agriculture.

The agricultural sector will undergo substantial changes. The changing climate has led to more extreme weather events, resulting in higher chances of failed harvests, salination and inundations. Large-scale agricultural farms are no longer able to sustain themselves in the Belt and move to higher grounds alongside the coast. More agricultural fields in the region become fallow and the remaining agricultural farms produce for local use. Solutions for drought-induced damages are found in the tilts of alternative crops and biomass production. The change of pace in the agricultural sector within the region results in the landscape becoming wilder. While space for nature is abundant, funds to manage it are limited. The production of biomass can play a role here. The 'wilder' of the landscape contributes to the robustness of the landscape. Ultimately this can be seen as a form of adaptation as the region becomes adapted through the natural process of shrinkage.

Scenario 'Growth'

This scenario foresees globalisation to continue in combination with fast technological development and economic growth. Energy is available sufficiently against reasonable pricing. Funds are available too for the solving of problems. This the general scenario, however, whether the Northern Netherlands can profit from this situation, however, depends on the approach that is taken. According to the authors, this depends on whether the development and distribution of funds are done publicly or privately. As the demand for water increases elsewhere in the Netherlands, water becomes more scarce. Other areas are prioritized in the distribution of water meaning that the north has to become more self-sufficient, largely through technological innovation.

In contrast to the first scenario, higher educated people do not leave the northern region as much as they do today. The north has a well developed agricultural sector with specialisations in biobased agriculture, sensor technology and water. Movements within the north have increased as the transport sector has grown, mobility is largely electrical or hybrid. Growth primarily happens within or alongside the city(networks). The energy demand has increased and is met by the use of fossil and sustainable forms of energy. Energy is primarily produced centrally with the Eemshaven as an essential distributor. Also, decentral efforts of energy production become more generic as technological developments happen. At the Lauwersmeer energy is produced through osmosis. Scarcity of energy is expected after 2040.

For water the motto 'water level follows function' becomes the standard. Through the use of sensor technology in agriculture can water management be performed more precisely. This allows for the sustaining of the agricultural sector within the Green-Blue Belt while limiting the settling of peat soils. The Veenkolonien are used for the retention and storage of water for dry periods. Without the use of technology will 13% of the Veenkolonien be required for the retention of water. It is argued that the amount of water that should be buffered depends on the amount of water that is stored elsewhere in the country.

The peat meadows of Friesland remain an appropriate area for dairy farming. Agriculture in the Veenkolonien should focus on the large-scale production of biomass for the biobased industry of Emmen. Dairy farms can be located here when space shortages occur in the peat meadows of Friesland. In the proximity of city(networks) 'urban agriculture' is performed in combination with recreation. These types of agriculture can exist because of the demand for quality and the presence of wealth. Nature is no longer prioritized and follows other developments. It is solely functional and is used for other functions such as recreation. The approach in which water level follows function is also applied in nature through the use of technological precision water management.

The advice

The results that are presented in the report are built upon the earlier discussed scenarios of shrinkage and growth. The advice concludes that there is no imperative for the development of large water bodies in the

Northern Netherlands. It argues that there are opportunities for the better handling of water, as well as for the adoption of an integrated approach to its challenges. Such measures are so-called 'no-regret' measures that will play out well in all situations. The advice is largely governance oriented and only presents one physical measure.

For the Northern Netherlands to become less dependant on the IJsselmeer for sweet water, investing in precise water management is the most cost-efficient measure that can be taken. Through precise water management can the necessary amount of water be decreased. Moreover, can agricultural yields be increased because the water supply to the plants is improved. This form of water management is primarily aimed at farmers. It is dependant however on developments in telemetry, sensor technology and computerization for it to become available to the agricultural sector. Precise(r) water management will limit peat oxidation and thus subsidence, and the complementation of groundwater. The advice argues that the waterboards of the north can play a guiding role here by setting conditions for water levels and by locating suitable areas.

