CLIMATE ADAPTION IN DANISH MUNICIPALITIES

Barriers and Challenges

by Jawad Gul Dar & Jeppe Henriksen

Abstract

In more recent times the topic of climate change had paved the way for climate adaptation in the planning stage, seeking to address the consequences of humanity's impact on the global climate and protect the livelihood of society.

This master's degree final project takes a jumping point from the topic of climate adaptation and international effort of the European Union's Adaptation Strategy and Floods Directive and takes it to a Danish municipality level. There have been evaluations carried out by both the European Union and Concito, painting a lacking performance on Denmark in implementing climate adaptation in its municipalities.

The project seeks to approach this problem by investigating 3 municipality cases from a governance and implementation theoretical viewpoint. By using this approach, this project seeks to investigate possible causes for why the implementation of climate adaptation in Danish municipalities has performed this way, by first analysing what has been done so far, followed by what the barriers and challenges are.

The empirical evidence from the analysis will proceed to provide a basis for the discussion, in which the topic of how the implementation process can be strengthened using the theoretical framework will be discussed. This project will conclude with a list of findings of empirical evidence, and a list of recommendations that can strengthen the implementation and continued work of climate adaptation.

Foreword

This master's degree final project is written by Jawad Gul Dar and Jeppe Nordentoft Lyngsaa Henriksen, on their 4th semester of the Master's Programme, Sustainable Cities at Aalborg University (AAU) of Copenhagen. It is the authors final project for the Master's Programme, starting on the 1st of February to the 9th of October 2020.

The project was written based on the wish of addressing a current and relevant problem in Denmark, and to offer additional insight and evidence on how to handle these issues.

In that regard, the authors of this project would like to give thanks to:

- To the supervisor, Karina Sehested, who offered guidance, sources of literature and feedback essential for this project
- To the planning departments of the municipalities Høje Taastrup, Brøndby and Vordingborg for allowing us to interview them and provided this project with valuable empirical evidence.

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Introduction

On the topic of climate change and climate adaptation, new international efforts of the European Union have resulted in a wave of Climate adaptation focus in Denmark and Danish municipalities. The EU has mode two big moves, the Floods Directive of 2007 which had the member states carry out a mapping of areas in risk of floods, and in 2013 the European Union Commission adopted the Adaptation Strategy, with the intend of creating a coordinated effort in climate adaptation across all of its member states.

To accomplish this, the Danish Government made an agreement with the Local Government Denmark association for all Danish municipalities, that by 2013, all municipalities would have begun making climate adaptation plan and include them in their municipality plans.

Now, almost 7 years later, reports, evaluations and complaints have shed light on this endeavour, and has found that the climate adaptation implementation in Danish municipalities had been lacking, based on various evaluation methods. Most a report from Concito, which both sought to evaluate the municipalities and provide recommendations for further actions.

This project departs from this currently ongoing development and tries to investigate this issue from a governance and implementation theoretical framework perspective to shed light over additional possible causes that the evaluation of Concito points out. The goal is to take this empirical evidence and produce, based on observations and the theoretical framework, additional recommendations that can strengthen climate adaptation in Denmark.

To do so, this project seeks to investigate the following research question: *In Danish municipalities; what are the challenges and the barriers for the implementation of climate adaptation plans that address the flooding of urban areas, and how can this implementation process be strengthened?*

This research question is answered through investigating a selection of municipality cases based on the evaluation of Concito, with the focus on first analysing what the municipalities have done and interviewing their planning departments. The following analysis focus on investigating the barriers and challenges faced by each of these municipalities and what their causes are in accordance with the theoretical framework. Lastly, the discussion will focus on how these barriers and challenges can be overcome to strengthen the implementation process, by drawing on the recommendation of Concito and the theoretical framework. The conclusion is an overview of empirical findings and recommendations that will both answer the research question and can be used to strengthen the implementation of climate adaptation in Danish municipalities.

1 Problem Analysis

This chapter will frame the focus of this Master Thesis by presenting the reports problem area.

The chapter will first bring up the subject of global warming and climate change, before then focussing on the consequences it has boradly had on Denmark and the world.

Following that the chapter will delve into the initiatives carried out to address the issue of climate change, namely climate adaptation planning.

The chapter will then sum up the current efforts committed to addressing the issue of floods and climate-change endeavors, leading up to the challenges faced by implementing these plans in Danish Municipalities.

1.1 Climate change and climate adaptation

Climate change is already here. It's not just something that threatens the horizon. When the water pours in from everywhere, it changes our country and our lifestyle and causes great losses - both financially and human. Up through this century, climate change is expected to lead to more extreme cloudburst events, increased winter precipitation as well as a general sea level rise.

Already today, water management is a major challenge across the entire country, and seen in that light, the issue will only become even more topical by the prospect of increased water volumes. The combination of sustainability and urban areas has gained increased attention over the last few decades. This is primarily the result of increased urbanization and the adverse effects of climate change. Hence, radical changes in planning and the governing of cities are necessary.

In Denmark, the consequences of climate change are, in particular, attributed to changing precipitation patterns, including more intense rainfalls and storms. A major problem is urban floods that occur when cloudburst overwhelms the cities stormwater drainage capacity. This happens when rainfall runoff is channeled from buildings, parking lots, roads and other impervious surfaces to sewers and storm drains that cannot handle the volume.

Urban areas are particularly vulnerable to climate change, which poses a serious threat to urban infrastructure, the quality of life and the functioning of urban society. This challenge creates a need for a climate adaptation to thereby ensure that the cities will be able to handle the water volumes during extreme weather events such as cloudbursts, storm surges and urban flooding. Climate adaptation contains both challenges in relation to the technical solutions for water management, as well as regulatory and planning challenges.

There are already a number of technical solutions for handling the water, through which it is basically possible to control the floods to where they cause the least possible damage. Watercourses can also be regulated or warning can be planned with associated emergency preparedness, just as detailed calculations of both probabilities and consequences for urban floods can be made through model simulations.

For many municipalities, it is still a challenge to to deal with climate change and the municipality's vulnerability to these. The internal cooperation within the individual municipality between the specialized sectors and departments can also be a challenge, especially in the large municipalities. There

is a tendency for climate adaptation to be considered a technical issue, which is why engineers, urban planners and landscape architects sometimes look at things very differently which hampers cross-sector cooperation and coordination.

The planning and implementation of climate adaptation is a municipal task, where legal regulation consists of a very complex connection between EU-regulated, cross-cutting legislation, special legislation and sector planning. The planning and implementation of concrete climate adaptation measures thus requires consideration and balancing of many different interests, and is thus associated with major potential conflicts.

Several times over the course of a year, the politicians in the municipality adopt new policies in an attempt to solve the climate problems in the municipality and steer the development in the politically desired direction. However, political decisions and new legislation do not solve problems and do not create change in themselves. They must be implemented.

Implementation research has shown that some legislation is not implemented as intended, that there are often significant delays in implementing new reforms and that there are significant variations in implementation results from situation to situation and even between implementers to implementers and why is it that it is successful sometimes but not always?

Climate change places demands on planning. The municipalities are responsible for climate adaptation in the municipalities, which are particularly focused on how climate adaptation can be handled. The climate challenges in the municipalities require interdisciplinary cooperation, which can often create challenges, and therefore the municipality has a strong focus on achieving optimal climate adaptation across administrative areas. In addition, the municipalities try to incorporate climate adaptation into the renewal and transformation of the cities and create added value for society.

Literature studies have shown that the municipality is one of the crucial actors in climate adaptation and that climate adaptation takes place through the physical planning in the municipality. For this reason, the report focuses on how implementation takes place in the municipality, which deals with climate adaptation.

The climate is changing and it places demands on the planning and management of the overall climate adaptation. The focus on the environment in Denmark has previously undergone changes, and due to climate change, it is now necessary for climate adaptation to become part of this management. The water is not so controllable - and it comes whether we want it or not!

1.2 The European Union and National move.

In 2007, the European commission adopted what was known as the EU Floods directive. This choice was a response to the recent occurrences of serious floods within the European borders, leaving much devastation behind. (European Commission, 2019)

The intention of this directive was to encourage climate adaptation in the member states, by making them all work on mapping and investigating which areas of their territory would be in risk of flooding and would therefore need protection. The directive stipulated specific methods for this mapping, as well as resources to help address further work. (European Commission, 2019)

However, in 2013, the European commission adopted the Adaptation Strategy, of which multiple nations, including Denmark, agreed to take up. Like the previous directive, this Adaptation Strategy focussed climate adaptation and this time wanted all of the member states to begin engaging in the planning endeavor. (European Commission, 2013)

For this purpose, many resources such as funds, guidance and expertise were made available to encourage this implementation. (European Commission, 2013)

Meanwhile in Denmark, the Danish Government had made an agreement with Local Government Denmark to have all the municipalities begin producing climate adaptation plans by 2013. (Klimatilpasning, 2018)

1.3 A Poor Performance

In 2017 Concito, on the basis of an evaluation from the European Commission on Denmark's climate adaptation performance, Concito did an evaluation of several danish municipalities. The result was not good, and they concluded that there was a lot more to do. (Concito, 2017)

2 Research Question

The planning and implementation of climate adaptation is largely a municipal task, where legal regulation consists of a complex connection between EU directives, national and legislation and sector planning. The planning and implementation of concrete climate adaptation plans and measures within each water management boundary thus require consideration and balancing of many different interests between different stakeholders, and are thus associated with major potential conflicts within each.

