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Towards the **mainstreaming** of climate adaptation within the Province of Utrecht

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Preface

This master's thesis can, in fact, be regarded as my last real achievement for the Environment and Society Studies, which I have been following at the Radboud University for one year from 2019-2020. Thanks to this program, I was able to enhance my knowledge of the way society deals with its physical environment. One of those issues is the adaptation of the physical and social environment to the possible consequences of climate change, which is also called climate adaptation. This has aroused my interest to such an extent that I decided to focus on this subject for my graduation assignment.

Since the formation of the new Coalition Agreement in 2019, the Province of Utrecht has on the agenda to include climate adaptation within the provincial policy, plans and projects. Nevertheless, it was found that the consequences of climate change are not yet structurally (and /or seriously) weighed up with new sectoral developments. Therefore, a climate adaptation team was founded to further give more attention to this subject and integrate it into the provincial policy. This can also be called 'mainstreaming'. As part of my master's thesis, I have, therefore, researched the extent to which climate adaptation is mainstreamed within the Province and determined barriers that hinder the integration of climate adaptation into the existing provincial policy. In the end, I provide recommendations to the climate adaptation team on how it can contribute to limiting these barriers in order to achieve the mainstreaming of climate adaptation.

For several months I have worked with great pleasure and interest in this research, which ultimately led to interesting results, and which I hope will contribute to the mainstreaming of climate adaptation. That this thesis lies before you in its current state is not merely the result of my own efforts. Therefore, I would like to express my thankfulness to everyone who helped me during this process. First of all, I would like to thank my supervisor Maria Kaufmann (Radboud University) for her support and valuable suggestions throughout my research process. In addition, I want to thank my supervisor Wietse Visser (Province of Utrecht) and the team manager Stef Meijs (Province of Utrecht) for not only providing me with many valuable and interesting insights about climate adaptation but also for their enthusiastic attitude and patience. I would also like to thank all my colleagues from the climate adaptation team, and all the other people who contributed to my research!

Finally, my sincere thanks go to my boyfriend for his amazing support and encouragement throughout these last turbulent and intense months.

After all, I hope you enjoy reading this paper.

Kira Schäfers August 2020

Summary

"The Earth is a fine place and worth fighting for."
- Ernest Hemingway, Author

The climate is changing worldwide. Also, in the Netherlands temperatures are going up, heatwaves occur more frequently, and dry periods are getting longer whilst in the meantime precipitation events are becoming more extreme and more intense. The climate is, however, not the only thing that is changing; society is changing along with it, and this has various consequences for the Netherlands' vulnerability to climate change. For instance, both the increasing and ageing population within cities is very likely to result in greater exposure to infectious diseases and heat stress. The consequences of climate change are hence becoming increasingly visible and noticeable, which means that the feeling 'that something must be done' is slowly penetrating to all layers of society. Not everyone is aware of this, however, and awareness is the first step towards a climate-proof living environment.

In recent years, the Dutch central government has made investments into considerable knowledge development about combating climate change. Now is the time to utilise this knowledge in projects of implementation on regional and local scales. The next step lies with the provinces, with the regional policy in the field of climate adaptation being essential for this (Pietrapertosa et al., 2019; Kennisportaal Ruimtelijke Adaptatie, 2020a). Nevertheless, this policy development is still in the initial phases, and the subject is not yet included in all policy agendas and sectoral projects.

Climate adaptation cannot be seen as an isolated topic. It is rather an integral theme, giving form and direction to many policy sectors. It includes adapting the current (living) environment so that the consequences of climate change have as little impact as possible on the functioning of society. This means that it must be determined for all different parts of the living environment whether there is a link with climate change and if so, how climate adaptation can be shaped in that respect. In short, climate change and thus climate adaptation are an integral issue in the broadest sense of the word: they both affect everyone.

Various studies have shown that climate adaptation has so far been insufficiently integrated into government policy. Many spatial and non-spatial decisions are made in various policy areas, with little or no account being taken of climate change. This implies the presence of factors that hinder integrating climate adaptation. The Province of Utrecht is one of the regional governments that has started to integrate climate adaptation within its policy. Based on expert interviews, a survey study and three embedded case studies of provincial policy sectors the degree to which climate adaptation is an integral part of the provincial policy has been examined and barriers were identified that hinder this integration process. Ultimately, this determines the extent of climate adaptation mainstreaming. The analysis was based on five criteria of policy integration: inclusion, consistency, weighing, reporting and resources and a list of barriers resulting from an extensive literature review.

Despite the fact that the majority of policymakers of the Province of Utrecht say that they see it as important to take climate change effects into consideration in sectoral developments, the

integration of climate adaptation is limited. Major barriers to this include the lack of financial resources, unclarity about the benefits of adaptation measures, and insufficient knowledge about climate adaptation measures. Based on the current major transitions within the province, three sectors were selected to get an insight into barriers to the integration of climate adaptation are dealt with. The sectors chosen were energy, agriculture and building.

One of the most striking conclusions gleaned from empirical research is that the extent of climate adaptation mainstreaming differs among policy sector which can mainly be explained by the varying level of urgency, since not all sectors are affected the same by climate change. Finally, climate adaptation is unlikely to be integrated if knowledge about climate adaptation measures is not present and benefits about them are not made clear. If these barriers were to be solved, it is likely that it would result into the resolution of other barriers as well.

Table of content

List of tables

List of figures

1. Introduction

1.1. Context

The fact that climate change is unavoidable is now widely acknowledged (IPCC, 2018). Global warming continues, sea levels keep on rising, and precipitation patterns continue to change. Within the last decade, policy debates around the topic of climate change also shifted from seeing it as a problem of greenhouse gas emission towards the recognition that some climate change impacts are inevitable (Biesbroek et al., 2010; Jordan & Lenschow, 2010; Klein et al., 2007; Moser, 2012; Swart & Raes, 2007). Therefore, climate adaptation strategies have become a complementary policy strategy for managing these unavoidable impacts of climate change. With the growing consensus about the urgency to climate change adaptation, contemporary discussions are shifting their focus on how to integrate adaptation in contemporary policy practice (Boussalis et al., 2019; IPCC, 2014; Schmidt, 2009).

Therefore, in recent years, new policy challenges have emerged. One of the challenges is that climate adaptation cannot be regarded as an isolated issue anymore since it affects almost all policy areas and ambitions. It is becoming an integral theme that gives form and direction to many disciplines (Hofland & Boon, 2019). This can also be seen as the 'mainstreaming of climate adaptation'. According to Uittenbroek et al., (2013), it can stimulate "the effectiveness of policy-making through combining objectives, increase efficient use of human and financial resources and ensure long-term sustainable investments" (p. 399). As part of climate adaptation policies, the aim of mainstreaming is to capture the potential in other policy fields to implement climate-adaptive development pathways (Munasinghe, 2002).

The integration of climate adaptation into existing policy, however, does not take place automatically. Adaptation measures usually have to be embedded in a relatively complex decision-making process in which they represent a relatively 'weak interest' and need to compete with strong economic interests (Driessen & Spit, 2010, p. 74). By doing case studies around the world, several authors have begun to detect barriers that can hinder the adaptation process. Examples of these barriers include high cost of adaptation measures, rigidity, uncertainty about its benefits, unawareness, pre-existing beliefs, lack of data, fragmentation, lack of national attention to the topic, and insufficient understanding of the possible impacts of climate change (Biesbroek et al., 2011). Few studies, however, have done thorough investigations into how climate adaptation mainstreaming can be understood in policy processes. Runhaar et al. (2018), therefore, point to the lack of investigation into barriers that hinder the mainstreaming process and suggest that an analysis of these could help to clarify some of the reasons for inadequate implementation.

Whereas a country as a whole can often be considered resilient, a region or an area can still be vulnerable to climate change, for example, due to its geographical location or the existing infrastructure. The changing gravity and nature of climate impacts between regions, therefore, seek for climate adaptation initiatives at other governmental levels (Biesbroek et al., 2010; EC, 2016). In the Netherlands, regional governments increasingly play a crucial role in climate-proofing the physical environment (Dolšak & Prakash, 2018; Pietrapertosa et

al., 2019; Kennisportaal Ruimtelijke Adaptatie, 2020a; Runhaar et al., 2018). This study zooms further into one regional government in the Netherlands, the Province of Utrecht.

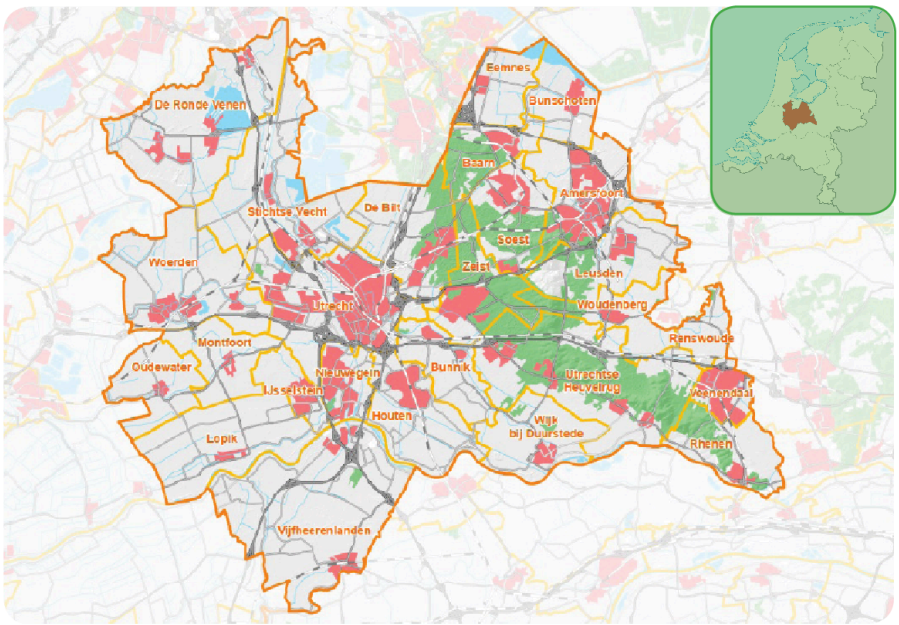
1.2. The Province of Utrecht

The Province of Utrecht is one of the 12 provinces in the Netherlands and covers about 1560 square kilometres, borders four other provinces, has 26 municipalities and four water boards (Figure 1) (Provincie Utrecht, n.d). It is a relatively densely populated region, with approximately 1.34 million inhabitants (ibid). Due to its diversity of landscape (peat, clay and sandy soil, and a mixture of cities, land and nature), the province is confronted by different kinds of consequences of climate change, such as floods, droughts and hear and is, therefore, in need of different solutions for adaptation to avoid the risk of greater climate change impacts.

For a long time, the Province was not obliged to address climate change adaptation and it remained largely a voluntary matter to include this subject into the provincial programs, plans and projects. With the advent of the new Coalition Agreement in 2019, the Province of Utrecht has come up with the ambition to be climate-proof and water-safe in 2050 (Provincie Utrecht, 2019b). One goal for the upcoming years is to 'mainstream' climate adaptation into the provincial policy (Ministerie van Infrastructuur en Waterstaat [IenW], 2018; Provincie Utrecht, 2020c). To complete this task, a provincial climate adaptation program was launched in spring 2020 (Provincie Utrecht, 2020c).

FIGURE 1

MAP OF THE PROVINCE OF UTRECHT



Note. The map of the Province of Utrecht with all municipal boarders, cities, streets and train rails, waters and forests. In the right corner the location of the Province of Utrecht within the Netherlands is displayed. Source of Map: Website Provincie Utrecht. URL: https://www.provincie-utrecht.nl/organisatie/over-het-gebied-utrecht, right upper corner map: Wikimedia Commons: URL https://nl.wikipedia.org/wiki/Bestand:Utrecht_in_the_Netherlands.svg. Retrieved on 14 April 2020. Both figures were adjusted for this research.

1.3. Research aim and research question(s)

The aim of this research is to measure the degree to which climate adaptation is integrated within the Province of Utrecht and to identify barriers that might constrain process. Ultimately, this should result in a certain extent of climate adaptation mainstreaming. Based on the results, recommendations are further given to the climate adaptation team of the Province on how it can support the mainstreaming of climate adaptation within the organisation. The following objective has, therefore, been chosen for this study:

> The aim of this research is to provide recommendations on how to facilitate the mainstreaming of climate adaptation within the Province of Utrecht by giving insight into the extent to which climate adaptation is integrated within the Province and determine barriers that need to be overcome.

The aim formulated above requires different kinds of knowledge about the subject. In order to be able to acquire this knowledge, the following central research question has been formulated:

> To what extent is climate adaptation mainstreamed within the Province of Utrecht and what factors hinder the mainstreaming process?

The above central question is comprehensive and can, thus, hardly be answered without intermediate steps. That is why a number of sub-questions have been formulated, which ultimately led to the answer of the main research question. The sub-questions associated with this research can be formulated as follows:

1. What are the activities of the Province of Utrecht regarding climate adaptation?
2. To what degree is climate adaptation integrated to date into the provincial policy?
3. Which barriers play a role in the integration of climate adaptation into the provincial policy?
4. What kind of role can the climate adaptation team play in the mainstreaming of climate adaptation?
5. How do three provincial policy sectors have integrated climate adaptation and deal with barriers that can hinder the sectoral integration of climate adaptation?

1.4. Scientific relevance

This research contributes to scientific knowledge for four main reasons. Firstly, most literature studies about policy mainstreaming are written on a geographical scale (internationally, nationally and locally) (Biermann et al., 2009; Geerlings & Stead, 2003; Hertin & Berkhout, 2003; Huq et al., 2007; Jordan, 2011; Nilsson & Persson, 2003; Szyszczak, 2006; Visseren-Hamakers, 2015). This study looks at the mainstreaming process within an organisation, namely the Province of Utrecht. It, therefore, contributes to the

literature to see whether research on climate adaptation mainstreaming is also applicable within an institutional context.

Secondly, even though there is much scientific literature written about climate adaptation, studies about the integration of climate adaptation in existing policies are rather scarce (Schmid, 2010; Biesbroek et al., 2010; Burton et al., 2002; Huq et al., 2007; Jordan & Lenschow, 2010; Klein et al., 2007; Moser, 2012; Swart & Raes, 2007). Furthermore, whereas several researchers promote the mainstreaming of climate adaptation, only a limited number of researchers actually explain how such an integration process can be understood (Moser & Ekstrom, 2010; Runhaar et al., 2012, 2018; Uittenbroek, 2014). Besides, various barriers that hinder the implementation of the integration of climate adaptation are mentioned in literature. Nevertheless, the combination of the theoretical constructs of barriers has only been tested to a limited extent in practice. In the theoretical context of this research, a widely applicable and well-arranged typology for climate adaptation barriers was, therefore, designed. Hence, a better understanding of the hindering factors to the integration processes can be gained (Biesbroek et al., 2011; Moser & Ekstrom, 2010; Runhaar et al., 2012). This research, therefore, contributes to scientific knowledge in this relatively unexplored area, by mapping out the current status of the concept of 'mainstreaming' on the basis of a number of criteria to ‘measure’ the degree of integration and by explaining the importance of certain barriers that influence this process.

Third, little theoretical literature has focused on the role of certain organisational features (i.e. the climate adaptation team). However, I think it might be influential since it can bring structure and incentives (such as financial support and expert knowledge) to the mainstreaming of climate adaptation, so climate adaptation is taken more seriously within provincial policy sectors. The importance and role of the provincial climate adaptation team are, therefore, also analysed.

Finally, the results of this study about mainstreaming are not only relevant for the subject of climate adaptation but can also be used for the implementation of objectives of other emerging and important policy fields such as climate mitigation, sustainability, inequality and poverty.

1.5. Societal relevance

About sixty per cent of the Dutch territory is located below sea level, and most of the gross national product is earned in these flood-prone areas. In addition to floods, climate change can also lead to heat stress and (extreme) dry periods in higher areas and cities, the latter of which naturally make the largest contribution to the gross national product. Even though the impact of climate change may differ in regions, it is likely that all provinces of the Netherlands will be negatively affected (Royal Netherlands Meteorological Institute [KNMI], 2014). It is, thus, important that these negative effects are anticipated regionally by means of climate adaptation strategies.

As any other province, also the Province of Utrecht faces the consequences of climate change and the urgency is continuously increasing to adapt to the changing weather circumstances. In collaboration with the provincial climate adaptation team, it was examined to which extent

the provincial policy sectors are currently committed to integrating climate adaptation within their policy and how they experience certain barriers hindering this process. This can also be called, 'baseline-measurement' of climate adaptation. Based on this measurement, strategies can be developed to further 'mainstreaming' the subject under study. Therefore, this study contributes to the discussion of mainstreaming of climate adaptation. The recommendations resulting from this study do not only provide the Province of Utrecht with useful insight in reaching their goal to 'mainstream' climate adaptation within the provincial policy but can also help other provinces to make their provinces more climate proofed.

1.6. Reading guide

Having outlined the objective and relevance of this thesis, Chapter 2 proceeds by presenting relevant concepts and theories from the scientific literature. This theoretical framework lays the basis for the conceptual model of this research and its operationalization. Chapter 3 presents the methodology to this research and discusses the research steps, the research philosophy and the research strategy. Moreover, the research methods and the approach to data collection and data analysis are explained. At the end of chapter 3 considerations regarding the validity and reliability of this research are discussed. Chapter 4 provides an analysis of the findings from empirical research. Chapter 5 concludes by discussing the practical implications derived from the findings. Finally, Chapter 6 reflects on the research limitations and chapter 7 gives a short indication for further research about this topic. Finally, chapter 8 provides several recommendations for the climate adaptation team.

To improve the readability of this paper, a few abbreviations of names/concepts are used. In order to refer to the organisation 'Province of Utrecht', the short version 'Province' is used. The word 'province' is written with a small letter and refers to the region. Besides that, the word 'adaptation' is used as a short version of 'climate change adaptation'.

2. Literature review and theoretical framework

In order to achieve the objective and to answer the research question, a number of steps were taken. Based on the scientific literature on the subject, this chapter explains the main concepts from the objectives and questions. This provides more insight into the practical problem that is central to this research and can, therefore, also be regarded as the necessary foundation for answering the presented research question at a later stage of this research.

First of all, in section 2.1., brief attention is paid to the phenomenon of climate change and its possible consequences. Most attention is given to the effects and consequences that climate change has on the Netherlands. In the following, two ways in which a society can deal with climate change will be discussed, namely climate mitigation and climate adaptation (section 2.2 and 2.3). Although climate mitigation is in principle outside the scope of this study, this concept helps to further understand the adaptation strategy. Section 2.4. discusses the main theoretical concept of this research: mainstreaming. In this section, its meaning will be discussed as well as the importance of its practical application. Section 2.5 discusses how the degree of mainstreaming can be assessed. Furthermore, section 2.6. will give an overview of the barriers that hinder the mainstreaming of climate adaptation. These barriers have been formulated by scientists in various ways, therefore, a specific typology of barriers in regard to climate adaptation integration has been constructed in section 2.7. Finally, the conceptual model is presented in section 2.9.

2.1. Climate Change

Climate change can be considered as the change of the average weather type over a period of time. Usually, a period of 30 years is considered for this. According to United Nations Framework Convention on Climate Change (UNFCCC) climate change can be defined as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (United Nations, 1992). The definition of climate change from the Intergovernmental Panel on Climate Change (IPCC) further emphasises, that human activities (also called anthropogenic activities) has been the dominant cause for the increasing concentrations of in the atmosphere since the mid of the twenty-century (IPCC, 2018).

In the last decades, climate change has become one of the most complex policy problems and is often seen as a 'wicked problem'. Dorland et al. (2011) name several reasons for this: First of all, it is difficult to observe climate change directly. This means, that the public, as well as the government, depend highly on experts to describe potentially negative and positive consequences of climate change. Second, the effects of climate change often only become visible in the long-term. Many preventive measures, however, are taken or should be taken now. Third, climate change is a global phenomenon that can only be effectively tackled if all countries participate. Finally, combating climate change is not a question of tackling one clearly identified source, but a multitude of sources (such as cars, houses, coal-fired power stations, factories, etc.) (ibid).

According to the Royal Netherlands Meteorological Institute (KNMI) (in Dutch: Koninklijk Nederlands Meteorologisch Instituut), the effects of climate change have become largely visible in the Netherlands, especially within the last decennia. The average temperature has risen over the past century, the amount and intensity of precipitation have increased, and extremely hot days are (increasingly) more common (KNMI, 2014). In addition to the more often occurring of extreme weather situations, such as drought, severe weather and heat waves, climate change can also result into new or recurring diseases and pests in agriculture or public health (IenW, 2016).

2.2. Climate mitigation

In response to climate change, two movements complement each other: climate mitigation and climate adaptation. These terms are similar but are also essentially different and often confused with each other. Mitigation and adaptation both aim at maintaining a good living environment for plants, animals and people. Both domains recognize that the quality of the living environment will deteriorate if no measures are taken. The urgency for mitigation is to greatly reduce greenhouse gas emissions, thereby ideally reversing the human impact in climate change (Füssel & Klein, 2006). The aim is to have at least a climate-neutral situation, meaning that the situation does not deteriorate compared to the current situation. In the last decades, a large number of countries have committed to take measures to reduce their CO2 emission within the time period of 2008-2020 by signing an international treaty also known as the 'Kyoto protocol' (Najam et al., 2003).

Mitigation is of great importance to prevent (further) climate change. However, it is expected that today's observable changes will continue to intensify in the upcoming decades and centuries, even if the greenhouse gases are greatly reduced (Albers et al., 2015; IPCC, 2018a; KNMI, 2014). According to IPCC (2018), it is increasingly becoming clearer that it will not be possible to completely prevent climate change. Therefore, changes that are made within the physical and social environment will have to be designed in such a way, so they can deal with the consequences of climate change. This is also known as 'climate adaptation'. To clarify the differences between climate mitigation and adaptation, the characteristics of both strategies are presented in table 1. Since the adaptation strategy forms the guiding principle of this research, the subject is, therefore, discussed in more detail in the following sections 2.3.

2.3. Climate adaptation

2.3.1. Definition

For a long time, the emphasis was only on mitigation, but in recent years climate adaptation has increasingly come into the limelight (De Bruin et al., 2009; Jordan, 2011). Climate adaptation can be defined as the "adjustment in ecological, social or economic systems in response to actual or expected climatic stimuli and their effects or impacts" (Smit et al., 1999; p. 1). Climate adaptation has a long and multidisciplinary history of investigation, resulting in different meanings of the term per working field and practice (Moser & Ekstrom, 2010). A rather general but inclusive definition, reflecting the common usage in the climate change field, comes from the IPCC. They define adaptation as "adjustment in natural or human

systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities" (IPCC, 2018a, p. 542). This definition emphasizes that adaptation must not be considered solely in the context of climate change alone but should also be initiated or undertaken in the context of non-climatic windows of opportunity (such as in land-use plan updates, infrastructure replacement and the renovation of buildings). It also implicitly assumes effectiveness in outcomes that we believe is premature and whether harm will be moderated and beneficial opportunities exploited is contingent on many factors, not just on the adaptive action itself. Some adaptive actions may turn out maladaptive later (PCC, 2014). Whereas the IPCC distinguishes natural and human systems, Moser and Ekstrom (2010) take another approach, and instead of separating the two systems, they see the social-ecological systems as one whole. According to them, adaptation:

> Involves changes in social-ecological systems in response to actual and expected impacts of climate change in the context of interacting non-climatic changes. Adaptation strategies and actions can range from short-term coping to longer-term, deeper transformations, aim to meet more than climate change goals alone, and may or may not succeed in moderating harm or exploiting beneficial opportunities. (Moser & Ekstrom, 2010, p. 1)

The Stern Review further stresses the importance of adaptation since it "will be crucial in reducing vulnerability to climate change and is the only way to cope with the impacts that are inevitable over the next few decades" (Stern, 2007).

In the context of this research, the regional scale to which climate adaptation is applied is particularly relevant. Whereas climate mitigation leads to global effects, an adaptation measure only has a small (regional) influence. As a result, so-called free riding in climate adaptation is less plausible. Indeed, the regional (or provincial) government hardly benefit from adaptation measures taken by neighbouring provinces. For this reason, it is important that each province ensures climate-proof spatial planning.

TABLE 1

COMPARISON CLIMATE MITIGATION AND CLIMATE ADAPTATION

	Mitigation	**Adaptation**
Definition	Reducing the cause of anthropogenic climate change	Adjusting to the unavoidable impact of anthropogenic and natural climate change
Scale of problem	Solution to global problem, but requires implementation across all scales	Solutions to mostly local and regional problems but which can have global implications (e.g. food insecurity, climate migration)
Policy goal	Limit to well below 2 degrees global average temperature increase since pre-industrial levels, preferably limiting to 1,5 degrees	Enhance adaptive capacity, strengthening resilience and reducing vulnerability to climate change
Key indicators of success	Quantifiable: e.g. reduced greenhouse gas emissions	Difficult to quantify e.g. impacts averted, reduced vulnerability, resources dedicated to specific policy or projects
Role of politics	Highly politicised in most instances	Depoliticised and technocratic in most instances
Policy timescale	Medium to long term	Short to medium term (and increasingly long term)

Notes. Adapted from *"Barriers to climate change adaptation in the Netherlands", by* R. Biesbroek, J, Klostermann, CJ.A.M. Termeer, P. Kabat, 2009, Climate Law 2 (2). and from "*Integrating climate change mitigation and adaptation in agriculture and forestry: opportunities and trade-offs",* by B. Locatelli, C. Pavageau, E. Pramova, M. Di Gregorio, 2015, Wiley Interdisciplanry Revies Climate Change 6(6).

2.3.2. Literature on climate adaptation

Climate adaptation is a new topic in scientific literature compared to climate mitigation. Based on the perspective of policymakers and scientists, climate mitigation generally receives much more attention than climate adaptation. Also, in order to tackle the issue of climate change, the emphasis so far has mainly been on reducing greenhouse gas emissions and thus on reducing climate change (Biesbroek et al., 2009; Crabbé, 2011). Füssel (2007) gives several reasons for this. The main reason for the attention towards climate mitigation is "its ability to reduce impacts on all climate-sensitive systems whereas the potential of adaptation is limited for many systems" (Füssel 2007, p. 265) Still, despite the need for climate mitigation, he argues that there are several important arguments to increase the focus on climate adaptation:

1. The average climate conditions and climate extremes are already influenced by, among other things (anthropogenic) greenhouse gases,
2. The climate will continue to change in the future. As a result of increasing CO2 emissions in the past and the slowness of the climate system, the rate of global warming is expected to accelerate significantly in the coming years than it has been in recent decades.
3. The effect of a decrease in emissions is only visible after a few decades, where most adaptation measures (or climate adaptation) have a much shorter lead time.
4. Adaptation measures (or climate adaptation) can be realized on a local or regional scale. Its effectiveness is less dependent on the actions of others, as is the case with climate mitigation.
5. A large number of adaptation measures have further important benefits, such as reducing current climate-sensitive risks.

These insights led to the increase of attention of scientific research on climate adaptation in the last decades. Several studies highlight various aspects of climate adaptation. For example, attention is paid to general climate adaptation (measures) (Smit & Wandel, 2006; Termeer et al., 2011), possible synergy effects and tensions between mitigation and adaptation measures (Davoudi, 2009; Zhao et al., 2018) and climate adaptation in developing countries (Conway & Mustelin, 2014). Russel et al. (2017) focussed in particular on the integration of climate adaptation into established policy fields. In their view, despite the expansion of the number of studies within climate science in recent decades, the sectoral integration of climate adaptation is still insufficiently understood in the academic literature.

2.3.3. The role of regional governments

According to Davoudi, Crawford and Mehmood (2009), there is "widespread recognition that the spatial configuration of cities and towns and the ways in which land is used and developed have significant implications for […] adaptation to the adverse impacts of climate change" (p. 13). Given that governments ultimately have the responsibility for spatial planning, they naturally play a prominent role in the context of climate adaptation. Moreover, governments are necessary to take the political and administrative decisions that make it possible to implement spatial measures (Rijksoverheid, 2013). According to Khan et al.

(2018), the impact of climate change differs within each area, thus approaches are needed on specific locations to analyse climate vulnerability and adaptation. Therefore, in addition to the central government, the regional governments (also called provinces) and the local governments (such as the municipalities and water boards) play an important role in the climate-proof design of the physical environment of a certain region (IenW, 2016). According to Runhaar et al. (2012) and van den Berg and Coenen (2012), climate change is already receiving worldwide attention from municipalities, but little attention has been paid to provinces so far. According to the IPO (2020), the provinces now realise their role connecting climate adaptation with other large spatial and social challenges such as the realization of new housing and the energy transition (Kennisportaal Ruimtelijke Adaptatie, 2020a). In order to succeed in a transition towards climate-resilient water management and spatial planning, de Vries and Wolsink (2009) argue though, that fundamental changes in the process of policymaking are needed (Davoudi et al., 2009).

2.3.4. Climate adaptation and policy sectors

According to research done by the KNMI, it was argued that the further effects of climate change in the Netherlands are in principle manageable at the current rate of change. On the one hand, this is because most effects seem to be limited for the time being and are changing only gradually. This gives sufficient time to anticipate these consequences. On the other hand, the effects seem to be manageable because climate risks are increasingly embedded in various policy fields (Hofland & Boon, 2019; KNMI, 2014)

According to Moser and Ekstrom (2010) adaptation strategies "aim to meet more than climate change goals alone" (p. 22026). In fact, climate adaptation goals are to be achieved only together with other regional policy goals (Driessen & Spit 2010). Most aims of climate adaptation overlap with targets from policy areas such as water management, nature and agriculture, energy, infrastructure, housing and recreation (IenW, 2018). Smit and Wandel (2006) emphasise that "one widely acknowledged lesson [is] that adaptation measures are rarely undertaken in response to climate change effects alone, and certainly not to climatic variables that may be of importance to decision makers" (p. 289). To be able to tackle different tasks at the same time it is, therefore, necessary that the subject is integrated into all existing policy. This process in which the integration of climate adaptation into other policy fields takes place ensures besides others, the increase of opportunities for innovations and greater effectiveness and efficiency of several policy areas (Uittenbroek et al., 2013).

Van den Berg and Coenen (2012) distinguish between adaptation within a sector as a conscious process (the term 'adaptation' is used and explicit attention is given to the consequences of climate change) and adaptation in the form of unconscious measures taken (where the term 'adaptation' is not used, but measures to reach other sectoral goals are taken, that also deal with the changing weather conditions) (van den Berg & Coenen, 2012). On the other hand, Runhaar et al. (2012) distinguish 'proactive' and 'reactive' measures. Proactive measures are taken before climate effects occur, while the application of reactive measures occurs precisely during or after the occurrence of these effects. Since the starting point of society will in principle be that negative effects should be avoided as much as possible, this

research aims, in principle, for a taking adaptation measures as a conscious choice and focuses on proactive climate adaptation.

Finally, there are various options for taking climate adaptation measures. At all levels - buildings, parcels, districts and areas - adaptations measure can be made to absorb the expected effects of climate change (IenW, 2016). The choice of a particular adaptation measure for an area depends on the policies and rules that are made at the national, regional and local. Compared to a rural area, an urban environment is characterized for example by a higher degree of pavement and is, therefore, in need of other measures, such as more greenery (Royal Haskoning & Tekstbureau Tussenhaakjes, 2010). Spatial measures are generally well suited to deal with threats from climate change in a sustainable and effective manner and to take advantage of opportunities (for example in the field of other policy sectors where transitions take place). A climate-proof spatial design is characterized by low vulnerability (resistance and resilience) and high adaptability. Resistance is necessary to withstand extreme conditions. Resilience is required to recover quickly once conditions return to normal. Finally, climate-proof spatial planning requires a high degree of adaptability, because there are many uncertainties regarding, in particular, the size and speed with which the climate changes (Restemeyer et al., 2015; Swart et al., 2014).

2.4. Mainstreaming

As outlined in the previous sections, according to a number of authors claim, that taking into account climate change and its effects when developing and implementing (new) policy is becoming increasingly more important. (Crabbé, 2011; Hofland & Boon, 2019; IPO, 2020; Munasinghe, 2002). Also, Crabbé (2011) argues, that the potential consequences of climate change need to become a systematic consideration in the planning and decision-making of policy. This process, in which integration of climate adaptation takes place, is also known as ‘mainstreaming’. If there is support for this process, climate adaptation will be ultimately embedded in institutional regulation and budgetary processes and within organizations and administrations of all governmental levels (Crabbé, 2011). Uittenbroek, Janssen-Jansen and Runhaar (2013) claim, that if adaptation would become mainstream within governmental institutions, the chance for society to become ‘climate-proof’ would also increase.