Also, water retention and storage measures are suggested to keep the province of Groningen dry. Water retention in the brook valley of the Hunze and at the top of Drenthe can help out here. In the Hunze valley, wetter areas can be combined with nature, recreation and drinking water extraction. Drier parts in the upper course of the brook valley can be suitable for livestock farming.

Governance

The scenarios

In the scenarios, no specific attention is paid to governance or how the suggested measures can be executed and achieved. It is described that the scenarios are based on certain assumptions regarding government and market influences, but these are not specified within the scenarios.

The advice

The actual goal of the research was to produce advice that could help in the deliberation of choices and interventions for the Blue-Green Belt. It thus makes sense that most of the presented advice was more governance or policy-oriented. Besides the physical suggestions that are made above, five other pieces of advice are given.

The main advice that is given is related to the overall idea of the research of finding out what the possible 'meekoppelkansen' are for the transforming of the Blue-Green Belt into a water buffer for the Northern Netherlands. It is argued that there is no (economical) substantiation for such a transformation. Currently, freshwater from the IJsselmeer is sufficiently available for decent prices. The transformation of the Belt requires large-scale investments in agricultural lands, which will be taken out of production. The costs that are involved with such a transformation outweigh the costs of supply from the IJsselmeer, meaning that the transformation would be economically undesirable. Moreover would the new situation cause problems for the monitoring of water quality. The authors state that 'meekoppelkansen' were found for the development of the Belt into a water buffer. These do however not outweigh the required investments and the loss of revenue from agricultural production. The first advice, therefore, argues for the securing of sweet water supply from the IJsselmeer for the upcoming decades.

Similar to this advice regarding the securing of sweet water supply from the IJsselmeer, does the second advice argue for the securing of (future) subsidies. As other parts of the Netherlands will also require more sweet water in the future (due to droughts) is it likely that decisions must be made about how the available freshwater is distributed over the country. Water might thus be distributed elsewhere in the country. This potentially means that the north will not receive the amount of water that it requires. For the north to be more self-sufficient regarding its sweet supply, investments in the development of water buffers in the north will be necessary. Such developments will take about 10 to 20 years to be realized. It is argued that, because other parts of the country benefit from such investments too (more sweet water become available) financial

support from the central government or these other regions can be expected. Mainly the costs of investing in (agricultural) land that can be inundated are extensive. It is therefore suggested that the central government is approached with the question of whether the northern region can receive financing for the try-out projects that could make it more self-sufficient.

Moreover is it argued that the Blue-Green Belt would profit from integral policymaking. When this is applied to agriculture, water, sensor technology and agribusiness, 'meekoppelkansen' can be realized. Policy goals should be developed that aim to improve knowledge, education or innovative business activity. Independent of whether the economy of the north experiences shrinkage of growth will this approach of integral policymaking be beneficial. A cohesive development towards a bio-based agricultural economy will require special attention to the preservation of the landscape, preservation of water quality, balanced development of nature, and the facilitation of low-skilled labour. It is not specified which organization should be the frontrunner in such an approach. Whether this should be the provinces or waterboards or a new independent type of organization that solely focuses on the Blue-Green Belt.

The last two parts of the advice are oriented on the practice of research. It is stated that available databases of the provinces are currently not well in tune which complicates the comparison of data. The model that was applied in the research is argued to be suitable for discovering trends and making comparisons. When relevant data is collected and used in the model, this can positively contribute to the development of integral policy. Moreover, is it argued that the development and discovering of future scenarios can benefit policymaking. Similar to the scenarios that have been used in this advisory report can such scenarios help steer policy-making depending on, in this case, economical shrinkage or growth.

Appendix K: De Nordic City

Why was it made?

The plan was made as a part of the IABR–2016–THE NEXT ECONOMY project. This project aimed to explore the cities of the 21st century. The makers of the plan were invited to develop an energy transition-related design. For the development of the plan, the design atelier collaborated with researchers, entrepreneurs, residents, architects and energy specialists. They claim that this collaboration has resulted in pretty designs, good analyses and sometimes bold suggestions. It is argued that this should not be problematic because it is valuable to look at the future from different perspectives.