In recent years the danish government has decided on a number of climate change initiatives including a change in planning law, which binds municipalities to include pluvial flooding from storm surges in spatial planning. This includes that the municipalities' planning to a greater extent supports the prevention of damage due to flooding caused by climate change.

Adaptation to climate change is an imperative and an institutional challenge. This project argues that the implementation of climate adaptation plans is a crucial element of a comprehensive response to the impacts of climate change in cities.

In reflection of the above focus on implementing climate adaptation plans, the variedness of of governance challenges within each boundary, and the increased focus of flood prevention in spatial planning, the following research question is proposed and sub questions create the basis for this projects research focus:

"In Danish municipalities; what are the challenges and the barriers for the implementation of climate adaptation plans that address the flooding of urban areas, and how can this implementation process be strengthened?"

This research question consists of 2 questions, the first asking what the challenges and barriers are for the municipalities, and the second asking how to strengthen the implementation. However in order to answer the last question, one needs to know the answers to the first question. But, finding out what the challenges and barriers are without a solid context about what happened in the municipalities forces up a third question.

Using this approach to solving the research question, the following three sub-questions must be answered in the folin the following order:

1. *What have the Danish municipalities done in relation to climate adaptation?*
2. *What are the organisational barriers and challenges that are preventing the implementation of climate adaptation in the municipalities?*
3. *How can the implementation of climate adaptation in Danish municipalities be strengthened?*

How and where these sub-questions will be answered will be explained in the following chapter.

3 Project Structure

With the problem analysis carried out and the research question setting the course for the investigation, this chapter will now present the structure of this project. Each chapter will be outlined, delving into general content and how they will relate to each other.

Explaining the structure and intent of a report is an essential tool for assisting readers in understanding a longer written work. This project is no exception.

Chapter 4: Theoretical framework

The theoretical framework will continue the focus of the focus of chapter 2, by delving into the relevant theories that this project will focus on. The chapter first takes a general dive into the governance theory that this project will include to get an understanding of hoe governance practices may cause issues. The following theory is that of implementation theory, which is the in-depth framework of this project. The chapter will end with a theoretical conclusion, explaining how the theories will be applied to the analysis and discussion of this project in the chapter.

Chapter 5: Methodology

The methodology chapter will delve into how this project approached its research question, explaining various methods. The first part will focus the hermeneutic viewpoint of this project, followed by explaining the case study and how it was approached. It will then delve into the various methods used to gather empirical evidence, before ending in a methodological reflection.

Chapter 6: Analysis

The analysis of this project will be pertaining to the first two sub-questions presented in chapter 2:

What have the Danish municipalities done in relation to climate adaptation?

What are the organisational barriers and challenges that are preventing the implementation of climate adaptation in the municipalities?

To answer these, the analysis will consist of 2 individual analysis, each investigating their own sub-question. Each analysis will end with a part-conclusion, summarizing the empirical evidence found. The first analysis will provide empirical evidence for the second analysis, which in turn will provide the empirical evidence for the last sub-question answered in the next chapter.

Chapter 7: Discussion

The discussion will pertain to the final sub-question: *How can the implementation of climate adaptation in Danish municipalities be strengthened?*

The chapter will present the central barriers and challenges found in this project, and then proceed to address each of them. Each answer will be discussed based on the empirical evidence, the theoretical framework and recommendations by Concito, if any are applicable, and then propose new recommendations. The chapter will end with a part-conclusion of recommendations and answering the final sub-question.

Chapter 8: Conclusion

The conclusion will first present the general empirical findings found through this project, followed by a conclusion on the application of the theoretical framework. It will end with a summary of recommendations that this project reached by at the end of the discussion, thereby answering the research question.

Chapter 9: Perspectivation

This final chapter will conclude the main section of this project, by perspectivation the research and evidence of this project into further work or other projects.

Chapter 10: Bibliography

This part of the project will present the sources used throughout this project, sorted alphabetically.

Chapter 11: Appendix

The appendix contains the interview guides used for each of the interviews carried out with the municipalities in this project in descending order. It will also contain a list of the recorded interviews uploaded along this project to AAU's libraries.

4 Theoretical Framework

The theoretical framework for a project is important regarding setting the baseline understanding of the research question and how the empirical evidence is approached. Theories are based on existing knowledge and are used to explain phenomena, enabling the ability to draw connections and make predictions based on the empirical evidence.

The theoretical framework also adds to the project, by delving into the topics and presenting additional information. For the case of this project, the focus will be on general governance and the implementation theory.

This chapter is structured so that governance theory will be explained first, as it is the general theory outline for this project. Following it the chapter will move into implementation theory, the more specific and targeting theoretical framework for answering the project's research question. The chapter will end with a theoretical summary, explaining how the theories will be relatable to this project and how they will be used in the analysis, and discussion of the empirical evidence.

4.1 Governance theory

This segment will seek to describe the supported element of this report's theoretical framework, governance. It will first seek out to explain the concept of governance, delving into its meaning and concept, where it happens, it is models and how they are carried out and lastly, what makes governance good.

4.1.1 Governance

The theoretical background of governance draws its original source from the article, “Governance Theories and Models” by Muhammed Asaduzzaman and Petri Virtanen, 2018. These authors had the intent of creating an overview of the theories and models of *‘governance’*, in which they sought to analyse the definitional image and theory of governance and then discuss its dimensions related to governance.

The first thing to understand about governance that the authors make clear, is that governance is not a clearly defined concept, but a continual research and developing concept that is, and has, been analysed and studied over a long time (Asaduzzaman, M & Virtanen, P., 2016). This project acknowledges this statement, and it is not the intent of this theory chapter to obtain anything more than a general understanding of governance and how it can be applied to the context of this project for the purpose of analysis.

So, while there is yet to be developed any general governance theory, there is an accumulation of research and works across time that has helped establish these general understandings. These include not only a general understanding of what governance is and is about, but also its meaning and concepts, spaces, models and theories. (Asaduzzaman, M & Virtanen, P., 2016)

Firstly, governance will be explained and what it is, along with defining government too. Secondly, the spaces in which governance can take place in and where these spaces would be in the context of this project. Following that dilemmas and problems along with different models of how governance can be carried out will be explained. The last segment will seek to understand what makes governance “good governance” and the qualities therein.

Meaning of Governance

The meaning of governance is very broad, and differs from the context of who practices it, where it is practiced, and how it is practiced. In depth, from the various sources investigated in their research, Asaduzzaman and Virtanen find that governance pertains, and describes many different key elements in how to strategically steer a society and address issues. Governance is about how power is exercised in managing a nation's resources. It is seen as the rules of which power plays out, dictating who is involved in the decision-making, how they are involved, and the mechanism facilitating power. (Asaduzzaman, M & Virtanen, P., 2016)

Governance is associated with improving democracy through the decentralisation of power, and to increase transparency by bringing political decision-making out and closer to the public via open debate. It is also associated with cooperation with multiple partners via networks, and with accountability through its focus on transparency and inclusion. (Asaduzzaman, M & Virtanen, P., 2016)

In a danish context, this means that governance must promote active involvement and debate with its citizens and actors, while ensuring that power remains distributed from the state and instead lies on a local level. So, when looking into if Denmark practices governance in adherence to the meaning of it, one must look at how it makes use of networks, actors and citizens in making decisions.

And in a way, this already applies. According to the §82 of the Danish Constitution, “The municipalities' right to independently manage their affairs under state supervision is regulated by law.” (Folketinget, n.d.) (Translated from danish), which adheres to the aspect of decentralising power in governance. The law is to also encourage the voice of the citizens themselves via citizen meeting when making decisions. This is furthermore enhanced by the environmentally focussed Aarhus convention. This convention is an international agreement to ensure the availability of environmental information, the right to participation in the decision making process, and the access to appeal and juridical review. (Møller, 2003)

As such, governance, as understood by this project and the literature, is defined as; a practice and ruleset on how to reach decisions and take action to carry these out through the use of networks of actors with the purpose of being transparent, and inclusive in the decision making process.

And in continuation, these networks of actors and individuals may be part of entities from the public, private and third party actors. These actors may involve the state itself, governments, sub organisational structures like municipalities or sub-divisions and other public or government sectors, along with private companies, organisations, agencies, citizens, or third parties like NGOs or even other networks.

However, to further understand what governance is, it is also important to distinguish it from a concept of a similar name, government. Government and governance are often thought of as synonymous, but they are not the same thing. (Asaduzzaman, M & Virtanen, P., 2016)

Defined by both Asaduzzaman and Virtanen, along with several dictionaries, a government is an organisation consisting of a collection of people with authority and political power, who make decisions and implement them. (Asaduzzaman, M & Virtanen, P., 2016; Lexico, n.d.; Merriam Webster, n.d.) Which is in contrast to the definition of governance.

In that sense, ‘government’ is a collective of individuals and actors that may carry out governance. Governance in turn is the ruleset that applies to how these people must exercise their power. Government can therefore be understood as a “who”, whereas governance can be comparatively seen as a “how”.