2.4.1. Mainstreaming origins

Mainstreaming has its origins in the concept of Environmental Policy Integration (EPI). EPI can be defined as “moving environmental issues from the periphery to the centre of decision-making, whereby environmental issues are reflected in the design and substance of sector policies” (European Environmental Agency [EEA], 2005, p. 12). Jordan and Lenschow (2010) argue, that EPI and the resulting concept of mainstreaming, are based on the same idea of integrating environmental issues into existing policy domains. However, whereas EPI focuses on general sustainable development, the emphasis of mainstreaming lies primarily on the integration of climate (adaptation) consideration into the normal activity of governments (Runhaar et al., 2018).

Climate adaptation mainstreaming has no agreed-upon definition (Brouwer et al., 2013). According to the IPCC, the term ‘adaptation mainstreaming’ is described to denote the increased of adaptation planning and implementation within governments (IPCC, 2014), whereas Massey and Huitema (2013) consider mainstreaming as a “mode or a means of implementing adaptation policies and activities” (p. 345). The latter definition basically describes climate adaptation as a new policy field on its own, and mainstreaming can be considered more as a means to implement this policy into different governmental levels and policy sectors. Also, Uittenbroek et al. (2014) and Dewulf et al. (2015) distinguish mainstreaming from dedicated adaptation policy, whereas Wamsler and Pauleit (2016) perceive dedicated adaptation policies as an integral element of adaptation mainstreaming. Mainstreaming can, therefore, be used and interpreted in several ways. The most often cited definition of mainstreaming is written by Klein et al. (2005). They define climate adaptation mainstreaming as:

> “The integration of policies and measures to address climate change [adaptation] in ongoing sectoral and development planning and decision-making, aimed at ensuring the sustainability of investments and at reducing the sensitivity of development activities to current and future climatic conditions” (Klein et al., 2005, p. 584).

Schipper & Pelling (2006) emphasis further that by integrating climate (adaptation) issues into the policies of various sectors, the subject is not considered anymore as a sectoral interest, but it rather gets a holistic character. For reasons of effectiveness and (financial and capacity-related) efficiency, not only one sector should, therefore, be responsible for the adaptation to climate change (Klein et al., 2007). Hence, mainstreaming stimulates the effectiveness of policymaking further because it combines objectives, increases the “efficient use of human and financial resources and ensures long-term sustainable investments” (Uittenbroek et al. 2013, p.399).

Mainstreaming implies that the impact of climate change is taken into consideration by policymakers that are responsible for the implementation of measures to reduce the vulnerability to climate change impacts within their own policy field (Uittenbroek et al., 2013). However, not every policy domain is able to achieve a firm institutional embedding. On the basis of three models, Crabbé (2011) describes the extent to which climate adaptation is integrated into one policy domain. The three models are partly comparable to the distinction between ‘adaptation as one unconscious measure 'and' adaptation as a conscious process' by van den Berg and Coenen (2012). The first step, he describes, is the ‘serendipitous adaptation’, that can be considered as a sectoral policy that happens by chance to be accompanied by the effects that support adaptation to climate change. This shape of adaptation can, therefore, also be considered as ‘adaptation as an unconscious measure’. Secondly, ‘climate proofing’ and thirdly ‘discrete adaptation’ can be classified as an adaptation as ‘conscious process’. Climate proofing involves using one climate lens in the actions, measures, projects and programs that a policy domain conducts. ‘Discrete adaptation’ goes even a step further, meaning that climate adaptation is always the primary objective of a project or initiative in a specific policy domain. According to the above, the most ‘ideal’ situation, therefore, should be the ‘adaptation as a conscious process’.

Another aim of a mainstreaming strategy is to "capture the potential in other policy areas and sectors for implementing climate-friendly and climate-safe development pathway" (Kok & de Coninck, 2007, p. 588). By laying appropriate links between different functionally linked issues can help possibilities for solving problems, and the efficiency and effectiveness of the policymaking are increased. According to Smit and Wandel (2006), successful integration of climate adaptation ultimately ensures that 'the adaptive capacity' of a society is increased. However, a large adaptive capacity does not automatically lead to a successful adaptation to the effects of climate change (Næss et al., 2005). A greater adaptive capacity does ensure though that an area can more easily adapt to changing (weather) conditions. The adaptive power is also described by Wall and Marzall (2007) as the "ability of a system to adjust to moderate potential damages, to take advantage of opportunities or to cope with the consequences [of climate change]" (p. 377).

Ultimately, to understand how mainstreaming is approached it can be distinguished between the horizontal and vertical mainstreaming (Mickwitz, 2009). Horizontal policy mainstreaming refers to cross-sectoral government measures or procedures in order to achieve full integration of climate adaptation into government policy. Vertical policy mainstreaming, on the other hand, is about integrating climate adaptation vertically into one specific sector across different government layers. This research focuses primely on integrating climate adaptation across different policy sectors fields, which can be seen as horizontal mainstreaming.

2.4.2. Conceptualizing mainstreaming

As mentioned before, the consensus about the need to adapt is increasing. This shifts the focus on how climate adaptation can be operationalized in policy practice. Given the complexities of simply 'defining' mainstreaming, it is not surprising that 'assessing' the extent to which climate adaptation is mainstreamed in policy is also an area of disagreement. Since mainstreaming is quite a new concept, the literature on environmental policy integration was reviewed for conceptualizing mainstreaming.

According to Underdal (1980), policy integration can be distinguished between three basic requirements for policies to be qualified as 'integrated' (or mainstreamed). These are comprehensiveness (recognizing a broader scope of policy consequences in terms of time, space, actors and issues), aggregation (a minimal extent to which policy alternatives are evaluated from an 'overall' perspective) and consistency (a minimal extent to which a policy penetrates all policy levels and all government agencies). Another way to measure mainstreaming is to develop specifications and criteria. Some organizations such as the European Environmental Agency (EEA) and the Organisation for Economic Co-operation and Development (OECD) have already created such evaluation schemes. However, both focus on a wider approach to evaluate general environmental policy (EEA, 2005; OECD, 2002). An often-cited assessment for climate policy integration is inspired by the work of Mickwitz et al. (2009) (Brouwer et al., 2013; Kivimaa & Mickwitz, 2006; Uittenbroek et al., 2013). Their analytical framework is designed to be applied to both, climate policy processes and outputs (i.e. plans, legislation and related guidance documents). According to Mickwitz et al. (2009), one can assess climate policy integration based on five criteria:

'inclusion', 'consistency', 'weighing', 'reporting' and 'resources' (Table 2). Uittenbroek et al (2013) go even a step further and evaluate the climate policy integration per different policy phases. This step would indeed add extra credibility to this research but due to time constraints, it is not possible to go into each policy phase of all provincial policy sectors. Hence, the analytical framework of Mickwitz et al. (2009), is, therefore, also further used in this study.

The first evaluation criterion, *inclusion,* refers to the degree in which climate adaptation is addressed in the policy notes, either in general or by means of a specific reference to the subject and associated risks. This is also expected to largely depend on the extent to which policymakers, from a certain policy sector, feel responsible for the subject under focus. Only when they feel responsible, they can examine to what extent climate adaptation has consequences for the relevant policy sector. Based on this, it can be determined to what extent the aspect should be included in the policy notes of that policy sector. Kivimaa and Mickwitz (2006) argue, that this criterion is necessary for the other four criteria to exist.

To integrate a policy, it is important that different policy instruments are consistent with each other. This is expressed by Lafferty and Hovden (2003), as the "commitment to minimize contradictions" (p. 9). The second evaluation criterion is, therefore, the *consistency* of climate adaptation aspects in relation to other aspects. Only by aligning (sectoral) policy documents with each other, climate change can be taken into account in policy and spatial decisions in an effective and efficient way

The third evaluation criterion, *weighing,* refers to the priority given to climate adaptation in relation to other sectoral objectives. According to Kivimaa and Mickwitz (2006) "environmental issues should take priority in situations where contradictions between different policy objectives emerge" (p. 732). Agreements on the priority given to climate adaptation over other objectives can be laid down in a protocol. In this way, climate adaptation is structurally embedded in the decision-making processes. Moreover, it is not always necessary to make a choice between climate adaptation on the one hand and other policy objectives on the other hand. As Kivimaa and Mickwitz (2006) argue, some contradictions between divergent policy objectives can be avoided by creating win-win situations. For this reason, it is, thus, important that governments focus on linking adaptation measures with other new policy developments.

The fourth evaluation criterion *reporting* relates to the extent to which "adaptation strategies and policy instruments specify ex-ante how their impact on climate change aims to be followed up and reported" (Mickwitz, 2009, p. 23). Furthermore, this criterion also refers to the inclusion of climate adaptation information in ex-post evaluations of strategies and policy instruments (Mickwitz, 2009; Moser, 2012; Moser & Ekstrom, 2010). This criterion is largely left out of scope for this research since it cannot be expected that the policy sectors of the Province have integrated climate adaptation to such an extent so that this criterion would be fulfilled.

Lastly, climate policy integration also requires knowledge and *resources*. The links of policy strategies and the impacts of an instrument on climate change adaptation should not be underestimated. Therefore, the degree of policy integration at all levels is dependent on the

expertise of the people involved and the time and resources (i.e. finances and capacity) that they have at their disposal.

TABLE 2

ASSESSMENT CRITERIA FOR CLIMATE ADAPTATION POLICY INTEGRATION

Criterion	Key Questions
Inclusion	To what extend are direct as well as indirect climate change adaptation impacts covered?
Consistency	Have the contradictions between the aims related to climate change adaptation and other policy goals been assessed and have there been efforts to minimize revealed contradictions?
Weighing	Have the relative priorities of climate change adaptation impacts compared to other policy aims been decided and are there procedures for determining the relative priorities?
Reporting	Are there clearly stated evaluation and reporting requirements for climate change adaptation impacts (including deadlines) ex ante and have such evaluations and reporting happened ex post? Have indicators been defined, followed up and used?
Resources	Is internal as well as external know- how about climate change adaptation impacts available and used and are resources provided?

Notes. Retrieved from *"Climate policy integration, coherence and governance",* by Mickwitz, et al., 2009, PEER Report No. 2.

The above framework still has its limitations. As Persson and Klein (2009) argue, there is no 'sound theoretical foundation' on which one can evaluate adaptation mainstreaming in terms of ultimate outcomes. They explain this by referring on one side to the 'required' level of adaptation which is determined relative to the risk of climate change and variation in a given period and area. On the other side, they claim that it also depends on society's willingness to accept those risks. Nevertheless, this research does not aim at passing normative judgments on ultimate outcomes.

Another limitation of the framework is mention by van Bommel and Kuindersma (2009) and Urwin and Jordan (2008). According to them, judgments on the extent of mainstreaming remain somewhat subjective and depend on people's own perspective. Therefore, they suggest investigating the compatibility of policies from different perspectives (i.e. high-level policymakers and locally based implementers). What appears inconsistent or successful from a 'top-down' perspective may not be seen as such from 'bottom-up' and vice versa (Van Bommel & Kuindersma, 2009). Due to the limited time frame of this study, the focus in this study, however, remains on the governmental level of the Province. Nevertheless, if needed, other level policies are also taken into consideration, but this only to a limited extend.

2.5. Barriers to the mainstreaming of climate adaptation

With the challenge to operationalize adaptation mainstreaming in policy, other policy challenges about climate adaptation have also emerged (Smith et al., 2009). With the review of the recent literature on climate adaptation and general literature on climate policy procedures, it shows that that a large number of barriers exists that hinder the development and practical application of climate adaptation policy (Adger et al., 2009; Biesbroek et al., 2010; Moser & Ekstrom, 2010; Runhaar et al., 2018; Uittenbroek et al., 2013). To find

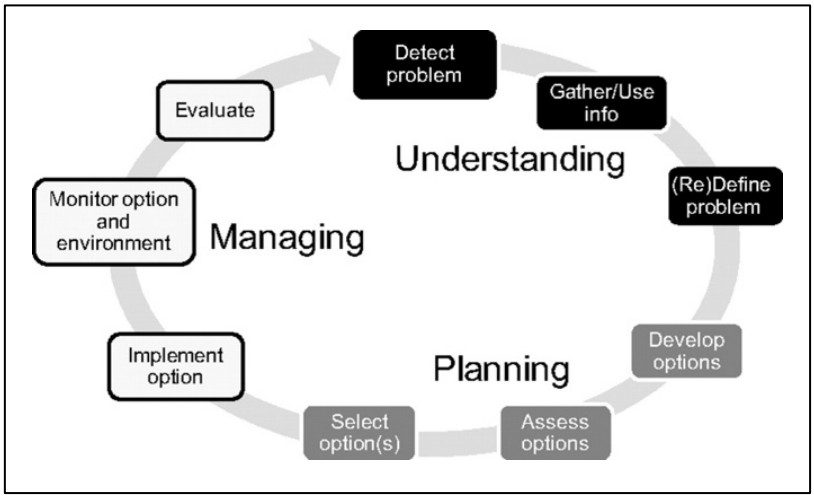
relevant and useful literature, the focus was mainly on 'mainstreaming climate change adaptation' and 'climate policy integration'. With the latter search term in particular, it was particularly important that the literature was filtered on climate adaptation, given the fact, that most literature is written on climate mitigation. In addition, a large share of the scientific literature is about climate adaptation in developing countries. But, according to Gagnon-Lebrun and Agrawala (2006), there are large differences in the potential adaptive capacity between Western countries and developing countries and the institutional setting differs considerably between these countries (Adam, 2005). Therefore, literature focusing on the subject within developing countries was left out for this study.

While there is a recognized need to adapt to changing climate conditions, there is an emerging discussion about the limits to such adaptation. Various definition about these 'limits' or 'barriers' exist in scientific literature. According to Adger et al. (2007), barriers can be considered as "the conditions or factors that render adaptation ineffective as a response to climate change and are largely insurmountable" (p. 733). Moser and Ekstrom (2010), on the other hand, define these barriers as "obstacles that can be overcome with concerted effort, creative management, change of thinking, prioritization, and related shifts in resources, land uses, institutions etc." (p. 22027). The latter definition implicitly indicates that the barriers can be solved by making use of the right means. Biesbroek et al. (2011), argue though, that it is not always clear which factors can be considered by actors as a barrier to the integration of climate adaptation. Whereas for one person the application of certain climate adaptation measures can be seen as a barrier, for somebody else it can also be seen as an opportunity. According to Biesbroek et al. (2009), a barrier "is a multifarious description of a pressure or counter pressure that represses individuals in achieving personal and collective goals - the development and implementation of adaptation strategies" (p. 3). These different definitions of 'barriers' also means that barriers can be seen and experiences in practice in various ways. For this research, the definition of barriers from Moser and Ekstrom is chosen to be further used in this study, since one aim of this research is to provide recommendations to the provincial climate adaptation team on how to mainstream climate adaptation effectively and more efficiently into the provincial policy in the future. To achieve this, (if existing) certain barriers need to be solved.

Another distinction can be made between barriers assigned to certain 'phases' within the adaptation process. For example, Moser and Ekstrom (2010) distinguish between the three phases of (1) understanding the problem, (2) planning adaptation actions and (3) managing the implementation of the selected option(s). Subsequently, a distinction is made in three steps per process phase (see figure 2). For each step they identified a number of barriers. Other authors, such as Uittenbroek et al., (2013) also use this subdivision in their research. However, it is questionable whether adaptation is really such a circular process, or whether it takes different forms. Runhaar et al. (2012), therefore, distinguish only between two (linear) phases, namely (1) problem recognition and (2) development of adaptation plans. Also, he assigns to each phase a number of barriers, which are divided into three categories: resources, political and institutional and nature of the problem.

FIGURE 2

PHASES THROUGHOUT THE ADAPTATION PROCESS



Notes: Retrieved from "A framework to diagnose barriers to climate change adaptation" by S.C. Moser, and J.A. Ekstrom, 2010*, PNAS, 107* (51), p.22027. Copyright 2010 by S.C. Moser and J.A. Ekstrom

Besides the distinction of barriers in phases, the level of concreteness in which barriers are described is also mentioned. Adger et al. (2007) distinguish between five abstract comprehensive barriers, namely: technological barriers, cognitive barriers, ecological and physical limits, financial barriers and social and cultural barriers. A number of other concrete barriers can be found literature, often also divided into a number of phases of the adaptation process (Adger et al., 2009; Biesbroek et al., 2009; Moser & Ekstrom, 2010; Runhaar et al., 2018).

Where several scientists choose to describe the barriers more in detail, Füssel (2007) and Ahmad (2009) focus more on the necessary conditions for an 'effective planned adaptation' and 'adaptive capacity'. Obviously, the lack of such necessary condition often leads to bottlenecks in the implementation of climate adaptation. According to Graaff et al., (2018), in order to achieve 'adaptive capacity', the vulnerabilities of climate change need to be identified (to know), following this, ambitions need to be formulated (to want) and finally, it needs to be implemented into practice (to work) (De Graaff, 2018). This working method is specifically used in the Dutch Delta Program on Spatial Adaptation (Staf Deltacommissaris, 2018) (De Graaff, 2018; Staf Deltacommissaris, 2018). It can be assumed that climate adaptation can only be integrated into the provincial policy if at least the knowledge conditions (to know) is met. Appendix 1 contains an overview in which a large number of barriers are listed, that derived from various scientific articles.

2.5.1. Classification of the barriers

Based on the barriers included in appendix 1, a typology of relevant and common barriers for this study was constructed. A comparison of these barriers shows, among other things, that there is a relatively large overlap between them, and only a small number of barriers are mentioned once. Furthermore, there are large differences in the concreteness or the level

of abstraction of the description. Since these barriers are further used in the empirical research of this study, it is important that these barriers are characterized by an appropriate level of abstraction. Highly abstract factors (see, for example, Adger et al., 2007) make it practically impossible to collect useful data in a targeted manner, while concretely elaborated factors (see, for example, Moser & Ekstrom, 2010) ensure that only a narrow range of factors can be examined. However, since this study is rather focused on getting a general overview within the Province, the aforementioned barriers (by Adger et al., 2007) form an appropriate categorization of barriers into which the concrete barriers can be divided. Based on this, an overview of the categorizations was made (appendix 2). This overview enables a further classification of the barriers. The information from appendix 2 is presented in a simplified way by combining and further specifying double-mentioned and overlapping barriers. This has led to the classification of barriers that form part of the theoretical framework of this research.

In Table 3 the classification of the barriers is visualized in a clear way. In particular, 'lack of financial resources' and 'lack of political support' are common barriers based on the literature. Some of the single mentioned barriers were disregarded since they do not address mainstreaming within an organization sufficiently and are, therefore, not seen as relevant enough to address in this study. Most of the barriers, however, are comparable and relatively easy to divide into different categories. Some further barriers, mentioned by Biesbroek et al. (2011), were excluded as well, since they were rated as '*not important'*, in their study on climate adaptation within the Netherlands. Since his study also focused on Dutch practice and governmental policymakers, it can be assumed that these barriers are also not important for this research. Finally, Moser and Ekstrom (2010) distinguish between nine process steps in the adaptation process, in which they formulate a (large) number of barriers per process step. As a result, these barriers are so concrete compared to the barriers of other scientists that they can hardly be divided into the constructed categorization. In addition, the implementation of an adaptation process implies that actors are (actively) committed to the implementation of climate adaptation (measures), while this research rather aims at identifying barriers that hinder policymakers to initiate the adaptation process within policy. For the above reasons, the barriers of Moser and Ekstrom (2010) are, therefore, also largely ignored in the context of this study.

TABLE 3

BARRIERS CLIMATE ADAPTATION BASED ON SCIENTIFIC LITERATURE

Categories	Barriers
Technological barriers	• Limited number of effective adaptation possibilities
Physical barriers	• High costs associated by the adaptation of the environment
Capacity-related barriers	• Lack of financial resources for climate adaptation • Lack of human capacity for climate adaptation
Cognitive barriers	• Uncertainty over cost/benefits of climate adaptation • Lack of knowledge over vulnerable places on a regional/local scale • Lack of useful climate scenarios for the regional/local scale • Lack of knowledge about possible measures for climate adaptation • Uncertainty about the effect of climate change • Lack of awareness of the need to adapt • Low threshold of concern • Passive attitude of many policy makers
Social and cultural barriers	• Lack of regional support • Lack of problem recognition within the organisation • Lack of sense of urgency within the organisation • Conflicting interest between actors
Political and institutional barriers	• Lack of effective instruments • Lack of political support/interest • Lack of incentives to implement climate adaptation • Inadequate cooperation and communication between other sectors within the organisation • Lack of clarity on responsibilities in climate adaptation (and its investment) • Competition from other planning problems • Not clear who should finance adaptation (or how) • Dependency in decision making on other actors

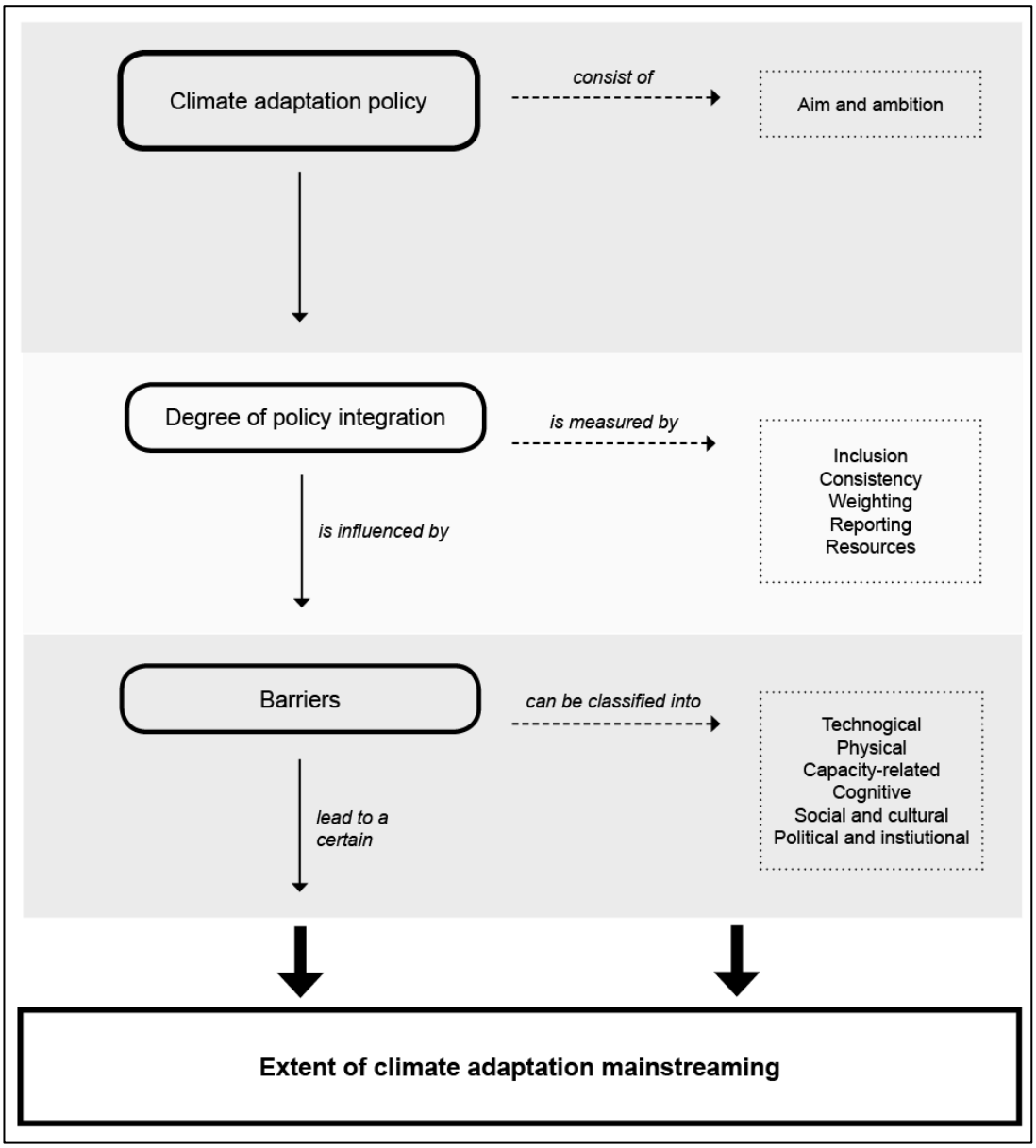
Notes: The table was created by the author based on the literature mentioned within the text. A more detailed overview can be found in appendix 1.

2.6. Conceptual framework

From the theoretical framework a conceptual framework for this research was constructed, including the main concepts and their relation to each other (Figure 3).

FIGURE 3

CONCEPTUAL FRAMEWORK



Notes: This conceptual framework was created by the author of this research and serves as a basis for this research. This framework can basically be also expressed as a formula: a + b = c (a refers to the evaluation of policy integration, b refers to the barriers and c is the outcome degree of climate adaptation mainstreaming)

The conceptual model has combined elements of the theoretical models, discussed in the previous sections. Such as any policy, climate adaptation is also the result of a certain aim and ambition. In the case of this study, the (provincial) objective regarding climate adaptation is to 'mainstream' the subject within the provincial policy (Provincie Utrecht, 2020c). In order to achieve this, climate adaptation goes through the process of policy integration which

can be measured by a certain degree of integration based on the five criteria, 'inclusion', 'consistency', 'weighting, 'reporting' and 'resources'. Secondly, barriers exist that can hinder this integration process of climate adaptation. These barriers are further divided into different types of barriers: technological, physical, capacity-related, cognitive, social and cultural, and political and institutional. This study further investigated how these barriers are experiences and are dealt with by a number of provincial policymakers. Finally, it ultimately leads to a certain extent of climate adaptation mainstreaming that currently exists within the Province.

2.6.1. Operationalising mainstreaming

In order to measure the different concepts, they need to be further operationalized into concrete indicators. This is an important process of research (Næss et al., 2005). For policy integration, the criteria 'inclusion', 'consistency', 'weighting, 'reporting' and 'resources' mentioned can also be considered as 'dimensions' in the context of operationalization (Table 2, left column). One or more indicators must be developed for each individual dimension so that each dimension is measurable and can actually be assigned a value (Korzilius, 2008, p. 58). The questions from table 2 (right column) can be seen as 'indicators'. These questions serve as the basis on which other relevant questions were developed for the empirical research.

Also, for the barriers, it is important to operationalize them into measurable factors. So far categories have been used when it comes to the classification of concrete barriers. The categories of the barriers determined in table 3 can also be seen in the scope of the operationalisation as 'dimensions'. To make the dimensions measurable, indicators are needed. Based on the scientific literature, the dimensions in the left column of table 3 have been worked out into concrete obstacles, which have subsequently been included in the right column. Given that, these concrete barriers are sufficiently measurable, they form the second group of indicators for the purpose of this study. The operationalization of the concepts further helps to answer the sub-questions of this research:

1. What are the activities of the Province of Utrecht regarding climate adaptation?
2. To what degree is climate adaptation integrated to date into the provincial policy?
3. Which barriers play a role in the integration of climate adaptation into the provincial policy?
4. What kind of role can the climate adaptation team play in the mainstreaming of climate adaptation?
5. How do three provincial policy sectors have integrated climate adaptation and deal with barriers that can hinder the sectoral integration of climate adaptation?

Ultimately, this should lead to an answer of the main research question:

To what extent is climate adaptation mainstreamed within the Province of Utrecht and what factors hinder the mainstreaming process?

3. Methodology

This chapter explains the research strategy and methods used in this research. Before turning to the methods, the chapter starts with the research steps (section 3.1) taken to answer the main research questions. Section 3.2. explains the research philosophy used. The sections that follow discuss the strategy and methods used in this research. Finally, the validity, reliability, and ethical considerations are explained.

3.1. Research phases

The research has been divided into four phases (Figure 4). Each of these phases focuses on one research method, consisting of quantitative and/or qualitative methods. By using different methods sequentially, this research takes a mixed-method approach.

The *first phase* consists of a review of the literature, which results into important contextual information and a theoretical framework for analysis. Additional information was gathered through desk research into policy reports, studies, news articles and other available sources online.

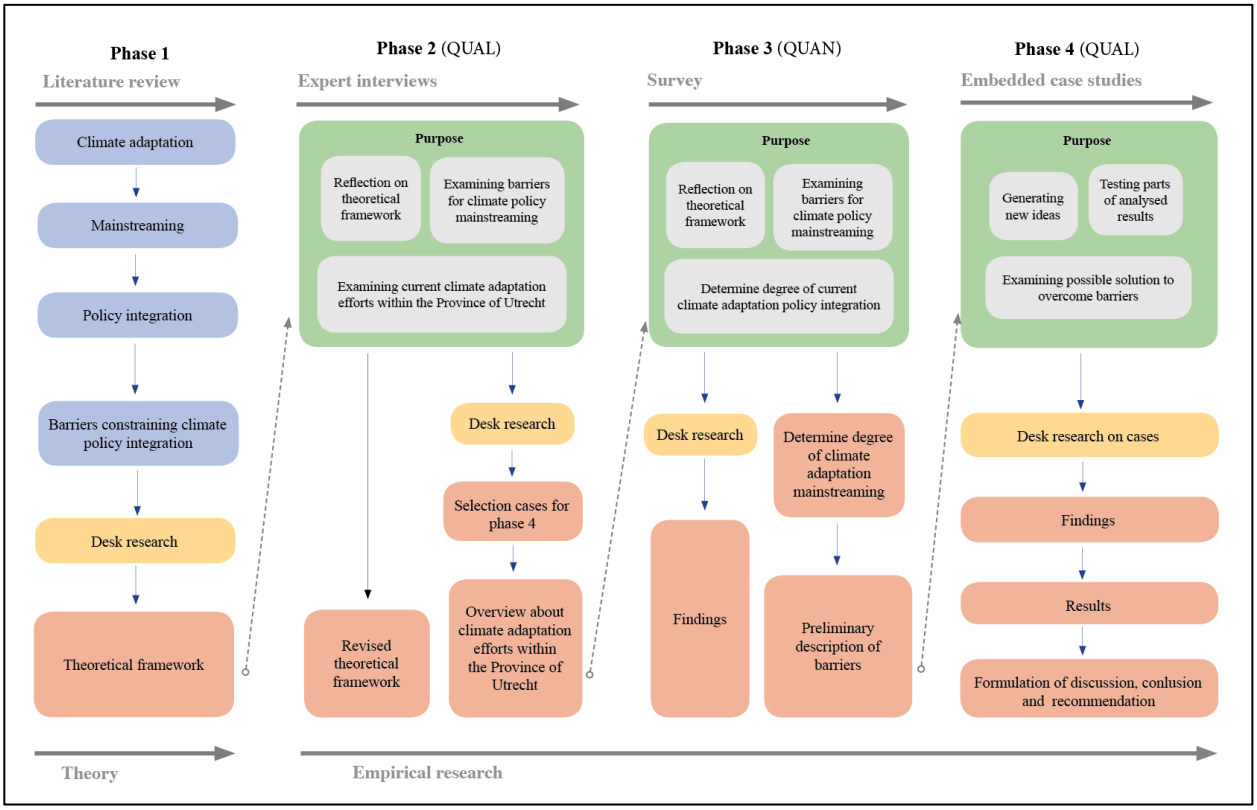
In the *second phase* a number of experts within the climate adaptation field were consulted during exploratory interviews, with a twofold aim. Firstly, they helped to fine-tune the theoretical framework. Secondly, they supported the development of a primary overview of the current situation about climate adaptation within the Province of Utrecht.

In the *third phase,* a survey was sent out to the policymakers from the different provincial policy makers. Firstly, the survey served to get an overview about the degree to which climate adaptation is integrated within the provincial policy. Secondly, it served to determine the barriers that they encounter to the integration of climate adaptation.

In the *fourth phase,* three embedded case studies were carried out. Data was collected from about the selected provincial policy sectors to acquire in-depth knowledge about the sectoral integration of climate adaptation, and how barriers are dealt with that can hinder the mainstreaming of climate adaptation. In addition to desk research on the sectoral policy documents, interviews with sectorial policymakers were carried out to complement information acquired during the desk research. The data collection eventually resulted into findings, conclusion and recommendation of this research.

FIGURE 4

OVERVIEW OF RESEARCH PHASES



Notes: This overview of the research phases was created by the author of this research. The end-product of one phase forms the starting point for the next phase.