The plan aims to develop an attractive design for the earthquake plagued areas in the province of Groningen. This design is built on the presumption that the province requires an energy transition towards a sustainable system. Where possible, has the plan linked the energy transition to the (circular) economy. The authors mention that the presented design should function as a perspective that can be worked towards. This should be done in a joint process in which governments, entrepreneurs, interest groups and residents should collaborate to realize their ambitions.

In what context was it made?

Goal

The authors stress the importance of exploring the future, especially because it is impossible to know this future. One of the authors explains that perspectives can play an essential role to explore this future, but also to give people something to live towards. Regarding the climate crisis, we know what the consequences of this will be. We are also aware of what causes it. Perspectives that show us how we can continue, without contributing more, but rather counteracting the change of the climate, are missing. It was the goal of this report to develop such a perspective. Instead of focusing on the problems or guilt of the earthquakes, the report aimed to start the conversation about a shared desired future. With this approach, it is hoped that people that have suffered or are still suffering from earthquake-related troubles have something to hold on to. It is argued that an energy transition can function as an impulse for the economy of Groningen city and the earthquake plagued region. With this can the struggles of economical and demographical decline, earthquake damages and climate change be turned around for the better. When an integrated approach is adopted in realizing this energy transition, also the spatial quality of the region can profit. The presented perspectives should not be interpreted as a vision (as in a dream) but as an opening for new projects and accelerator of policy- and decision-making.

Assumptions

The earthquake that hit the village of Huizinge in 2012 functioned as a turning point in the gas-extraction related earthquake problem of Groningen. The realisation that the extraction of natural gas from the province's soil had unacceptable consequences for its residents. Besides these physical and psychological damages that the earthquakes in the rural region led to, also the realisation that the natural gas would be likely to run out soon after 2023 settled in. Since 2012 the safety of residents comes first in thinking about natural gas extraction. Residents of Huizinge, but also many other areas where extraction induced earthquakes have taken place, are in a lot of insecurity about their safety, the value of their properties and the rates at which their houses would be repaired and strengthened.

The report has a strong focus on the economical side of the energy transition. The authors refer to the unprecedented economical growth that the Netherlands experienced from 1960 onwards. This growth was mainly possible because of the available fossil fuels at the time. Now, however, the realisation has sunken in that fossil fuels negatively influence the future as their use contribute to climate change. Therefore a new economical approach is needed that builds upon the energy transition and makes use of the circular economy concept which argues for the reuse and limited waste of resources.

Reason

While the report states that it is important that the beforementioned subjects receive attention, they also note that we should look forwards. We are aware of the changing climate and the problems that it brings. We are also aware that fossil fuels will eventually run out. The authors question what we will do about this, and especially what opportunities there are to combine this with the earthquake-related problems. The city and region of Groningen have the ambition to become energy neutral in 2035. This has become a priority for authorities, companies, knowledge institutions and residents. How this can be achieved, how it can be linked to the economy and how this could influence the spatial design of Groningen is explored in the plan.

Attention to adaptation and mitigation

Throughout the report, limited attention is paid to climate change adaptation. The presented perspectives also show little signs of contributing to the adaptation to climate change. The notion is made that climate change brings unacceptable risks and that the idea that it should therefore be counteracted is commonly shared. This would mean that alternative ways for energy use in the form of natural gas should be found. By moving away from the use of natural gas can the emission of carbon dioxide into the atmosphere be reduced. While it is not mentioned explicitly, is this a form of climate mitigation.

Although climate adaptation or measures that fit this concept are not mentioned, can it be argued the transition towards a sustainable energy system is a form of climate adaptation. Being aware that fossil fuels will run out in the future, climate adaptation is in favour of the use of renewable forms of energy. This prevents people, businesses and society in general, from being or becoming dependant on fossil fuels.

What is suggested?