Additionally, governments are also hierarchical (Rouse, n.d.). In the danish dictionary, hierarchy is defined as *"A structure or organisational form, where one or more individuals assume a dominant position, with multiple levels of decreasing influence beneath them."* (Den Store Danske, n.d.) (translated from danish). This applies to governments too, that as organisations, are arranged with a top and bottom structures such as a state on top, and municipalities at the bottom. Governments in addition also further employee hierarchy in their power, through the use of organisational structures and laws to enforce their decisions and regulate itself. (Rouse, n.d.)

So, to summarize, governance is about networks of actors that make decisions, and how this is accomplished. These networks may involve actors from both public, private and third party sectors. Governance may be practiced by governments, which in turn are organisations of individuals with political authority and power, using hierarchies in the form of laws and organisational structures to exercise power.

In the context of this project, the focus is therefore on the governance and governments involved in the climate adaptation of Denmark. These governments are, the EU, and the Danish Government, including the Danish State and Danish Municipalities. The hierarchy aspect in here, therefore pertains to the hierarchy of the EU and its member states, and the Danish government's organisational structures and laws. Governance is in the case of this project, the decision making processes that took place at the EU, Danish State, and Municipality, and how these were carried out. The network aspect is then of course in who was involved, and how they were involved in each decision making process for implementing climate adaptation in Denmark.

Governance spaces

In continuation of governance and what it entails, Asaduzzaman and Virtanen made observations in their overview, that governance can take place in "zones", or "spaces", as they call it. Depending on which space governance takes place, it will in turn affect the form of goals, who participates and to what extent they are involved. In their text, Asaduzzaman and Virtanen define 5 different zones, seen below in table 1 (Asaduzzaman, M & Virtanen, P., 2016):

Governance spaces
Governance in "global space", or global governance, deals with issues outside the purview of individual governments.
Governance in "national space", i.e., within a country: this is sometimes understood as the exclusive preserve of government, of which there may be several levels: national, provincial or state, indigenous, urban or local. However, governance is concerned with how other actors, such as civil society organizations, may play a role in taking decisions on matters of public concern
Organizational governance (governance in "organization space"): this comprises the activities of organizations that are usually accountable to a board of directors. Some will be privately owned and operated, e.g., business corporations. Others may be publicly owned, e.g., hospitals, schools, government corporations, etc.
Service space governance reflecting the idea of governing local, regional, and national service spaces, consisting of various service providers from private, public, and the third sector.
Community governance (governance in "community space"): this includes activities at a local level where the organizing body may not assume a legal form and where there may not be a formally constituted governing board

Table 1: Overview of the governance spaces and what they may concern. Source: (Asaduzzaman, M & Virtanen, P., 2016)

In the context of this project, this enables an understanding in where governance can occur on the political level, both internationally and within nations. For this project, most of the spaces equate to a different level relevant.

The first space, 'global space' here would refer to the European Union, and how policies and laws passed in turn affect how it is member states must then seek to implement these.

Second space, 'national space' refers to the Danish state itself, and the national government. Here, Law is made, and the directives and policies of the EU implemented on a national scale. It also refers to the regions (regionerne on Danish), which are responsible for several nationwide-public services and the management of interests of the state.

'Organisational space' is tricky to place in a Danish context. The nation's private sector's role in providing large scale varied services to the public, which is dominated by the public sector (Asaduzzaman, M & Virtanen, P., 2016). And even then, the examples given in the theory are primarily dealt with on a national level in Denmark. However, there are examples of these types, such as Utility companies in Denmark which are often publicly owned such as the likes of Greater Copenhagen Utility, the utility company of the capital and surrounding municipalities (HOFOR, n.d.). This space also applies to other companies like the Metro company responsible for the construction of the Copenhagen metro lines (Metroselskabet, n.d.) and the urban development companies like the publicly owned Ørestads Company that built the new city of Ørestaden (Andersen, 2013).

The fourth space, 'Service space' can here apply to the municipality level in Denmark, along with any other service provider like the publicly owned water companies or citizen services. One could make the argument that municipalities would fall under "organisational space", as municipalities are organisations of the government, but due to their independence from the state, self-rule, and role as a service provider and local governing body, we place them here.

The final space, 'Community Governance', here would apply to below the municipal level and occurs close to the citizens. This would be official and legal organisations like housing associations, school class representatives, etc., or non-institutional organisations like clubs or privately owned organisations, etc.

As can be seen, these "spaces" each provide a different set of actors and therein different types of goals that can vary greatly in terms of how to approach them and what these goals objectively are. It can also be noted that the larger the scale and "space", the more institutional this governance is, whereas when it approaches the local level, it may become more informal and dissolved (Asaduzzaman, M & Virtanen, P., 2016). By applying this perspective to the focus of climate adaptation in this project, it becomes possible to understand how the directive funnels down from the top, all the way down to the municipality and even local levels of governance and government structures. Therefore, due to the focus of the EU, Danish state, and Municipalities, this project will only primarily focus on the 1st, 2nd, and 4th governance spaces, with the possibility of the 5th level if applicable.

Governance models and theories

Another element about governance is to understand the models and theories within the concept. As already explained, governance has many understandings, and in their analysis of the models and theories, Asaduzzaman and Virtanen provide 2 useful viewpoints of how governance is modelled and theorised that can be applied to this project. (Asaduzzaman, M & Virtanen, P., 2016)

These are "Stokers Five Propositions and Associated Dilemmas and Issues", which serves to criticize governance practice, and "Peters Four Performance Governance Models" which presents four dominant models for how governance can be practiced in nations.

Stoker's five propositions and associated dilemmas and issues

The first viewpoint is Stoker (1998) who discussed governance theory on background of analysing criticising Public Administration practices at the time. He did so through five complementary propositions, presented in table 2 below, and argued that certain dilemmas and critical issues applied to each of them. The work of Stoker helped in providing the concept of governance and provided light on the issues of power decentralisation, local self-governing networks and sector involvement on the governance research front. (Asaduzzaman, M & Virtanen, P., 2016)

Presented below in table 2 is an overview of Stoker's five propositions and associated dilemmas and issues, from which he discussed governance.

Stoker's five propositions and associated dilemmas and issues	
Proposition	**Associated dilemma and issues**
Governance refers to a set of institutions and actors that occupy government bodies and "beyond" – that is, they are also from the private and the third sector.	There is a disparity between the complex reality of decision-making associated with governance and the normative codes used to explain and justify government.
Governance identifies the blurring of boundaries and responsibilities for tackling social and economic issues.	The blurring of responsibilities can lead to blame the avoidance or scapegoating.
Governance identifies the power dependence involved in the relationships between institutions involved in collective actions.	Power dependence exacerbates the problem of unintended consequences for the government.
Governance is about autonomous self-governing networks of actors.	The emergence of self-governing networks raises difficulties over accountability.
Governance recognizes the capacity to get things done which does not rest within the power of government to command or use its authority.	Even where government operates in a flexible way to steer collective action, governance failure may occur.

Table 2: Overview of Stoker's five propositions and associated dilemmas and issues: source: (Asaduzzaman, M & Virtanen, P., 2016)

The first proposition refers to the issue of how complex governance is. Governments and their governance are legitimised through electing people into positions of power through democratic processes, who is responsible for meeting the demands of its citizens and is therefore accountable. But reality is that governance is a complex system of networks with multiple actors both inside and outside of governments, and that when governance is practiced, it is through this complex network of structures and actors that decisions are carried out. As a result, responsibility and accountability is spread out between these faceless actors, Therefore the trust in the government weakens, leading to trouble encouraging participation or mobilising resources with citizens. (Stoker, G., 2018)

In order to overcome this, governance must be practiced and carried out in a way that creates legitimacy and accountability that creates trust between the government and citizens. (Stoker, G., 2018)

The second proposition continues from the first one, stating that governance helps identify the blurring of responsibility in a network of actors from both within and outside of the government. Due to this blurring of responsibility between public, private and third sector, uncertainty and ambiguity emerges amongst the actors within governments, which enables blame to be passed around and leads to avoidance of responsibility. The more advanced a governance system is, the easier it may be to blame others for failure and create disparity via scapegoating. (Stoker, G., 2018)

The solution therein is the same as the former proposition; that by practicing and forming governance to be clear on accountability, even in an advanced system, it is possible to avoid the shifting of blame and avoidance of responsibility. (Stoker, G., 2018)

Third propositions deal with the fact that in governance, for action to take place and decisions to be made, the networks involved therein force the actors to be dependent on each other. This may manifest in different ways depending how the network relationship between the actors are. The first one, is the principal-agent form where a main actor employs another actor to fulfil goals, where the main actor is not aware of how the employed actor may be approaching the goals. The second model, the inter-organisational form, is when multiple partners come together to share resources and accomplish goals, and will be dependent on each other's intentions to reach final decisions, which then may be twisted to different outcomes depending on the personal interests of each actor. And finally, there is the systemic coordination form, in which multiple partners engage in long term relationships with the purpose to co-develop goals, share resources and shape self-governing networks. This form of network can fall victim to the “game of rules” where the ongoing collaboration process between actors dictates and shapes how decisions are made in the future as the network continues. All of these in turn mean that governance can result in outcomes that can barely be seen as fulfilling, if not outright detrimental to governments and actors. (Stoker, G., 2018)

In order to avoid this, different solutions must be applied depending on the nature of the network. Employing more communication between actors, possibly via debate or making “arena’s” where actors can come together to talk about goals, intentions or the rules, could present a solution here. (Stoker, G., 2018)

The fourth proposition is about the emergence of the self-governing networks and associated issues. The end goal of governance is to establish regime networks of powerful key actors that can act effectively in decision making and share interests. This creates a dominant network that takes over the government’s role. The dilemma here is then that networks then become exclusive, and limited in their governance practice, their rules so to say, to reach decisions. This creates accountability issues, because actors, either from within, or outside the network, that are disagreeing with the process cannot step in and give voice due to the tightly weaved strength of the network.