3.2. Research philosophy

A research philosophy can be seen as the basis of a research, since it basically determines which data about a phenomenon should be gathered, analysed and used (Saunders et al., 2019). It helps to design a coherent research project, in which all elements of research fit together.

The philosophy underpinning this research is based on the *interpretivist paradigm*. Put simply, this position takes the view that things and meanings do not exist independently from humans, instead it is the people that have to construct the meanings (Saunders et al., 2019). In order to answer the research question of this study it is important to understand the various perceptions and interactions between the actors, involved in the context of climate adaptation mainstreaming.

The paradigm of scientific research can be divided into ontology, epistemology, methodology, and methods (Verschuren & Doorewaard, 2015; Yin, 2009; Guba & Lincoln, 1994). The interpretivist philosophy paradigm, chosen for this research, focuses on constructionist ontology and interpretivist epistemology. Concerning the *ontology* of constructivism, this research assumes that policy is produced through social interaction which is in constant state of revision. Furthermore, it also aims at examining the way barriers are dealt with by policymakers. This kind of reality can only be assessed through social

constructions such as language, instruments, shared meanings and consciousness. According to the interpretivist philosophy approach, it is important for the researcher, as a social actor, to value differences between people (Saunders et al., 2019).

The *epistemology,* in turn, discusses the questions of what constitutes acceptable knowledge. Here again, this research takes an interpretivist view. The provincial policy is a social phenomenon which is open to different interpretations. These interpretations, thus, mean that the researcher has a large influence on data collection. Interviews are needed to explore such motives and meanings. The researcher has much influence on the framing of the questions and interpretation of respondent's responses.

The above described research philosophy results further into the *methodological* consideration which is presented and discussed in the following two sections (section 3.3. and 3.4.). The philosophical approach taken for this research emphasizes the use of qualitative research methods. Still, some quantitative research is done, in terms of a survey, in order to give a first indication of the current degree of mainstreaming of climate adaptation within the Province. However, the resulting data is then further tested, analyzed and compared in depth by doing again qualitative research.

3.3. Research strategy

A research strategy can be understood as a guideline for a research (Saunders et al., 2019). It is further important that the research strategy is designed in such a way so it can provide a thorough answer to research question.

3.3.1. Mixed methods

As already indicated before, this study uses 'mixed-methods' research, whereby quantitative and qualitative methods are combined, to answer the research question (Van Thiel, 2014). By using this approach, weaknesses with using only one method can be avoided and it provides scope for a richer approach to data collection, analysis and interpretation (Saunders et al., 2019).

Furthermore, this approach offers the possibility of encompassing both, descriptive and explanatory research. The first one is done but collecting quantitative data that is complementary to gain a better understanding of the current situation of climate adaptation within the Province. The latter aims to explore the way in which policymakers deal with barriers hindering the mainstreaming process. Therefore, this research can also be seen as a 'descripto-explanatory study' (Saunders et al., 2019).

Survey and embedded case study

A 'descripto-explanatory study' requires further various research strategies. For the descriptive part, a quantitative research strategy, in the form of a *survey*, was selected. Survey studies provide an overview of a phenomenon by collecting data on a large number of characteristics or variables for a great number of research units (Van Thiel, 2014). Moreover, one of the features of survey research is that the question of a study focuses on the extent to which a phenomenon occurs (Van Thiel, 2014). On the basis of the above reasons, it was

concluded that the survey is an appropriate research method for partly answering the research question.

However, a disadvantage of the survey is the limited ability to understand and explore phenomena in more detail. Although the survey analysis provides general descriptive insights, it does not offer much room for explanation due to the limited number of variables included in secondary data (Saunders et al., 2019). For the explanatory part of the research, qualitative methods are, therefore, better suited. The survey data-analysis was, thus, followed by an *embedded case studies analysis*. According to van Thiel (2014), a case study is a research strategy in which one or several cases of the subject of study are studied in a real-life setting in order to get in-depth knowledge about the subject of study. Within the case studies, the general patterns found in the quantitative research were explored in more depth. The case study analysis in this way fills in the gaps left by the survey analysis.

The selection of the embedded multiple cases can be compared to the process of drawing a sample: the researcher can either make a purposive selection or apply a random procedure. Given the fact, that by the time, when the cases were to be selected for this research, little insight into the exact degree of sectoral integration of climate adaptation was present. Therefore, the selection criteria were based on a number of conversations with experts and provincial policymakers. These conversations revealed that even though climate adaptation affects all kinds of policy sectors, there are still a few that seemed more 'suitable' for the time of this research. Three policy sectors that stood out the most were the energy sector, the agriculture sector, and the building sector. Since major transitions are taking place within these sectors, such as the energy transition, the housing tasks, and the CO2 crisis, it was, therefore, decided, in cooperation with the provincial climate adaptation team, to include these sectors in the research since it is crucial to make climate adaptation become part of these current provincial transitions.

3.4. Research methods

The research methodology uses triangulation of data by means of multiple sources to answer the research questions. These are document study, observation, semi-structured interviews and a questionnaire. Triangulation was done in order to address the validity of the collected data and to enable a more comprehensive understanding of the research topic (Saunders et al., 2019). In the following subsection (3.4.1) the qualitative and quantitative research methods are explained more in detail.

3.4.1. Document study

Document study is applied in this research by examining literature studies and policy documents. Literature studies were mainly used for the theoretical framework and to discuss the results with the literature. Policy documents from the national, regional and sectoral level were further included in the analysis. The content of these documents was analysed around the criteria of policy integration (inclusion, consistency, weighing, resources and reporting). A code book for this analysis is provided in appendix 3.1.

3.4.2. Observation

The second approach is done by the use of *participatory observation.* A participatory observer can be seen as a participating member who joins a group as a to get a first-hand perspective of the group and their activities. The aim is to observe objectively and participate subjectively, instead of observing as an outsider (Bryman, 2016; Saunders et al., 2019). In order to collect data on the mainstreaming of climate adaptation within the Province, several meetings with policymakers from the different provincial sectors, as well as with the climate adaptation team were planned. These meetings formed an opportunity to observe how provincial policy makers perceive climate adaptation. It, thus, formed a valuable addition to this research. During the meetings notes were taken that were also included in the analysis of this research.

3.4.3. Semi-structured interviews

Expert interviews

In addition to the literature study and the observation, exploratory interviews with experts in the field of climate adaptation were conducted. Besides refining the theoretical framework, the expert interviews helped to gain insights into the role of the Province in regard to climate adaptation and provided a first indication of the role of climate adaptation in the Province. This partly formed the basis for the data analysis.

Both external and internal experts were selected based on their convenient accessibility and proximity to the researcher. This can also be seen as a non-probability convenience sampling strategy (Saunders et al., 2019). Even though this sampling method has its disadvantages, such as that it can lead to bias or might not be representative, it can still be seen as suitable for this study since these interviews mainly served to get a basic idea about the situation of climate adaptation within provincial policy.

In the end, six (four provincial and two external) experts were interviewed. As this study was connected to an internship within the climate adaptation team of the Province of Utrecht, all members of the team were interviewed. These interviews provided valuable information as they were closest to the setting of the subject under study. In addition, two external experts in the field of climate adaptation were selected. They served as an external source of information to provide contextual knowledge about the research aim.

A list of all expert interviews conducted is provided in table 4.

TABLE 4

OVERVIEW EXPERT PARTICIPANTS

Nr	Participant name	Organisation	Function	Date
1	Hilde Westera	Ministery of Infrastructure and Water Management (IenW)	Senior consultant at Rijkswaterstaat Knowledge coordinator for the National Climate Adaptation Strategy (NAS) Member of the knowledge team for Delta program Spatial Adaptation (DPRA)	06-05-2020
2	Arjen Koekoek	Climate Adaptation Service (CAS)	Senior Consultant	06-05-2020
3	Stef Meijs	Province Utrecht	Program manager climate adaptation	12-05-2020
4	Wietse Visser	Province Utrecht	Policy adviser climate adaptation	19-05-2020
5	Ida Philip	Province Utrecht	Policy adviser climate adaptation	27-05-2020
6	Mieke Kruseman	Provincie Utrecht	Senior policy adviser climate adaptation	19-05-2020

Note. This overview was created by the author of this research

Interviews with policymakers

In order to assess to what extent adaptation is integrated into existing provincial policy sectors and how the barriers hindering this process are dealt with, in-depth interviews with policymakers were conducted in the three-case sector. The selection of the policymakers took place in the form of purposive sampling. A purposive sample is a non-probability sample selected based on characteristics of a population and the objective of the study. The purposive sampling technique is the deliberate choice of a participant due to the qualities the participant possesses (Saunders et al., 2019). In this case, the researcher decides what needs to be known and contacts people based on their virtue of knowledge or experience. This sampling method was, therefore, suitable for this research since participants could be identified and selected that are proficient and well-informed with the phenomenon of climate adaptation. The interviewees were, therefore, selected based on their participation in the survey study, that was conducted before the interviews with the policymakers took place. Finally, nine policymakers were interviewed, three from each policy sector (Table 5).

TABLE 5

OVERVIEW INTERVIEWEES OF THE EMBEDDED CASE STUDIES

	Sector	Interviewee	Team/domain	Function	Date
7	Energy	Roelof Mulder	Urban living environment	Senior program manager energy transition	13-05-2020
8	Energy	Aart Kees Evers	Project management agency	Strategic project manager energy transition/ circular economy	13-05-2020
9	Energy	Robin Koppers	Urban living environment	Project manager energy transition/ solar energy	15-05-2020
10	Agriculture	Wilma Timmers	Nature and Agriculture	Senior policymaker	18-05-2020
11	Agriculture	Jaap van Till	Nature and Agriculture	policymaker	20-05-2020
12	Agriculture	Jos Geenen	Nature and Agriculture	Senior project manager	27-05-2020
13	Building	Vincent van Esch	Living environment	Senior project manager area development/ housing	28-05-2020
14	Building	Martijn van Veelen	Strategic spatial development and coordination of the environment	Program manager	14-05-2020
14	Building	Menno Smit	Urban living environment	Senior project manager inner city development	26-05-202

Notes: This overview was created by the author of this research

Data collection

The participants for the interviews were contacted via e-mail and the topic list was sent to them a week before the interview took place. This allowed the participants to prepare themselves beforehand and minimalized the chance of a participant not knowing an answer. Since during the time of the research process, it was not possible to meet the participants in person (due to the Covid-19- crisis in spring 2020), all interviews took place via skype. The interviews were conducted in Dutch, as this was the mother language of all participants. Instead of taking notes, the interviews were recorded and transcribed.

Conducting a semi-structured interview means that the interviewer develops a broad topic list with questions and topics that need to be covered during the conversation (Van Thiel, 2014). The topic list for this research is based on the research model and takes into account the research expectation, which links the interviews directly to the theoretical framework. Besides that, it also formed a guide during the interviews but left the room to stray from the guide whenever deemed necessary. By keeping a basic structure to all interview, it has the advantage that a better comparison can be made within the analysis. Meanwhile, conducting semi-structured interviews also leaves sufficient room for exploring interesting side paths during the interview and giving the space to the participants to express their views in their own way and to ask follow-up questions for clarification A complete overview about the interview guides can be found in appendix 6.

Data analysis

Data analysis of the semi-structured interviews was done with the help of coding. Codes serve to summarize the content of a certain concept (Van Thiel, 2014). For this coding process, a coding scheme (Appendix 3.2. and 3.3.) was created, based on the different concepts and topics of this research, for both, the expert interviews and the policy maker interviews. This approach can also be seen as a deductive approach; the codes were deducted from the research model underpinning the research. Subsequently, the coding scheme was adapted and complemented throughout the coding process. This can then be seen as an inductive approach; codes derived from the data itself. Based on the coding, the amount of data could be reduced into manageable and meaningful text parts, which made it easier to use the information from the interviews in the analysis (Van Thiel, 2014).

Finally, within the analysis of the interviews, quotes of participants were used for a richer description of the results (Van Nes et al., 2010). In order to make the analysis more readable, the quotes were translated into English (the original translation was put into the footnote). The translation was undertaken by the researcher but checked by several Dutch native speakers.

3.4.4. Questionnaire

In section 3.3.1. it was argued why the survey study is an appropriate research strategy for this study. In surveys, data is usually collected through questionnaires. A distinction can be made in the oral and written take of a questionnaire (Korzilius, 2008). Due to time constraints, the questionnaire was sent out by means of email.

The questionnaire was self-administered and took place via a professional tool made for sending surveys to internal employees of the Province of Utrecht. The advantages of using a self-administered questionnaire for this study are; the lack of social desirability bias since responses are completely anonymous when taking the survey and the level of convenience since the respondents can decide themselves when and how to complete the questionnaire (Korzilius, 2008). However, there are also some disadvantages to the self-administered questionnaire. Relevant for this research is the fact that there is no one present to help the respondents if they struggle to answer the questions. Hence, it was essential that the instructions were made clear and the questions were easy to follow (Bryman, 2016).

Sampling

Usually, a population contains too many individuals to study conveniently, so within an investigation, one or more samples must be drawn. Moreover, it is important to distinguish between united of analysis and observation unit (Van Thiel, 2014).

The united of analysis of this research can be explained as the following: The Dutch provinces consist of several working fields that create regional policy. These fields can also be described as domains, programs or teams. Since there are many overlaps between these working fields, it can lead to confusion about what a working field encompasses. Therefore, for the comprehensibility of this study, it was chosen to stick to the national descriptions of the different policy fields. According to the Dutch Ministry of Infrastructure and Water

Management, 10 sectors exist where climate adaptation needs to be included in the sectoral policy and plans (IenW, 2016). These are the built environment, security, water, agriculture, nature, health, recreation and tourism, infrastructure, energy, IT and telecom. The provincial policy sector 'cultural heritage' was added to the list, since, according to the members of climate adaptation team, it plays an important part for the mainstreaming of climate adaptation within the Province. These 11 sectors can be, therefore, labelled as the units of analysis of the study and together they form the research population (Van Thiel, 2014).

A unit of observation is, therefore, the item (or items) that can actually be observed, measured, or collected (Van Thiel, 2014). Since policy sectors themselves are not an approachable object, it was further reached out to the policymakers of the different sectors. These policymakers, consequently, form the observation units and, thus, also the sample of this research.

In research, it is important that the observation units are representative of the population (also called the external validity) (Van Thiel, 2014). Due to the limited time frame, it was not possible to reach out to all provincial policymakers. Therefore, in consultation with the climate adaptation team, it was decided to contact only specific type of policymakers, that are seen as climate adaptation 'ambassadors' within their own policy field. These people can provide at least to some extent, valuable information for this research about the current situation of climate adaptation within their own policy field. Therefore, with the help of the climate adaptation team, a list of 45 climate adaptation ambassadors was created.

The way in which the sampling was drawn for the survey can also be called nonprobability conveniences sampling. A convenience sample simply includes the individuals who happen to be most accessible to the research. The downside of this sampling method is, however, that it might not produce generalizable results (Van Thiel, 2014). This is only minor disadvantage for this research since the questionnaire is used to develop an initial understanding of a small population.

Nonresponse

Nonresponse is a problem that occurs a lot and therefore needs to be addressed when conducting survey research. It is defined as the percentage of respondents who cannot or do not want to participate in research (Korzilius, 2008). A high non-response can have major implications for interpreting the results of a study. In the context of this study, a number of measures were taken to minimise the non-response (Korzilius, 2008; Jansen, Joostens & Kemper, 2004). First of all, an announcement mail (Appendix 4) was sent, which was meant to serve as a first incentive to participate in this research. A number of 'automatic replies' from policymakers were received (for example about people being on maternity leave or long-term absence). These people were consequently excluded from this study.

In addition, further pre and post-communication was done to stimulate the respondents to complete the questionnaire. The design of the questionnaire was further kept simple, comprehensible and concise way. The professional look of the questionnaire was achieved by the usage of the provincial survey tool. In total, the survey was available for two weeks, and a

reminder was sent out after the first seven days. Finally, all policymakers were able to ask questions or comment on the survey and the research in general.

Questionnaire design

In addition to the above, in order to design a suitable questionnaire, requirements and tips provided in the scientific literature were taken into consideration (Bryman, 2016; Saunders et al., 2019; Van Thiel, 2014): In a survey different types of questions can be asked, both by content and by form. As far as questions about content are concerned, a distinction can be made between fact questions and opinion questions. Both types of question were included in the questionnaire of this study. The fact questions are mainly aimed at gathering information on the social characteristics of the policymakers, such as the team, domain or sector for which they work. Answers to questions about the importance and presence of barriers in the sectoral context contain a value judgment and can therefore also be considered as opinion questions.
Regarding the form of questions, Saunders et al. (2009) distinguish between open and closed questions. Open questions play a limited role in the survey study. The information collected by means of open questions is difficult to classify and can cause problems for their analysis. Thus, only a few open questions were asked, since closed questions are the best fit with this research strategy. The questionnaire was written in Dutch since this was the native language of all respondents. Ultimately, the questionnaire was checked for errors by a number of colleagues from the climate adaptation team. The final questionnaire can be found in appendix 6.

Quantitative data analysis

The data resulted from the questionnaires was analysed by using the software program IBM SPSS Statistics. According to Van Thiel (2014), descriptive statistics are limited to the mere description of data from a research group. Part of the research question of this study is purely aimed at obtaining an image about the extent of climate adaptation mainstreaming and an overview of the most important barriers hindering this process. Therefore, investigating possible (whether causal or not) links between different variables and other statistical inferences fall outside the scope of this research, as this would not contribute to answering the research question. Due to the lack of complex statistical procedures, the results of the survey study are presented in a relatively easy way, by the means of frequency distributions, bar charts and cross tables.

3.5. Validity and reliability of the research

In order to evaluate the quality of this research, it is important to look at the validity and reliability. Whereas validity is about the accuracy of measures, reliability focuses more on their consistency (Van Thiel, 2014). After all, there are methods that can be taken to ensure that both reliability and validity of a study, are met.

3.5.1. Validity

Validity can be distinguished between internal and external validity. The 'internal validity' of this research is enhanced by using triangulation. This enables a comparison in content, to check whether the data from different methods result in the same conclusion (Yin, 2009). To ensure that the data is understood, used and categorized in the right way, respondent validation was done: Interview transcripts and results of the research were checked by the interviewees to minimize the chances of misinterpretation. The 'external validity' of the study refers to the extent to which the results of the research apply to other contexts or setting. Much data was collected about the phenomenon of mainstreaming and even though the main focus of this research was on climate adaptation, it can be assumed that the insights, provided in this research, can also be applied to other policy areas. Further, even though the recommendations given at the end for the provincial climate adaptation team might be less applicable and situational as well as cultural differences might appear in contexts, this research can be useful for other provinces with similar climate adaptation ambitions. Still, the applicability of this case should not be the most important objective since there are often problems when cases are compared to one another (Yin, 2009). Therefore, the generalization of this research ought to concern analytical generalization by "generalizing a particular set of results to some broader theory" (Yin, 2009, p. 36).

3.5.2. Reliability

In order to enhance the trustworthiness of the research findings, it is important to test their reliability. Reliability refers to the degree to which the study can be replicated. Within qualitative research this is a difficult criterion to measure, because findings are partially dependent on the research- and as such are transactional and subjective (Bryman, 2016). To enhance reliability it is important to keep a database (Yin, 2009) or a log book (Miles & Huberman, 1994), in which all the steps taken in the study and the data sources used are documented, so that the whole process can be reviewed or checked afterwards. This was done by using the program ATLAS.ti. Finally, since this study applied an embedded case studies it is useful to conduct it in a systematic manner by using a case study protocol or records (van Thiel, 2014). Examples of these protocols and records are given in terms of lists of selected research participants and interview transcripts.

3.6. Ethical consideration

This research was carried out on behalf of the Radboud University Nijmegen and was combined with an internship at the climate adaptation team of the Province of Utrecht. This internship has formed a valuable addition to this research, as it provided important contextual insights into the mainstreaming of climate adaptation within the provincial setting. All participants agreed with making the findings and results of this study publicly available.

Within the process of doing this research interaction with people took place. To ensure that the participants are not put in risk or harmed in the course of this research, the ethical issues

should be carefully addressed. According to Diener and Cradall (1978), ethical issues can be divided into four main areas: harm to participants, lack of informed consent, invasion of privacy and deception. Firstly, harm to participants is not relevant for this research. The only effects in this category could be a larger consciousness of unsustainable planning or behaviour within the work of the interviewees. Secondly, all participants were aware of the subject of the research. Preceding the expert and case study interviews as well as the questionnaire, the participants were given elaborative information about the aim and the content of the research. Thirdly, during the interviews, it was ensured that their privacy would be guaranteed and that they were allowed to refuse to answer, to stop the recording and to deny the permission to use some personal data (Appendix 7). Finally, deception is hardly relevant in this research, since there are no false expectations purposefully created in regard to the participants. The only concern that could be mentioned is the expectations of the participants within the case study about the possible implementation of their ideas mentioned during the interviews. It was, therefore, important to be clear on the further possible development.

4. Results and analysis

The following chapter describes the findings and the results of this research. The initial aim of this research was to examine the extent of climate adaptation mainstreaming within the provincial policy and determine factors that might hinder the mainstreaming of climate adaptation. In order to achieve this aim, five sub-questions were created. For the reasons of readability and in order to provide an answer to the sub-questions 1, 2, 3, 4 and 5, the results have been split into three chapters. First, section 4.1. gives an insight into the efforts that the Province has made to date in the field of climate adaptation, and therefore provides an answer to sub-question 1.

1. What are the activities of the Province of Utrecht regarding climate adaptation?

In section 4.2. the results of the survey were analysed about the degree to which climate adaptation is integrated within the provincial policy. Additionally, barriers are identified that hinder this integration process. This section provides answers to the sub-question 2, 3 and 4.

2. To what degree is climate adaptation integrated to date into the provincial policy?
3. Which barriers play a role in the integration of climate adaptation into the provincial policy?
4. What kind of role can the climate adaptation team play in the mainstreaming of climate adaptation?

Finally, section 4.3. serves to analyse the climate adaptation integration within three provincial policy sectors and investigates how the sectoral policymakers deal with the barriers hindering this process. This section, thus, provides an answer to sub-question 5.

5. How do three provincial policy sectors have integrated climate adaptation and deal with barriers that can hinder the sectoral integration of climate adaptation?

Where interviews were used for the analysis, it was referred to the interviewees in terms of numbers. An overview about all interviews can be found in section 3.4.4.

4.1. The Province of Utrecht and climate adaptation

In the introduction chapter, the scope of this study, namely the focus on the Province of Utrecht, was explained. As a reminder, the core tasks of the Province are again displayed in box 1, including sustainable spatial development and the focus on climate. This section provides an overview about the policy and programs within the Province that shape provincial climate adaptation activities. For this several national and provincial policy documents were analysed that serve as a framework for the provincial climate adaptation policy. Within these policy documents, attention is specifically being paid to the way in which climate adaptation is included. In addition, the information gained through the expert interviews was used to enrich the analysis. This section, therefore, provides an answer to the first sub-question:

1. What are the activities of the Province of Utrecht regarding climate adaptation?

BOX 1: The seven core tasks of the Province of Utrecht

- Sustainable spatial development, including water management
- Environment, energy and *climate*
- Vital countryside, nature management & development of nature reserves
- Regional accessibility and regional public transport
- Regional economy
- Infrastructure Cultural infrastructure and monument conservation
- Quality of public administration

Note. Source: Provincie Utrecht (2020b)

4.1.2. National policy framework on climate adaptation

Besides making its own policy, the provinces are obliged to take into consideration policy and rules that are made at the national and sometimes even at the international level. In regard to climate adaptation, some plans and strategies were developed at the national level, such as the National Environmental Vision (NOVI), the Delta Plan on Spatial Adaptation (DPRA) and the National Climate Adaptation Strategy (NAS) (IenW, 2016; Kennisportaal Ruimtelijke Adaptatie, 2020c; Kennisportaal Ruimtelijke Adaptatie, 2018). As came forward during the expert interviews, the Dutch provinces have partly committed themselves to collaboratively support the implementation of the climate adaptation objectives on a regional scale. Furthermore, they argue that the development of national adaptation plans provides an

important incentive towards a more regional approach to adapt to climate change. In order to achieve this, interviewee 1[1] emphasised that:

> An overarching coherent vision and policy for climate adaptation must be created. [Otherwise] you run the risk that implementation practice is hindered in the application of climate adaptation due to conflicting policy and conflicting laws and regulations.[2]

Provinces are therefore working on a collaborative approach towards climate proofing the country. However, each province is still responsible for its own region and therefore also develops its own policy.

4.1.3. Provincial policy framework on climate adaptation

Within the Province of Utrecht, different policy, plans and programs exist. Some of them overlap more with each other than others. For this study, only the most important provincial plans are analyzed, however, the overlap of these plans is out of scope since the focus lies more on the impact of each policy plan on climate adaptation.

To start with, the beginning of the provincial board period 2019-2023 marked a milestone within the provincial ambition for climate adaptation, since the aim of becoming a climate-proof province until 2050 was included as one of the core ambitions of the Province for the time period of four years (Provincie Utrecht, 2019b). This means that the province needs to be adapted to the risks and opportunities that arise from the consequences of climate change - such as flooding, drought, heat and floods (ibid). According to a number of the expert interviewees (3, 4, 5 and 6), the inclusion of climate adaptation within the Coalition Agreement can be seen as a crucial step, since, from that moment on, the subject could be seen one of the guiding topics for other provincial policy developments (Box 2). Additionally, it meant that for the first time, a separate budget would be made available for climate adaptation efforts.

BOX 2: Agreements made about climate adaptation

- Integrate climate adaptation into the Environmental Vision and Regulation
- Draw up an ambitious climate adaptation program
- Invest in pilots and projects and matching government resources
- Take spatial plans into account of the futureproofing of, for example, homes and roads, in order to anticipate problems with flooding or water level management.

Note. Source: Province Utrecht, 2019b

As mentioned before, there are a number of provincial policies and plans that add to the provincial policy framework for climate adaptation. The Provincial Spatial Structure Vision 2013-2028 (PRS), for example, has been drawn up to ensure a permanently attractive

[1] A list of the expert interviewees 1,2,3,4,5, and 6 can be found in section 3.4.4.
[2] Er moet een overkoepelende coherente visie en beleid voor klimaatadaptatie worden gecreëerd. Anders loop je het risico dat de uitvoeringspraktijk wordt belemmerd bij het toepassen van klimaatadaptatie door tegenstrijdig beleid en tegenstrijdige wet- en regelgeving.

province and to contribute to a high-quality physical living environment (Provincie Utrecht, 2016b). The Provincial Spatial Regulation 2013 (PRV) then contains general rules that are necessary for safeguarding the provincial interests outlined in the PRS. Climate adaptation is named as one of the key focus points of this regulation. In order to achieve a climate-proof living environment, the document states that various measures need to be taken, such as reserving space for water storage, strengthening dikes and further developing robust nature (Provincie Utrecht, 2016b,c). To include climate adaptation in spatial regulations can be seen as another step towards the integration of climate adaptation since the subject is not only meant to be integrated into policy but also in practice. Interviewee 1 argues though, spatial planning remains complex since other topics, such as circular economy, inexpensive housing and energy transition also need to be taken into consideration. Therefore, it is argued, that in order to minimize the contradiction with other spatial objectives, more specific spatial regulations for climate adaptation need to be made.

Some elements of climate adaptation are also included in the policy and rules of the Soil, Water and Environmental Plan 2016-2021 (Provincie Utrecht, 2015). This plan brings together the goals of the Province in the field of water safety and flooding, clean and sufficient surface water, subsurface and quality of life in urban areas. In the form of water tests, it is ensured that water interests are taken into account in spatial and land use planning so that negative effects on the water system are prevented. However, currently, the water test does not sufficiently address all objectives of climate adaptation. As interviewee 1 argued, "climate adaptation goes much broader than just water management"[3] and attention also needs to be paid to heat and droughts. However, it can be said that the water test does bring added value in achieving some of the climate adaptation goals.

Another important step towards the further integration of climate adaptation within the provincial policy was done with the formation of the Environmental Act (in Dutch: Omgevingswet) (Kennisportaal Ruimtelijke Adaptatie, 2020c). This act obliges the Province to draw up a new Provincial Environmental Vision and Ordinance (POVI) (in Dutch: Provinciale Omgevingsvisie) which will enter into force in 2022. Within the POVI 'climate-proof and water-robust' becomes one of the seven priority policy themes which can be classified as a key objective of climate adaptation (Ministerie van Binnenlandse Zaken en Koningsrelaties, 2020) The POVI can be seen as an 'umbrella' under which all the other provincial policy and plans fall. Taken in consideration climate adaptation objectives in the POVI can be seen as a crucial step to integrate climate adaptation further into the provincial policy.

4.1.3. The climate adaptation program

The ambitions of the POVI and the Coalition Agreement 2019-2023 of the Province in regard to climate adaptation are further implanted in a new provincial Climate Adaptation Program (in Dutch: Programma klimaatadaptatie) (Provincie Utrecht, 2020c). This program broadly outlines the role, tasks and responsibilities of the Province in the field of climate adaptation (Box 3) for the time period of 2020-2023. Its aim is to make the province more climate-proof.

[3] Klimaatadaptatie gaat veel breder dan alleen maar waterbeheer.

It, therefore, contributes to the national agreements and ambitions made about climate adaptation (ibid).

As mentioned before, climate adaptation affects almost all policy areas. Therefore, one of the goals of the program is to fully integrate climate adaptation into the provincial policy, including all policy sectors (Box 3). According to interviewee 1, this is challenging since:

> Sectors and policy fields differ greatly in their relationship to climate change. As a result, the awareness of urgency for climate adaptation also differs. [Ultimately] climate adaptation must be integrated into (almost) all policy sectors. The approaches then differ among sectors, because of the substantive differences.[4]

Interviewee 3 adds to this, to start with, it is important to select a number of specific sectors in order to avoid an "overwhelming list of tasks". He argues that the sectors, that should be tackled first are the ones that are currently high on the provincial agenda. Besides other, these are, in particular, the energy sector, buildings sector and the agriculture sector, as was indicated by a number of interviewees (1, 3, 4, 5 and 6). Interviewee 6 explains that "if you connect well [with specific sectoral projects], then you can take significant steps [and] that is why coupling [with sectoral objectives] is very important."[5] However, in order to really 'mainstream' climate adaptation into the provincial policy, a structural approach is needed. According to interviewee 3, this structure can ultimately be established by implementing the ambitions of the Climate Adaptation Program (Box 3).

BOX 3: Goals of the provincial climate adaptation program

- Promoting awareness and stimulating behavioral change with regard to climate adaptation.
- Putting climate adaptation into practice by supporting concrete physical measures, pilots, example projects and innovations; these may be activities that transcend the region or that are at the level of the province (for example, the construction sector).
- Anchoring climate adaptation in the own provincial policy, rules, programs and implementation and ensuring that climate adaptation is an integral part of it.
- Participating in activities in the working regions and developing and implementing regional climate adaptation strategies for each working region;
- Utilizing and strengthening the cycle of knowledge and monitoring in the field of climate effects and climate adaptation measures.

Note. Source: Provincie Utrecht, 2020c

One of the main goals of the program is to ensure that climate adaptation becomes a guiding and integral part of all provincial policy and implementation instruments. It was further argued by the interviewees (1, 3, 4 and 6) that climate adaptation should not remain the responsibility of the provincial climate adaptation team alone. As interviewee 2 argues:

[4] Sectoren en beleidsterreinen verschillen sterk in hun relatie tot klimaatverandering. Hierdoor verschilt ook het besef van urgentie voor klimaatadaptatie. [Uiteindelijk] moet klimaatadaptatie worden geïntegreerd in (bijna) alle beleidssectoren. De benaderingen verschillen dan per sector, vanwege de inhoudelijke verschillen.
[5] Als je goed aansluit [met deze sectorale projecten], dan kun je belangrijke stappen zetten [en] daarom is koppeling [met sectorale doelstellingen] erg belangrijk.

> [Climate adaptation] should not remain a sector on itself, because it is by definition a theme that touches almost everything. […] Ideally, the term [climate adaptation] would not be necessary anymore, because it is simply integrated in all sectoral policy.[6]

However, not all provincial policy sectors see the responsibility in including climate adaptation within their plans, programs and spatial developments. As interviewee 1 explains, "when awareness of urgency is low, it is difficult to integrate climate adaptation into a policy sector".[7] An advantage of the current situation is though that there is "a lot of interest from the different parts of how [policy sector] they can deal with climate adaptation in their own program"[8], as indicated by interviewee 3.