The plan foresees that Groningen and its region can play a leading role in the energy transition, also in an international context. With its high-quality knowledge institutions that are specialized in energy and logistics, and the availability of infrastructure for data and energy in the Eemshaven. The region could develop itself into an energy-hub. The plan identifies four essential zones: the Northsea with large windmill parks that are controlled from the Eemshaven, the Wadden environment as a recreational and ecological system, the agricultural sea-clay soils in both the Netherlands and Germany and lastly some strong, growing cities (Leeuwarden, Groningen, Oldenburg, Bremen and Hamburg). The plan presents four spatial perspectives that are discussed below.

Physical

Energy Port

The plan argues that the Groningen-Eemshaven-Delfzijl 'triangle' could develop itself into one of the most important energy hubs of Northwest Europe. For this, the region has some important features. First is the availability of well-developed infrastructure for the conversion of incoming electricity- and gas lines. This makes the location attractive for the establishment of data centres. The Google datacentre, which requires a huge amount of electricity, is a good example of this. The second is the favourable location that allows for the development of offshore windmill parks in the Northsea above the Wadden islands. The construction, building and maintenance of this industry is a long-term and intensive occupation. The third is the biomass industry located in the harbour of the Eemsdelta. The authors argue that this will allow the region to develop itself into a marketplace for the large-scale production, storage and sales of energy. Centrally, (windmill parks) and decentrally, (private solar panels) produced energy meet in the energy port, requiring the constant coordination and regulation of delivery, storage and transport. The authors are in favour of the continuation of the 'wind on land' policy with the building of large windmills in the vast, open clay landscape. Current locations near Eemshaven and Delfzijl are preferred for further development. It is argued that the construction of windmills along the coast in the Eems-Dollard estuary while improving the ecological system, should be further researched.

Biobased Economy for the North

This perspective argues for the 'greening' of the chemical industry of Delfzijl and the further development of the strong agricultural cluster that is located in the region. The principles of the biobased economy should be the foundation of this development. The availability of the large-scale crop farming sector, as well as the presence of wind energy and large industrial complexes, makes this region suitable for a transition towards a biobased economy. In practice, this entails the replacement of fossil fuels for energy by recycled and sustainable resources. The industry should focus on the production of fibres, bioplastics, biogas and biofuels from waste products from the local agricultural sector, through the use of excess heat. This type of industry is built around the chemical centre in Delfzijl but as more companies will join, the system evolves into a green working environment. The agricultural sector will still be able to produce the crops it produces now, however, waste materials will be used more efficiently. Besides the use of biological materials for the production of energy, could these products also be used for the development of building materials.

Groningen smart energy city

For the city of Groningen, a role in becoming a specialist on the energy subject is envisioned. Through the collaboration of training centres, knowledge institutions and companies, the city could develop itself into a sustainable energy economic cluster. The authors identify the development of expertise essential for the region to achieve a successful energy transition. Spatially, will the city of Groningen change too to become a smart energy city. The perspective categorizes the city into different types, each requiring different interventions to become optimal in energy usage. These vary from isolation types, usage balancing and the type of energy that is used. A strong and well-developed network is necessary for the balancing of high and low demand for electricity and heat. This network is envisioned as a circle that could be integrated with the city's ring road. While this allows for the optimal coverage of the network does it also create the possibility for the adding of spatial quality. It should moreover connect the different city districts, creating one coherent urban fabric.

Sustainable and safe villages

This perspective aims to equip the earthquake plagued areas of Groningen with energy neutral houses and building with a three-step approach. This approach concerns the repairing of damages, reinforcing and making sustainable constructions. While this approach is lucrative for the house- and building owners as their fixed energy costs are reduced, does it also give an impulse to the local construction sector and economy. In places where buildings must be demolished, new residential areas can be constructed according to the newest developed knowledge and techniques. The region thereby also becomes a frontrunner for energy-neutral building for the Netherlands as well as abroad.

Governance

Little attention to governance is paid in the presented perspectives themselves, at the end of the report however a governance strategy is shortly discussed. The twofold strategy introduces 'small when possible' and 'large where necessary' as ways in which the energy transition can be realized.