The solution here is to therefore include the government back into the governance practices and networks, but not in a position of power, but as facilitator, to ensure that networks do not become closed off, but remain inclusive and open to change. (Stoker, G., 2018)

The final proposition continues from the topic of governments assuming a facilitating role in governance. It is through governance that the needed action and decisions is realised, and that these may be outside the power of governments. The main part here, is that local governments must try to be flexible when approaching governance and need to fulfil a lot of tasks with the purpose of facilitating governance in a way that avoids issues. This includes the early work of properly understanding the situation, identifying the main actors/stakeholders, and making links between them. It also involves reaching the desired outcomes through influencing and steering, and finally system management

with the purpose of avoiding undesirable outcomes and set the groundwork to create strong cooperation. The government must learn to properly operate governance, without falling into old habits of hierarchical systems or structures like the principal-agent network models. But even if governments manage to succeed in doing so, there is still a risk of governance failing due to various reasons involving the differences or rifts between the different sectors, actors and their inventions or other social issues making cooperation impossible to facilitate. (Stoker, G., 2018)

The solution to this is to not only create proactive institutions that can operate with high flexibility and are open to new approaches and to learning, to be dependable and accountable, but also accepting of the fact that various intra- and inter-elements affect actor behaviour. But even then, institutions cannot determine outcomes, only to influence them, and that governance in and of itself brings a level of uncertainty and risk due to the actions of actors and the potential and limits they have. (Stoker, G., 2018)

Stoker's five propositions and associate issues and dilemmas are at its core mostly focussed on networks and actors and how they act. Applying this to this project, governance can therefore present an issue when implementing climate adaptation when accountability and responsibility is not clearly defined and is allowed to be muddled out into a network of actors both outside and inside the government. Therefore, a case where responsibility is avoided, and blame pushed around is a clear indicator of both the first and second proposition and related dilemma and issue are prevalent in the governance practice. It also applies in the form of the actors within a network depending on reaching agreements that accomplishes the goals sufficiently, that no influential imbalance or exclusivity occurs, that governments play an adequate role in facilitating these, and that in the end that the involvement of all of actors in networks does not lead to failure of governance due to strong issues.

Understanding when any of these issues apply will help understand how well governance is handled, and what issues may be present in the different scales and different acting government bodies, be they municipality, the state, or the EU. Therefore, by then identifying the issues, it also becomes possible to counteract them, and create focus on how to solve these objectively.

Peter's four performance governance models

The work of Peter meanwhile allows us to understand how governance models may in turn be expressed, and therefore how they operate, what they value, and who is involved. In his book 'The Future of Governing: Four Emerging Models', Peter wanted to broaden the perspective and understanding of governance practice. (Bogason, P., 1999)

Peter tries to figure out how governments can meet the demands and expectations of the people. In order to do so, he explores governance tendencies and practices with promising results from the world and literature. (Bogason, P., 1999)

In the end, he sets up, explored and coined four governance models that encompass the practices he has found, with each model providing their own unique, but overlapping structural managements, policy making progress and interest implications (Bogason, P., 1999). Presented in table 3 below is an overview of each model and how it operates.

Peter's four performance governance models
The market model, according to which the private sector can provide better services than the traditional public sector.

The participatory state model, which is different from the market model as it puts more emphasis on greater individual and collective participation by segments of government organizations that have been commonly excluded from decision-making.
The flexible government model, according to which the government should be contextual and flexible. In order to face environmental challenges and changes, and to meet the people's demands, appropriate and suitable policies should be made by the government.
The deregulated government model, which focuses on less bureaucratic control, more managerial freedom, and recommendation based on societal needs and collective decision-making.

Table 3: Overview of the four governance models by Peter. Source: (Asaduzzaman, M & Virtanen, P., 2016)

The first model 'The market model' adheres to its idea of the private sector outperforming the public sector due to the forces of the free markets and supply and demand. A private actor can better cover and meet the demands of the populace most effectively and seeks to optimise and rework itself in order to make a profit and be competitive. (Bogason, P., 1999)

The second model sees the problems of providing services as partly caused by participation being deterred by the hierarchical structures in place. In order to solve this, authority must be moved close to the citizens, meaning that hierarchy must be put aside and flattened to meet this. (Bogason, P., 1999)

The third model, 'The flexible government model', the concept is that governmental structures are too strict, static and therefore cause issues when facing problems from a chaotic and changing world. By implementing new laws and reforms that undo this stagnant norm would allow for governments to better adapt the public sector. (Bogason, P., 1999)

The final model meanwhile is focussed on how the excessive and strict control and adherence to rules that prevent the public sector and government bodies from acting freely and make decisions. In order to do this, liberation of the public sector by lessening laws, guidelines and rules must be carried out to provide this freedom to act. (Bogason, P., 1999)

Applying this to a real life context, the models makes it possible to identify governance practices, and to categorise and compare multiple models. Applying this to the context of this project, these models each add a possible way to understand how governance is practiced on the different "spaces" acts and if they differ from these models in other ways

While the state and international space only have one government and governance practice each to analyse, these models might not necessarily apply in a full manner, but rather partially due the responsibilities and priorities of each space.

However, when approaching the municipality and more local spaces, diversity occurs as each municipality has their own way to approach governance.

Municipalities that simply place the responsibility and final decisions on private service providers cover the costs and find solutions would put them in the first type of governance model. Meanwhile, if the municipalities that seek to be as involved and participatory as can be, inviting all actors to the table to reach decisions, they would be in adherence to the second model. If the municipality however has a practice of switching between involving everyone or just involving key actors when reaching goals, they will fall under the third model. Lastly, the fourth governance model would be for the municipalities that practices governance informally, letting not just private, but public and even third party actors more freedom to reach solutions rather than binding them with rules.

Therefore, keeping these models in mind will allow for the analysis of each municipality and how they each practiced governance to reach their goals of Climate adaptations.

"Good Governance"

Lastly, there is the term "good governance". In times since it emerged in the 90'ties as a topic for how governance should be carried out in developing countries, the term "good governance" has gained much popularity and desirability in both developing and developed countries around the world. (Asaduzzaman, M & Virtanen, P., 2016)

Much like the theory of governance, the concept of "good governance" does not have a definition, but by studying multiple different definitions, shared concepts and patterns emerge to form a normative picture of "good governance". (Asaduzzaman, M & Virtanen, P., 2016)

According to Asaduzzaman's and Virtanen's overview, "Good governance" builds on a decentralised democratic ideal, with a good administration and commitment to enhance the quality of life for people. People must be included in the decision-making process through a transparent, friendly and open process. It is a responsive and local government system, with a high degree of free media and association, and should enable various forms of solution making processes. (Asaduzzaman, M & Virtanen, P., 2016)

In addition, there are also characteristics that have been found that make institutions and rules more effective and repeat themselves through the general picture of "good governance": Transparency; Participation; Responsiveness; Accountability; Rule of Law, Decentralisation and Democracy. (Asaduzzaman, M & Virtanen, P., 2016)

That said, "good governance" is however not clearly definable, as the definitions and characteristics are normative, and thus will vary greatly depending on the social, cultural, structural and political context. But One does get an idea of what it is about. (Asaduzzaman, M & Virtanen, P., 2016)

Applied to a Danish context, these elements can be evaluated when analysing the governance practices in each governance space, and each governance practice and models found there. Taking into account what good governance must accomplish, one can then ask: Was it transparent? Was it participatory? Was it responsive? Was accountability ensured? Was the rule of law applied? Was it decentralising the power? Was it democratic? Was it an innovative process?

In addition, conditions may have occurred that have made it impossible for governance practice to follow along these elements, at which point one must then keep in mind that if they could not fulfil certain elements, what did they do instead?

If each of these questions can be answered, or at least approached, evaluating whether or not good governance took place at each space and governance practices should be possible, if not at the very least, arguable.

4.1.2 Governance summary

Governance is a multifaceted concept with many meanings and interpretations, developed over time. We have yet to reach a distinctive, and definitive definition, meaning, theory and model of governance, but despite so, several characteristics and perceptions to what Governance is about, what it means, and what it must do and contain denote a shared image of governance.

Governance is about how the decision on where to go is reached. It is about the interaction between networks of actors that influence each other, as well as being about who to include in the decision-

making process and the degree of how these actors are involved. Governance is practiced by governments, which consists of hierarchical structures of groups of people typically elected through democratic structures.

There is a huge degree of differences between goals, issues and actors involved in governance depending on the 'spaces' that it may occur in, and the models that it is based on. There are furthermore several dilemmas and issues that may occur within governance itself, that have various causes and solutions.

The concept of "good governance" supplies this meaning with the characteristics of: Transparency; Participation; Responsiveness; Accountability; Rule of Law, Decentralisation and Democracy.

All of this in turn provides the means necessary for this project to approach governance with a general understanding to identify, categories and understand governance spaces, issues and models. This contributes to the project's main theoretical framework, by providing alternative viewpoints and arguments for analysis and discussion.