As a result of some of the expert interviews (1, 2, 3, 4, 5, and 6) the ability to integrate the subject does not solely depend on a certain level of urgency that is felt by policymakers. As mentioned in the literature review, having sufficient knowledge about the subject that is to be integrated, is crucial for its further integration within a specific policy field (Mickwitz, 2009). But the challenge remains "to make [climate adaptation] as simple as possible, so that people understand the subject and can apply it easily in their work"[9], as was indicated by interviewee 2. Furthermore, the interviewees mentioned other aspects, such as the personal interest of policy makers, the capacity of financial and personnel resources and the profile of the current provincial board that has further influence on the mainstreaming of climate adaptation within the organization. Interviewee 3 added to this that it is crucial that perspectives of policymakers need to change. Instead of focusing on the challenges and barriers of the integration of climate adaptation, he argues that attention should be paid more to the benefits that the subject can bring to other sectoral goals and to the environment and society at large. According to him, the focus on positive aspects "is what brings people into action"[10]. The challenge, therefore, now lies in creating awareness about climate adaptation and referring the opportunities and benefits that climate adaptation measures can bring to other provincial policy fields.

It was further stressed, that in order to achieve a climate future-proof province, policy sectors collaboratively need to work together, since spatial policy often overlap in a specific area that is under development (Provincie Utrecht, 2020b). So far this has hardly gotten off the ground. In fact, according to interviewee 1, "as far as [the provincial policy sectors] work, they work for themselves [and] there is no formalized collaboration."[11] The cooperation, coordination and connection between sectors therefore further needs to take shape in order to mainstream climate adaptation within the organization.

This further leads to the role of the team behind the Climate Adaptation Program. According to the expert interviewee, its main role is to "harmonise" (interviewee 1),"connect"

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[6] Mag geen sector op zich blijven, want het is per definitie een thema dat bijna alles raakt. […] Idealiter zou de term [klimaatadaptatie] niet meer nodig zijn, omdat deze eenvoudig geïntegreerd is in al het sectorale beleid.
[7] Als het besef van urgentie laag is, is het moeilijk om klimaatadaptatie in een beleidssector te integreren.
[8] Heel veel interesse vanuit de verschillende onderdelen van hoe ze met klimaatadaptatie in hun eigen programma om kunnen gaan.
[9] Om [klimaatadaptatie] zo eenvoudig mogelijk te maken, zodat mensen het begrijpen en het gemakkelijk kunnen toepassen in hun eigen werk.
[10] Dat brengt mensen wel het meest in actie.
[11] Voor zover [de provinciale beleidssectoren] werken, werken ze voor zichzelf [en] is er geen formele samenwerking.

(interviewee 2), “stimulate, catalyse and guide” (interviewee 3) “finance [and] network” (interviewee 6) and to “create awareness [and] support” (interviewee 4). However, it also became clear through some of the interviews (1, 2 and 3) that the exact role of the team and therefore the general of the Province in regard to climate adaptation efforts within the region still needs to be specified further.

Finally, to implement the plans and projects of the program, financial resources were made available. According to 5, “if you have no money, you are a less interesting interlocutor [and this means that] these financial means are very important to make something tangible.”[12] Based on current knowledge, insights, and plans, an amount of €6 million will be provided for the period 2021-2023 (Provincie Utrecht, 2020b). In addition to this, the National Impulse Scheme provides additional financial contribution that can be received for certain climate adaptation measures (Kennisportaal Ruimtelijke Adaptatie, 2020b). Some interviewees (3, 4, 5 and 6) indicated that this gives the subject extra significance and an important agenda-setting function. Through this, an important incentive is provided to policymakers from other policy sectors to further integrate this subject in their plans and projects. However, as interviewee 4 argues, “the [sectoral] budgets are still too separated from each other at the province [and] they need to come together much more […] so that the costs become lower as well.”[13] As argued before, financial resources a necessary condition for enabling the mainstreaming of climate adaptation (Mickwitz, 2009). Ultimately, more financial resources can be made available by the sectors themselves, if the exact sectoral benefits of climate adaptation are made clear enough (such as the prevention of further financial damage resulting from climate change).

Although the Climate Adaptation Program has officially only been officially approved in May 2020, and therefore only a few specific actions have been made yet, it can be seen as a crucial step to mainstream the subject into the Province not only by providing the financial resources but also by establishing a certain structure and by offering other expert knowledge about specific adaptation measures. With the latter, it can be achieved that climate adaptation becomes more of a conscious choice for sectoral policymakers since this climate adaptation measures can be specifically worked out for a certain sector. As mentioned before, the availability of knowledge is an important condition that needs to be fulfilled to enable the mainstreaming of climate adaptation in policy (Mickwitz, 2009).

4.1.4. Other provincial activities on climate adaptation

Based on the above some specific climate adaptation activities and actions within the Province can be detected (a list with some more provincial climate adaptation activities is provided in box 4). The ‘regional stress test’ can be seen as an important provincial activity to make regional actors (such as the Province itself, but also the municipalities and the waterboards) aware of the regional vulnerabilities to climate change (Hofland & Boon, 2019;

[12] Als je geen geld hebt, ben je een minder interessante gesprekspartner [en dat betekent dat] deze financiële middelen erg belangrijk zijn om iets tastbaars te maken.
[13] De [sectorale financiële] budgetten zijn in de provincie nog te gescheiden. Maar ze moeten veel meer samenkomen. Ook dat moet meer integraal worden aangepakt, zodat de kosten sowieso lager zijn.

Kennisportaal Ruimtelijke Adaptatie, 2018a). According to interviewee 5, through the stress test, it was possible to "increase a conscious feeling and a sense of the need to adapt to climate change, but also to achieve a common perspective for the regional adaptation challenges" [14]. These stress tests can be further seen as a kind of 'climate test'. As it was explained in literature by Crabbé (2011), applying a climate test can be regarded as a form of 'climate-proofing', which usually indicates a degree of 'mainstreaming' (p. 40). At the same time, however, he also states that mainstreaming does not really take place until the potential consequences of climate change are considered as a systematic consideration in planning and decision-making. The occasional execution of a stress test cannot therefore simply be regarded as a characteristic of mainstreaming.

The stress test resulted further into workshops (also called *risk dialogues*) that were connected to the different provincial policy sectors. These workshops served to gain further insight into possible sectoral measures that can be taken to tackle the consequences of climate change and resulted further into a number of learning points (Kennisportaal Ruimtelijke Adaptatie, 2018b). One of these learning points mentioned during the conversation with interviewee 5 was particularly important for this research. She emphasised the need to connect the interfaces of climate adaptation with other provincial sectors:

> It encouraged [policymakers] to think actively think about the consequences of climate change for their policy sector. It made them aware of the urgency to adapt and to look for synergies of sectoral and climate adaptation objectives.[15]

In fact, through the risk dialogues, the Province took another step towards mainstreaming of climate adaptation. According to other interviewees (1, 3, 4, 5, and 6) practice shows, however, that adaptation measures are still not always included in the different policy sectoral of the Province.

Moreover, partly resulting from the stress tests, the Province further supports and facilitates the development of several Regional Adaptation Strategy (RAS) *(*in Dutch: Regionale Adaptatie Strategie) (Provincie Utrecht, 2020c). The RAS' are jointly drawn plans, together with 17 regional authorities, that gives substance to the wide range of tasks to achieve a climate-resilient province. Even though, the RAS' are currently still under development. They can be considered as a necessary condition for the active and effective consideration of climate adaptation during spatial planning processes within the region and therefore automatically effects the development of the provincial policy sectors.

The above-mentioned policy, programs and actions show, that the Province is making great efforts towards mainstreaming climate adaptation within the provincial policy. Several national and provincial agreements were made, and policy plans were developed that serve as a framework towards further inclusion of climate adaptation within regional policy. This, however, asks for adjustment of the provincial structures, a cultural turnaround and flexibility

[14] Een bewust gevoel en de noodzaak van aanpassing aan klimaatverandering te vergroten, maar ook om een gemeenschappelijk perspectief te bereiken voor de regionale aanpassingsuitdagingen.
[15] Het moedigde [beleidsmakers] aan om actief na te denken over de gevolgen van klimaatverandering voor hun beleidssector. Het maakte hen bewust van de urgentie om zich aan te passen en synergiën te zoeken tussen sectorale en klimaatadaptatiedoelstellingen.

within policy sectors to design current and future policy in such a way so that climate adaptation becomes fully integrated into provincial plans.

Besides, the Province seems to have developed a number of actions and activities to make the province more climate-proof, especially in regard to water management. However, the analysis of the policy documents and the expert interviews have shown, that the weight given to climate adaptation efforts differs among provincial policy sector. In other words, it can be assumed that climate adaptation only constitutes to a limited extent a serious and a structural trade-off in the policy of the Province. In order to avoid significant (material, financial, emotional, etc.) damage in the future, it is therefore important that climate adaptation become the new 'norm' (mainstreamed) in provincial policymaking and planning. The Climate Adaptation Program provides an important basis to give this subject more direction, shape and importance to further integrate it within the provincial policy sectors.

Box 4: More examples of climate adaptation actions and activities within the Province

- *Guide on flood-resilience.* This guide was already developed in 2010 and describes how flood risks can be taken into account when realizing vulnerable and vital objects - such as escape routes, power plants, hospitals, drinking water purification, large-scale residential areas and large-scale business parks. This guide is still useful for current promotions and it may be useful in the future to be updated and extended for the climate themes of heat, drought and flooding.
- *Current regulations.* The current regulations contain rules that contribute to a climate-proof province. This concerns rules for floodable areas, water storage areas, regional flood defences, flooding and water scarcity (displacement series).
- *Standards and implementation for water safety*. Water safety in the province is guaranteed by national standards for the primary flood defence systems and provincial standards for the regional flood defence systems.
- *Remaining task for new nature*. The Province has made agreements with the central government about the amount of new nature to be developed. It concerns 1570 hectares, of which about 800 hectares have been realized. The remaining 700 hectares are to be completed by 2027. This be combined with other tasks, such as climate adaptation. An example of this is the re-delimitation of a number of hectares of the Nature Network of the Netherlands in the flood plains, which coincided with the implementation of the Room for the River project.
- *Merwede channel zone.* A spatial design for the Merwede channel zone (in Dutch: Merwedekanaalzone) residential construction site has been carried out into a climate-adaptive and healthy city. The research was completed in 2017 and the result is used for the further development of this important Utrecht inner-city housing site.
- *Digital climate portal.* The portal provides the Province with insights into vulnerabilities and opportunities for climate adaptation. The stress tests are included in this portal, as well as practical information and tips for a climate-proof design. This map outlines possible effects of a changing climate and land use for the province. This instrument provides a framework for which (new) spatial developments can be tested.
- *Guide adaptation in the organization.* Research has been conducted into the role of the Province and the embedding of climate adaptation in its own policy and actions, in relation to the expectations of the external partners. As a result, the Province takes on different roles, depending on the tasks. The roles are, to stimulate, participate, realize and regulate.

Note. Source: Provincie Utrecht (2020c)

4.2. Survey analysis

In section 3.3.1., it was argued why a survey study was used in the context of this research. As a result, a questionnaire has been drawn up on the basis of the scientific literature of the mainstreaming of climate adaptation policy and the barriers that might hinder it. A complete overview of the final questionnaire (in English) is set out in appendix 7. The data provided by the survey was further used to answer the following research questions:

2. To what degree is climate adaptation integrated to date into the provincial policy?
3. Which barriers play a role in the integration of climate adaptation into the provincial policy?
4. What kind of role can the climate adaptation team play in the mainstreaming of climate adaptation?

4.2.1. Description of the answers given

Overview respondents per sector

Before presenting the actual results of the survey study, an overview of the responses is provided. As shown in table 6 a total number of 38 policymakers, coming from 11 different provincial policy sectors filled in the questionnaire. The first column of table 6 shows that the number of responses per policy sector differs. The reason for this is that the size of programs, domains and teams per policy sector is different, therefore also the number of climate adaptation 'ambassador' varies. This resulted in an unequal number of policymakers per policy field. The difference between backgrounds of policymakers should, however, not constrain the outcome of this research since the resulting number of policymakers are seen as one research population. When discussing the survey results, it is assumed that sufficient policymakers have completed the questionnaire to make targeted statements on the whole policy of the Province.

TABLE 6

Overview of policy sectors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bouw	4	10,5	10,5	10,5
	Cultuur en erfgoed	6	15,8	15,8	26,3
	Energie	4	10,5	10,5	36,8
	Gezondheid	2	5,3	5,3	42,1
	Infrastruct	4	10,5	10,5	52,6
	IT en telecom	2	5,3	5,3	57,9
	Landbouw	3	7,9	7,9	65,8
	Natuur	5	13,2	13,2	78,9
	Recreatie en toerisme	4	10,5	10,5	89,5
	Veiligheid	2	5,3	5,3	94,7
	Water en ruimte	2	5,3	5,3	100,0
	Total	38	100,0	100,0	

Furthermore, based on the results of a survey, there is also the possibility to make statements about the relation between different variables. However, the review of the possible links between the different variables is outside the scope of this study and would, therefore, also not be of (direct) value to answer the sub-questions and ultimately the final research questions of this study. The following analysis of the survey, therefore, rather remains descriptive.

Nonresponse

Despite taking various measures to limit the non-response (as was outlined in section 3.4.4.) the problem of non-response in survey research is almost inevitable. Nevertheless, nonresponse should be carefully addressed. When writing a research report, it is therefore common and important to take into account the nonresponse, for example by providing an overview of the reasons for non-response (Korzilius, 2008). The two most occurring reasons for nonresponse for this research where the lack of knowledge about climate adaptation and the difficulty to choose one of the 11 sectors as a working area. The latter was relatively often given as a reason for not participating in the survey since some work of the policymakers does not fall into any specific policy field. Since 45 policymakers were originally contacted and 38 filled in the survey, it can be said that there is a non-response of nine policymakers, meaning 17,1%.

If there is non-response, an important question is whether there is selective non-response. This occurs if due to non-response, specific groups are under or over-represented in the survey (Korzilius, 2008). Although it was asked several times for what reason a person had not (yet) completed the questionnaire, not everyone responded to this request. Usually, a representativeness test can be used to assess the extent to which there is selective non-response. This standard procedure shows whether relevant characteristics (variables) of the response group match those of the population (ibid). However, carrying out the representativeness test is impossible in the context of this study, since a complete picture of the people belonging to the research population was not available. The aim of this research is also not to make statements about individual sectors and policymakers but about the current situation of climate adaptation within the Province. Therefore, it cannot be ruled out that there is a selective non-response in the context of this research. Nevertheless, it is believed that the results of the research and the reasons for non-responders give no reason to assume that there is a selective non-response.

4.2.2. Degree of climate adaptation integration within the Province

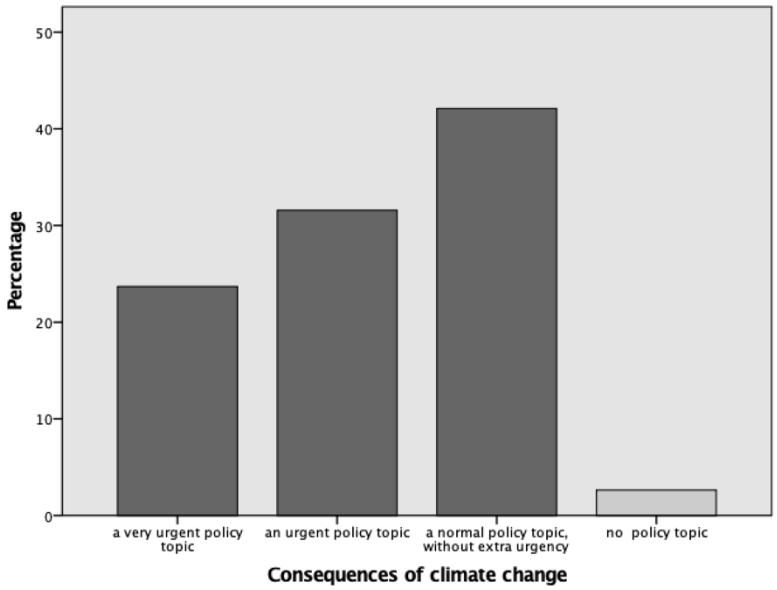
In section 4.1., it was analysed the current climate adaptation activities within the Province. It showed that climate adaptation is considered in some way within the provincial policy. In order to give this statement more value, in this section, the results were analysed in the light of the sub-research question 2: “To what degree is climate adaptation integrated into the provincial policy”.

Before analysing the degree of climate adaptation integration, it is useful to first look at whether the respondents feel the urgency of the need to adapt. According to figure 5, more

than half of the respondents (55,3%) see climate change as an 'urgent topic' or a 'very urgent topic'. Only 2,6% of the respondents answered that the topic is not on the sectoral policy agenda. The rest (42,1 %), indicated that they feel the consequences of climate change for their own sector, but they do not give it extra importance compared to other sectoral policy topics. This shows that the majority of the respondents feel the consequences of climate change within their own policy field. However, the level of urgency within the provincial policy for this subject is rather moderate.

FIGURE 5

Importance of the consequences of climate change for the policy makers



Despite the fact that a total of 97.4% of the 38 respondents has indicated that the consequences of climate change (whether or not urgent) are a relevant topic that needs to be considered, this does not mean that it is translated directly into specific policy objectives within the Province. Table 7 gives a first indication about the degree to which climate adaptation is integrated within the provincial policy. According to the results of table 7, 92,1% of the respondents indicated that climate adaptation is at least to some extent included within the provincial policy. Whether and to what degree this is, in fact, the case, is discussed in the following part of this section.

TABLE 7

Inclusion of climate adaptation within provincial policy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Altijd	6	15,8	15,8	15,8
	Vaak	10	26,3	26,3	42,1
	Soms	19	50,0	50,0	92,1
	Zelden	3	7,9	7,9	100,0
	Total	38	100,0	100,0	

In the literature review (section 2.4), the concept of mainstreaming in relation to climate adaptation was set out. According to Klein et al. (2005), mainstreaming was described as "the integration of policies and measures to address climate change [adaptation] in ongoing sectoral and development planning and decision-making" (p. 584). It was further argued that mainstreaming can be evaluated by the criteria from the concept of policy integration, *inclusion, consistency*, *weighing, reporting* and *resource* (Mickwitz, 2009). On the basis of these criteria, a list of questions was developed for each criterion (Table 8).

TABLE 8

Criteria of policy integration in relation to the questions from the survey

Criteria	Question nr.	Questions
Inclusion	Q6	To what extent should your sector be responsible for climate adaptation?
	Q8	To what extent is climate adaptation already included in your policy area?
Weighing	Q5	How important do you think is the inclusion of climate adaptation within your sector?
	Q9	How important do you think is it that climate adaptation becomes a serious and structural consideration for new policy or/ and spatial development within your sector?
	Q18	With what grade (1-10) would you assess the degree to which climate adaptation is integrated into the existing policy of your sector?
	Q19	With what grade (1-10) do you assess the quality of the adaptation policy in your sector?
Consistency	Q10	Are new sectoral developments in your sector aimed at linking adaptation measures?
	Q16	How important do you think it is that there is intensive cooperation within the province between different policy fields in regard to climate adaptation?
	Q17	Within the Province there is intensive cooperation between your sector and other policy sectors in regard to climate adaptation.
Resources	Q12	Within your sector, there is sufficient knowledge about the consequences of climate change?
	Q13	Do you have sufficient knowledge about the consequences of climate change within your policy field?
	Q14	Within your sector there is sufficient knowledge about the possibilities to adapt to the effect so f climate change (climate adaptation)?
Reporting	Q15	Does your sector have a protocol or procedure that stipulates how the consequences of climate change must be included in new policy developments?

Notes: The questionnaire was originally set up in the Dutch. For the ease of readability, the above questions as well as the questionnaire in appendix 7 were translated into English by the author of this study.

In order to describe the general degree of climate adaptation integration within the Province, it is useful to look at the average ('mean') of the results for each criterion individually and in total. In order to do this, the average response to the questions for each criterion was calculated (Table 10). As it was not expected that, by the time of conducting this research, climate adaptation would be integrated to such an extent so the criterion, 'reporting' would be fulfilled, it was excluded from the analysis of the degree of integration. To still provide an indication of the possible accomplishment of this criterion, one question (Q 15) was included within the questionnaire, and the results were presented separately from the rest.

Before calculating the average, the data used to analyse had to be normalized. Normalization can have a range of meanings (Dodge, 2006). For this study, the normalization

of ratings is most important since the answer scales differed among the questions. Therefore, the different scales were 'normalized' to a notionally common scale: The response scale of question 10, 18 and 19 was normalizing to a five-answer scale. For question 10 (which had originally a six-answer scale) this meant that one answer could not be taken into consideration, which resulted in one missing value (Table 10). Since the normalization of ratings for question 11 (an open question) was not possible, it was excluded from the analysis.

In order to give an indication of the degree of integration of climate adaptation within the Province, an evaluation scheme was created (Table 9). This scheme was partly based on the research done by Mickwitz. et al. (2009) and Brouwer et al. (2013) and describes the different degree of climate adaptation integration on a scale from one to five (one being the best).

TABLE 9

EVALUATION SCHEME

	Degrees of integration				
	1	**2**	**3**	**4**	**5**
Inclusion	Climate adaptation is extensively considered	Climate adaptation is considered	Climate adaptation is partially considered	Climate adaptation is hardly considered	Climate adaptation ignored.
Consistency	No contradictions are found; climate adaptation is seen as an integral part of the agenda.	Contradictions are considered and addressed across the policy sector.	Contradictions are considered and addressed in certain instances.	Contradictions are considered but disregarded.	Contradictions are ignored.
Weighing	Climate adaptation considerations take precedence.	Climate adaptation consideration are often taken into account.	Climate adaptation considerations are taken on board when they overlap with other goals.	Non-climate adaptation consideration has partly priority.	Non-climate adaptation considerations are most important.
Reporting	Clearly stated evaluation and reporting requirements for climate adaptation impacts ex ante and ex post.	Some evaluation and reporting requirements for climate adaptation impacts ex ante and/or ex post	Partly evaluation and reporting requirements for climate adaptation impacts ex ante and/or ex post	Few evaluation and reporting requirements for climate adaptation impacts ex ante and/or ex post	No clearly stated evaluation and reporting requirements for climate adaptation impacts ex ante and ex post
Resources	Much resources available for climate adaptation.	Some resources available for climate adaptation.	Few resources available for climate adaptation.	Almost no resources available for climate adaptation	No resources available for climate adaptation.

Note: This evaluation scheme was created by the author

Ultimately, the average response rate for each criterion was calculated. Table 10 provides an overview about the mean and standard deviation of the four criteria ('inclusion', 'weighing', 'consistency' and 'resources') as well as the mean of the total degree of mainstreaming (excluding 'reporting').

TABLE 10

Mean of climate adaptation integration

	N	Minimum	Maximum	Mean	Std. Deviation
inclusion	38	1,00	4,00	2,3158	,76601
consistency	37	1,33	3,33	2,3153	,48398
weighing	38	2,00	4,00	3,0132	,55583
resources	38	1,33	5,00	2,6404	,80681
Total integration	38	2,15	3,38	2,6761	,28735
Valid N (listwise)	37				

The first criterion concerns **inclusion**. As explained before, it is the extent to which a climate adaptation is addressed in the sectoral policy, either in general or by means of a specific reference to the issue and associated risks (Mickwitz, 2009). It was assumed that policymakers should feel responsible for an issue to include it in their sectoral policy. For this reason, the policymakers were asked to indicate the extent to which they should be responsible for the subject within their policy field. Following this, they were further questioned to provide an answer about the extent to which they are currently responsible for climate adaptation policy. Based on table 10, the mean of inclusion is 2,32. This means, consistent with the evaluation scheme (Table 9), that climate adaptation seems to be considered by the policymakers of the Province.

The second criterion that can be used to assess the degree of mainstreaming is **consistency**. This criterion concerns the extent to which it tries to avoid contradictions between climate adaptation and the sectoral policy objectives. According to Mickwitz et al. (2009), "a common means of achieving compromises is simply to include many different aims in one policy" (p. 22). Therefore, if no coherence is made between the various policy objectives, it is also not possible to speak of the integration of a certain policy. Ultimately, consistency should, therefore, lead to a shared understanding of the subject between actors and in the policy. In order to arrive at a shared understanding of climate adaptation, the cooperation among policy sectors on this subject is of great importance. Therefore, the policymakers were asked to indicate, on the one hand, how important they think it is, that intensive cooperation takes place within the Province on climate adaptation. On the other hand, they were asked to what extent intensive cooperation currently takes place. Table 10 shows that the mean of consistency is 2,32. According to the evaluations scheme, this means that policymakers from the Province seem to consider and address contradictions across the policy sector.

Weighing is the third criterion to assess the degree of integration of climate adaptation. This criterion refers to the priority given to the issue in relation to other objectives involved in spatial processes. As Kivimaa and Mickwitz (2006) argue, that "environmental issues should take priority in situations where contradictions between different policy objectives emerge" (p. 732). Based on the answers to the questions that fall under the criterion weighing, table 9 shows a mean for weighing of 3,01. This means that relative priority is given to climate adaptation when they overlap with other policy goals.

Finally, the last criterion mentioned in Chapter 2 is **resources**. According to Mickwitz et al. (2009), mainstreaming of a policy is not just about the intentions of policymakers, but it also

depends largely on the available knowledge and resources (such as knowledge, financial resources, personnel capacity, etc.). As argued before, this criterion can be seen as an important pre-condition for the successful integration of climate adaptation into policy. In other words, it can be assumed that for a policy sector without these resources is almost impossible to integrate climate adaptation. Nevertheless, the policymakers were still asked about the state of knowledge regarding the consequences of climate change and adaptation measures. As shown in table 10, the mean for this criterion is 2,64. This means that relatively few resources are available for climate adaptation which results in the lack of an important condition to the integration of climate adaptation into the provincial policy.

Based on the above analysis and the evaluation of the criteria, it can be concluded that the degree of climate adaptation integration within the provincial policy can be described as rather moderate (namely, only 2,68, according to the last row of table 10). However, whether the subject is sufficiently integrated within the provincial policy remains rather subjective, since it largely depends on what the exact goal of the Province is when it comes to the integration of climate adaptation integration.

Climate adaptation integration per policy sector

Even though the survey analysis was only meant to discuss the outcomes of the answers of all provincial policymakers together, it is useful, for the rest of the analysis (especially for the case studies) to briefly look at the differences of the degree of climate adaptation integration among the provincial policy sectors. In table 11 three out of the 11 policy sectors are shown to illustrate the range of mean. The three policy sectors, building, energy and agriculture, were displayed since they were further also used in the embedded case study analysis. A complete overview of all policy sectors can be found in appendix 8.1.

As shown in table 11, a small difference exists between the degrees of climate adaptation integration of the three policy sectors (varying between 2,5 and 2,9). Most differences can be seen within the criterion 'resources': Whereas the policymakers from the building sector indicated to have relatively many resources available (mean of 1,8), the resources accessible to the agriculture sectors are rather limited (mean of 3,6). The energy sector lies in between the two (mean of 2,5). Generally speaking, Table 11 shows that climate adaptation is integrated into the building sectors to the largest degree (with a mean of 2,5), followed by the energy sector (with a mean of 2,8). The agriculture sector appears to have integrated the subject to the lowest degree.

TABLE 11

Average of integration for the building-, energy-, and agriculture sector

sectors	inclusion	consistency	weighing	resources	total integration
Building	1,7500	1,8333	3,5313	1,8333	2,4904
Energy	2,2500	2,2500	3,4063	2,5000	2,7596
Agriculture	2,5000	2,5556	2,8333	3,5556	2,8718

Note. The average total integration is displayed in the last column

Reporting

As outlined before, the criterion 'reporting' was not taken into account in the analysis of the degree of integration of climate adaptation. To still get an idea whether this criterion is not fulfilled yet, a question was asked in the questionnaire about the existence of a protocol to report on the consequences of climate change. The results of table 12 show, that 97,4 % of the respondents answered this question with a 'No' or 'I do not know'. Only one person answered this question with a 'Yes'. These results match the assumptions made before, which is, that the reporting of climate adaptation does not take place yet.

TABLE 12

Frequency about the reporting of climate adaptation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	2	5,3	5,3	5,3
	Nee	24	63,2	63,2	68,4
	Weet ik niet	12	31,6	31,6	100,0
	Total	38	100,0	100,0	

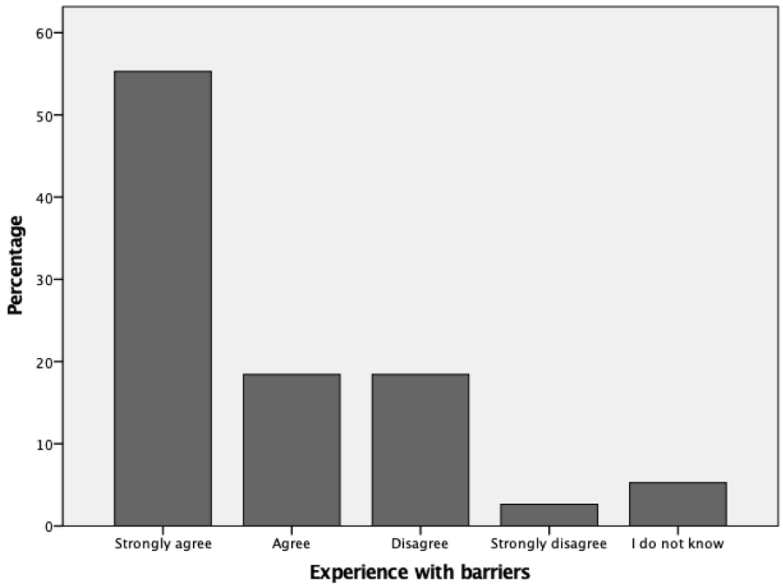
4.2.3. Barriers for the integration of climate adaptation

In chapter 2 it was explained that climate adaptation policy and measures are required in various policy sectors to adapt to the consequences of climate change. The literature review and the analysis of the expert interviews, as well as the first part of the survey have shown that the amount of climate adaptation activities is rather dispersed and differ among the policy sectors. Also, the degree of adaptation policy integration within the Province was calculated as being moderate. This implies the presence of barriers that can negatively influence the degree to which climate adaptation is integrated into existing policy.

As figure 6 shows, the majority of the respondents indicated that the presence of barriers negatively influences the degree of climate adaptation integration of climate in the sectoral policy.

FIGURE 6

The experience of barriers within policy sectors



Based on an extensive literature review (in section 2.6.), 28 barriers were selected to be further examined within this study. In the context of the survey study, the policymakers were asked to indicate to what extent these barriers hinder the sectoral integration of climate adaptation.

Initially, it was planned to calculate the average response for each barrier. The statistical analysis, however, showed that the means for each barrier do not differ much from each other (Appendix 8, SPSS output 8.2.). Besides that, the mean of all barriers was relatively high, which meant that almost none of them was seen as an important barrier. Due to these similar results of means, it was not possible to see which barriers are considered most important. To still get an overview and distinguish between important and less important barriers, the scores of the answer categories (1) 'Yes, to a very large extent' and (2) 'Yes, to a large extent, were added up'. Table 13 indicates the subdivision made. By colouring the barriers depending on their importance, a clear overview could be made about the main barriers that the policymakers experience as hindering the integration of climate adaptation (Table 14). The most important barriers were highlighted in red.