'Small when possible' assumes that the energy transition is something that the 'energetic society' can deal with. These individuals actively engage in the energy transition with their own initiatives. These could be the isolating of their house, making their business more sustainable, purchasing or producing green energy or driving an electric vehicle. Public parties and energy suppliers have the responsibility of facilitating, stimulating and accelerating such initiatives by offering space for experiments. The authors argue that we should expect the central government to change the tariffs for electricity and taxes for gas so that the storage and buffering of energy becomes profitable. This part of the strategy could be explained as the facilitation of bottom-up initiatives by those who have the power to do so.

'Large when necessary' argues that local initiatives will not be able to make the sufficient change and that there is thus the need for interventions on a regional and (inter)national scale. The development of the Eems-Dollard estuary into an 'Energy-bay' could be an example of such an intervention. The main argument in favour of such interventions is that sensitive subjects like the construction of windmills should not be executed sectoral but in coherence with other challenges, and thus integral. Also, the suggestion of integrating the energy network with the ring road of Groningen could benefit from such an approach. The authors argue that an important role here lies for public parties and especially for the province and the city board. When this approach is adopted correctly, it can create an impulse resulting in synergy, an open debate and increased public support.

Appendix L: Plan B: Nederland in 2200

Why was it made?

In Plan B: Nederland in 2200, does the landscape architect bureau LOLA present its vision for the future of the Netherlands. The horizon is set at 2200 which was at the time of publication, 180 years into the future. For the development of the plan, numerous knowledge- and research institutes were involved. Unlike the other plans that have been discussed so far, the vision presented by LOLA is not accompanied by a lengthy report that in large detail explains the ideas behind it. Instead, the reasoning behind the plan and what it suggests is briefly explained on their website.

The authors state that spatial planning and visions are necessary to develop a range of alternative strategies for the adaptation to climate change. The well-developed and internationally recognized spatial planning system of the Netherlands is mentioned, the authors however note that because of decentralization, attention to planning at the national level has been minimized. Because of their belief that such visions are needed, the authors decided to develop their own. They argue that according to research, the current approach of heightening dykes will not be sufficient when sea level rise turns out to be higher than expected. Because Lola does not believe in this approach they wanted to work out a vision that lets the Netherlands 'keep its head above the water' while creating a healthy, sustainable way of living.

In what context was it made?

Goal

The authors state that in the past, the Netherlands has shown to be able to plan and build its own future. In their opinion, this tradition should be continued. It is therefore important to have a range of strategies available to adapt the country to climate change and sea-level rise. They argue that the plan is not necessarily a spatial plan but rather an agenda. To develop a roadmap for the future of the Netherlands, other challenges apart from climate adaptation should be included too like nitrogen deposition, the decline of biodiversity, housing, and the quality of life in urban areas. This so-called roadmap should be built on a set of integrated strategies that include spatial opportunities.

Assumptions

Central to the whole plan is the assumption that when the Paris agreement, which is referred to as plan A, fails, the sea level will rise considerably more and therefore protection through dykes and storm-surge barriers will be insufficient. While these are arguably the most obvious way forward in the short term, this strategy does induce technical, economical and social insecurities. Whether coastal protection through technical solutions is desirable, considering the risk that temperature rise exceeds the Paris agreement, is questioned by the authors. Hypothetically thinking that the temperature rise is not limited to what the Paris agreement states, the plan, therefore, assumes an extreme, but plausible scenario, in which sea level rises by 2 meters in 2085, 3 meters in 2100 and 6 meters in 2200.

Reason

The main reason for the development of the vision is the idea that the Dutch tradition of spatial planning at a national scale should be restored. The authors deem this important because it contributes to future-oriented thinking which helps explore the challenges that the country faces regarding climate change and adaptation. Presumably with such kind of thinking a properly integral strategy can be developed that the country can work towards.

Attention to adaptation and mitigation

The plan was not accompanied by an elaborate document that goes far into detail about what climate change consequences will be and how they can be faced. The main challenge for the Netherlands is considered to be the rising sea level which is logical for a low-lying delta. Moreover, does this challenge create a spatial issue in

the long term, looking at 2200, that might overshadow challenges like salination and drought. Attention to climate change is strong anyway because it is the main reason behind the presented plan.

What is suggested?