4.2 Implementation theory

This report elucidates the implementation of climate adaptation policy, which is by no means an easy task. It is a dynamic and political process that often takes place in an interplay between many different actors with very different interests, be it authorities, nongovernmental organisations, pressure groups and community groups.

In the following sections theoretical perspectives and theoretical reflections are explained. The implementation of public policy is influenced by several factors that are collectively addressed in this chapter. The purpose of the chosen perspective from the implementation theory is to provide an understanding of which behavioural mechanisms get activated when a policy decision is to be implemented and present an analytical implementation model and a number of concepts to characterise and analyse a given implementation situation.

This report focuses on the implementation process of climate adaptation in Danish municipalities through a study focusing on climate adaptation plans. The implementation of these plans takes place in a complex environment where a number of actors are expected to participate, and it is in the field of tension between the different actors that the implementation process takes place. Theoretically, the implementation of policies is addressed from the policy formulation over the implementation process itself to the results of the implementation. In this report, special attention is paid to the factors or elements in the implementation theory that deal with the actual implementation process as well as the internal and external factors that influence this process.

It is possible that the results of the implementation on the basis of the policy/legislation and the effect on the behaviour of the target group can be assessed through the implementation theory but the aim of this report is not to assess the results of the policy or climate adaptation plans. Therefore, the perspectives from the implementation theory is solely used to provide a theoretical framework for the study of the implementation process, and subsequently this framework forms the basis for interpretation and assessment of the collected empirical data in this study.

Several times in the course of a year, the elected representatives - at both EU, national and local level - adopt new policies and rules to steer the society in the politically desired direction. However, Political decisions and new legislation do not solve problems and create societal change unless they are implemented. One thing is to make decisions, but effectively realising it is something else. A decision

to reduce CO2 in the atmosphere does not in itself reduce the amount of CO2 emitted. They must be implemented as a new activity or as new ways of acting by the public sector employees. Without an implementation process, policy decisions are nothing more than words on paper. Implementing policy decisions is neither an automatic nor a trivial process. It is not a guarantee that adopted policies are implemented as agreed. Likewise, it is also not certain that if they are carried out as agreed, they will create the desired changes.

This fact became more and more apparent up through the 1970s in the wake of evaluations of major social reforms and welfare projects. Over and over again, the feedback was that the reforms had little or no effect. Gradually the researchers began to consider whether the explanation could be that the reforms and projects were not carried out as expected at all. This was the beginning of the implementation research and implementation was defined as the process by which legislation and other policy decisions are implemented. (Nielsen, 2019 p. 338)

As referenced in by Nielsen (2019), Pressman & Wildavskys´ book *Implementation* from 1973 is still a classic in the implementation research field. The book focuses on a large-scale development project in Oakland, USA that was to reduce the high unemployment among the city's minorities. Different kinds of infrastructure and construction were built, and all the money was spent, but virtually no one from the minority target group got involved or came into employment. Likewise, Derzon et.al. (2005) made a metaanalysis of several independent studies and the result of this metaanalysis showed that the average effects of the outcome were insignificant and varied from place to place but increased 12-fold when corrected for identified implementation problems. (Nielsen, 2019 p. 338)

Nielsen (2019) explains that the metaanalysis of Derzon et.al. (2005) indicates that a local implementation of an effort e.g. climate adaptation affects the outcome that is achieved and a better understanding of the challenges in regard to the implementation process can provide valuable input to both implementation strategy and choice of instruments. Once a political decision has been made, one faces a double challenge: on the one hand, the policy must be translated into new practice by authorities, institutions and public employees. On the other hand, the new practice only takes effect when - and if - the target group of the policy/legislation changes behaviour or when the objective of the policy has been achieved.

From a decision being made, over public authorities changing practices or reaching the goal and pushing development in the desired direction, many factors can come into play. An important question posed by implementation researchers is therefore: *What organisational and cross-organisational and individual mechanisms are set in motion when policy decisions need to be implemented?* (Nielsen, 2019 p. 339). This question is both relevant and essential, whether one is driven by a democratic interest in identifying the relationship between politicians and public sector employees or whether one has a desire to advise and provide guidance on how the implementation process should be designed to achieve the greatest possible implementation success. These two motives are not mutually exclusive, but one fails miserably if one considers implementation merely as a technical, automatic and apolitical process (ibid).

In order to be able to handle implementation challenges strategically, it is a good idea to see the process as a hurdle race where there are both technical and practical challenges as well as potential "battles" between both organisational and individual interests and different ways of understanding of the problems and challenges. However, the number of stumbling blocks and size will vary from implementation situation to implementation situation depending on the characteristics of the given policy/legislation and its fit /misfit with the context in which it is implemented (Nielsen, 2019 p. 340). Fundamentally, Nielsen's (2019) perspective and its model draw on a politological framework of understanding that sees behavioural mechanisms partly as a result of power and potential struggles be-

tween both organisational and individual interests and partly as a result of the knowledge and abilities of actors and that interests as well as knowledge and abilities are conditioned by the manoeuvring room defined by the institutional framework (Nielsen, 2019).

This section presents which factors may appear as obstacles from decision to actual change and thus stop, delay or derail the implementation process. Theoretically, the *implementation* part of the theoretical framework in the report is based on Søren Winter's Integrated Implementation Model (Søren & Nielsen, 2008), but this report will be based on an updated version of the model developed by Nielsen (2019) which will be presented later in the chapter. Nielsen's (2019) conclusion is that implementation is a complex affair - among other things due to conflicting interests between the stakeholders involved and the new policy or legislation, however, the level of conflict varies from implementation situation to implementation situation depending on the characteristics of the given policy decision and its fit /misfit with the context in which it is implemented. This will be elaborated later in the chapter where Nielsen's (2019) updated implementation model for characterising and analysing a given implementation situation is described.

This study focuses on the factors that are in the implementation process and they will be elaborated after a brief introduction of Søren Winter's Integrated Implementation Model.

4.2.1 Søren's 2008 Integrated Implementation Model

A brief description of Søren's model. Implementation research has followed many different tracks and it may appear relatively fragmented; Søren & Nielsen (2008) has sought with its implementation model to integrate a number of the most important theoretical contributions in implementation research into one overall model. In the form of the Integrated Implementation Model, Søren & Nielsen (2008) have created a model that aims to describe and analyse the processes by which legislation and other policy decisions are implemented. The primary focus of the integrated implementation model is the implementation process itself; it is through this process that decisions become a reality. Furthermore, the model has a strong focus on the behaviour, abilities, will and interests of public employees as well as a focus on their performance and the effects on the target group, e.g. citizens and companies when implementing. Thus, the process of implementation itself is just as important to a political decision as the process through which the policy is formulated. According to Søren & Nielsen (2008), implementation of policies is a dynamic process, where many crucial choices are made that shape the policy and affect the end result. The model can be seen below in figure 1.

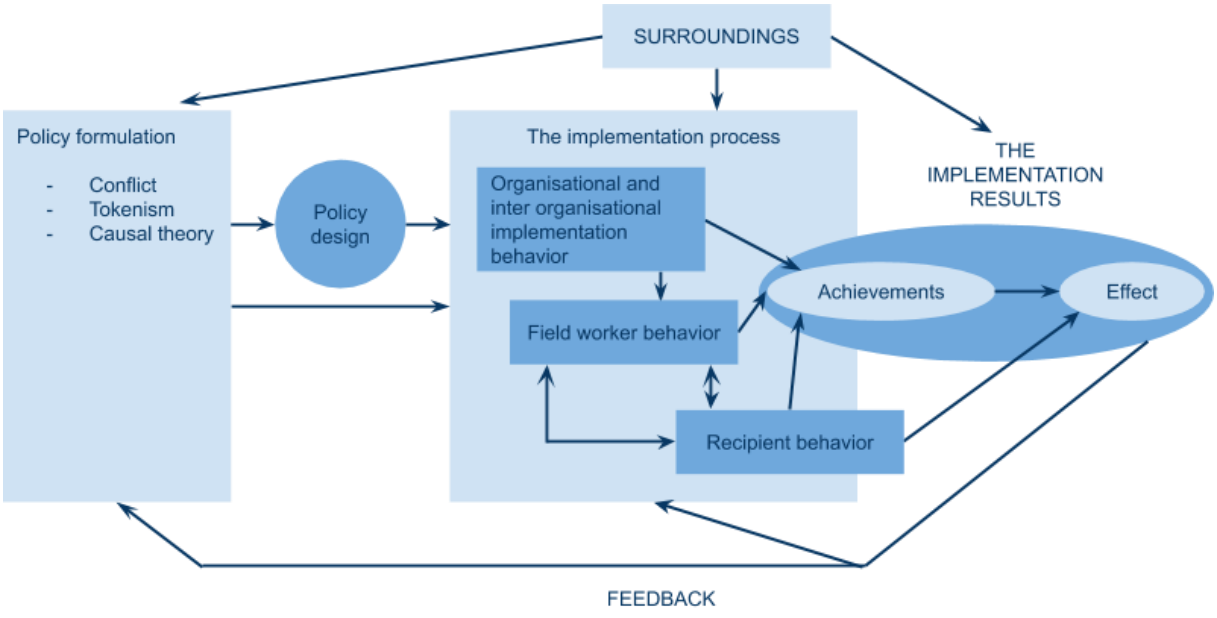


Figure 1: Søren's old integrated implementation model. Source: (Søren & Nielsen, 2008)

The policy is created through a number of processes, and it is these processes that are the focus of Søren & Nielsen (2008). This processual perspective differs from the more structural perspectives in the overall organisational theory where the structures of public administration are in focus. The processual perspective has more focus on and gives more importance to the processes through which legislation and policy are implemented and these processes include public governance with other actors and stakeholders. (Søren & Nielsen 2008) Thus, the model provides an overview of key factors and mechanisms that are of importance for implementation.