TABLE 13

Subdivision for the importance of the barriers

Very important barriers (red)	'Yes, to a very large extend' + 'Yes, to a very large extend' < 40%
Important barriers (orange)	'Yes, to a very large extend' + 'Yes, to a very large extend' = 30-40%
Other barriers (grey)	'Yes, to a very large extend' + 'Yes, to a very large extend' < 30%

Note. Created by the author of this research

TABLE 14

Overview of the importance of the barriers

Nr	Which barrier forms an important barrier for the integration of climate adaptation within your sector? *	Yes, to a very large extend (1)	Yes, to a large extend (2)	Sum percentage *
1	Lack of space for adaptation options in the existing space	5,3	28,9	34,2
2	High costs associated with adapting the existing space	7,9	39,5	47,4
3	Lack of effective adaptation options and technical solutions	2,6	34,2	36,8
4	Lack of financial means to devise adaptation measures	5,3	23,7	29
5	Lack of financial resources to implement adaptation measures	5,3	42,1	47,4
6	Lack of personnel capacity	7,9	21,1	29
7	Uncertainty about social costs and benefits of adaptation measures	10,5	31,6	42,1
8	Lack of knowledge about vulnerabilities within the province	5,3	31,6	36,9
9	Lack of useful climate scenarios for the province	7,9	23,7	31,6
10	Inadequate knowledge about adaptation measures	5,3	44,7	50
11	Uncertainty about the effects of climate change	5,3	26,3	31,6
12	Lack of awareness of the need to adapt	10,5	34,2	44,7
13	Low threshold of care for climate adaptation	13,2	26,3	39,5
14	Lack of public support for taking climate adaptation measures	0	28,9	28,9
15	Lack of problem recognition when it comes to the impact of climate change within your sector	0	28,9	28,9
16	Lack of urgency awareness within your sector to take climate adaptation measures	5,3	15,8	21,1
17	Lack of legal obligations to take climate change effects into account in decision-making procedures	10,5	42,1	52,6
18	Lack of effective instruments within your sector to structurally consider climate change effects in decision-making procedures	2,6	18,4	21
19	Lack of political support to structurally include climate change effects in decision-making procedures	2,6	18,4	21
20	Lack of effective tools to enforce climate adaptation with private parties (developers, housing associations, etc.)	10,5	42,1	52,6
21	Lack of cooperation with other sectors (policy fields and domains) within the province	5,3	31,6	36,9
22	Lack of clarity about responsibilities for climate adaptation within the sector	5,3	31,6	36,9
23	Competition with other spatial and sectoral policy topics that will receive more attention in the short term	21,1	31,6	52,7
24	Lack of clarity about which parties' (public/private) should take adaptation measures	7,9	28,9	36,8
25	Dependency in decision-making on other actors within your sector/ the province	10,5	28,9	39,4
26	Lack of leadership (authority and skill) in leading the climate adaptation integration process	5,3	18,4	23,7
27	Lack of clarity about who pays for the adaptation measures	7,9	31,6	39,5
28	Lack of regional funding for climate adaptation measures	7,9	23,7	31,6

Note. This table gives an overview about the barriers, coloured by their importance. The answer categories of the two first answers are provided, including the sum percentage. This table was created by the author of this study.

As table 14 shows, a large number of policymakers indicated that the 'high costs associated with adapting the existing space' (*Barrier 2*) form an important barrier. Also, the 'financial means to implement adaptation measures' (*Barrier 5*) seem to be a significant or even a highly important barrier. On top of that, there seems to be a lot of 'uncertainty about the social costs and benefits of adaptation measures' (*Barrier 7*). It can further be assumed that a number of barriers (significantly) reinforce each other. Therefore barrier 7 might consequently lead to the fact that policymakers are less likely to use their financial resources for climate adaptation measures. It can also be assumed, that the uncertainty about the benefits of climate adaptation lead to that 'other policy topics will receive more attention in the short term' (*Barrier 23*). In addition to capacity-related barriers, cognitive barriers also appear to play an important role in the integration of climate adaptation into policy. These are 'insufficient knowledge about adaptation measures' (*Barrier 10*) and 'lack of awareness of the need to adapt' (*Barrier 12*). In fact, it can be said that both of the latter barriers are needed in order to tackle the other barriers. If the policymakers would be aware of the need to adapt to the changing climate, they would be more likely to feel the need to acquire knowledge about adaptation measures for their policy field. If they had enough knowledge about adaptation measures, they would also be more aware of their costs and benefits and might, therefore, be more likely to invest in adaptation measures. Lastly, there is a number of institutional and political factors that are considered as barriers as well. According to table 14, more than 50% of the respondents indicate that 'lack of legal obligations to structurally take climate change effects into account in decision-making procedures' *(Barrier 17)* hinders the integration of climate adaptation. The new Environmental Act, that was recently drafted by the Dutch Government can be seen as a good example of a kind of 'legal obligation' to further include climate adaptation within the provincial policy (Klimaatportaal Ruimtelijke Adaptatie, 2020c). However, whether this act will actually work in practice will become visible in 2022 when the act will be executed. Besides the need for legal obligations to include climate adaptation in policy, policymakers also indicated that the 'lack of effective tools to enforce climate adaptation on private parties' forms a barrier (*Barrier 20*).

On the basis of the above reasoning, it can be concluded that the barriers hindering the integration of climate adaptation can be classified into different sub-topics, namely:

- the uncertainty of benefits and costs;
- the lack of obligatory and legal instruments.
- the consideration of climate adaptation;
- and, the lack of knowledge;

The analysis of the survey also gives a first indication about the hierarchical order of the barriers which suggest that some of the barriers should be tackled first. These categorizations of barriers are further discussed in more qualitative depth in the analysis of three case studies (chapter 4.3.).

4.2.4. The role of the climate adaptation team

As indicated earlier, the research was (partly) done on behalf of the climate adaptation team of the Province. Therefore, the aim of this study was also to provide recommendations to the climate adaptation team about the mainstreaming of climate adaptation in the provincial sectors. In order to be able to make specific recommendations, it was important to first gain an insight into the quality of the current cooperation between the climate adaptation team and the other policy sectors. Table 15 shows that 42 % of the respondents rate the current cooperation with the climate adaptation team as 'good'. No less than 15,8% of the respondents answered the question with 'moderate' and just 7,9% indicated that the cooperation is 'rather bad'.

TABLE 15

Current cooperation with the climate adaptation team

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	16	42,1	42,1	42,1
	Neutral	13	34,2	34,2	76,3
	moderate	6	15,8	15,8	92,1
	Rather bad	3	7,9	7,9	100,0
	Total	38	100,0	100,0	

Subsequently, the policymakers were asked whether they have the need to receive more information from the climate adaptation team about how to make their sector more climate adaptive. Of the 38 respondents, 33 respondents (86%) answered this question with 'strongly agree' or 'agree' (Table 16).

TABLE 16

The need for more knowledge about climate adaptation measures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Stronlgy agree	7	18,4	18,4	18,4
	Agree	26	68,4	68,4	86,8
	Disagree	3	7,9	7,9	94,7
	I do not know	2	5,3	5,3	100,0
	Total	38	100,0	100,0	

Finally, the policymakers where asked about how the climate adaptation team could contribute to the better integration of climate adaptation into sectoral policy. Table 17 provides an overview of the answers given, which are summarized in a clear and concise manner. Based on this, four different roles can be appointed to the climate adaptation team, namely the role as a

- coordinator;
- knowledge distributer;
- supporter and;
- financial stimulator.

The roles are further discussed in the analysis of the multiple case studies in the next chapter. A complete overview of the answers can be found in appendix 8.3.

TABLE 17

Roles assigned to the climate adaptation team

Role	Description
Role as a coordinator	• Create a working group to share knowledge • More alignment between sectors about their aims and ambitions, • More effective and efficient integration of climate adaptation into policy • Find overlapping objectives • Focus on the biggest assignments (such as agriculture, energy transition and housing construction) • Organize lunch meeting
Role as a knowledge distributer	• Sharing of knowledge about climate adaptation and climate adaptation measures • Deliver expertise • Provide information about specific measures • Give examples
Role as supporter	• Giving advice about climate adaptation measures • Support for specific project work • Bringing ideas about linkage opportunities • Tailor made solutions
Role as a financial stimulator	• Give subsidy measures • Public-private financing constructions

Note: Created by the author of this study

4.3. Embedded casestudies analysis

As outlined in the literature review, the effects and consequences of climate change can differ among the policy sectors (Kennisportaal Ruimtelijke Adaptatie, 2019). It can, therefore, also be expected that the extent to which climate adaptation is integrated into sectoral policy and the way policymakers deal with certain barriers also varies among the policy sector. Zooming in into specific policy sectors can, therefore, lead to interesting in-depth insights. Hence, in the context of the embedded case studies, three sectors of the Province of Utrecht were selected, namely the energy, agriculture, and building sector (in chapter 3.3.1. it was outlined why these sectors were chosen as suitable case studies for this research). This section, therefore, gives a final contribution to achieving the objective of this study and give an answer to the following sub-question:

> 5. How do three provincial policy sectors have integrated climate adaptation and deal with barriers that can hinder the sectoral integration of climate adaptation?

For the embedded case study, data collection took place through sectoral document study on the one hand, and interviews with three policymakers per sector on the other hand. To refer to the interviewees within the analysis, instead of using their original name, each interviewee received a number (a complete overview of all interviewees can be found in section 3.4.3.).

The first part of this section includes a short introduction of each case study, followed by an analysis about the sectoral climate adaptation integration based on the four criteria 'inclusion', 'consistency', 'weighing' and 'resources'. Following this, it is analysed how the policymakers from the three sectors deal with the barriers to climate adaptation integration. In order to give the embedded case study sufficient depth, only the most important barriers (coloured red) were further analysed. This also enabled more specific recommendations in concern in dealing with particular barriers.

4.3.1. Climate adaptation integration within the case studies

CASE STUDY I: The energy sector

Introduction to the case

The first case study analysed is the energy sector. The Province has the goal to become energy-neutral in 2040 (Provincie Utrecht, 2019b). Since the vast majority of energy consumption in the province still comes from fossil sources, it requires a complete transition towards sustainable energy resources in order to reach the provincial goals. These efforts are taken to reduce CO2 emission fall under the term 'climate mitigation'. Besides that, the sector is also increasingly being affected by climate change, resulting into changes in the annual and seasonal heating and cooling demands, and pressure on the supply conditions of energy (Kennisportaal Ruimtelijke Adaptatie, 2019). Besides the importance of climate mitigation efforts, the sector also needs to face the consequences of climate change and take efforts to make the existing and new energy infrastructure climate-proof.

In order to gain insight into the integration of climate adaptation in the policy of the energy sector, various policy documents and plans of the sector were analysed. In this way, attention was mostly paid to the Regional Energy Strategies (RES) and the Energy Transition Program. Additionally, interviews were conducted with three respective sectoral policymakers.

Sectoral climate adaptation integration

The first criterion to assess the integration of climate adaptation is **inclusion**. As explained earlier, this criterion evaluates the extent to which climate adaptation policy objectives and impacts have been considered in a sectoral policy (Mickwitz, 2009). During the empirical research, it became clear that the climate policy discussion of the energy sector almost solely focuses on climate mitigation. Instead, climate adaptation is perceived rather as a none or marginal issue. As explained by the interviewees (1,2 and 3) [16], this is due to the strong political focus on climate mitigation resulting from the global and national climate agreements made to reduce the amount of CO2 emission made in the Netherlands (Provincie Utrecht, 2020c). According to the interviewee 7 "climate adaptation has only recently become a legitimate and important issue for the energy sector [and it is believed] that many of the goals [they] have are in line with the climate adaptation goals."[17] Furthermore, in order to reach national climate goals, the Province supports the development of three Regional

[16] A list of the interviews 7,8 and 9 from the energy sector can be found in section 3.4.4.

[17] Klimaatadaptatie is pas sinds kort een legitiem en belangrijk onderwerp voor de energiesector […] maar veel van de doelen die [ze] hebben zijn in lijn met de doelen voor klimaatadaptatie.

Energy Strategies (RES). The strategies include agreements on the generation of sustainable energy on land, the distribution of sustainable heat sources and the storage and energy infrastructure required for this (Provincie Utrecht, 2020b). The Province is actively contributing by providing expertise and financial support. According to interviewee 8, "the three RES's are important instruments for reaching the provincial ambition which is not only to produce sustainable energy and become energy-neutral in 2040 but also to become climate-resilient in the same year."[18] However, so far, climate adaptation is only to a limited extent included in these strategies. Furthermore, it is not clear what the exact role of the Province within these strategies is in regard to climate adaptation. Ultimately, within the provincial Energy Transition Program, no indications are made about the inclusion of climate adaptation objectives (Provincie Utrecht, 2020b). Therefore, it can be said, that the inclusion of climate adaptation within the energy sectors hardly takes place.

The second criterion is **consistency**. To integrate climate adaptation into a policy sector, it is essential that the different policy instruments used are consistent with each other, or as expressed by Lafferty and Hovden (2003), there should be "a commitment to minimize contradictions" (p. 9). Within the guidelines of the Energy Transition Program, indications are made about the consideration of other sectoral objectives (Provincie Utrecht, 2020b). However, only the consideration of climate mitigation efforts is mentioned, and climate adaptation is left out of focus. Other sectoral policy documents, however, further do mention the need for more alignment and coordination of some climate adaptation measures within the spatial environment, with other users and functions, such as the usage of the soil and water system. Still, as indicated by the interviewees (2 and 3), this task does not fall under the work of the policymakers from the energy sector, but, instead, is part of the tasks of the provincial water team.

In regard to the RES's, in two out of the three, is stated that the consequences of climate change need to be taken into account in spatial development (RES Amersfoort, 2020; resfoodvalley, 2020; RES U16, 2020). However, only one RES further outlines this in more detail, such as the re-design of the physical environment, which takes into the consideration water storage and retention for bridging dry periods, enhancing biodiversity and combating soil subsidence (resfoodvalley, 2020, p. 18). Generally speaking, the three RES' indicate very little coupling opportunities with sustainable energy and climate adaptation. Interviewee 7 explains this lack of minimizing contradiction by the insufficient insights of linkage opportunities of energy and climate adaptation. Interviewee 8 adds to this, that the perception of climate adaptation among the policymakers of the sector measures is 'very old fashion'. While "the reflex is often that [the implementation of a sectoral project] is getting more expensive, while in the longer term it actually gets cheaper."[19] According to him, spatial limitations lead to another contradiction between the two subjects:

[18] De drie RES's zijn belangrijke instrumenten om de provinciale ambitie te verwezenlijken, niet alleen om duurzame energie te produceren en energieneutraal te worden in 2040, maar ook om klimaatbestendig te worden in hetzelfde jaar.
[19] De reflex is vaak dat het duurder wordt, terwijl het op langere termijn goedkoper is.

> In order to implement the objects of both subjects, space is needed. And this is rather limited in the Netherlands [therefore] you need to make choices [and] the challenge is to be able to compensate it so that the subjects support each other and take each other along with developments.[20]

However, he also adds that use of space could also have a double function, such as the usage of space for water storage in combination with flooding solar panels. Nevertheless, these ideas have not been realised yet into actual plans and projects.

The third criterion of policy integration is **weighing**. In the context of this study, it means that where trade-offs continue and choices have to be made, the weigh given to climate adaptation aims becomes crucial (Mickwitz, 2009). As mentioned before climate adaptation has become one of the key ambitions of the provincial board, along with other goals such as circularity and sustainability (Provincie Utrecht, 2019b). However, within the energy sector, the recognition of the need for climate adaptation action has not yet resulted in any particular climate adaptation aims and measures. Even though the awareness and feeling of urgency to adapt are increasing, as interviewee 9 admitted, "more attention needs to be paid to this subject within the sector, especially when decisions on specific sectoral spatial measures are taken, and resources are allocated."[21]

This leads to the fourth criterion of policy integration, which is **resources**. The know-how available and the financial resources allocated for climate adaptation measures are a sign of its significance (Mickwitz, 2009). The empirical research of the sector revealed a diverse approach and strength in knowledge building. Even though climate adaptation is almost not mentioned in policy documents, some knowledge about the subject does seem to exist. A number of relevant climate adaptation measures for the energy sector were mentioned during the interviews. According to interviewee 7, the increase of greenery, especially within cities, could not only help to cool down the temperature but can also serve as a CO2 sink. Interviewee 8 added to this, that energy can be saved by taking climate adaptation measures in the form of isolating houses or increasing the amount of greenery within cities to decrease the urban temperature. This could, for example, result in less energy usage of air-conditioning. Also, interviewee 9 argued, that green roofs can result in not only into a higher yield of solar panels due to the cool environment but also helps to increase biodiversity. Finally, an idea was mentioned about the possible link between the heat that stays within cities (also called urban heat island effect) and the production of energy with warmth. These examples show, that the policymakers from the energy sector do have, at least, some knowledge about possible win-win solutions and climate adaptation efforts within the energy sector. Nevertheless, this knowledge does not come back in sectoral plans and programs yet. Ultimately, according to the above analysis of the sector, it is not surprising that no indication is made about the allocation of financial resources to climate adaptation.

In regard to the analysis of the sectoral climate adaptation integration within the energy sector, it can be concluded that almost none of the criteria of climate adaptation policy

[20] [Om de doelstellingen van beide onderwerpen te realiseren is ruimte nodig. En dat is in Nederland vrij beperkt [dus] je moet keuzes maken [en] de uitdaging is dan om het zo te kunnen compenseren dat je de opgaves elkaar ondersteunen en elkaar meenemen bij ontwikkelingen.

[21] Er moet binnen de energiesector meer aandacht komen voor dit onderwerp, zeker als er beslissingen worden genomen over specifieke sectorale ruimtelijke maatregelen en middelen worden toegewezen.

integration are met (Table 18). There are, however, some indications (such as the feeling of urgency to the need to adapt, and the existence of some knowledge about climate adaptation measures) that this might change in the near future.

TABLE 18

Assessment on the climate adaptation integration within the energy sector

Criteria	Assessment
Inclusion	Climate adaptation is hardly addressed.
Consistency	Consistency with other policy goals is only to a limited extent discussed.
Weighing	The weighing of climate adaptation goals is rather low.
Resources	Finances: Resource allocation is not discussed Knowledge: Knowledge about specific measures are partly present but not put into practice.

Note. Created by the author

CASE STUDY II: The agriculture sector

Introduction

The second case study is the agriculture sector. Agriculture largely determines the use of space in the Province. With 57% of the provincial surface, it is the largest land user in the province. The agriculture sector does not only provide the food supply but also plays a major role in the quality of the rural area. Nowadays, the province includes 3,000 farms and together they use about 65,000 hectares of agricultural land. Almost 95% of this is used by grazing livestock farms (grassland and silage maize) (Provincie Utrecht, 2018). Also, the agriculture sector has to deal with the impact of climate change in various ways. The increasing temperatures, changes in precipitation patterns and infrequency of extreme events, as well as the longer-lasting dry periods can influence crop yields and livestock productivity in a negative way. The sector, therefore, has to adapt to challenges stemming from climate change by pursuing adaptation actions (Kennisportaal Ruimtelijke Adaptatie, 2019). The Province, therefore, strives for a socially appreciated, vital and sustainable agriculture, that is circular, nature-inclusive and climate-neutral and certainly also economically viable (Provincie Utrecht, 2019b).

In order to gain insights into the extent to which the provincial agriculture sector has integrated climate adaptation into its policy, various sectoral policy documents were studied. In this way, attention is paid to the Agenda Vital Countryside, the Rural Development Program, the Agriculture Vision, the Cooperation Agenda, the Program Approach Veenweide and the Soil Subsidence Vision. In addition, the insights gained from the interviews with three policymakers from the sector were further used to complement the analysis.

Sectoral climate adaptation integration

The first criterion is again the **inclusion** of climate adaptation objectives within the sector. The study of sectoral policy documents has shown that relatively much attention is given to the consequences of climate change and the need to adapt to it. Of the various policy documents, the Agriculture Vision devotes most explicit attention to climate adaptation (Provincie Utrecht, 2018). According to interviewee 10[22], within this document, the sector includes for the first time the term 'climate adaptation'. He explains that until now, adaptation measures were mainly taken in the context of disposing water but were not named as climate adaptation efforts. Even though the sector attempts to become climate adaptive, relatively little (explicit) attention is paid to climate adaptation measures in sectoral policy documents. Mainly the focus lies on sustainable water management. Within the Agriculture Vision, climate adaptation measures are mentioned rather generally, such as that the sector strives for a robust water system in the countryside and that measures need to be taken in case of extreme rainfall (Provincie Utrecht, 2018). In the Rural Development Plan, the sector notes that the consequences of the water shortage have a direct impact on the sector itself (Provincie Utrecht, 2020a). The same applies to the Program Veenweiden Approach. According to this program, the ambition of the sector is to work on sustainable water systems and land subsidence (Provincie Utrecht, 2019a). Some of the sectoral goals can also be seen as positively contributing to climate adaptation objectives (such as keeping the soil wet). However, so far climate adaptation is mostly implicitly included in the sector. The inclusion of adaptation measures is the highest when it comes to the water policy of the sector.

In order to reach **consistency,** it is important to identify possible contradictions with climate adaptation and sectoral objectives. According to interviewee 11, in the past years, relatively much research has been done on climate resistant plants and climate adaptive soil by the University of Wageningen. Several sectoral documents also mention the development of measures, such as underwater drains, to be an effective method of raising the groundwater levels (Provincie Utrecht, 2018). As interviewee 12 argued, these measures "create win-win situations for the agriculture sector itself but also add to the aims of climate adaptation."[23] The analysis of the policy documents and the interviews also showed that the sector regards environmental objectives (such as nature inclusive and circularity) as an important topic to take into consideration in sectoral plans and projects. According to the interviewees (10, 11 and 12), these measures, however, have only been partially implemented and climate adaptation is rather seen as a positive side effect, that happens from time to time. Thus, the consistency as to climate adaptation and its contradictions with the sectoral policy objectives are only to a limited extent considered and addressed.

The third criterion of policy integration, **weighing**, is assessed by the extent to which climate adaptation weighs up to the sectoral developments. Weighing climate adaptation objectives against other policy objectives is not explicitly addressed in the policy documents of the sector. It can, therefore, be assumed that little weigh is given to the subject. Interviewee 11

[22] A list of the interviews 10,11 and 12 from the agriculture sector can be found in section 3.4.4.
[23] Creëert niet alleen maar een win-winsituatie voor de landbouwsector zelf, maar levert ook een bijdraag aan de doelstellingen van klimaatadaptatie.

argued that, in fact, “the Netherlands is the country with the highest livestock density in the world and the high concentration of livestock farming causes problems in various areas, especially on the topic of CO2 emission.” [24] Hence, especially within the implementation of climate policy, much attention goes to climate mitigation and less to climate adaptation efforts (such as was the case within the energy sector as well). The inclusion of the subject within sectoral documents (such as within the Agriculture Vision), therefore, does not mean that the subject is given much importance within the sector. Also, according to interviewee 10, “even though certain climate adaptation goals are written down on paper, this does not mean, that it also happens in practice” [25]. Therefore, it can be concluded that only limited (explicit) attention is given to climate adaptation within the sectors.

Finally, policy integration is not just about intentions; it also requires certain **resources**. According to interviewees (11 and 12), the sector receives a great number of subsidies from the national and European level. Yet, it is difficult to say how many financial resources are made available for climate adaptation efforts since the sectoral documents only give general indications about the allocation of the budget. Some sectoral money seems to go into circular and nature inclusive agriculture projects, which partly also include climate adaptation objectives (Provincie Utrecht, 2018). Climate adaptation is, however, not explicitly named in these plans. Regarding the knowledge for climate adaptation, the sectoral policymakers indicated that they are aware of the need to adapt to climate change within the agriculture sector. Even though the subject is not explicitly mentioned in many of the sectoral plans, some knowledge does exist about the subject, such as the need to keep the groundwater level high by using underwater drainage, creating water storages for times of droughts and the sustainable management of drinking water. Still, according to the interviewees (10,11 and 12), the amount of knowledge about climate adaptation is still low and differs a lot between the policymakers. Also, the term remains vague, and the lack of synergy of the two topics causes the main barrier to further integrate the subject into the sector.

All things considered; climate adaptation objectives seem to be partly reached by some of the sectoral objectives, however, the subject still remains rather unclear to most policymakers: few indications of specific climate adaptation measures are made, which is the result of the lack of knowledge about climate adaptation. Financial resources do not seem to be an issue, even though no monetary allocations towards climate adaptation measures are yet made.

[24] Nederland is het land met de hoogste vee dichtheid ter wereld en de hoge concentratie veehouderij zorgt op verschillende gebieden voor problemen, met name op het gebied van CO2-uitstoot.
[25] Ook al staan bepaalde klimaatadaptatiedoelen op papier, dat wil niet zeggen dat het ook in de praktijk gebeurt.

TABLE 19

Assessment on the climate adaptation integration within the agriculture sector

Criteria	Assessment
Inclusion	To a relatively medium extend (implicitly and explicitly) included in the policy sector
Consistency	Contradictions with the sectoral policy objectives are only to a limited extent considered and addressed.
Weighing	To a medium extent, but climate mitigation still receives more attention.
Resources	Finances: Is available but no explicit allocation of the budget to climate adaptation measures are made. Knowledge: Is partly present but rather dispersed.

Notes: Created by the author

CASE STUDY III: The building sector

Introduction

Lastly, the building sector was chosen as a third case study. Climate change is likely to influence almost all components of cities and towns (Ruimtelijke Adaptatie, 2019). This results in challenges for the planning and management of the urban environment, such as how they are kept cool and how they are weathered against more extreme climatic conditions. The number of new houses and apartments, that need to be built in the province (approximately 145,000 homes in total until 2040), therefore, must be designed as climate-resistant and water-robust as possible by 2050, so the built environment is able to cope with all kinds of future climate scenarios (Provincie Utrecht, 2016a).

In order to gain insight into the extent to which the building sector has integrated climate adaptation into its policy, several sectoral policy documents were studied, including the Policy Framework for Urban Development, the Implementation Program Plan Inner City Development 2017 - 2021 and the Action Agenda Housing Market 2018-2021. Besides that, interviews with three policymakers from the sector were conducted.

Sectoral climate adaptation integration

The evaluation of the first criterion of policy integration, **inclusion**, revealed, that climate adaptation is considered to quite a large extent in sectoral plans. Within the Policy Framework for Urban Development, the consequences of climate change for the sector are mentioned, such as the occurrence of more intensive showers, flooding and warmer summer days (Box 5). One ambition of the sector is to make cities climate proofed against floods, water shortage and heat stress. For the inner city, opportunities are recognized to make smart multifunctional usage of the space and use of perceptible water and greenery (Provincie Utrecht, 2016a). Some focus further lies on measures that can be taken to climate-proofing real estate, such as adding green and blue networks and softening the petrified surface. Other climate adaptive measures include water squares, more trees, water-permeable tiles, green roofs and facades, and the higher placement of vital installations in potentially floodable

areas (Provincie Utrecht, 2016a). In order to realize these ambitions, the implementation takes partly place through the Innovation Program Physical Living Environment 2016-2019 (IFL). The IFL focuses on the way in which the province of Utrecht can deal more efficiently with urgent social issues in the network society, such as climate adaptation. Measures, such as the building of less paved surface, more greenery and the use of roofs and facades for water collection are mentioned (Provincie Utrecht, 2017, p. 9). The fact that the subject is included in the policy framework of the sector, further results in the inclusion of climate adaptation in most of the sector's policy documents.

Box 5: Policy framework for urban development and the inclusion of climate adaptation
Ambitions for living and the living environment in relation to inner-city development:

- *Realizing inner city housing.* In the PRS, 80% of the housing program (total approx. 68,000 homes) situated in existing urban areas.
- *The realization of a housing supply that matches the (future) demand.* That also means attention for the quality of these homes and housing differentiation.
- *Realizing and strengthening a good living environment.* Including preserving and improving living environment quality and maintaining sufficient green space in cities and villages.

An urban area prepared for the effects of climate change. The ambition is to do this as much possible in perceptible water and greenery so that the facility also has clear added value for the area.

Note. Source: Provincie Utrecht (2016a)

Concerting the criterion **consistency** of climate adaptation within the sector, some policy documents mention that it is important to be consistent with other provincial objectives (Provincie Utrecht, 2016a, 2017). The IFL, for example, lists nine social challenges that need explicit attention. Climate adaptation is named as one of them. This means, that if there is an overlap with the activities from, for example, the Inner City Development Program, such as the need for real estate in the form of housing, coordination with climate adaptation objectives will need to take place (Provincie Utrecht, 2017, p. 26). Also, the Implementation Program Plan Inner City Development (2017-2021) mentions climate adaptation as a linkage opportunity both at the building and the area level (Provincie Utrecht, 2017, p. 6). Furthermore, the sector sets a goal for a time period of four years to further avoid contradictions: in at least 60% of the areas, one or more linkage opportunities need to be visibly included. Next to energy, mobility and healthy living environment, climate resilience is also seen as one of the linkage opportunities (Provincie Utrecht, 2017, p. 14). Indications are further made for climate-adaptive pilots and projects and how climate adaptation can add value to them, such as within the approach to redevelop public space and office locations and include more green and blue networks in these areas.

With respect to the criterion **weighing** of climate adaptation against other sectoral goals, climate adaptation seems to play a role within the sectoral policy framework. The subject receives its own section the policy framework and specific examples on climate adaptive measures are mentioned about the way in which the built environment can be designed in a more climate-adaptive way, for example, by serving as water storage (Provincie Utrecht,

2019b). According to the interviewees (13, 14 and 15)[26], climate adaptive measures are seen to bring added value to the environment of a city, and it can, therefore, be expected to be a deliberate consideration in the development of the built environment. However, the interviewees also admitted, that these measures are hardly put into practice yet. As interviewee 13[27] indicated, the main focus still lies on "accelerating the housing construction, so that more homes are built, instead of looking at the quality." [28] Interviewee 15 further added that the accumulation of all provincial ambitions has made it increasingly difficult and complicated for a developer to come to a healthy business case for the built environment. This partly explains the reason why climate adaptation plays only a limited role in the sector and does not have priority in comparison to other sectoral policy goals.

The last criterion, **resources***,* refers to the finances and knowledge available within the sector in regard to climate adaptation. According to the policy documents, the sector has an amount of €16,8 million available for a period of four years (Provincie Utrecht, 2016, p. 32). It is not stated though how much of the budget is reserved for climate adaptive measures. One requirement to receive subsidies is though, that when developing an area, the advantage of opportunities in public space and real estate for a climate-proof living environment need to be used. Therefore, it can be assumed that some allocation of the sectoral budget could lead to climate-adaptive measures. Regarding the knowledge about the topic, it can be concluded that general knowledge about the consequences of climate change exists and that the policymakers are aware of the added value of climate adaptation for residents and users of an area. Interviewee 13 even indicated that "taking climate change into consideration in policy and projects has become kind of common sense." [29] However, this does not seem to be the case for the two other policymakers that were interviewed. They admitted, that the awareness of the need to adapt to the changing climate is still relatively small. According to interviewee 15, there is even "absolutely insufficient knowledge about" climate adaptation measures. Therefore, it can be said that the amount of knowledge about climate adaptation is rather dispersed and remains, generally speaking, rather low.

[26] A list of the interviews 13,14 and 15 from the building sector can be found in section 3.4.4.
[27] A list of the interviews 13, 14 and 15 from the building sector can be found in section 3.4.4.
[28] Hoe kunnen we de woningbouw versnellen, zodat er meer woningen komen en plaats van naar de kwaliteit kijken.
[29] Rekening houden met klimaatverandering in beleid en projecten is een soort van gezond verstand geworden.

Box 5: Other examples of projects within the building sector in relation to climate adaptation:

- *Platform Approach.* This platform consists of a fixed group of directors and officials of governments and market parties. The Platform comes two times per year together, where scheduling, coordination, sharing knowledge and opportunities and where make necessary / possible concrete agreements, are central. Beside other, climate adaptation is one of the linkage opportunities on the agenda.
- *Living Deal Region Utrecht.* The central government, the province and the 16 municipalities in the Utrecht region have topics, such as energy transition and climate adaptation cannot be separated from necessary policy commitment.
- *Hart van de Heuvelrug.* The Hart van de Heuvelrug program is a large-scale area development program for the area in the Soest-Zeist-Amersfoort triangle. The aim of the program is to improve the spatial quality and focuses on spatial quality gains for living, working, care and recreation.
- *Residential area Air Base Soesterberg.* the housing construction project contributes to improving the spatial quality of Soesterberg and to regional housing needs where the inclusion of nature (such as green roof as a storage for rainwater) is one of the key focus points.
- *A12 Zone.* In collaboration with the municipalities of Houten, Nieuwegein, Utrecht and Rijkswaterstaat (RWS) Central Netherlands, the Province is further developing the urbanization options for the A12 Zone, which must result in an integrated development perspective. Six ambitions are central to this, one of them referring to the ambitions to make the area energy neutral and climate adaptive.

Note: Source: Provincie Utrecht (2016a, 2017, p. 12)

To sum up, climate adaptation seems to be included to a larger extent into the building sector, compared to the previously mentioned energy and agriculture sector. However, it is questionable to what extent the subject is taken into consideration when it comes to the implementation of the sectoral policy plans and programs.

TABLE 20

Assessment on the climate adaptation integration within the building sector

Criteria	Assessment
Inclusion	To a large extend (implicitly and explicitly) included in the policy sector
Consistency	Contradictions with other policy topics are taken into consideration.
Weighing	Attention is being given to climate adaptation on paper, in practices this is, however, hardly the case yet.
Resources	Finances: There is budget available but financial support must also come from other policy sectors to fulfil their objectives. Knowledge: Knowledge is present but rather low and remains dispersed.