In comparison to the other plans has this plan a really limited description of the measures that should be taken for the adaption to the rising sea-level. They are therefore explained based on the limitedly available descriptions, as well as a visual interpretation of the maps.

Physical

The authors practically summarize the plan with the sentence “Plan B envisions the Netherlands without dykes”. It is assumed that such a technical approach to coastal defence will be unable to withstand a sea-level rise of 6 metres. Instead, coastal protection should be build by making use of the driving forces of nature. The Dutch should therefore live in logical locations and thus above sea-level. This will require the population to move eastwards where also a new, natural coastline will be formed. The land that is flooded by the sea will transform into a giant lagoon where cities are built on terps, satellite towns on poles and agricultural fields float scattered over the water. They are connected via bridges and waterways. Inhabitants must thus move to the higher lying east, as well as all necessary facilities, infrastructures and employment opportunities. Such an operation is enormous. Along the new coastline, the new economic heart will be constructed. What is left of the west coast should be maintained and strengthened to develop a marine lagoon in which the historic remains of what ones were our cities and villages are protected. This newly developed country that shall be called ‘Waterland’ will maintain its strong water management character, its residents will develop residential areas, fisheries, aquaculture, recreation, nature and energy in the lagoon.

A further interpretation of the map shows what is visioned for the provinces of Friesland and Groningen. Both will undergo a massive transformation. The larger cities and towns seem to be protected by circular dykes. They are moreover connected by straight lines of infrastructure making them look like some sort of constellations on land. Approximately half of both provinces is flooded and transformed into a lagoon, splitting the Northern Netherlands region in half.

Governance

The governance strategy that should possibly contribute to the realization of the presented vision remains undiscussed. This is probably because the plan is not so much presented as a spatial plan that should be realized, but rather an agenda or strategy that should contribute to future-oriented thinking about the Netherlands.

Appendix M: Nederland in 2120

Why was it made?

The plan was made by the Dutch Wageningen University & Research. As an organisation, they want to contribute to the improvement of the Dutch living environment through the use of fundamental- and applied knowledge. They state that the Netherlands is faced with several challenges like the energy transition, sustainable agriculture, the recovery of biodiversity, urbanisation and the adaptation to climate change. These challenges will have significant impacts on the spatial planning of the country. They require changes to be made that prepare us for rising sea-levels, more frequent extreme weather events, increased demands for food and the urgent need to decrease carbon dioxide emissions. The authors argue that the country, therefore, needs a new storyline that can guide the Netherlands in becoming an example country where nature, sustainable economy, liveability and safety come first. They state that this storyline should be grounded in 'Nature-based solutions'. With their views and knowledge has the Wageningen University & Research created a storyline that they deem desirable.

In what context was it made?

Goal

The goal of the plan, or vision as the authors call it themselves, is to act as a source of inspiration. Whether it should specifically inspire policy- and decision-makers or the Dutch society as a whole is not specified. It tracts to show that a future in which economic development and a nature-inclusive society can go hand in hand. While taking into account the differences in the diverse Dutch landscape, the vision tries to show what is possible for the Netherlands to be achieved in 2120. It herein pays attention to some of the most important subjects for society such as agriculture and water management, and not to every detail of the living environment. The authors mention that the presented vision requires further elaboration and substantiation. Moreover is it the goal to translate the vision into an action perspective for the people of today.

Assumptions

The authors take the time to take a step back and describe what preceded the report. They refer to the in 2015 signed Climate Agreement (Paris Agreement) that was signed by the members of the United Nations, intending to limit global warming to a 1,5 degrees Celsius increase, with a maximum of 2 degrees. In case active measures are not carried out can the 1,5 increase already become reality in 2030, with an overall increase of 3,2 to 5,4 by the end of the 21st century. In this situation will the sea level rise by up to a meter by the end of the century and several more in the next one. Calculations from 2018 have shown that it is possible to decrease the emission up to a point that temperature rise is limited to 1,5 degrees Celsius. Practice has shown however that many countries do not live up to the Paris agreement and global carbon dioxide emissions have even increased. The consequences of climate change do not only hurt our living environments but also our economies. According to the authors, intensive measures are necessary to change the tide so that all countries can become energy-neutral by 2050. They argue that nature-inclusive solutions in combination with the adaptation to climate change and recovery of biodiversity are the way to go.