4.2.2 Nielsen's 2019 Integrated Implementation Model 2.0

In the following sections, the updated integrated implementation model by Nielsen (2019) will be explained. This new model has been developed on the basis of a comprehensive theoretical and empirical update and on the basis of recent international and danish research results. This updated perspective draw on a politological framework of understanding that sees behavioural mechanisms partly as a result of power and potential struggles between both organisational and individual interests and partly as a result of the knowledge and abilities of actors and that interests as well as knowledge and abilities are conditioned by the manoeuvring room defined by the institutional framework. (Nielsen, 2019)

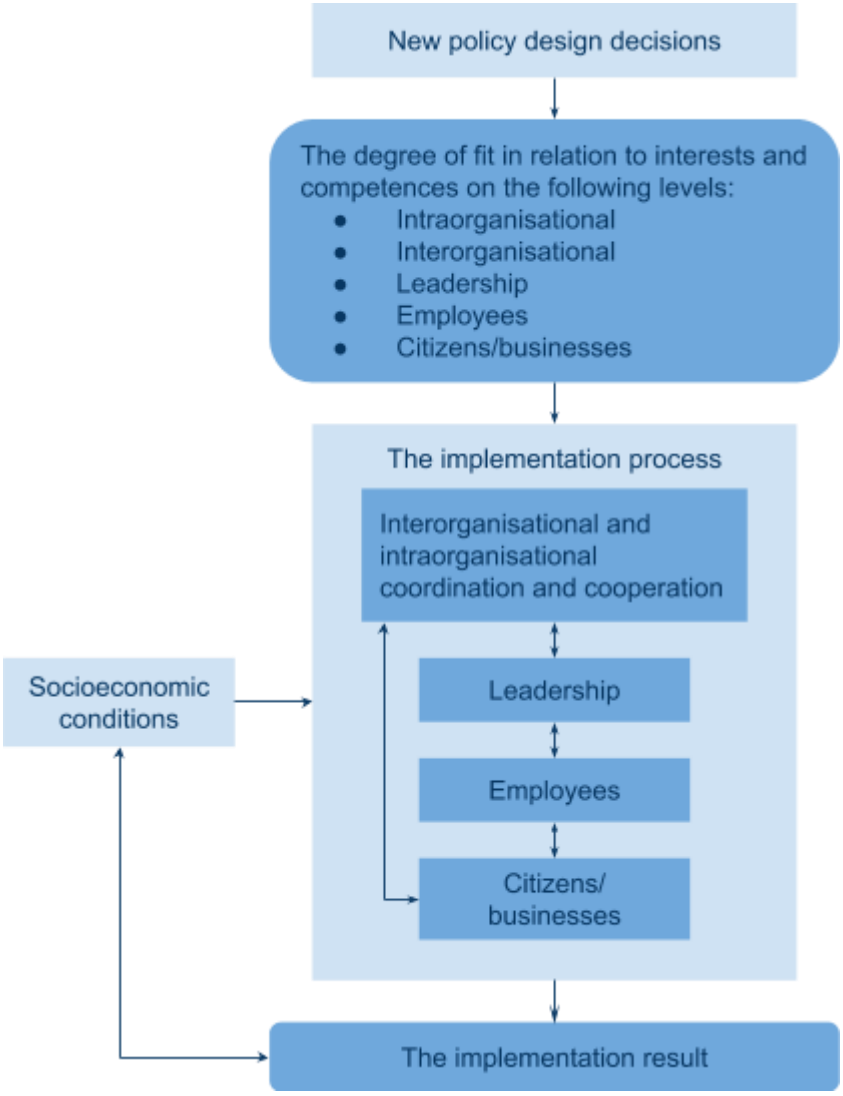


Figure 2: The new integrate implementation model by Nielsen. Source: (Nielsen, 2019)

The model is in many ways a simple check-list of the essential factors an implementation process may include, but at the same time illustrates the complexity of reality by pointing out, partly, that an implementation process is integrated into an international and national political and socioeconomic reality and partly that the implementation process itself consists of a number of integrated factors.

As mentioned earlier, this model is based on Søren's model, but the clear difference is that performance and results are not focal points in Nielsen's model. Søren's model focuses on 1) conduct/performance in the form of the administrative apparatus' behaviour (*Output*) and 2) effects on the target group's behaviour (*Outcome*). *Output* is the authorities' performance in relation to behaviour towards citizens and businesses and *outcome* is the effects of the authorities' behaviour towards citizens and businesses, whereas Nielsen 2019 defines *outcome* as the actual result of the policy/legislation and *output* as the administrations management performance. In addition, Nielsen has added a new focus point which is the degree/extent of *fit / misfit* in relation to interests and competences, in other words it is the characteristics of the given policy and its *fit /misfit* with the *context* in which it is implemented which is in focus. Another very important difference is that where Søren & Nielsen (2008) in the implementation process focuses on intra- and inter-organisational *implementation-behaviour*, Nielsen (2019) focuses on intra- and inter-organisational *coordination* and *collaboration*. Thus, the new model provides an overview of new key factors and mechanisms of particular importance for the implementation process.

Policy design

Although policy design is not a direct part of the actual implementation process, it still has significance for the actual implementation of the policy as the policy design itself defines the basic framework for the implementation process. The policy design consists of one or more objectives, a set of instruments to achieve these objectives e.g. rules regarding permits, directives and prohibitions with associated sanctions, information and financial instruments and incentives, a determination of which authorities, organisations or administrations are responsible for implementing the political decision, and an allocation of resources to the task. (Nielsen, 2019)

The implementation of a policy is thus dependent on which policy-instruments the political decision makes available to the practitioners. In some political decisions, there may be a lack of coherence between objectives on the one hand and policy-instruments and correct use of organising on the other, which can complicate the implementation process. Moreover, policy-instruments can be combined in many ways and put together with different forms of organisation such as hierarchy, market and network and the chosen combinations can hinder or further the implementation. When policy-instruments and organisation are ineffective in relation to the political objectives, it may be due to a lack of knowledge about how certain forms of organisation are used and work. (ibid)

Goodness of fit

Recent research literature, especially in the literature on the implementation of EU policy, the concept of *goodness of fit* and the distinction between *policy* and *institutional* fit / misfit, respectively, have been developed. Policy fit is about substantial substantive coherence between two policies, while institutional fit is about coherence between administrative and organisational arrangement/setup and tradition. In the EU implementation literature, the national policies and institutions of the member states are held up against the EU policies and institutions in an attempt to explain national adaptation or lack thereof on the basis of the degree of *fit* or *misfit* between the policies and the institutions. A high degree of *fit* means that EU regulation will be implemented without problems, while a high degree of *misfit* means that the implementation of EU regulation will be difficult.

However, it should be mentioned that this *fit* varies both from EU regulation to EU regulation and between member states. (Nielsen, 2019)

By transferring this way of thinking and approach to implementation challenges in general and in this case implementation challenges in the municipalities, it clarifies the need for, that in order to assess the potential implementation challenges of a given political decision, we must also assess the extent/degree to which the political decision *fits* with existing interests, competencies and ways of understanding at both organisational and inter-organisational as well as at management and employee level. The less *fit* both in relation to the individual factors and at an overall level, the greater the probability that there will be challenges in the implementation process. The model is thus also updated with regard to policy decisions at supranational level, such as EU directives. Implementation of such decisions thus expands the model by another factor in the implementation process. (ibid)

Implementation process

Whether it is about policy design or goodness of fit where the latter is an important detail, it is essential to understand the factors that influence whether, and how the political decision is translated into new ways of acting and performing. Virtually all implementation requires that at least one executive organisation or administration be involved. Whether it is a private or public organisation, it is characteristic that organisations take care of interests of both substantial and institutional character and represent different forms of knowledge and ways of understanding.

Substantial interests are the views of the organisation on what kind of policy should be pursued regarding the areas of expertise, assignments or tasks that the organisation deals with. It can also be characterised by professional views on how to solve the problem, public administrations can be dominated by professional staff groupings who tend to develop their own professional perception of how the issues in question should be solved and what kind of duties and tasks the administration should take care of. It should also be mentioned that the organisation or administration's own substantial goals are not necessarily in line with the goals pursued by the policy or legislation. *Institutional interests* are the organisation's goals for its own survival, status, growth, and economy. *Individual interests* are at a lower level than the organisation's substantial and institutional interests but have a great significance within the organisation, they are more about the individuals preferences for self-interest maximisation in the form of, for example, job security, status, workload, career and salary - including incentives for result-oriented salary. (Søren & Nielsen 2008)

These different organisational interests are interesting because of their effects on the implementation of public policy. The individual organisation or administration may therefore be more or less passionate about the task assigned, and partly against detailed management in connection with new tasks or redefining existing ones. A significant factor in the implementation process is thus the administration responsible for the implementation of the political decision. (Nielsen, 2019)

Inter- and intra-organisational cooperation and coordination

Another factor of importance for the implementation as shown in Figure XX is the nature of inter- and intra-organisational cooperation and coordination in the responsible administration. Much implementation requires that several stakeholders within or across administrations e.g. state, region, municipality or committee cooperate. However, the necessary cooperation and coordination between different administrations may lag behind due to the commitment of the responsible administrations, for example because the administrations involved have different interests and / or different priorities of time, resources and attention to implement the desired policy.