Notes: Created by the author

4.3.2. Dealing with barriers

The above section has shown, that climate adaptation is integrated in different ways and degrees within the three provincial case studies sectors. As already indicated in the literature review and as a result of the survey research, a number of barriers were identified and selected as hindering factors to the integration of climate adaptation into the provincial policy (Chapter 4.2.) In forms of interviews, it was, therefore, investigated how the policymakers from the three sectors deal with these barriers. The results are discussed on the basis of four themes: (1) Costs and benefits, (2) usage of obligatory and legal instruments, (3) consideration of climate adaptation and (4) knowledge about climate adaptation. These themes are based on the type of barriers indicated in section 4.2.3.

(1) Costs and benefits

Through the survey it became clear that three barriers hinder the integration of climate adaptation into sectoral policy, namely:

- *Barrier 2:* high costs associated with adapting the existing space
- *Barrier 5:* the lack of financial means to implement adaptation measures.
- *Barrier 7:* uncertainty about the social costs and benefits of adaptation measures.

The policymakers from the **energy sector** indicated that these barriers also play a role within their sector. Whereas for climate mitigation (such as sustainable energy) many subsidies are provided by the national and regional government, for climate adaptation, instead, only very limited sectoral budget is made available. A reason for this could be, that it is relatively easy to formulate a business case for climate mitigation measures, therefore costs and financial benefits can be determined beforehand. Such a business case is, though, not made for climate adaptation yet. Interviewee 7 explained this further. He claims that the difficulty with climate adaptation is "that the earn-outs only becomes visible after a longer time frame. Whereas climate mitigation calculations can be made within a time frame of 5-10 years."[30] He, therefore, suggested providing short and long-term calculations about the financial costs and (financial) benefits for climate adaptation. This would facilitate the allocation of the sectoral budget towards climate adaptation activities. Besides, interviewee 8 argued, that instead of focusing on the costs of climate adaptation measures, the emphasis should ley more on the prevention of (financial) damage due to extreme climate impacts on the sector. According to him:

> The emphasis should lie on other positive side effects, such as the increase of biodiversity, the cooling effect on the environment, and the function as a CO2 sink. The latter could be of much value for the sector to further decrease the CO2 emissions.[31]

The benefits of climate adaptation measures, therefore, need to become clearer and more visible to the sectoral policymakers. Also, climate adaptation should be seen more as a

[30] De earn-outs pas na een langere periode zichtbaar worden. Terwijl klimaatmitigatie, berekeningen kunnen worden gemaakt binnen een tijdsbestek van 5-10 jaar.
[31] De nadruk moet liggen op andere positieve neveneffecten, zoals de toename van de biodiversiteit, het verkoelende effect op het milieu en de functie als iets wat het CO2 uit de lucht opneemt. Het laatste kan van grote waarde zijn voor de sector om de CO2-uitstoot verder terug te dringen.

‘value-case’, that increases the quality of a climate-robust living environment. However, in order to change this, more information about climate adaptation efforts are needed.

Quite the reverse, the respondents from the **agriculture sector** indicated, that the lack of financial resources only forms a minor barrier to the sectoral inclusion of climate adaptation. Agriculture is highly subsidised by the regional, national and European government to initiate and support regional projects. As interviewee 10 outlined, “the allocation of the budget depends on the sectoral prioritization of topics. Some of them relate to the development of sustainable, nature inclusive and circular agriculture initiatives.” [32] Even though these topics do not specifically refer to climate adaptation activities, the interviewees (10,11 and 12) stated that climate adaptation goals (such as the increase of water storage and biodiversity) can be partly achieved through these kinds of agriculture activities. One reason why climate adaptation is not explicitly named in the division of the sectoral budget is explained by interviewee 12. He outlined that:

> The costs of climate adaptation measures are not very clear neither is this the case for the financial damage it can avoid. Therefore, it remains difficult to make budget available for climate adaptation measures [but] if there is more insight that climate adaptive measures yield something, then there is money for it.[33]

Therefore, also in this sector the uncertainty about the financial benefits of climate adaptation remains rather vague which creates a large barrier for the integration of the subject. Therefore, the policymakers suggested the development of climate adaptive tools to measure and estimate the exact financial and social damages that can be prevented with the respective sector.

The interviewees from the **building sector** agree with the above reasoning about the lack of visibility about the (financial) costs and benefits, that makes it difficult to make sectoral budget available for climate adaptation efforts. In particular, in the existing city, climate adaptation can be associated with high costs, while it is often unclear in advance what such a measure will ultimately yield. Therefore, it becomes even more important to find possible win-win situations of the two subjects, such as the linkage of the housing assignment with a greener and, therefore, also more attractive and healthier living environment. In order to make more sectoral money available for climate adaptation, it was further suggested find a more integral way to divide costs, since often the interests of several sectors come together within a certain area of development. The division of responsibility for taking climate adaptation measures into account, however, remains an issue since it is often not clear who the problem owner is for including and investing in climate adaptation efforts. Thus, new strategies need to be found to enhance the cooperation between and the coordination of integral subjects, such as climate adaptation.

[32] De toewijzing van het budget hangt af van de sectorale prioritering van onderwerpen. Sommigen van hen hebben ook een verbinding met de ontwikkeling van duurzame, natuur inclusieve en circulaire landbouwinitiatieven.
[33] De kosten van maatregelen voor klimaatadaptatie zijn niet erg duidelijk en dat geldt ook niet voor de financiële schade die het kan voorkomen. Het blijft daarom moeilijk om budget beschikbaar te stellen voor maatregelen op het gebied van klimaatadaptatie [maar] Als er inzicht is dat klimaat adaptieve maatregelen iets opleveren, dan is daar geld voor.

(2) Usage of obligatory and legal instruments

The results further of the survey showed, that the following factors are also seen as main barriers to the integration of climate adaptation into sectoral policy:

- *Barrier 17*: lack of legal obligations to structurally take climate change effects into account in decision-making procedures
- *Barrier 20*: of effective tools to enforce climate adaptation with private parties

The above barriers are very much considered an issue for the interviewees from the **energy sector.** According to interviewee 9, it is even seen as the main reason for the lack of climate adaptation integration, that "there are no legal obligations made about climate adaptation. Therefore, the pressure is rather low to include [the subject] into sectoral plans and programs."[34] This barrier can, therefore, also be seen, partially, as a result of barrier 7: if the key benefits of adaptation measures would be clear, no legal obligations would be needed. Striking is, however, that one of the key focus points of the Coalition Agreement from the Province is also climate adaptation. And this could be, more or less, also seen as a certain kind of 'obligation" to integrate the subject into all provincial policy sectors. According to interviewee 10, these can be seen as general provincial guidelines but are by no means legal obligations: "if the politics decide to give another topic more importance (such as climate mitigation), there is further no room left to also consider other provincial ambitions."[35] All of the three interviewees of the sector agreed on the fact that legal obligations would serve as a strong incentive to bring climate adaptation higher up on the provincial agenda. However, for this to happen more insights need to be provided on the achievability of certain climate adaptation rules.

In addition, concerning the effective tools to enforce climate adaptation with private parties, whereas for climate mitigation measures certain standards are given for their implementation (such as a minimum sustainable energy level for houses), instead, for climate adaptation, these standards do not sufficiently exist yet for the sector. Besides, the influence of the Province on specific climate adaptation requirements is rather low. Therefore, the interviewees (7 and 8) argued, that the integration of climate adaptation within the energy sector could be better facilitated by developing specific requirements and minimum standards for the subject, such as a certain percentage of green and blue space within an area.

The policy makers from the **agriculture sector** partly agree with the above. Again, for climate mitigation the sector has certain rules and laws that need to be followed to reduce the CO2 emission. This has resulted into a large number of projects within the province. For climate adaptation it is expected that these rules and laws would have the same results, however, so far, no requirements or 'hard' policy objectives are made. Besides that, legal obligations and rules would further help to bring the topic higher on the agenda not only within the Province but also on the agenda of other regional parties. It would ultimately lead

[34] Er zijn geen wettelijke verplichtingen aangaande klimaatadaptatie. Daarom is de druk vrij laag om op te nemen in sectorplannen en programma's.
[35] Als het politiek besluit om een ander onderwerp belangrijker te maken (zoals klimaatmitigatie), is er geen ruimte meer om ook andere provinciale ambities in overweging te nemen.

to more concrete and 'conscious' climate adaptive actions within the region. Interviewee 12 argued though, that "if farmers are given the right [financial] incentives to implement climate adaptation measures, legal obligations would play a less important role."[36] He therefore suggested introducing, for example, differentiated water taxes depending on the amount of water used, in order to enforce climate adaptation measures with private parties. So as to achieve this, more knowledge and insight is needed about specific climate adaptation goals for the sector. If these can be set in such a way that the concrete benefits are made clear for the sector, the specification and allocation of the sectoral budget towards this subject could also be facilitated.

The interviewees from the **building sector** also claimed that the above-mentioned barriers hinder the sectoral integration of climate adaptation, at least to a certain extent. According to the interviewees (14 and 15), for surface water, the sewage system and space made for water, some legal obligations exist for the built environment. However, for other climate adaptation topics, such as for the prevention of heat, no rules are made yet. Therefore interviewee 13 argued, that "legal obligations would be the easiest way to get climate adaptation on the agenda […] this can take form by having a minimum level for the percentage of greenery for example."[37] On the other hand, it was also mentioned that legal obligations can be counterproductive, if it proves to be inflexible and involves heavy procedures. Interviewee 15, therefore, suggested that climate adaptation should be rather experienced bottom-up by municipalities and citizens "by indicating more clearly the added value [of climate adaptation] to an area, municipalities and private parties would be more motivated and challenged to get started with climate adaptation."[38] Finally, the interviewees (13,14 and 15) emphasised though that it is still too early to come up with legal obligations for climate adaptation since there is not enough insight yet available into the reachability and fulfilment of exact measures. Instead, more insights, guidelines and tools about specific climate adaptation measures are needed, as well as a clear set of climate-adaptive criteria for the climate adaptive design of buildings should be developed. These 'tools' and specific guidelines would also help to increase the discussion with regional partners since the implementation of climate adaptation measures would be more facilitate. Nevertheless, the interviewees said, that legal rules could help to fasten up the mainstreaming of climate adaptation measures.

[36] Als boeren de juiste (financiële) prikkels krijgen om klimaatadaptatiemaatregelen door te voeren, zouden wettelijke verplichtingen een minder belangrijke rol spelen.
[37] Wettelijke verplichtingen zouden de gemakkelijkste manier zijn om klimaatadaptatie op de agenda te krijgen […] dit kan vorm krijgen door bijvoorbeeld een minimumniveau voor groen te hebben.
[38] Door de meerwaarde voor een gebied duidelijker aan te geven, zouden gemeenten en private partijen meer gemotiveerd en uitgedaagd worden om aan de slag te gaan met klimaatadaptatie.

(3) Consideration of climate adaptation

The previous sections showed that climate adaptation is often not taken into account into sectoral policy. The further gives an indication to the next barriers:

- *Barrier 12:* The lack of awareness of the need to adapt
- *Barrier 23:* The competition with other spatial and sectoral policy topics that receive more attention in the short term

The interviewees from the **energy sector** are aware of the need to adapt to climate change, but the feeling for urgency to take action upon this subject has been rather low until now. As explained by interviewee 8, this is due to the high level of expertise of the country on water management which is regulated by the governmental institution called Directorate-General for Public Works and Water Management (in Dutch: *Rijkswaterstaat*). For a long time, this institution was specialised to protect the Dutch people from any climate events related to floods. However, as interviewee 9 argued:

> [Other] extreme weather conditions are happening, which cause great damage to the energy sector as well, such as blackouts of electricity or ICT failures. [Therefore] the impact of climate change cannot be ignored, and the urgency to adapt therefore increases.[39]

Still, this feeling of urgency remains rather low and fragmented among the policymakers of the sector. To change this, it was suggested to make the consequences of climate change on the energy sector more visible and more easily accessible. This suggestion can lead back to the 'risk dialogues' that took place in 2019 within the Province, which aimed at making the impact of climate change more visible to the different provincial sectors. In order to keep the level of awareness and feeling of urgency high, it was advised by the policymakers to reorganize such discussions on a more regular level but also make clearer what the financial costs of damages could be if no measures would be taken against climate change.

In regard to the competition of other sectoral topics, interviewee 7 indicated, that "the need to prioritize activities is nothing new in policy making, also for the energy sectors […] it also does not mean that other topics such as climate adaptation are completely left out."[40] To estimate to what extent climate adaptation is integrated within the sectoral projects remains however difficult to assess since climate adaptation is not even mentioned in the sectoral policy documents. Interviewee 9 suggested, that in order to put climate adaptation efforts higher on the agenda within the sector, it is again important to understand its exact benefits for and connections with the sectoral objectives. The need for finding synergies also came up strongly during the interviews to give the subject more importance.

Whereas for the energy sector the lack of urgency to adapt is an issue, for the **agriculture sector** this does not seem to be the case. The document analysis of the sector showed that the consequences of the different climate change scenarios are included, and the interviews

[39] Extreme weersomstandigheden worden steeds erger, die ook in de energiesector grote schade aanrichten, zoals stroomuitval of ICT-storingen. [Daarom] kan de impact van klimaatverandering niet worden genegeerd en de urgentie om zich aan te passen neemt dus toe.
[40] De noodzaak om prioriteit te geven aan activiteiten is niets nieuws in de beleidsvorming, ook niet voor de energiesectoren […]. Het betekent ook niet dat andere onderwerpen zoals klimaatadaptatie volledig overblijven.

revealed that dealing with the changing weather has become a common task within agriculture sector. According to interviewee 11, "the increasing political discussion about reducing the CO2 emissions, resulting from agriculture activity, as well as tackling the issue of soil subsidence for the sector"[41] has led to an increasing feeling of urgency. Still, as interviewee 10 argued, that:

> Climate adaptation is, however, not the most important driving factor in tackling climate change [and] in order to bring climate adaptation higher on the agenda of the agriculture sector, more synergies and win-win situations need to be found with climate adaptation and the sectoral goals.[42]

On the basis of the above, it can therefore be concluded that the people from the agriculture sector are aware of climate change and the urgency to adapt to it, mainly because the impact that climate change has on the sector is often visible and felt at first hand. According to interviewee 10, one has to become "aware and especially show what the risks or disadvantages are if you do nothing. And also, the contrary, that if you take it into account, it might be of benefit."[43] The next step is to turn these plans and ideas into specific actions. For this, more insights need to be provided about specific climate adaptation measures, including their (financial) benefits to the sector, that can be used in practice, especially by farmers.

Climate adaptation has not only become increasingly more important to the energy and agriculture sector, but also to the **building sector**. The interviewees explained this with the fact that the consequences of climate change on space and people within the built environment are also becoming more visible, such as the frequent occurrences of floods and heavy rains resulting into great damages. They also refer to the increasing number of warmer summer days causes increasing health risk, especially for elderly and children. The policymakers clearly emphasised the need for closer collaboration with the climate adaptation team in order to bring climate adaptation higher on the sectoral agenda, not only on the provincial level but also on the practical level within the work of municipalities, builders and developers.

When it comes to prioritizing policy objectives within the building sector, most attention is being paid to the quantity instead of the quality of houses, meaning that also less attention is being paid to subjects such as climate adaptation. As it was indicated by the interviewees (13,14 and 15), this will be difficult to change in the upcoming year since the new provincial building program also lies its focus on fasting up the building tasks and making living more affordable. Interviewee 14 further explained this with the fact that the "political pressure on achieving the building tasks is high, therefore other provincial goals are set aside." [44] If the importance and benefits of climate adaptation to the sector is made clearer, he argued, the topic could receive a higher prioritization within spatial development. Ultimately, win-win

[41] De toenemende discussie en het belang van het aanpakken van de CO2-uitstoot als gevolg van landbouwactiviteiten, [en] evenals het probleem van bodemdaling voor de sector.
[42] Klimaatadaptatie is echter niet de belangrijkste drijvende factor bij het aanpakken van klimaatverandering [en] om klimaatadaptatie hoger op de agenda van de landbouwsector te krijgen, moeten synergiën en win-winsituaties worden gevonden met klimaatadaptatie en de sectorale doelstellingen.
[43] Het bewust worden werken en vooral laten zien wat de risico's of de nadelen zijn als je niks doet. En ook het omgekeerde, dat als je wel goed rekening ermee houdt misschien het nog iets zou kunnen opleveren.
[44] De politieke druk om deze bouwopgaven te realiseren staat hoog, daarom worden andere provinciale doelen opzijgezet.

situations are probably the best solution to the issue of prioritization, because then 'work with work' can be made, which can lead to efficiency benefits for both subjects. Interviewee 15 added to this that the competition of topics will always remain an issue and therefore "policy makers should not always strive to score a '10' on all kinds of different ambitions." [45] According to him, this would ultimately lead to long-lasting processes without any realization of provincial and sectoral goals. Further, this opens the discussion about the question when climate adaptation is seen as sufficiently being integrated within provincial policy. This depends, however, on the ambitions set by each sector, but also on the provincial board, in how much they want to make the province climate adaptive.

(4) Knowledge about climate adaptation

The last barrier can be seen as the most hindering factor in the sectoral integration of climate adaptation. As it was already argued in the literature review, without solving this barrier, it will be difficult to also solve the other barriers.

- *Barrier 10:* Lack of knowledge about climate adaptation measures

As outlined before, the interviewees from the case studies showed that awareness of the impact of climate change on the sectors exists. Still, this awareness seems to not automatically result in climate adaptation actions in practice. Many of the previously mentioned barriers show, that this is mostly due to the lack of knowledge about climate adaptation.

All interviewees from the **energy sector** agreed that this barrier is most decisive and crucial to solve in order to be able to integrate the subject into sectoral plans. Throughout the interviews, it became clear though, that some knowledge exists about the topic, and some examples of climate adaptation measures were mentioned. Even though they are not implemented in practice yet, these ideas can be seen as a first step towards the further sectoral integration of the subject. Still, more insights about specific types of climate adaptation measures are needed, and the exact benefits for and synergies with the energy sector need to be made clear. The need for cooperation with the climate adaptation team came up strongly during the interviews, this will have to take more shape in the future.

According to the respondents of the **agriculture sector,** they also experience a lack of knowledge as an important barrier. Until now, they have depended on the provincial climate adaptation team, and partly on the team for water and soil, to acquire knowledge about climate adaptation measures for their sector. So far this is mainly done for water management, however, other climate adaptation measures, such as finding ways to make livestock farming, transport of animals and plants more resistant to heat and dry periods, hardly get off the ground. According to interviewee 12, it would be important to look at "certain projects together to gain insight into the interfaces, but also the benefits and costs." [46] Therefore, more synergies should be found between the two topics. Besides, the inclusion of knowledge institutes, such as universities, also plays an important role. They can provide

[45] Beleidsmakers moeten er niet altijd naar streven om een '10' te scoren op allerlei verschillende ambities.
[46] Ik zou belangrijk vinden als we samen naar bepaalde projecten zouden kijken om de raakvlakken inzichtelijk te make maar ook de baten en kosten.

valuable insights into possible climate adaptation measures for the sector (such as more sustainable water management). Finally, the need to find ways in order to involve farmers and other relevant parties within this discussion, also came up strongly, since in the end, they are the ones that implement the climate adaptation measures that have been decided upon at the provincial level. As interviewee 12 stated: "I wish we would be more proactive [and] that we start the conversation now."[47] By this he refers to the need for closer cooperation with farmers, the provincial climate adaptation team and other provincial sectors, to come up with the right measures, organize training and workshops and divide the responsibilities on climate adaptation among the groups and people involved.

Even though, the analysis of the policy documents and the interviewees showed, that some knowledge about climate adaptation measures is present within the **building sector** showed, it also became clear that "the lack of specific action points within [the sectoral] policy framework also leads to the fact that climate adaptation remains a vague term for the sector"[48], as interviewee 14 indicated. Interviewee 15 further admitted, that they do not feel well enough equipped to include and implement this topic further in sectoral plans and projects. They emphasized the need for more tools and guidelines on how specific climate adaptation can be used in practice, and, as interviewee 14 indicated, it is "necessary to have an overview about climate adaptation measures for the built environment [and] that it is important to know who needs to be contacted."[49] Furthermore, the interviewees indicated that climate adaptive measures should be tailor-made according to the features of an area. All in all, they agreed that it should be the responsibility of the climate adaptation team to acquire more knowledge about specific climate adaptation measures for the sector. The interviewees (12 and 13) further suggested having regular meetings with the climate adaptation team to keep each other updated on the development of projects, new developments in both sectors and to brainstorming about the linkage both subjects. Besides that, it was suggested to hire external experts that can support sectoral projects where climate adaptation is to be integrated Therefore, this would decrease the workload and lower the barrier to include climate adaptation, since the policymakers themselves would not necessarily need to gain in-depth knowledge about climate adaption.

The analysis of the three sectors has shown, that the integration of climate adaptation can vary between sectors, which depends mostly on the level of knowledge on climate adaptation and the degree to which the sector is affected by climate change.

[47] Ik zou willen dat we proactieve zijn, dat we nu het gesprek aangaan.
[48] Het ontbreken van specifieke actiepunten binnen [het sectorale] beleidskader leidt er ook toe dat klimaatadaptatie een vage term blijft voor de sector.
[49] Noodzakelijk om een overzicht te hebben over klimaatadaptatiemaatregelen voor de gebouwde omgeving, [en] het is belangrijk om te weten wie ik dan erbij moet halen.

5. Conclusion

In the view of climate change and the associated changing weather conditions, it has become clear, that all levels of governments need to structurally weigh the potential consequences of climate change in policy development. By adopting sectoral measures aimed at adapting the space and society to climate change impacts, ecological, technical, economic and social systems can be developed, which have the capacity to continue to function normally, despite the presence of substantial climate change impacts.

Although climate adaptation has become increasingly prominent on the political agenda in the Netherlands over the past few decades, this research has shown that not all governments have integrated the subject sufficiently into their policies yet in order to achieve a climate-resilient environment and society. This implies the presence of factors that hinder the integration of climate adaptation. That is why, partly on behalf of the climate adaptation team of the Province of Utrecht, a research was carried out to examine the extent to which climate adaptation is 'mainstreamed' within the provincial policy and to identify barriers hindering this process.

In chapter 4, answers were already given to the several sub questions of this research. Based on these, this chapter can lastly provide an answer to the final research question:

> To what extent is climate adaptation mainstreamed within the Province of Utrecht and what factors hinder the mainstreaming process?

In addition to this, the theories used are reflected on, followed by the limitations of this study and indications for further research on this topic. Finally, recommendations are provided to the climate adaptation team.

5.3. Climate adaptation mainstreaming within the Province of Utrecht

In order to determine the extent to which climate adaptation is mainstreamed within the Province of Utrecht, a conceptual framework was developed to evaluate the degree of climate policy integration and to determine barriers that can hinder this process. These 'concepts' were evaluated based on two sets of measures. The first set of measures provided indicators to evaluate the extent of integration within the provincial policy (inclusion, weighing, consistency and reporting) and the other set specified a number of barriers that hinder the integration process.

Within the previous years, the Province of Utrecht has worked on different, smaller and larger, climate adaptation efforts; but these remain rather dispersed and no structural approach exists. Further, the analysis of the adaptation policy integration showed, that the subject is only to a limited degree integrated into the provincial policy. Striking was that almost all evaluation criteria scored the same medium grade. This shows, that climate adaptation is at least to a certain degree integrated within the Province. With the advent of the POVI and the launch of the climate adaptation program, the subject is expected to receive

more attention since, for the first time, climate adaptation needs to structurally be included in all sectoral policy of the Province.

From a sectoral perspective, the study showed, that climate adaptation policy integration can also vary immensely among policy sectors. Of the three selected case studies, the agriculture sector and the building sector integrate climate adaptation the most. They feel the urgency of the need to adapt and make, direct and indirect, indications towards the inclusion of climate adaptation objectives in sectoral policy documents and plans. On the contrary, the energy sector seems to lack behind as almost none of the criteria of policy integration could be met. This is mainly due to the fact that most attention is given to climate mitigation efforts, which leaves little room to include other provincial topics as well. Generally speaking, it can be said that all three sectors have only to a limited extent integrated the subject into their plans and projects.

Even though differences between the extent of climate adaptation integration can be seen per sector, it seems that the Province is slowly making the step from, adaptation as an unconscious measure towards adaptation as a conscious process (climate proofing), as Berg and Coenen (2012) described the adaptation process. It is difficult to say, though, how much further the subject still needs to be integrated. This depends, namely, very much on the ambition of the Province and which 'degree of integration' they want to achieve (e.g. 1, 2, 3, 4 or 5). Besides, the success of mainstreaming efforts cannot be judged on the extent to which adaptation has been integrated into provincial policies alone, instead it must be also looked at concrete and measurable measures in practice as a result of the implementation of these policies and plans. In order to judge on this, more time is needed though. Furthermore, even though mainstreaming is often understood as an approach to conveniently link climate adaptation to other policy aims, but to address climate adaptation completely, mainstreaming needs to become 'mainstream'. Therefore, in light of the two terms of 'mainstreaming' and 'integration', it can be said that mainstreaming takes a step further since it also aims to structurally and deliberately integrate climate adaptation across and within policy. For this, mainstreaming requires coordination among multiple actors, organizations, and procedures, which can make the journey from a plan on paper to practical action.

Besides the issue of how, and if so to what extent climate adaptation is mainstreamed within the Province, this research also analysed barriers that hinder the mainstreaming process. The extent of climate adaptation mainstreaming within the Province is expected to be largely explained by this and contributes, therefore, to the scientific insights about climate adaptation. Given that the composition of the barriers is based on a large number of scientific articles on climate adaptation, the typology used in this study can serve as a clear and broadly applicable theoretical framework in further research into the mainstreaming of climate adaptation. Based on this, the processes in which integration of climate adaptation takes place can be better understood in the future.

In the context of this study, 38 policymakers from the Province were asked whether and, if so, to what extent certain factors hinder the integration of climate adaptation. Based on the empirical research, it can be concluded that especially the competition with other spatial and sectoral policy topics (*Barrier 8*) and the lack of financial resources to implement climate

adaptation measures (*Barrier 2*) form barriers to the integration of climate adaptation. These barriers can, nevertheless, be regarded as arguments in favour of the statement that governments should mainstream climate adaptation into policy. In fact, mainstreaming can ensure more efficient and effective use of spatial, financial and human resources compared to a situation where climate policy design, implementation and management are separate from ongoing activities (in other policy areas). Ultimately, the lack of knowledge about adaptation measures *(Barrier 4)* was experienced as a major barrier. The study showed, that he development of knowledge about specific climate adaptation measures is expected to solve most of the previously mentioned barriers.

Through case studies, it has been further investigated how three provincial sectors deal with the main barriers arising from this study. Since, the extent to which climate adaptation is integrated within the policy sectors differs, it can also be concluded that the barriers encountered are dealt with in different ways. In other words, these factors are not limited to sectors that are not yet actively involved in integrating climate adaptation. The policymakers from all three sectors experience the barriers to be hindering the sectoral integration of climate adaptation. Whereas the energy sector faces most challenges, the agriculture and the building sector already attempt to minimize them. They try to include climate adaptation objectives into their policy documents to give it more weight and, in some parts, even come up with specific climate adaptation measures. As a result, some indications are made about the allocation of financial means towards the subject, as well as the attempt to minimize contradictions with other sectoral objectives. It can be concluded that this differences between sectors can also explain the difference in the degree of integration of climate adaptation.

The results of the comparative case study contribute to the scientific knowledge about the creation of successful mainstreaming processes. Based on the empirical analyses, it can be concluded that it is easier to realize adaptation measures when they are linked to other sectoral developments (such as to energy transition). In addition, insights into the benefits of the adaptation measures is, in particular, of great importance. This could also include visualizing future (financial) damage that is prevented thanks to adaptation measures. By directly or indirectly integrating climate adaptation into sectoral plans and programs, the potential consequences of climate change would become a systematic consideration in the provincial policy. Linking climate adaptation to other issues within sectoral development can then prevent or mitigate potential climate change-related problems and can increase the efficiency and effectiveness of sectoral decisions.

Finally, a link can be made within the two concepts of policy integration and barriers. Within this research it was outlined that the differences in adaptation activities and the extent to which climate adaptation is integrated within the sectors are influenced by certain barriers. The classifications of barriers can therefore partly be related to the criteria of policy integration:

- *Inclusion*: capacity-related barriers (finances and personnel) and to a lesser extent institutional barrier (access to various instruments)
- *Consistency*: institutional barriers (powers and legal obligations)
- *Weighing*: social and cultural barriers (problem recognition and urgency awareness) and political barriers (political support)
- *Resources*: cognitive impediments (knowledge and (in) certainties)

Finally, it can be said, that climate adaptation mainstreaming within the Province of Utrecht happens only to certain extent, and much room remains for the further mainstreaming of the subject. This study can, therefore, be considered as a foundation for the assumption that climate adaptation is not yet an integral part of the provincial This contributes to current scientific knowledge about the status of the concept of mainstreaming.

6. Limitations of the research

Through this research, it was attempted to contribute to the scientific knowledge about mainstreaming climate adaptation in the provincial policy. Although new insights have been developed on the basis of this research, in particular about the mainstreaming processes, the findings of this study also have some limitations that should be borne in mind.

The first limitation concerns the sample drawn from the policymakers of the Province of Utrecht. Due to the incomplete overview of all policymakers, it was not clear how the population should be delineated. Consequently, the resulted into an unclear picture of the size of the population. It was, therefore, decided to only take policymakers into account, that are seen as climate ambassadors within their own policy sector. This sample might however not present the general or appropriate population concerned and can, therefore, be regarded as a limitation for this study, also known as sample bias or selection bias.

A second limitation of this study concerns the content of the questionnaire that was drawn up in the context of the survey study. As the questionnaire consists of questions related to specific sectors, it was not possible for policymakers to participate that work on other subjects that are not related to one specific sector or to several sectors simultaneously. This resulted in a lower number of respondents and can, therefore, be considered as a shortcoming of the survey research. Furthermore, after conducting the survey, it became evident that the number of questions asked per criterion from the policy integration theory differed. Therefore, some of the criteria were analysed in a more extensive way than others, which made it difficult to analyse the degree of integration.

7. Suggestions for further research

Until now, mainstreaming of climate adaptation has been considerably promoted by researchers, but scientific literature has paid limited attention to the functioning of the mainstreaming processes. The expert interviews and the survey study have provided an 'overall' exploratory picture of the extent to which the Province of Utrecht has integrated climate adaptation into its policy. Subsequently, the three case studies provided in-depth knowledge about how specific provincial policy sectors deal with the barriers to climate adaptation integration. Although this research contributes to the scientific literature on mainstreaming and associated barriers, the subject remains relatively underexposed and further research is necessary in order to achieve a practical effect of mainstreaming.

A first recommendation is to conduct additional research into other policy sectors that are more advanced with the climate adaptation integration process. These 'success-stories' could ultimately result in useful practical examples on how to deal with the barriers to the integration of climate adaptation.

The second recommendation is aimed at further investigation about the effect of barriers. This study has indeed identified the extent to which certain barriers are perceived as hindering factors, but it is largely unclear how the factors in question are interrelated.

8. Recommendation to the climate adaptation team

In the context of the survey study, the respondents indicated that they see an important role for the climate adaptation team in the mainstreaming of climate adaptation within sectoral policy. Respondents were also able to indicate how the climate adaptation team could contribute to this. Since this study was partly conducted on behalf of the climate adaptation team, this chapter provides a number of recommendations on how the team can contribute to the mainstreaming of climate adaptation within the provincial policy.

8.1. Climate adaptation as a sectoral approach

Since climate adaptation cannot be integrated into all policy sectors at once, the most feasible and urgent policy developments should be identified in order to prevent short and long-term impacts. Following this, where socio-economic benefits are clearly higher than costs, adaptation measures should be considered next. An option would be to start with 'no regrets' and 'win-win' adaptation measures. The first one is very likely to provide economic benefits regardless of the extent of future climate change, whereas the latter one can help to address not only climate change but also other (sectoral) issues.

In order to make policy themes more climate-driven, it is important to specify the general and the somewhat vague term 'climate adaptation' and to link it to the relevant policy domain. This approach can also be called 'sector-oriented appointment'. A first step is to include the term 'climate adaptation' more within sectoral plans and policy documents. Since this is often not enough, a way to increase the feeling of urgency and recognizability for the subject it is advisable to conduct regular 'climate stress test' and 'risk dialogues. As a result, the

provincial policymakers would feel more involved and can relate better to the subject since it is directly related to their policy work.