Reason

The main reason for the development of the presented vision is to show what the future could look like. With the maps and images that the report shows, what the future could look like becomes more tangible. It herein also stresses that continuing in the way that we do now in the world will have catastrophic consequences. The presented nature-based solutions however show attractive ways in which Dutch spatial planning can contribute to the mitigation of, and adaptation to, climate change. The report hereby shows what the Netherlands could become, despite the massive challenges that we are faced with today. In a way, this also shows the urgency of the problems we face as the volume of the necessary interventions and changes that must be made are extensive.

Attention to adaptation and mitigation

The authors state that the Netherlands has historically been well-abled in adapting itself to changes in the climate. The changes we are faced with due to the greenhouse effect induced climate change are unprecedented. A globally rising sea-level, the frequent occurrence of extreme weather events and long periods of drought are the main threats to the Netherlands. They, therefore, argue that we must focus strongly on both mitigation and adaptation to withstand the consequences of climate change. This focus on mitigation and adaptation has been integrated into the presented nature-based solutions. These have been developed around the themes of water management, energy, agriculture, circular economy, urbanisation and biodiversity.

Climate-related challenges are identified too. In the field of energy, the main challenge is to only make use of sustainable forms of energy and thus also reduce the emission of carbon dioxide. The Netherlands aims to be energy neutral in 2050. For this to be realized, only solar- and wind energy, geothermal energy, and energy from sustainable sources as biomass, can be used.

The Dutch agricultural sector also faces several challenges. It should transit towards a circular system that limits its impact on climate change, while still being profitable for the farmers. It should aim for ecological friendly livestock farming with smaller herds, better manure processing and a limited footprint on methane emission. It should adopt a more climate-smart and nature-inclusive approach for the management of fens, forests and fields. Fens should be kept wet, forests should be planted and fields should produce salty crops. This way can carbon dioxide be optimally captured in agricultural soils.

Of course, there are challenges related to water too. Climate change will result in the increasing occurrence of water shortages and surpluses, often at the wrong place or wrong time. This creates pressure on the liveability and safety of cities and economic centra. Moreover, does it influence the biodiversity and social-economical resilience of the Netherlands. On top of that are coastal lands also faced with the problem of salination. All these challenges show that the management of water will become increasingly important in the future.

While the report pays quite explicit attention to the consequences of climate change and the challenges that this imposes, is it interesting that attention to the Dutch coastal defence is limited. No section discussed the consequences of sea-level rise while this is identified as a pressing issue at the beginning of the report.

What is suggested?

The authors vouch for an integral approach for the handling of the identified challenges. This way solutions can be combined smartly and possibly enforce each other. The presented vision is therefore based on 5 guiding principles:

1. The natural system should function as the basis of future spatial design. This system should determine what climate resistance and biodiversity improving solution should be carried out where.
2. Water should be used optimally for the increase of biodiversity and ecological quality through the approach of retaining, storing and draining.
3. Being a nature-inclusive society that takes into account the consequences for nature with all choices that are made.
4. Having a circular economy that is sustainable in all sectors and can retain more greenhouse gasses than it emits, thereby becoming climate-positive.
5. Having adaptive spatial planning that can adaptive itself to the changes in nature and at the same time optimally uses natural processes. The building-with-nature approach is an example of this.

The vision presents examples of nature-inclusive solution that can be realized by the year 2120. These have been categorized in areas, so for the North Sea, the Riverine areas and the high sandy soils for example. As no

specific regions are described will only the examples that apply to the Northern Netherlands be discussed in the following sections.