As Pressman & Wildavsky pointed out as early as 1973, the implementation process is atomised and consists of a large number of decisions made either by joint administration's or by individual administration's, Pressman & Wildavsky (1973) therefore called implementation *the complexity of joint action*. Complexity arises because decisions have to be made on a number of independent points in the implementation process, and in each new point there is a risk that someone will veto some form of veto, one therefore speaks of veto points in the implementation literature. However, there does not have to be a conflict between the actors involved for the implementation to go wrong or be delayed. One implementation actor may simply have a preference for other tasks, which are to a greater extent regarded as the administration's core tasks (core area of responsibility) or have simultaneous and time-consuming obligations in relation to other tasks. There are thus several possibilities for problems, both when the implementation is to be carried out by individual administration's and when it is to be carried out in a complex interplay between several different administrations. (Nielsen, 2019)

An implementation collaboration means an interaction between authorities and administration's that have tasks concerning the implementation of public policy (Nielsen, 2019). Furthermore, one can expand the circle of collaboration with external stakeholders in the form of networks. The collaboration patterns in the implementation vary greatly and there are thus many forms of interaction relationships in the implementation processes. The interaction also varies in terms of degree of formalisation, some interactions take place informally others under formal frameworks. At the central level, there may be formalised corporate interaction patterns between the state and heavy business organisations, for example in the field of agriculture and industry (Søren & Nielsen 2008). Some have the character of entrenched and well-established corporate networks, especially at the central level, while others at the decentralised level in particular are more diverse, involving several different stakeholders (Søren & Nielsen 2008).

At the municipal level, however, networking have received a great deal of attention, this is because the municipality is increasingly dealing with complex problems that it cannot solve alone and therefore must involve external actors and stakeholders which often requires some form of network collaboration, one of the reasons may be that the administration can see some form of benefit from the networking, for example knowledge and resources that will be valuable for the administration to solve the issue. These informal cooperation arises on the basis of human social needs, which are not necessarily addressed by the formal structures of an organisation or administration. Therefore, these needs are sought to be met in other ways like in networks and groupings, and this informal networking can also affect the activities around an implementation process. Despite the relatively high prevalence of coordination and collaboration, knowledge about the effects on the problem solution is limited, some studies suggest that the net gains are often overestimated and that they may depend on leadership and higher management behaviour and on the level of conflict in the collaboration. (Nielsen, 2019)

Organisational leadership

A third factor of importance for the implementation is also illustrated in Figure XX, the organisational leadership (Nielsen, 2019). In the Leadership/Management literature a distinction is often made between *management* and *leadership* but there is far from always agreement on the precise content of distinction. The management task is more complex in the public sector with several stakeholders and objectives that are often vague and ambiguous, and there is always the legal aspect that one must take into account and maintain. *Management* is often referred to as the instrumental efforts of managers in solving the task in relation to its objectives on the basis of its formal authority role in relation to its employees, while *leadership* is referred to as managers relationships with their employees based on their personal authority and ability to motivate employees on the basis of, among other things, respect and trust. (Søren & Nielsen 2008)

Among the management instruments that the manager can use are targeted recruitment of employees who professionally and attitudinally fit the administration's objectives, clear and distinct managerial signalling of the goals and control of the employee's behaviour. Influence them continuously through attitude cultivation to pursue the same policy as oneself. The most forward-looking and targeted instrument is *targeted* recruitment of employees who are in line with the organisation's objectives in terms of qualifications, social abilities, attitude, willingness and opinions. Instruction and control therefore become a little less important if the employees do the *right thing* from the organisation's point of view. (Søren & Nielsen 2008)

On the one hand, the administrative management has a significant importance in connection with the inter-organisational cooperation, and on the other hand, the day-to-day managers have an independent significance when decisions at administrative level are to be translated into action among the employees - in the following referred to as *'implementers'* - who have to implement the policy or decision. Some studies suggest that it is not an easy task to make implementers change practices, but managers can influence the implementers by incentive management, formulating clear objectives, backing these goals with clear signals to the implementers and provide continuing education in the form of courses, just as there is a need for a strong managerial focus on the skill development and the upskilling of collaborative relationships that a new practice may require. However, managers attempt to influence the implementers behaviour may have a strong competitor in the implementers own professional knowledgebase, their own way of doing things and their own preferences regarding instruments, policies and values. (Nielsen, 2019)

Moreover, the effect of administrative management is highly dependent on the context, effects of leadership and management are thus often conditioned by other factors such as characteristics of the implementers, their professional knowledge, motivation and the experience of the chosen instruments. A significant management task in connection with the implementation of political decisions is also the practical organising of the implementation process itself. A number of implementation processes have been delayed and met with resistance from the implementers due to the practical organising of the implementation and due to the timing of when the new practice is supposed to begin. (Nielsen, 2019)

Implementers

A fourth and often very significant factor in the implementation process is the employees - in the following referred to as *'implementers'* - who in practice perform and solve the tasks and problems of the organisation, and who therefore often in connection with new policies and new political decisions have to do something different than usual (Nielsen, 2019).

Over the last 20-30 years there has been a lot of research into public employees, a classic is still Michael Lipsky's *Street Level Bureaucracy: Dilemmas of the Individual in Public Services* from 1980 in which he claimed that the real political decision makers are the public employees who as part of the implementation chain delivers the public policy to the citizens. Lipsky's theory is based on the fact that the public employees' behaviour is decisive for what benefits and regulation the citizens receive. Typically the work of the implementers is not regulated in detail, because the work with very different citizens complicates the passing of exact rules and it is also difficult to monitor all employees all the time, and the difficulties are often exacerbated by the rare consensus on methods and priorities among the implementers. There can be several reasons why the implementers work is not regulated in detail. One is that it is not practically possible; the reality is complex, which is why the legislation cannot take everything into account and predict all conceivable situations. (Andersen & Kjeldsen, 2019)

Put succinctly, implementers are responsible for many of the most central activities of the public apparatus, from allocating benefits, imposing sanctions, judging compliance and exempting businesses

and individuals from penalties. Because all these activities involve direct interactions with citizens, implementers exercise considerable discretion. The focus is on the discretionary decisions that each implementer makes in relation to individual citizens, businesses, networks, implementing new policies and when participating in an implementation process. The concern is how much influence and discretion the implementers have over policy implementation success or failure. This discretionary role in delivering services or enforcing regulations makes implementers essential actors in the implementation process and implementing public policies. (Andersen & Kjeldsen, 2019)

Thus, it is not always certain that implementers do as specified and expected, and as mentioned earlier, it is also not certain that their administrative managers are able to get them to do so. On the one hand, institutional frameworks and conditions can make them act differently than expected, and on the other hand, their ability and will, including their knowledge, interests, attitude and opinions, can affect their behaviour. And as a result, it can affect both the policy and the implementation process (Nielsen, 2019).

Citizens and Businesses

A fifth factor, which is also shown in Figure XX, with significance for the implementation, is in the last stage of the implementation process, namely with the citizens and companies whose welfare or behaviour the new policy or legislation seeks to influence. The purpose of much policy and legislation is thus to get citizens and businesses to, either through incentives or regulation, comply with and exhibit the behaviour that the incumbent government believes is optimal to ensure a healthy society and nature. Basically, the behaviour of companies and citizens can be influenced by assigning opportunities, duties and either positive or negative rights or by setting rules for what one can or cannot do. Thus, it is also clear that the success of the implementation of a law or policy depends on the members of society and the level of either co-operation or opposition they provide. (Nielsen, 2019)

The members of society thus have an important role when the political decisions are to be translated into effects in relation to the companies and citizens daily lives - that is, the actual result of the legislation (outcome), as they decide whether they will follow the policy and the administrative decisions. However, members of society as a target group also have another important role in the implementation, as they often seek to influence the implementers decisions, behaviour, service level and exercise of authority, thus they can not only influence implementation effects (outcome), but also the administrations management performance (output). (Nielsen, 2019)

The work of creating change in society and new practices is far from being done, just by making a political decision. New policies and decisions are a challenge to the status quo and require relevant actors to do something different than usual. This opens up for not only competence and practical problems, but also for potential battles between both organisational and individual interests and ways of understanding. The political struggle over the functioning of the public sector does not stop once a decision has been made and a policy adopted. It often continues in the implementation process, but the actors now are not the politicians who adopted the policy but the organisations, administrations, implementers, private organisations, networks, companies and citizens who are affected by the policy. Thus, there is a risk that the decision will be transformed in the implementation process. (Nielsen, 2019)

Socio-economic environment

It should be mentioned that the implementation process and its results are often affected by the surroundings, including changes in the socio-economic situation and in public opinion. The preconditions for implementing, for example, a new policy in the area of employment/labour or in the financial sector are not the same in times of economic downturn and upturn, nor are they in municipalities with high and low employment rates, respectively. Finally, it must also be acknowledged that the

authorities sometimes face what the literature calls wicked problems - that is, complex problems where there are no unambiguous solutions and where the solutions presented often create new problems. No matter how many resources are used, and no matter how well-planned and optimal the implementation process is, it can be difficult to solve these wicked problems. (Nielsen, 2019)

Implementing policy decisions in the form of new policies is thus a very complex matter with a high risk that one or more factors may derail the process. Although a new policy can in theory and in practice encounter many challenges on the way from political decision to actually changed behaviour in the target group, it is important to point out that implementation takes place virtually every day in the Danish public sector, which takes place smoothly - either because the new policy *fits* well all the way down into the *system*, or because the implementation process itself is well-planned, well-organised and managed optimally.