Although climate adaptation is an integral topic and recognized as an 'item' in some of the policy sectors, there is a risk that the climate challenges and measures will not be considered in an integrated manner. Viewing that individual adaptation measures can lead to inefficiency or shifting of problems, efforts should be made to facilitate interaction, coordination and create a common understanding of climate adaptation across other sectors.

8.2. Reframing climate adaptation as an 'opportunity'

Due to the doubts about the cost-effectiveness and efficiency, and the exact benefits of adaptation measures in the short and long-term, it is expected that the sectors are less likely to invest in climate adaptation. Therefore, more attention should be paid to informing policy makers about the substantive added value of the subject. The focus should, however, not be (purely) on the one-off short-term investment, but more attention should be paid to the longer-term benefits (such as the limitation of damage to space and the improvement of public health) and thus to validating risks in the future. An active effort should be made to promote adaptation measures that have synergies with other sectoral objectives, for example, by illustrating win-win solutions and innovations which might provide new opportunities.

Besides that, it seems strategically sensible to approach the adaptation mainstreaming from an even broader approach, such as that measures could enhance the quality of life and increase the sustainability or living environment quality. Therefore, adaptation measures do not only ensure adaptation of space to climate change but also, for example, result in a more attractive and healthier living environment. If possible, financially support could help to give an incentive to the integration of climate adaptation within policy sectors in the first phase of mainstreaming of climate adaptation. However, success often lies in the combination of financial support and knowledge as well as personnel capacity.

8.3. Specified adaptation measures, obligatory and legal instruments

Preparing policy sectors to successfully adapting to climate change requires a certain level of knowledge on climate adaptation measures. Therefore, the development and pooling of knowledge for implementation practice are necessary for effective and efficient adaptation to climate change. The policymakers of each sector should, therefore, be supported in identifying sectoral developments where climate adaptation measures would be needed. Subsequently, in cooperation with climate adaptation experts, context-specific adaptation measures can be developed and further implemented, in the form of concrete tools, such as guides, work sessions and other information systems.

Besides technological, managerial, and behavioural strategies, also obligatory and legal instruments play an important role in adaptation mainstreaming. Most importantly, they can facilitate the mainstreaming process by using regulations to reduce sensitivity to climate risks, develop a legal framework for new market mechanisms and make provincial and sectoral budget available. Finally, it can ensure the accountability of adaptation decisions and

provides an incentive for policymakers and developers in non-climate policy sectors to further integrate the subject.

8.4. Emphasis on climate adaptation assessment and evaluation

Even though adaptation mainstreaming is still in its infancy and reporting of the subject does not take place yet, it is, therefore, even more important to develop monitoring tools. These tools help to evaluate climate adaptation strategies and measures and can give an indication about whether certain climate adaptation goals have been achieved or need further improvement. Ultimately, this can lead to continuous optimization of the adaptation mainstreaming process. Therefore, the development of methodologies and arrangements to implement continuous monitoring of climate adaptation in sectoral development and of relevant regions are highly recommended.

8.5. A role as an advisor

Ultimately, it can be recommended that the climate adaptation team should profile itself as an adaptation advisor. This can take form, for example, in terms of providing knowledge, expertise and tools about tailor-made climate adaptation measures in the respective policy sector. The organization of sector specific working groups with external experts, that are specified in specific climate adaptation measures, would be another task. These workshops would enable the sharing of knowledge and the development of tailor-made solutions. Furthermore, provincial programs often overlap, so more communication and coordination need to be facilitated by developing a clear and structured communication strategy for (internal) provincial colleagues and (external) regional partners.

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Appendix

Appendix 1 - Overview of barriers

Author	Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012	
Categorisation of factors	Two phases. Three categories	
Factors/ Barriers	Problem recognition *Resources* • Lack of resources • Budget cuts *Political/institutional* • Competition from other planning problems • Lack of political will (short-term politics) • Lack of pressure from citizens or NGOs • No clarity about responsibilities for adaptation/framing adaptation as a private problem • Institutional fragmentation *Nature of the problem* • Denial of climate change (climate cynics) • Lack of insight into local impacts/difficulties in translating climate change to the local level • Uncertainties in scientific evidence • Unawareness of the issue	Development of adaptation plans *Resources* • Lack of insight into possible adaptation measures • Lack of resources (in particular for small municipalities) • High costs/budget constraints *Political/institutional* • No problem recognition or sense of urgency • Not clear who should finance adaptation (or how) • Distribution effects (winners/losers) • No clarity about responsibilities for adaptation • Lack of cooperation from actors within the organization or outside it/lack of possibilities to steer these internal and external actors • Lack of public or political support • Institutional fragmentation/complexity • Competition from other planning problems *Nature of the problem* • Path dependency (e.g. contracts with project developers that need to be reopened) • Inflexibility of urban area and high costs associated with adapting existing buildings and public space

Author	Moser & Ekstrom, 2010		
Categorisation of factors	Three phases		
Factors/ Barriers	Understanding phase *Problem detection and awareness raising* • Existence of a signal • Threshold of concern (initial framing as problem) • Detection (and perception) of a signal • Threshold of response need and feasibility (Initial framing of response) *Information gathering and use to deepen problem understanding* • Interest and focus (and consensus, if needed) • Accessibility • Credibility and trust Legitimacy • Availability • Receptivity to information • Salience/relevance • Willingness and ability to us *Problem (re)definition* • Threshold of concern (reframing of the problem) • Threshold of response need • Threshold of response feasibility • Level of agreement or consensus, if need	Planning Phase *Development of adaptation option(s)* • Leadership (authority and skill) in leading process • Ability to identify and agree on goals • Ability to identify and agree on a range of criteria • Ability to develop and agree on a range of options that meet identified goals and criteria • Control over process • Control over options *Assessment of option(s)* • Availability of data/information to assess options • Accessibility/usability of data • Availability of methods to assess and compare options • Perceived credibility, salience, and legitimacy of information and methods for option assessment • Agreement on assessment approach, if needed • Level of agreement on goals, criteria, and options *Selection of option(s)* • Agreement on selecting option(s), if needed • Sphere of responsibility/influence/control over option • Threshold of concern over potential negative consequences • Threshold of perceived option feasibility • Clarity of authority and responsibility over selected option	Managing Phase *Implementation of the selected option(s)* • Threshold of intent • Authorization • Sufficient resources (fiscal, technical, etc.) • Accountability • Clarity/specificity of option • Legality and procedural feasibility • Sufficient momentum to overcome institutional stickiness, path dependency, and behavioral obstacles *Monitoring the environment and outcome of the realized option(s)* • Existence of a monitoring plan • Agreement, if needed, and clarity on monitoring targets and goals • Availability and acceptability of established methods and variables • Availability of technology • Availability and sustainability of economic resources • Availability and sustainability of human capital • Ability to store, organize, analyse, and retrieve data *Evaluation* • Threshold of need and feasibility of evaluation • Availability of needed expertise, data, and evaluation methodology • Willingness to learn Willingness to revisit previous decisions • Legal limitations on reopening prior decisions • Social or political feasibility of revisiting previous decisions

Author	Uittenbroek, Jansesen-Jansen & Runhaar, 2013
Categorization of factors	
Factors/ Barriers	Ecological and physical limits • related to the possible limited adaptive capacity of natural systems Technological barriers • related to the possible incapability of technologies to be transferable as well as some technologies might be thought to be cultural undesirable or economically infeasible Financial barriers • refer overall to the lack of resources for both addressing adaptation and possible damage Informational and cognitive barriers • related to the uncertainty, complexity and lack of knowledge regarding the topic of climate change and the need for adaptation Social and cultural barriers • resulting from the differences in the worldviews, values and beliefs of individuals or groups

Name Author	Van den Berg M., 2011	
Categorization of factors/ barriers		
Factors/ Barriers	Determining factors • Experience with flooding • Suffiencit resources • Political interest • Cooperation with other governments and partners • Awareness of climate risks	Barriers • Lack of knowledge about the effects of climate change • Lack of local support • Lack of manpower • Lack of political interest • Lack of resources

Name Author	Van den Berg, 2009	Measham, et al., 2011	Adger, et al., 2007
Categorisation of factors/ barriers			
Factors/ barriers	• Sceptical colleagues • Lack of interest in climate change • Difficulties involved in cooperation between different departments and domains • Certain sense of urgency • Lack of capacity (time and personnel) to implement climate adaptation actions • Insufficient political support • uncertainty about the functionality of the most effective adaptation solutions • division of responsibility of investment • Lack of interest in climate change • Lack of knowledge • A lack of effective instruments • Uncertainties of climate-change impacts • A lack of national financial support • The lack of usability of the provincial climate scenarios to use at a local scale • Limited attention to climate adaptation	• Lack of information • Institutional limitations • Resource constraints	• Physical and ecological limits • Technological limits • Financial limits • Informational and cognitive barriers • Social and cultural barriers

Name Author	Van den Berg, 2010	
Categorisation of factors/ barriers	External and internal conditions	
Factors/ barriers	<u>Internal factors of institutional capacity</u> • N*o* internal and political sense of urgency • No means • Knowledge shortage	<u>External conditions</u> • No obligatory character • No public sense of urgency • Scope of the scenarios / lack of visualising the climate change problem

Name Author	Biesbroek, Termeer, Kabat, & Klostermann, 2011		
Categorisation of factors/ barriers	Clustering of barriers and description ranking of barriers		
Factors/ barriers	Clusters of barriers to adaptation • Conflicting timescales • Substantive, strategic, and institutional uncertainty • Institutional crowdedness andinstitutional voids • Fragmentation • Lack of awareness and communication • Motives and willingness to act • Resources	Ten highest ranked barriers to adaptation 1. Labelling traditional measures as climate adaptation strategies 2. Climate change adaptation is dominated by water management and land use planning 3. Little confidence that climate adaptation will prove successful 4. Insufficient scientific research on climate change adaptation 5. Many people think they are climate experts 6. Insufficient time to get involved in climate adaptation 7. Too many people are involved in developing adaptation strategies 8. Only few adaptation options available 9. People with different backgrounds participate in adaptation discussions 10. Few technological measures	Ten lowest-ranked barriers to adaptation 1. Labelling traditional measures as climate adaptation strategies 2. Conflicting interest between involved actors 3. Unclear societal costs and benefits of adaptation measures 4. Little finance reserved / available for implementation 5. Lack of awareness of the need to adapt 6. Short term attention to other urgent policy issues 7. No safeguarding of adaptation for future policymaking 8. Dependency in decision making on other actors 9. Existing policies do not include the long-term impacts of climate change 10. Passive attitude of many policy makers

Name Author	Biesbroek G., Termeer, Kabat, & Klostermann, 2009		Russel et al. 2015
Type of factors	Variables influencing policy processes on climate change adaptation		Institutional barriers that can affect the integration of climate adaptation
Categorisation of factors			Micro (*Individual behaviour)*, meso (*Organizational rules and dynamics)* and macro scale (*Wider social context and political context)*
Factors	Material factors • Technical factors • Physical-Ecological factors • Economic factors	Social factors • Institutional factors • Actor specific factors	Micro • Expertise, professional background, timeframes, awareness, understanding, networks Meso • Informal and formal established procedures, core objectives of an organizational unit, incentives, organizational competition Macro

	• Broader societal values, dominant political discourses (fringe and core issues

Appendix 2 - Categorization of barrier

Category	Barriers	Sources
Capacity-related barriers	Lack of financial resources for climate adaptation	Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012; Van den Berg, 2009; Adger, et al., 2007
	Lack of human capacity for climate adaptation	Uitenbroek, Jansesen-Jansen & Runhaar, 2013; Van den Berg. M, 2009
Technological barriers	Limited number of effective adaptation possibilities	Uitenbroek, Jansesen-Jansen & Runhaar, 2013; Van den Berg M., 2011; Van den Berg. M, 2009
Cognitive barriers	Uncertainty over cost/benefits of climate adaptation	Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012; Uitenbroek, Jansesen-Jansen & Runhaar, 2013;
	Lack of knowledge over vulnerable places on a regional/local scale	Van den Berg M., 2011; Van den Berg. M, 2010; Moser & Ekstrom, 2010; Biesbroek, Termeer, Kabat, & Klostermann, 2011; Russel et al. 2015
	Lack of useful climate scenarios for the regional/local scale	Van den Berg, 2011; Van den Berg., 2010
	Lack of knowledge about possible measures for climate adaptation	Van den Berg M., 2009; Van den Berg, 2010; Van den Berg, 2011; Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012
	Uncertainty about the effect of climate change	Biesbroek, Termeer, Kabat, & Klostermann, 2011; Uittenbroek, Jansesen-Jansen & Runhaar, 2013; Van den Berg M., 2009
	Lack of awareness of the need to adapt	Russel et al. 2015; Biesbroek, Termeer, Kabat, & Klostermann, 2011; Van den Berg, 2010; Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012
	Low threshold of concern	Moser & Ekstrom, 2010
	Passive attitude of many policy makers	Biesbroek, Termeer, Kabat, & Klostermann, 2011
Social and cultural barriers	Lack of regional support	Uitenbroek, Jansesen-Jansen & Runhaar, 2013
	Lack of problem recognition within the organisation	Van den Berg. M, 2010, Jansesen-Jansen & Runhaar, 2013; Van den Berg M., 2009
	Lack of sense of urgency within the organisation	Van den Berg. M, 2010, Jansesen-Jansen & Runhaar, 2013; Van den Berg M., 2009
	Conflicting interest between actors	Biesbroek, Termeer, Kabat, & Klostermann, 2011

Political and institutional barriers	Lack of effective instruments	Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012; Moser & Ekstrom, 2010
	Lack of political support/interest	Van den Berg M., 2011; Van den Berg. M, 2009
	Lack of incentives to implement climate adaptation	Biesbroek, Termeer, Kabat, & Klostermann, 2011; Russel et al. 2015
	Inadequate cooperation and communication between other sectors within the organisation	Van den Berg, 2009; Van den Berg, 2010, Jansesen-Jansen & Runhaar, 2013
	Lack of clarity on responsibilities in climate adaptation (and its investment)	Moser & Ekstrom, 2010; Van den Berg, 2009
	Competition from other planning problems	Russel et al. 2015; Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012
	Not clear who should finance adaptation (or how)	Russel et al. 2015; Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012; Biesbroek, Termeer, Kabat, & Klostermann, 2011.
	Dependency in decision making on other actors	Biesbroek, Termeer, Kabat, & Klostermann, 2011; Runhaar, Mees, Wardekker, Van der Sluijs & Driessen, 2012.

Appendix 3 - Code book

Appendix 3.1. Coding scheme: Policy documents

Theme	Code	Description	Example	Nr. Of codes used
Policy integration	*Inclusion*	Document states to what extent direct as well as indirect climate change adaptation impacts are covered	Een voorbeeld is het opvangen van neerslag na hoosbuien (piekberging). In het veenweidegebied kunnen boerenland beschikbaar stellen (blauwe dienst) als tijdelijk retentiegebied (Agenda Vital Countryside p. 50)	61
	Consistency	Document states that contradictions between the aims related to climate change adaptation and other policy goals are assessed and efforts are mentioned to minimize revealed contradictions	Natuur inclusieve landbouw draagt zo bij aan behoud en herstel van de biodiversiteit, duurzaam bodembeheer, een lagere milieubelasting, betere waterkwaliteit en hogere landschapskwaliteit. (Agenda Vital Countryside p. 38)	55
	Weighing	Document states the relative priorities of climate change adaptation impacts compared to other policy aims and procedures are determined for determining the relative priorities	Juist op momenten dat geïnvesteerd wordt in de transformatie c.q. aanpak van vastgoed en de bijbehorende openbare ruimte, ligt er ook een kans om te onderzoeken welke mogelijkheden er zijn om andere opgaven aan te pakken. Opgaven zoals energietransitie en klimaatadaptatie1, andere of betere mobiliteit en infrastructuur en verbetering van gezonde leefomgeving hebben wij bij gebiedsontwikkelingen altijd in beeld. (Inner city program, p. 9)	45
	Reporting	Document states clearly the evaluation and reporting requirements for climate change adaptation impacts (including deadlines) ex ante and has such evaluations and reporting happened ex post	No example available	0
	Resource	Document states internal as well as external know- how about climate change adaptation impacts and mentions resources that are provided for climate adaptation efforts	No specific example since climate adaptation is not yet explicitly named within the budget of policy documents.	9

Appendix 3.2. Coding scheme: Expert interviews

Theme	Code	Description	Description	Nr. Of codes used
Climate adaptation within the Province of Utrecht	*Role Province*	Interviewee mentions the extent to which the topic of climate adaptation is by the Province	Als het besef van urgentie laag is, is het moeilijk om klimaatadaptatie in een beleidssector te integreren.	32
	Internal integration	Interviewee mentions general provincial policy plans, programs and action that influence the climate adaptation integration. Furthermore, specific he or she provide examples about already existing provincial climate adaptation activities	Het doel van de stresstests was om een bewust gevoel en de noodzaak van aanpassing aan klimaatverandering te vergroten, maar ook om een gemeenschappelijk perspectief te bereiken voor de regionale aanpassingsuitdagingen.	41
	Role climate adaptation team	The interviewee outlines the role of the climate adaptation team in the integration of climate adaptation within the Province.	De uitdaging is om [klimaatadaptatie] zo eenvoudig mogelijk te maken, zodat mensen het begrijpen en het gemakkelijk kunnen toepassen in hun eigen werk.	11
	Climate adaptation program	The interviewee outlines the way in which the climate adaptation team contributes to the integration of climate adaptation within the provincial policy...	"Als je geen geld hebt, ben je een minder interessante gesprekspartner [en dat betekent dat] deze financiële middelen erg belangrijk zijn om iets tastbaars te maken."	27
	Sectoral approach	The interviewee mentions how climate adaptation is already integrated within the provincial sectors.	"Sectoren en beleidsterreinen verschillen sterk in hun relatie tot klimaatverandering. Hierdoor verschilt ook het besef van urgentie voor klimaatadaptatie. [Uiteindelijk] moet klimaatadaptatie worden geïntegreerd in (bijna) alle beleidssectoren. De benaderingen verschillen dan per sector, vanwege de inhoudelijke verschillen."	15
	Barriers	The interviewee mentions and outline barriers to the integration of climate adaptation within the Province and provides some indications on how these barriers can be solved.	De [sectorale financiële] budgetten zijn in de provincie nog te gescheiden. Maar ze moeten veel meer samenkomen. Ook dat moet meer integraal worden aangepakt, zodat de kosten sowieso lager zijn.	27

Appendix 3.3. Coding scheme: Policy makers

Theme	Code	Description	Example	Nr. of codes used
Policy integration	*Inclusion*	Interviewee mentions the extent direct as well as indirect climate change adaptation impacts are covered	*"Klimaatadaptatie is pas sinds kort een legitiem en belangrijk onderwerp voor de energiesector […] maar ik denk dat veel van de doelen die we hebben in lijn zijn met de doelen voor klimaatadaptatie."*	57
	Consistency	Interviewee mentions that contradictions between the aims related to climate change adaptation and other policy goals are assessed and efforts are mentioned to minimize revealed contradictions	"Zou niet alleen een win-winsituatie creëren voor de landbouwsector zelf, maar zou ook bijdragen tot de doelstellingen van klimaatadaptatie."	37
	Weighing	Interviewee mentions the relative priorities of climate change adaptation impacts compared to other policy aims and procedures are determined for determining the relative priorities	"Er moet binnen de energiesector meer aandacht komen voor dit onderwerp, zeker als er beslissingen worden genomen over specifieke sectorale ruimtelijke maatregelen en middelen worden toegewezen."	41
	Reporting	Interviewee mentions clearly the evaluation and reporting requirements for climate change adaptation impacts (including deadlines) ex ante and has such evaluations and reporting happened ex post	No example available	0
	Resource	Interviewee mentions internal as well as external know-how about climate change adaptation impacts and mentions resources that are provided for climate adaptation efforts.	"Een dak kan verschillende functies hebben, het kan energie leveren, maar ook helpen om de biodiversiteit te vergroten en de temperatuur van de omgeving te verlagen."	35
Physical barriers	High costs	The high costs associated with adapting the existing space	"De earn-outs pas na een langere periode zichtbaar worden. Terwijl klimaatmitigatie, berekeningen kunnen worden gemaakt binnen een tijdsbestek van 5-10 jaar."	25
Capacity-related barriers	Lack of financial means	The lack of financial means to implement adaptation measures.	"De kosten van maatregelen voor klimaatadaptatie zijn niet erg duidelijk en dat geldt ook niet voor de financiële schade die het kan voorkomen. Het blijft daarom moeilijk om budget beschikbaar te stellen voor maatregelen op het gebied van klimaatadaptatie [maar] Als er inzicht is dat klimaat adaptieve maatregelen iets opleveren, dan is daar geld voor."	36

Cognitive barriers	Uncertainty about social costs and benefits	Uncertainty about social costs and benefits of adaptation measures	“De nadruk moet liggen op andere positieve neveneffecten, zoals de toename van de biodiversiteit, het verkoelende effect op het milieu en de functie als iets wat het CO2 uit de lucht opneemt. Het laatste kan van grote waarde zijn voor de sector om de CO2-uitstoot verder terug te dringen”	56
	Lack of awareness	Lack of awareness of the need to adapt	“Extreme weersomstandigheden worden steeds erger, die ook in de energiesector grote schade aanrichten, zoals stroomuitval of ICT-storingen. [Daarom] kan de impact van klimaatverandering niet worden genegeerd en de urgentie om zich aan te passen neemt dus toe.”	59
	Inadequate knowledge	inadequate knowledge about adaptation measures	“Het is noodzakelijk om een overzicht te hebben over klimaatadaptatiemaatregelen voor de gebouwde omgeving, [en] het is belangrijk om te weten wie ik dan erbij moet halen”	53
Political and institutional barriers	Lack of tools to enforce measures with private parties	lack of effective tools to enforce climate adaptation with private parties (developers, housing associations, etc.)	“Als het politiek besluit om een ander onderwerp belangrijker te maken (zoals klimaatmitigatie), is er geen ruimte meer om ook andere provinciale ambities in overweging te nemen ambitions.”	35
	Lack of legal obligations	Lack of legal obligations (such as rules, laws, regulations etc.) to structurally take climate change effects into account in decision-making procedures	“Er zijn geen wettelijke verplichtingen aangaande klimaatadaptatie. Daarom is de druk vrij laag om op te nemen in sectorplannen en programma's.”	23
	Competition with policy topics	competition with other spatial and sectoral policy topics that receive more attention in the short term (e.g. money, support, media)	“De toewijzing van het budget hangt af van de sectorale prioritering van onderwerpen. Sommigen van hen hebben ook een verbinding met de ontwikkeling van duurzame, natuur inclusieve en circulaire landbouwinitiatieven.”	38
Climate adaptation team	Role climate adaptation team	Indications about the role of the climate adaptation to support the integration of the sectoral adaptation integration	“Het uitwisselen van projecten als winst tussen gemeenten op het gebied van klimaatadaptatie. En wij moeten deze coördinatie faciliteren vanuit de provincie en daarvoor hebben we het team klimaatadaptatie nodig.”	41

Appendix 4 - Announcement mail

EMAILS
Betreft: Aankondigingsbrief beleidsmedewerker provincie Utrecht
Beste collega,
We laten op dit moment onderzoek doen op welke manier klimaatadaptatie al in provinciaal beleid is opgenomen of dit kan worden bevorderd en zo ja hoe. Het verankeren van klimaatadaptatie in het provinciaal beleid is één van de hoofddoelen van het Programma Klimaatadaptatie dat inmiddels ter besluitvorming is voorgelegd aan GS en daarna PS. Het onderzoek wordt uitgevoerd door Kira Schäfers, vanuit de Radboud Universiteit. Kira loopt stage bij het team klimaatadaptatie. Haar onderzoek (voor haar het afstudeerproject) is voor ons programma belangrijk omdat we dit zien als een 0-meting: hoe is op dit moment, aan de start van de programmaperiode, de stand van zaken.
Kira gaat jou benaderen en een vragenlijst voorleggen. Meer uitleg over het onderzoek volgt in haar mail en over hoeveel tijd het kost etc. Zou jij dit willen invullen of dit willen vragen aan een collega om te doen? Het zou ons en Kira erg helpen.
Met vriendelijke Groet,

Appendix 5 - Survey mail

Betreft: 0-meting klimaatadaptatie provincie Utrecht: help je mee?
Beste collega,
Onlangs is door Wietse Visser en/of Stef Meijs aangekondigd dat we vanuit het team klimaatadaptatie bezig zijn met een onderzoek naar de mate van verankering van klimaatadaptatie in de verschillende sectoren van de provincie. In deze mail ben je vriendelijk verzocht deel te nemen aan dit onderzoek. De provincie Utrecht heeft het afgelopen jaar al flink geïnvesteerd in de integratie van klimaatadaptatie binnen andere beleidsvelden. Het is belangrijk inzicht te krijgen in de mate waarin sectoren aan de slag zijn gegaan (of gaan) met klimaatadaptatie en welke belemmeringen zij hierbij ondervinden. Dat is ook belangrijk om te weten als vertrekpunt voor het Programma Klimaatadaptatie en helpt daarnaast meteen bij het richting geven aan de uitvoering van het programma. Je bent als beleidsmedewerker werkzaam in een beleidsveld waar de verbinding met het onderwerp klimaatadaptatie aan de orde is. Daarom word je benaderd om door middel van een elektronische vragenlijst een bijdrage te leveren aan dit onderzoek.
Via onderstaande link word je doorverwezen naar de vragenlijst. Het invullen ervan zal ongeveer 10 minuten van jouw tijd in beslag nemen. Bij de presentatie van de resultaten van dit onderzoek is jouw anonimiteit gewaarborgd. **Er wordt veel waarde gehecht aan jouw deelname aan dit onderzoek.** De resultaten vormen namelijk input voor toekomstig adaptatiebeleid van de provincie. Dit beleid is ook gericht op de klimaatbestendige inrichting van jouw sector. Indien je geïnteresseerd bent in de resultaten van het onderzoek, word je hier vanzelfsprekend op de hoogte gesteld.

Appendix 6 – Interview guides

Appendix 6.1. – Interview guide external experts

Thema	Onderwerpen & vragen	Voorbeeld vragen
Introductie	*Thema en kader van dit onderzoek*	*Nogmaals hartelijk bedankt dat je hiervoor tijd hebt kunnen maken. Ik doe een onderzoek naar de mate van verankering van klimaatadaptatie binnen de provincie Utrecht. De provincie Utrecht heeft het afgelopen jaar al flink geïnvesteerd in de integratie van klimaatadaptatie binnen andere beleidsvelden. Het is dus belangrijk een inzicht te krijgen in de mate waarin sectoren aan de slag zijn gegaan (of gaan) met klimaatadaptatie en welke belemmeringen zij hierbij ondervinden.*
	Doel en tijd van het interview	*Het doel van dit interviews is om een inzicht te krijgen hoe het met klimaatadaptatie op dit moment in Nederland gaat en hoe klimaatadaptatie bij provincies en het provinciaal beleid meegenomen wordt.*
	De bescherming van je gegevens	*Dit interview wordt alleen gebruikt voor mijn scriptie – het is mogelijk dat ik je citeer, maar ik zal je anoniem houden als je dat wilt. Ik zal alleen gegevens delen met mijn begeleiders (een van Provincie Utrecht, een van Radboud Universiteit) en ik zal deze veilig opslaan. Je mag er altijd voor kiezen om een vraag niet te beantwoorden en je mag op elk moment intrekken als je dat wil. Ik stuur je graag het transcript en / of de opname van het interview achteraf, als je wilt, en natuurlijk deel ik graag de uiteindelijke scriptie.*
	Wat gaat met de gegevens gebeuren *Toestemming om op te nemen*	*Dit interview duurt ongeveer 45 minuten - 1 uur*. Geef je toestemming om opgenomen te worden? *Dit zal me helpen om de gegevens later te analyseren en zoals eerder vermeld, zullen ze alleen worden gebruikt voor dit onderzoek.* Heb je nog vragen voordat we beginnen?
	Persoonlijke achtergrond, link naar klimaatadaptatie, huidige positie, verantwoordelijkheden, opende projecten, ambities, persoonlijke motivatie voor klimaatadaptatie	Kun jij mij wat meer over je werk bij … vertellen? Wat zijn jouw taken? Waar ben je het meest trots op, als het gaat om wat jouw organisatie doet op het gebied van klimaatadaptatie?
Vragen over de inhoud	*Klimaatadaptatie in het algemeen*	*Je hebt in de afgelopen jaren aan verschillenden projecten gewerkt met betrekking tot klimaatadaptatie.* Hoe gaat het met klimaatadaptatie nu in Nederland? Wat voor cijfer zou je Nederland geven op dit gebied? Zie je een verandering in de laatste jaren? Wat heeft tot een verandering bijgedragen/wat zijn de oorzaken van veranderingen? Hoe kijk jij tegen klimaatadaptatie aan? Liever een echte klimaatadaptatie sector, of toch meer focus op integratie binnen ander beleid? Blijft klimaat niet altijd een ondergeschoven kindje wanneer het enkel “geïntegreerd” wordt?

	Mijn scriptie richt zich op hoe klimaatadaptatie geïntegreerd wordt binnen beleid. Wat is jouw beeld daarvan? Gaat dit al goed? En zijn er grote verschillen per thema? Hoe zie jij de sterke focus van Nederland op watermanagement en dus op water. Zijn andere onderwerpen ondergeschikt?
Provincie en klimaatadaptatie	*Overheden hebben een belangrijke rol in het inrichten van de ruimte. Om Nederland zo goed mogelijk voor te bereiden op extremer weer heeft de Rijksoverheid de Nationale Klimaatadaptatie Strategie opgesteld. Hierin vraagt het Rijk alle provincies het voortouw te nemen bij het opstellen van regionale klimaatadaptatiestrategieën.* Wat is de rol van de provincies bij klimaatadaptatie? Wat is je indruk hoe het binnen de provincie op het gebied van klimaatadaptatie gaat? Zijn er verschillen bij de provincies? En als ja, in hoe ver verschillen ze, en waarom? Hoe werkt de samenwerking tussen Provincies en…? Heb je specifieke voorbeelden van samenwerking met de provincie Utrecht?
Integratie van klimaatadaptatie in het provinciaal beleid	*Ook zijn er afspraken gemaakt in het Deltaplan Ruimtelijke adaptatie, waarin alle overheden hebben afgesproken dat klimaatadaptatie in 2020 onderdeel wordt in hun beleid, dat geldt ook voor de provincies.* Hoe ziet de uitvoering van klimaatadaptatiebeleid binnen de provincies eruit? Zijn er grote verschillen **per sector**? Voor welke sectoren worden jullie het meest om advies gevraagd? *Voor veel beleidsmaker is klimaatadaptatie nog steeds nieuw.* Is dat iets waar jij je zorgen over maakt? Hoe kan zo'n groot probleem voor zoveel (beleid)mensen nog steeds zo onbekend zijn? Hoe kan klimaatadaptatie in beleid integraal meegenomen worden? Hoe wordt de sectorgerichte aanpak meer klimaat sturend? *Klimaatadaptatie raakt veel verschillende sectoren, van bouw, infrastructuur, landbouw, natuur tot met energie en IT. Je kunt niet alles tegelijkertijd doen.* Hoe maak je keuzes in de integratie van klimaatadaptatie? Waar ligt de focus op dit moment van …, en welke rol spelen de provincies in jullie focus? Bij welke sectoren zie je de meeste kansen om klimaatadaptatie in beleidsdocumenten en uitvoeringsprojecten mee te kunnen nemen? *Omdat klimaatadaptatie vrijwel alle beleidssectoren raakt, betekent dat ook dat je met veel verschillenden mensen te doen hebt.* Wat voor strategieën zijn er om klimaatadaptatie een onderdeel te laten worden bij het werk van alle beleidsmedewerkers? Wat voor mensen heb je daarvoor nodig?