Physical

The Waddensea

Through active nature management should the biodiversity of the Waddensea be kept as intact as possible. This includes the creation of breeding- and foraging areas. Because of the rising temperature of seawater can be expected that several new types of sea animals will locate themselves in the Waddensea. Sea level rise will cause some of the mudflats in the western part of the Wadden Sea to be flooded permanently. To compensate for the loss of ecological values these mudflats have for birds and sea lions should sand supplementations be made at other mudflat locations. Also in the eastern part of the Waddensea will sand supplementations be necessary. Through natural processes of erosion and sedimentation will these supplementations be distributed over the area, causing the islands to slowly replace themselves eastwards. The coasts of Groningen and Friesland shall be transformed from narrow Delta dyke areas to broad water robust landscapes. It is characterized by mudflats, salt marshes and broad dykes that transform into marshlands in between dyke-surrounded lands. In brackish areas will salty crop farming be performed.

Northern-Netherlands clay soils

The vision foresees that the agricultural role that the Northern Netherlands currently has can be retained. The system in which this is performed should be changed. A premium circular agricultural should be established. What kind of interventions are required to become such as system is not described specifically. Sweet water basins must be created that store abundant rainwater in winter so that these reserves can be used during dry periods in summer. A smart system of waterways and sluices should divide sweet and salty water. The region is protected against sea-level rise by broad dykes that make use of natural processes. Vulnerable areas are protected with double dykes between which sludge can sedimentation, causing the dyke to grow as the sea level rises. Marshlands are created against the inner dykes as a source of water for agriculture as well as to create counter-pressure against the rising sea-level. This reduces the occurrence of salination of soils.

Peatlands

Attention is also paid to the peatlands of the Netherlands. While specific attention is paid to the peatlands in the west of the Netherlands, can these also be seen on the map in the south and east of Friesland. It is foreseen that in the future these peatlands will become much wetter. This will result in large water basins and peat marshes. Because of this will the peatlands become much more attractive for recreation and at some suitable location can city-agriculture be performed. In the much wetter peatlands can wet saline crop farming prosper. The Dutch agricultural sector quickly adapted itself to the growing demand for such crops as the demand for meat started to decline. The Netherlands has hereby become a frontrunner in this type of farming. By letting the peatlands become much wetter again salination, subsidence and peat-oxidation are counteracted. It also creates opportunities for the intake and storage of carbon dioxide.

High sandy soils

The high sandy soils that the Netherlands has will fulfil an important role in the management of the water system. Such soils can currently especially be found in Drenthe, but in the map that illustrates the presented vision, they can also be found in Friesland and Groningen in 2120. These sandy grounds will have to maximally store and slow down rainwater to relieve waterways and rivers during peak discharges. This way they are also used for the replenishment of groundwater. Such infiltration areas are regionally arranged. For them to function as optimal retention areas adjustments will have to be made. Pine trees will have to be replaced by more open areas with deciduous trees and herb-rich vegetation. This will improve infiltration and limits the vaporization of water. Agricultural areas on sandy soils will require changes too. These will have to give space for 'green and blue' structures again, such as creeks and forest marshes. This will contribute to the biodiversity of these areas as well as the resilience of the system, thereby contributing to the circular character of the

agricultural sector. New types of landscapes that arise with this approach are attractive for habitation and recreation. Near cities should agricultural areas be combined with food-producing forestry. This will provide the cities with nature, recreation and rest.

Governance

Only limited attention is paid to the governance side of the presented vision and how the suggested nature-inclusive solutions should be realized. One short paragraph called 'Policy' goes shortly into how policy-making would optimally happen in 2120. It argues that policy-making decisions are assessed on their effects on nature and biodiversity. Nature has become a guiding principle for people and law. Integral and nature-inclusive approaches are standardized. Tensions still arise concerning the demarcation of areas, decisions about the use of space, the degree of nature protection and the pricing of ecosystem services. For the guiding of interest conflicts and diverse perspectives, a national institution for mediation and arbitration should be established. This organisation can help in reaching agreements or consensus in the tensions that arise. Moreover are international agreements, like the Paris Agreement, highly respected. While this does not necessarily describe how the presented vision can become reality, does it give an insight into how the authors believe a nature-inclusive society would ideally perform. This can therefore be considered something that should be work towards too.