	Belemmeringen voor de integratie van klimaatadaptatie	*Je kunt niet zomaar klimaatadaptatie in beleid integreren. Voor veel beleidsmedewerkers is klimaatadaptatie een nieuw onderwerp.* Uit jouw werkervaring wat zie je als belangrijkste belemmeringen die je (en jouw collega's) tegenkomen bij de integratie van klimaatadaptatie in (provinciaal) beleid? Waar zie je de meeste belemmeringen bij de provincie? Voor welke sectoren zie je de meeste belemmeringen? Uit mijn onderzoek blijkt, dat bepaalde factoren het moeilijk maken om klimaatadaptatie in provinciaal beleid te integreren. B.v. • Gebrek aan financiële middelen om adaptatie maatregelen te implementeren • Gebrek aan kennis over adaptatiemaatregelen • Gebrek aan maatschappelijk draagvlak om klimaatadaptatie-maatregelen te nemen • Gebrek aan wettelijke verplichtingen om klimaatverandering effecten structureel te laten meewegen in besluitvormingsprocedures • Gebrek aan effectieve instrumenten binnen uw sector om de klimaatverandering effecten structureel mee te laten wegen in besluitvormingsprocedures EN om klimaatadaptatie af te dwingen bij private partijen (ontwikkelaars, woningcorporaties etc.) • Competitie met andere ruimtelijke en sectorale beleidsonderwerpen die op de korte termijn meer aandacht krijgen (b.v. geld, steun, media) *Misschien kom jij ook dit soort belemmeringen in je werk tegen.* Hoe helpt … provincies om dit soort belemmeringen te kunnen voorkomen? Hoe zouden provincies juist ook de belemmeringen die niet kennis gericht zijn kunnen aanpakken?
End	*Einde/ Afsluiten*	Wat hoop je wat er in de komende 5-10 jaar gaat gebeuren op het gebied van klimaatadaptatie bij de provincies? Is dit doel haalbaar? Bedankt voor je tijd. Ik denk dat ik klaar ben, maar heb jij nog vragen? *Schakel de recorder uit.* Nogmaals, deze gegevens worden anoniem bewaard. Wil je dat ik het dat ik het eindresultaat van mijn scriptie met je deel?

Appendix 6.2. – Interview guide internal experts (climate adaptation team)

Thema	Onderwerpen & vragen	Voorbeeldvragen
Introductie	*Thema en kader van dit onderzoek*	*Nogmaals hartelijk bedankt dat je hiervoor tijd hebt kunnen maken.* *Ik doe een onderzoek naar de mate van verankering van klimaatadaptatie binnen de provincie Utrecht. De provincie Utrecht heeft het afgelopen jaar al flink geïnvesteerd in de integratie van klimaatadaptatie binnen andere beleidsvelden. Het is dus belangrijk een inzicht te krijgen in de mate waarin sectoren aan de slag zijn gegaan (of gaan) met klimaatadaptatie en welke belemmeringen zij hierbij ondervinden.*
	Doel en tijd van het interview	*Het doel van dit interviews is om een inzicht te krijgen hoe klimaatadaptatie in jouw beleidsveld geïntegreerd wordt en hoe er met bepaalde belemmeringen omgegaan wordt, die je bij de integratie van klimaatadaptatie tegen komt.*
	De bescherming van je gegevens	*Dit interview wordt alleen gebruikt voor mijn scriptie – het is mogelijk dat ik je citeer, maar ik zal je anoniem houden als je dat wilt. Ik zal alleen gegevens delen met mijn begeleiders (een van Provincie Utrecht, een van Radboud Universiteit) en ik zal deze veilig opslaan. Je mag er altijd voor kiezen om een vraag niet te beantwoorden en je mag op elk moment intrekken als je dat wil.*
	Wat gaat met de gegevens gebeuren *Toestemming om op te nemen*	*Dit interview duurt ongeveer 45 minuten - 1 uur*. Geef je toestemming om opgenomen te worden? *Dit zal me helpen om de gegevens later te analyseren en zoals eerder vermeld, zullen ze alleen worden gebruikt voor dit onderzoek.* Heb je nog vragen voordat we beginnen?
	Persoonlijke achtergrond, link naar klimaatadaptatie, huidige positie, verantwoordelijkheden, lopende projecten, ambities, persoonlijke motivatie voor klimaatadaptatie	Kun je me wat vertellen over je werk en je verantwoordelijkheden in het team klimaatadaptatie?
Inhoud	*Klimaatadaptatie bij de provincie Utrecht*	Wat is je indruk hoe het binnen de provincie op het gebied van klimaatadaptatie gaat? Wat voor cijfer zou je de Provincie op dit gebied geven en waarom? Zie je een verandering? (Wat heeft ertoe bijgedragen?) Wie spelen een grote rol in de integratie van klimaatadaptatie in het provinciaal beleid? Is er sprake van provinciale wetgeving die kansen geeft voor klimaatadaptatie?
	Rol van de provincie over klimaatadaptatie	Wat is de rol van de provincie als het gaat om klimaatadaptatie? Wat voor een invloed heeft het provinciaal (klimaatadaptatie) beleid op de ruimtelijke ontwikkeling?

	Integratie van klimaatadaptatie binnen het provinciaal beleid	Hoe gaat het op dit moment met klimaatadaptatie in de verschillende beleidssectoren binnen de provincie? Zijn er grote verschillen tussen de sectoren? Waarom zijn er grote verschillen/ geen grote verschillen? Welke factoren spelen hier een rol in? Welke sectoren bieden de grootsten kansen voor klimaatadaptatie? Wat voor een rol zie je voor beleidsmedewerker van andere sectoren?
	Het programma klimaatadaptatie	Op wat voor een manier helpt dit programma om klimaatadaptatie een onderdeel te maken van het provinciaal beleid? Zie je veel potentie om klimaatadaptatie verder te kunnen integreren in het provinciaal beleid? Of zie je klimaatadaptatie meer als een op zichzelf staand domein? Hoe maak je de afweging tussen het integreren van klimaatadaptatie in een ander sector, of ga je liever je eigen koers varen? Als we doorgaan op die integratie, binnen de provincie Utrecht, welke sectoren bieden de grootsten kansen voor klimaatadaptatie? Welke factoren/ wie spelen een grote rol in de integratie van klimaatadaptatie in provinciaal beleid?
Team klimaatadaptatie	*Rol in de integratie van klimaatadaptatie in het provinciaal beleid*	Welke rol heeft het team klimaatadaptatie bij de integratie van klimaatadaptatie in andere beleidssectoren? Is het meer aanbod of meer vraag gestuurd?
Belemmeringen	*Belemmeringen voor de integratie van klimaatadaptatie*	Uit jouw werkervaring bij de provincie wat zie je als belangrijkste belemmeringen bij de integratie van klimaatadaptatie? *Uit mijn onderzoek blijkt, dat de belangrijkste belemmeringen zijn:*
	Kosten en Baten van klimaatadaptatie	• *Hoge kosten die gepaard gaan met het aanpassen van de bestaande ruimte* • *Gebrek aan financiële middelen om klimaatadaptatie te implementeren* • *Onduidelijkheid over de sociale kosten en baten van klimaat adaptieve maatregelen* Hoe maak je de keuze erover in welke sectoren/projecten je investeert?
	Gebruik van Instrumenten	• *Gebrek aan <u>wettelijke verplichtingen</u> om klimaatverandering effecten structureel te laten meewegen in besluitvormingsprocedures* • *Gebrek <u>aan effectieve instrumenten</u> binnen uw sector om de klimaatverandering effecten structureel af* te dwingen bij private partijen (ontwikkelaars, woningcorporaties enz.) Welke instrumenten werken het best om beleid voor klimaatadaptatie te maken en in de praktijk ook om te zetten?
	Afwegen van klimaatadaptatie	• *Competitie met andere ruimtelijke en sectorale beleidsonderwerpen die op de <u>korte</u> termijn meer aandacht krijgen* • *Gebrek aan besef over de urgentie van adaptatie aan klimaatverandering* Op welke manier zou je klimaatadaptatie een groter onderdeel in het beleid van andere sectoren kunnen maken?
	Kennis over klimaatadaptatie	• *Gebrekkige kennis over adaptatiemaatregelen*

		Hoe zou je de kennis op het gebied van klimaatadaptatie kunnen vergroten? Elk sector heeft zijn eigen klimaatadaptieve maatregelen/ informatie nodig, hoe kom je aan deze informatie?
Team klimaatadaptatie	*Rol in het oplossen van de belemmeringen*	Hoe zou jij met het team klimaatadaptatie deze belemmeringen kunnen wegnemen en de sectoren steun geven?
Einde	*Einde/ Afsluiten*	Wat hoop je wat er in de komende 5-10 jaar gaat gebeuren op het gebied van klimaatadaptatie binnen de provincie Utrecht? Is dit doel haalbaar? Bedankt voor je tijd. Ik denk dat ik klaar ben, maar heb jij nog vragen? *Schakel de recorder uit.* Nogmaals, deze gegevens worden anoniem bewaard. Wil je dat ik het dat ik het eindresultaat van mijn scriptie met je deel?

Appendix 6.2. – Interview guide policymakers

Thema	**Onderwerpen & vragen**	**Voorbeeldvragen**
Introductie	*Thema en kader van dit onderzoek*	*Nogmaals hartelijk bedankt dat je hiervoor tijd hebt kunnen maken.* *Ik doe een onderzoek naar de mate van verankering van klimaatadaptatie binnen de provincie Utrecht. De provincie Utrecht heeft het afgelopen jaar al flink geïnvesteerd in de integratie van klimaatadaptatie binnen andere beleidsvelden. Het is dus belangrijk een inzicht te krijgen in de mate waarin sectoren aan de slag zijn gegaan (of gaan) met klimaatadaptatie en welke belemmeringen zij hierbij ondervinden.*
	Doel en tijd van het interview	*Het doel van dit interviews is om een inzicht te krijgen hoe klimaatadaptatie in jouw beleidsveld geïntegreerd wordt en hoe er met bepaalde belemmeringen omgegaan wordt, die je bij de integratie van klimaatadaptatie tegen komt.*
	De bescherming van je gegevens	*Dit interview wordt alleen gebruikt voor mijn scriptie – het is mogelijk dat ik je citeer, maar ik zal je anoniem houden als je dat wilt. Ik zal alleen gegevens delen met mijn begeleiders (een van Provincie Utrecht, een van Radboud Universiteit) en ik zal deze veilig opslaan. Je mag er altijd voor kiezen om een vraag niet te beantwoorden en je mag op elk moment intrekken als je dat wil.*
	Wat gaat met de gegevens gebeuren, Toestemming om op te nemen	*Dit interview duurt ongeveer 45 minuten - 1 uur.* Geef je toestemming om opgenomen te worden? *Dit zal me helpen om de gegevens later te analyseren en zoals eerder vermeld, zullen ze alleen worden gebruikt voor dit onderzoek.* Heb je nog vragen voordat we beginnen?

	Persoonlijke achtergrond, link naar klimaatadaptatie, huidige positie, verantwoordelijkheden, lopende projecten, ambities, persoonlijke motivatie voor klimaatadaptatie	Kun jij mij wat meer over je werk vertellen? Wat zijn de belangrijkste (politieke of maatschappelijke) uitdagingen in jouw sector? Welke rol speelt klimaatverandering in jouw werk?
Integratie van klimaatadaptatie het beleidsveld	*Mate van integratie van klimaatadaptatie in het beleidsveld met betrekking tot:* *Meenemen van klimaatadaptatie in beleidsdocumenten en projecten (beslissingen, afwegingen, prioriteit, middelen).*	Kun je mij iets vertellen over klimaatadaptatie in jouw beleidsveld? Heb je voorbeelden van projecten waar klimaatadaptatie meegenomen wordt? In hoeverre wordt klimaatadaptatie in deze projecten meegenomen? • Zijn er specifieke eisen die gesteld worden met betrekking tot klimaatadaptatie? • Worden middelen ervoor gereserveerd? • Zijn er specifieke doelen of doelstellingen met betrekking tot klimaatadaptatie? • Gebeurt naar jouw gevoel genoeg op het gebied van klimaat in je beleidsveld? • Zijn er programmaplannen, beleidsdocument of andere informatie over huidige projecten waar klimaatadaptatie een onderdeel is?
Belemmeringen bij de integratie van klimaatadaptatie	*Introductie*	*De volgende vragen gaan meer over belemmeringen bij het integreren van klimaatadaptatie in beleid. Uit de wetenschappelijke literatuur en mijn onderzoek is gebleken dat er bepaalde belemmeringen zijn die de integratie van klimaatadaptatie in beleid hinderen. Ik zou graag een aantal van belemmeringen met je willen bespreken en kijken wat voor rol ze in jouw beleidsveld/projecten/ programma's spelen en hoe ermee omgegaan wordt?*
	Kosten en baten van adaptatiemaatregelen	*In de vragenlijst die ik gehouden heb bleek dat er hoge kosten gepaard gaan met het aanpassen van de bestaande ruimte en het implementeren van klimaat adaptieve maatregelen.* Hoe duur is klimaatadaptatie voor uw beleid? Kun je aangeven hoeveel % van het projectbudget gereserveerd wordt voor klimaatadaptatie? Mocht je hier geen antwoord op weten, wat ik kan begrijpen. Is dat voor andere onderwerpen wel het geval? Heb je een idee hoe je ervoor kunt zorgen dat financiële middelen voor klimaatadaptatie binnen uw beleidsdomein een stukje groter worden? Kun je voorbeelden noemen van projecten waarin klimaatadaptatie is meegenomen en welke kosten hierbij kwamen kijken? Zijn de kosten de laatste jaren aan het af of toenemen in uw beleid? Hoe ga je om met deze kosten? In hoeverre zijn de opbrengsten (financieel en maatschappelijk) van klimaat adaptieve maatregelen inzichtelijk? Hebben jullie methoden en technieken om dergelijke business-cases te ontwikkelen? *Het is ook onduidelijkheid hoe groot de maatschappelijke kosten en baten van adaptatiemaatregelen zijn* *Gebrek aan financiële middelen om adaptatie maatregelen te implementeren*
	Gebruik van instrumenten	*Er is ook sprake van een gebrek aan effectieve instrumenten binnen sectoren om de effecten van klimaatverandering structureel mee te laten wegen in besluitvormingsprocedures.*

	Hoe wordt klimaatadaptatie meegenomen in uw beleid en uw plannen? Zijn er instrumenten om klimaatdoelstellingen inzichtelijk te maken en te meten? Kun je hiervoor voorbeelden noemen? *Gebrek aan wettelijke verplichtingen om de effecten van klimaatverandering mee te nemen in besluitvormingsprocedures?* Geldt dat ook voor klimaatadaptatie? Hoe ga jij het mogelijk maken dat klimaatadaptatie in besluitvormingsprocedures structureel mee worden gewogen?? *Als we een stap verderzetten naar de uitvoering van beleid, blijkt ook sprake te zien van een gebrek aan effectieve instrumenten om klimaatadaptatie af te dwingen bij private partijen (ontwikkelaars, woningcorporaties etc.)* Hoe zorgen jullie ervoor dat private partijen meedoen in uw beleid? Gaat dat ook goed bij klimaatadaptatie? Hebben jullie ook hier b.v. te maken met wetgeving die helpt bij het afdwingen? Zijn er subsidies beschikbaar? Wat voor andere instrumenten zouden nog kunnen helpen? (B.v. richtlijnen, workshops)
Afwegen van klimaatadaptatie	*Ook blijkt de competitie met andere ruimtelijke en sectorale beleidsonderwerpen die op de <u>korte</u> termijn meer aandacht krijgen een belemmering te zijn?* Met welke andere domeinen is klimaatadaptatie in competitie bij uw beleid? Kun je hiervan voorbeelden noemen? Hoe maken jullie keuzes/afwegingen tussen verschillende beleidsonderwerpen die van invloed zijn op jouw sector? *Het gebrek aan bewustzijn van de noodzaak om zich aan te passen?* Geldt dat ook voor jouw beleidssector? Hoe zou je de het besef voor klimaatadaptatie binnen je sector kunnen vergroten?
Kennis over klimaatadaptatie	*Tot slot blijkt dat gebrekkige kennis over adaptatiemaatregelen in de beleidssectoren een belemmeringen vormen.* Hoe gaat het met kennis over klimaatadaptatie in jouw sector? Is er iemand verantwoordelijk om klimaatadaptatie een onderdeel te maken in het beleid, programma's en projecten? Hoe komen jullie aan informatie over klimaat adaptieve maatregelen?

Rolverdeling	Team klimaatadaptatie	*Sinds begin van dit jaar is er een team voor klimaatadaptatie.* Heb je bepaalde verwachtingen aan het team? Wat zouden ze kunnen bijdragen daarmee klimaatadaptatie effectiever meegenomen wordt in je beleidssector?
	Je eigen rol	Denk je dat bij het meenemen van klimaatadaptatie de verantwoordelijkheid van de sectoren zelf is?
Einde	Afsluiten	Wat hoop/ of wat denk je, wat er in de komende 5-10 jaar zou moeten gebeuren op het gebied van klimaatadaptatie binnen jouw sector? Is dit doel haalbaar?
	Einde/	*Bedankt voor je tijd. Ik denk dat ik klaar ben, maar heb jij nog vragen?* Schakel de recorder uit. *Nogmaals, deze gegevens worden anoniem bewaard. Maar als ik de informatie in vorm van citaten in mijn scriptie zou willen terugkomen, zal ik het je nog laten weten. Ik ga dit interview transcriberen en als je dit interview nog een keer terug wilt zien kan ik dat met alle plezier doen. Ik ga je data gewoon anoniem gebruiken. Wil je dat ik het eindresultaat van mijn scriptie met je deel?*

Appendix 7 - Questionnaire

General

Q1 I work for the team/ domain/ program

…

Q2 Within the team/domain/program, I fulfil the following function

…

Q3 The activities within my position are mainly focused on (choose one)

a. Safety
b. Water and space
c. Agriculture
d. IT and Telecom
e. Recreation and tourism
f. Culture and heritage
g. Health
h. Energy
i. Infrastructure
j. Construction
k. Nature

Climate adaptation

Climate change cannot be (completely) prevented by climate mitigation. By adapting the existing space and making new developments climate proof, the possible consequences of climate change can be anticipated. This is also known as climate adaptation. Adaptation measures include the disconnection of rainwater and sewage, the realization of wadis, vegetation roofs, public green areas and retention areas. The following questions are about climate adaptation in your sector.

Q4 Within your sector, the consequences of climate change ...

a. a very urgent policy issue
b. an urgent policy topic
c. a normal policy topic, without extra urgency
d. no policy topic
e. I don't know

Q5 How important do you think the application of climate adaptation is to your sector?

a. Very important
b. Important
c. Not important
d. Not important at all
e. I don’t know

Q6 To what extent should your sector be responsible for climate adaptation?

a. Very responsible
b. responsible
c. Not responsible
d. Totally not responsible
e. I don't know

Q7 Does the sector you work for have specific policies to adapt to the effects of climate change (climate adaptation policy)?

a. Yes
b. No
c. I don't know

Climate adaptation integration
The Delta Program and the new provincial environmental vision (POVI) include the aim of making adaptation to climate change an integral part of the policy as early as 2020 (mainstream). The following questions are also about integrating climate adaptation into your policy area.

Q8 To what extent is climate adaptation already included in the policy area where you work?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

Q9 How important do you think it is that climate adaptation is a serious and structural consideration for new policy or/ and spatial development within your sector?

a. Very important
b. Important
c. Not important
d. Not important at all
e. I don't know

Q10 Are new spatial developments (restructuring, renewal, expansion, etc.) in your sector aimed at linking adaptation measures?

a. Always
b. Often
c. Sometimes
d. Rare
e. Never
f. I don't know

Q11 Can you give an example (a project, plan, strategy, procedures or approach) of how climate change has been taken into account in your policy?

...

Q12 Within your sector, there is sufficient knowledge about the consequences of climate change for this sector.

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree
e. I don’t know

Q13 Do you have sufficient knowledge about the consequences of climate change within your policy field?

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree
e. I don't know

Q14 Within your sector there is sufficient knowledge about possibilities to adapt to the effects of climate change (climate adaptation).

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree
e. I don't know

Q15 Does your sector have a protocol or procedure that determines how the consequences of climate change must be weighed up for new policy/ spatial developments?

a. Yes
b. No
c. I don't know

Q16 How important do you think it is that there is intensive cooperation within the province between different space-oriented policy fields in the field of climate adaptation?

a. Very important
b. Important
c. Not important
d. Not important at all
e. I don't know

Q17 Within the Province there is intensive cooperation between your sector and other space-oriented policy fields in the field of climate adaptation.

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree
e. I don't know

Q18 With which number (1-10) do you assess the degree to which climate adaptation is integrated into the existing policy of your sector? (1 = very low; 10 = very high; 0 = climate adaptation is not integrated in your sector))

0
1
2
3
4
5
6
7
8
9
10

Q19 With which grade (1-10) do you assess the quality of the adaptation policy in your sector? (1 = very low, 10 = very high; 0 = climate adaptation is not integrated in your sector)

0
1
2
3
4
5
6
7
8
9
10

Barriers

Although science and the central government in particular encourage the application of climate adaptation, these parties generally also realize that integrating climate adaptation into existing policy cannot be regarded as a simple process. Based on the scientific literature, a number of factors have been selected that could hinder the integration of climate adaptation into existing policy. The following questions are about this.

Q20 The sector in which you work encounters obstacles in the implementation of climate adaptation.

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree
e. I don't know

Q21 I would like to ask you to indicate for each factor whether, and if so to what extent, a factor is an obstacle to the (successful) integration of climate adaptation into the existing policy of your sector.

		Yes, to a very large extend	*Yes, to a large extend*	*Yes, but just to a limited extent*	*No, this is not seen as a barrier*	*I do not know*
1	Lack of space for adaptation options in the existing space					
2	High costs associated with adapting the existing space					
3	Lack of effective adaptation options and technical solutions					
4	Lack of financial means to devise adaptation measures					
5	Lack of financial resources to implement adaptation measures					
6	Lack of personnel capacity					
7	Uncertainty about social costs and benefits of adaptation measures					
8	Lack of knowledge about vulnerabilities within the province					
9	Lack of useful climate scenarios for the province					
10	Inadequate knowledge about adaptation measures					
11	Uncertainty about the effects of climate change					
12	Lack of awareness of the need to adapt					
13	Low threshold of care for climate adaptation					
14	Lack of public support for taking climate adaptation measures					

15	Lack of problem recognition when it comes to the impact of climate change within your sector					
16	Lack of urgency awareness within your sector to take climate adaptation measures					
17	Lack of legal obligations to take climate change effects into account in decision-making procedures					
18	Lack of effective instruments within your sector to structurally consider climate change effects in decision-making procedures					
19	Lack of political support to structurally include climate change effects in decision-making procedures					
20	Lack of effective tools to enforce climate adaptation with private parties (developers, housing associations, etc.)					
21	Lack of cooperation with other sectors (policy fields and domains) within the province					
22	Lack of clarity about responsibilities for climate adaptation within the sector					
23	Competition with other spatial and sectoral policy topics that will receive more attention in the short term					
24	Lack of clarity about which parties' (public/private) should take adaptation measures					
25	Dependency in decision-making on other actors within your sector/ the province					
26	Lack of leadership (authority and skill) in leading the climate					

	adaptation integration process					
27	Lack of clarity about who pays for the adaptation measures					
28	Lack of regional funding for climate adaptation measures					

Collaboration with the climate adaptation team
Finally, there are three short questions about the possible cooperation of your sector with the climate adaptation team. Since 2019, the province of Utrecht has set up a climate adaptation team to give climate adaptation a place within the policy of the province itself. From the 1st quarter of 2020, this team will work in a program structure on the construction and implementation of a Climate Adaptation Program. The province aims to have the province climate-proof by 2050.

Q22 How do you rate the current collaboration with the climate adaptation team and your topic?

a. Very good
b. Good
c. Neutral
d. Mediocre
e. Bad

Q23 I need more knowledge about the possibilities of building up the policy of my sector more climate proof

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree
e. I don't know

Q24 In what way could the climate adaptation team make a better contribution to the climate-proof design of your sector?

…

END OF QUESTIONNAIRE

Q25 I would like to be informed of the results of this survey

a. Yes
b. No

Appendix 8 – Outputs from the survey

Appendix 8.1. – Average response about the climate adaptation policy integration per sector

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Sectors	inclusion	weighing	consistency	resources	total integration
Bouw	1,7500	3,5313	1,8333	1,8333	2,4904
Cultuur en erfgoed	2,3333	2,7708	2,3889	2,4444	2,5705
Energie	2,2500	3,4063	2,2500	2,5000	2,7596
Gezondheid	2,7500	3,4375	2,1667	2,6667	2,9808
Infrastructuur	2,2500	2,7500	2,5833	2,9167	2,6346
IT en telecom	3,2500	3,3750	2,0000	2,0000	2,6154
Landbouw	2,5000	2,8333	2,5556	3,5556	2,8718
Natuur	2,5000	3,1750	2,2500	2,9333	2,8077
Recreatie en toerisme	2,5000	2,5000	2,6667	3,0000	2,7500
Veiligheid	1,5000	2,5625	2,0000	3,0000	2,4808
Water en ruimte	2,0000	3,0000	2,5000	2,0000	2,4615
Total	2,3158	3,0132	2,3153	2,6404	2,6761
	38	38	37	38	38

Appendix 8.2. – Average response of each barrier

	N	Minimum	Maximum	Mean	Std. Deviation
Barrier 1	38	1,00	5,00	3,3158	1,27566
Barrier 2	38	1,00	5,00	3,0526	1,37443
Barrier 3	38	1,00	5,00	3,3421	1,27928
Barrier 4	38	1,00	5,00	3,3421	1,23630
Barrier 5	38	1,00	5,00	3,0263	1,28372
Barrier 6	38	1,00	5,00	3,2105	1,18909
Barrier 7	38	1,00	5,00	2,9211	1,23860
Barrier 8	38	1,00	5,00	3,2895	1,31330
Barrier 9	38	1,00	5,00	3,3158	1,37753
Barrier 10	38	1,00	5,00	2,8421	1,12769
Barrier 11	38	1,00	5,00	3,2632	1,13147
Barrier 12	38	1,00	5,00	2,9474	1,18430
Barrier 13	38	2,00	5,00	3,8158	1,06175
Barrier 14	38	2,00	5,00	3,3421	1,09733
Barrier 15	38	1,00	5,00	3,3947	1,02771
Barrier 16	38	1,00	5,00	3,3947	1,05368
Barrier 17	38	1,00	5,00	2,9474	1,39395
Barrier 18	38	1,00	5,00	3,0789	1,30242
Barrier 19	38	1,00	5,00	3,5526	1,10765
Barrier 20	38	1,00	5,00	2,9737	1,44235
Barrier 21	38	1,00	5,00	3,0000	1,09050
Barrier 22	38	1,00	5,00	3,2632	1,30869
Barrier 23	38	1,00	5,00	2,7105	1,41245
Barrier 24	38	1,00	5,00	3,0526	1,22909
Barrier 25	38	1,00	5,00	2,9737	1,24090
Barrier 26	38	1,00	5,00	3,6053	1,26362
Barrier 27	38	1,00	5,00	3,0263	1,24090
Barrier 28	38	1,00	5,00	3,3421	1,34116
Valid N (listwise)	38				

Appendix 8.3. – Overview of Q 24 from the survey

Comments about the role of the climate adaptation team
Communiceren en delen van informatie.
Kennis en advies
(Digitaal) overleg hoe we concreet de acties (met link naar NHW en SvA) genoemd in het conceptprogramma klimaatadaptatie kunnen uitwerken. Paragraaf 3.4 Overzicht acties 2020 (actie 2, 9, 10 en 11).
Werkgroepen en kennis delen
Kennisdeling, ondersteunen bij sommige projecten
Ik denk dat de vraag in feite andersom gesteld zou moeten worden, hoe kan circulaire economie helpen om klimaatadaptatie te bevorderen.
Wij zijn al goed bezig met het onderwerp maar misschien zouden we af en toe ondersteuning nodig
Odersteunen en expertise leveren
Expertise geven
Meer afstemming team landbouw met team klimaat
Graag samen onze doelen en processen doorlichten om te bepalen wat de meest effectieve inzet is voor om klimaatadaptie beter te integreren in de sector.
Ideeën aandragen over meekoppelkansen bij m.n. natuurontwikkelingsprojecten.
Ik heb 'slecht' ingevuld omdat die samenwerking vooral vanuit onszelf niet gezocht wordt. Dus het is vooral kritiek op mijn eigen team :) We zijn veel te veel met de waan van de dag bezig, en benaderen het probleem los van aanpalende opgaven. Dat lijkt op termijn wel goed te komen, maar ondertussen worden er elke week bestuurlijke besluiten genomen die het tempo daarin vertragen.
Gezamenlijk oppakken om mee te nemen in het programma recreatie en toerisme en het beleidskader sport.
Ik ben niet echt van een bepaalde sector dus dat beïnvloedt heel erg de beantwoording. Wij van GIS zijn volgens mij goed aangesloten en zullen altijd goed mee blijven denken met jullie vraagstukken.
Grotendeels is er sprake van overlappende doelen. Goede afstemming en integratie van programma's en projecten is een must.
Meedenken en adviseren bij b.v. regionaal programmeren
We moeten ons samen richten op bewustwording en mogelijkheden om maatregelen te treffen bij de grootste grondgebruiker in de provincie. Met als centraal thema de bodem. Het sluiten van kringlopen, het opslaan van koolstof in de bodem, het voorkomen van schade door droogte en neerslagpieken, het begint allemaal bij de bodem. Meer kennis over de bodem is noodzakelijk en het uitvoeren van pilots. Meest concreet: breng het organisch stofgehalte van de landbouwbodems in beeld die in eigendom zijn van de provincie en denk na over hoe we deze percelen willen verpachten vanuit klimaatadaptatie.
Meedoen en meedenken in projecten waaraan ik werk
Informatievoorziening en advies
Stapeling van ambities leidt ertoe dat zaken niet gerealiseerd kunnen worden. Het is dus zaak dat er steeds per situatie maatwerk geleverd wordt, waarbij er een afweging plaatsvindt langs de verschillende kwantitatieve en kwalitatieve opgaven. Zoek daarnaast de samenwerking met kwalitatieve opgaven zoals groen groeit mee en circulair bouwen en gezonde leefomgeving. Groenmaatregelen kunnen bijdragen aan al deze thema's. Probleem blijft de financiering van groen. Focus dus gezamenlijk met in ieder geval Nationaal park, groen groeit mee, NHW en gezonde leefomgeving op groen en economie (verdienmodellen achter groen). Zijn er publiek-private financieringsconstructies mogelijk of moeten we naar een groenbelasting?
Ik denk niet dat dat in de sector energie transitie nodig is. Wij zijn al heel druk bezig met mitigatie en nemen de verandering van klimaat mee bij elke projectafweging.

Ik kan niet spreken voor de hele sector erfgoed. Ik heb nu geantwoord voor het Werelderfgoed van de NHW en SvA. Dat bestaat vooral uit landschap, en dat leent zich prima voor klimaatadaptieve maatregelen. Voor gebouwd erfgoed ligt het anders.

Lunchbijeenkomst als start (kennisdeling), vormen werkgroepen voor specifieke uitwerking, terugkerend thema laten zijn. Het is geen rocketscience, gewoon doen.

Inbreng kennis en mogelijke toepassingen. Samenwerken in projecten die ertoe doen.

Met specifieke voorbeelden voor de sector komen en ook welke subsidiemaatregelen er zijn voor de sector.

Het concreter maken van op welke manier, op welk schaalniveau etc de omgeving meer klimaat adaptief te maken is. Welke effecten bereik je daarmee. Als wij datzelfde doen voor de gezonde en veilige omgeving, dan kunnen we beter samenwerken aan een klimaat robuuste en gezonde en veilige leefomgeving, wat is ervoor nodig, zijn er tegenstellingen: dingen die bv wel goed zijn voor klimaatadaptatie, maar niet voor een gezonde en veilige leefomgeving en hoe zouden we daarmee om kunnen gaan, kunnen we financiële middelen bundelen, omdat we hetzelfde willen vanuit deze twee invalshoeken etc.

Nog vaker meedenken bij casussen

Ik denk dat er koppelkansen liggen voor de klimaatadaptatie enerzijds, en de biodiversiteitsopgave anderzijds. Samen zouden we meer kunnen bereiken. Denk bijvoorbeeld aan het BBOT over de conflicterende belangen energietransitie met de biodiversiteitsopgave vanuit de Natuurvisie (Wnb), waarin het bestuur duidelijk is geworden dat alle coalitiedoelstellingen niet gehaald kunnen worden binnen de wettelijke kaders (zeker als niet alle gemeenten meewerken)

Ik zou het op zich wel een idee vinden om jullie een keer uit te nodigen om een presentatie te laten geven voor AVP-team om bewustwording te verhogen, ook al voeren wij geen beleid.

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