4.2.3 Summary

Political decisions and new legislation do not solve problems and create societal change unless they are implemented as new practices in organisations and among public employees. Policies do not succeed or fail on their own merits; rather their progress is dependent upon the process of implementation.

Implementation research shows that some legislation is not implemented as intended and that there are often significant delays in implementing new reforms and policies. The research also indicates that there are significant variations in the implementation results from implementation situation to implementation situation.

New decisions are a challenge to the status quo and require relevant actors to do something different than usual. This opens up for practical problems and potential battles between organisational and individual interest. The struggle for influence often continues in the implementation process by all relevant stakeholders with interest in the policy. Thus, there is a risk that the policy can be transformed in the implementation process.

From political adoption to the final result, there are several factors in the implementation process that can have an impact on both the process and the result. Thus, the process of implementation itself is just as important to a political decision as the process through which the policy is created.

Nielsen's (2019) implementations model places special emphasis on these factors in the implementation process that can affect both the process and the result and she explains in connection with the new model that one fails miserably if one considers implementation merely as a technical, automatic and apolitical process.

Nielsen's (2019) conclusion is that implementation is a complex affair - among other things due to conflicting interests between the stakeholders involved and the new policy, however, the level of conflict varies from implementation situation to implementation situation depending on the characteristics of the given policy decision and its fit /misfit with the context in which it is implemented.

The possibilities for implementing a policy depend on how it is “put together”. Policy design is often crucial to whether a policy can be implemented or not. If there is no coherence between objectives on the one hand and means in the form of policy instruments or correct use of the organising opportunities on the other hand, the implementation process can become difficult and end in poor results. Policy instruments, e.g. financial incentives or rules can be combined in many ways and put together with different forms of organisation, e.g. hierarchy, market and network. The selected combinations have a great impact on the result.

Goodness of fit is basically about coherence and has a focus on whether and to what extent interests converge between stakeholders, a high degree of *fit* means that the policy will be implemented without problems, while a high degree of *misfit* means that the implementation of the policy will be difficult.

The Implementation of public policy requires the participation of authorities and organisations, they often have their own interests and perspectives that can influence the implementation and its results and implementation often involves decision making at different levels and places with various veto points and coordination problems.

Organisational management, including the management of public employees is not an easy task. Managers can use different kinds of management instruments to influence the employees behaviour and direction but attempts to influence the employees behaviour can have a strong competitor in the employees own professional pride, their own way of doing things and their own preferences regarding instruments, policies and values. The public employees are responsible for many of the activities of the public apparatus and during these activities the public employees exercise considerable discretion. This discretionary role in delivering services or enforcing regulations makes employees essential actors in the implementation process. The members of society also have an important role when the political decisions are to be translated into effect as they decide whether they will follow the policy or not and they also often seek to influence the public employees decisions and their exercise of authority, so not only can they influence the outcome but also the performance.

The implementation of a policy is influenced by the socio-economic situation that prevails in the time and place where the implementation process takes place. In a period of boom, for example, there will be an increased willingness to allocate resources, thus the socio-economic environment constitutes the 'framework conditions' for the implementation process and can influence the outcome, and it is therefore important to pay attention to the specific framework conditions for a given implementation process.

The purpose of this model is primarily to outline a number of factors to characterise and analyse a given implementation situation.

4.3 Theoretical conclusion

Both theories focus on the various topics that can go wrong within each framework form a political and decision making perspective.

The governance theory, while general, provides a good understanding of what governance practices are about, and how networks can make decisions. It also delves into how these networks may fail, and the causes as to why. Finally, it also presents various models and situations that may influence what shape it takes, who it involves and what decisions it is dealing with.

The implementation framework in contrast approaches its topic in more focussed detail, delving into the process of a political decision being made, and then implemented through a system. It describes how the various parts may react to a given decision, and what to be aware of to avoid issues.

Looking across the theoretical frameworks presented, a certain overlap can be noticed. Governance spaces and policy design, hierarchy and 'goodness of fit' all share a domain of decision making in a

"place from above the local", and share connected topics such as laws, policies regulations, decisions goals from political leaderships or higher positions may have an affect downwards.

Meanwhile the network theory and the inter- and intra-organisational coordination and cooperation also shares similar issues which would allow for connecting various causes that could hamper implementation.

From this fit between the theoretical frameworks it will be possible to look at barriers and challenges for implementation of climate adaptation in danish municipalities from multiple perspectives and shed light on the possible causes of these.

The project will apply the theoretical frameworks to the empirical evidence found through the analysis, viewing the evidence through each theoretical topic to analyse barriers and challenges. By the end of the analysis, the shared overlap of the theoretical framework will allow the project to combine causes and aspects of the barriers and challenges, and propose solutions founding in each theory to best overcome each barrier and strengthen the implementation of climate adaptation.

5 Methods

In the following chapter the methodological approaches and decisions will now be explained. The chapter will start out with the case study, the basic premise for the project's approach to gathering empirical evidence. The chapter will afterwards delve into the data collection methods used in this project, finishing off with a methodological approaches, reflections and then limitations for this project

5.1 Casestudy

Described by the social scientist Robert K. Yin, a case study is a qualitative research method that focuses on how and why questions, with the investigator having minimal or no influence over the events, and is focussed on real life events and topics. The primary purpose of a case study is to describe and explain these phenomenon's, and draw understanding from them. (Yin, Robert K., 2014)

The research question imposed by this project leads up to investigating closely what happened in several danish municipalities. This case will therefore focus on a few selected cases of danish municipalities and investigate the phenomenon of implementing climate adaptations. Through this study, the aim was to gain understanding into the issues related to climate adaptation and the greater picture, within an implementation and governance theoretical viewpoint.

Because of the focus on studying only a small selection of cases that varies in how they implemented climate adaptation, the case study will therefore according to Flyvbjerg (2006) be defined as a study of maximum variation cases. This case type is marked by there being one variable that changes between the cases, to set a basis for the investigation on whether this variable has any effect on a given phenomenon. (Flyvbjerg, 2006)

A thing to be aware of regarding case studies of any kind is their applicability outside of their case area. because a case study is so focussed on the intricate situation of the phenomenon and produces highly qualitative data that deeply explains this situation it can result in qualitative data that is only applicable for this unique phenomenon. As a result, the empirical evidence and data of one case study will have a limited applicability with the exception of similar cases.

For this project, because it will be focussing on Danish municipalities the evidence that this case study finds will most likely only be applicable to other Danish municipalities. There might be other European countries or nations that could find the data relevant, but the more removed from the context of this project, the less applicable the evidence found in this report may be.

5.1.1 Choice of cases

When choosing multiple cases for a case study, one must take into consideration in which ways these cases are related to each other, and how they differ when comparing them. The more alike they are, the more similar empirical information would be assumed to be found. Furthermore, the more different the cases are, the more varied empirical information would be found. When comparing cases, it is often a good idea to have one or few factors in which the cases differ, in order to draw conclusions on shared elements or differences that may affect the subject matter studied in the cases.

The method of which the cases chosen was based on 3 part factors; their ranking, geographical position and availability. Furthermore the number of cases that were chosen was also limited to 3, as this was deemed sufficient enough for the project.

When looking over which municipalities that could be looked into, the project drew on the report from Concito rapport, "Resilience in Municipal Climate Adaptation Plans" (Translated from Danish). Using Concito to make this choice was deemed appropriate, as it was the only source besides the Europeans Unions own evaluation report of Denmark that looked at each individual municipality and ranked them. Concito made it's scores of vulnerability based on the statistical occurrences and reporting of damages caused by floods. The rapport separated floods into 3 categories, seawater, streams and heavy precipitation. It gave each of the municipalities a score, and then proceeded to give all municipalities a 'General vulnerability score against floods'. This general score was what this project makes its choice of cases on. This provided the project with an initial perspective of which municipalities are doing the poorest, which are doing the best, and which laid in the middle of the performance scale. This ranking was carried out on all municipalities, but only around 68 out of the 98 municipalities had their plans screened. The choice from Concito to base it's rankings on the damages caused by flooding, was on the premise that the more damages a municipality experiences from floods, the more vulnerable and unprepared for floods is the municipality. Concito is aware however, that this premise for an evaluation is not wholly solid, and that a singular event of flooding could completely tip the statistics and the scale. (Concito, 2017)

However despite this, the project finds the evaluation to still be a suitable premise.

Another phase of the case selection process, involved exploring the socioeconomic and geographical aspect of the municipalities. In order to do so, the municipality, rankings and screening were combined with data that put them into the different regions of Denmark, along with citizens pr. km2, total municipality budget, the municipality budget for urban development, housing and environmental measures and whether there were coastal lines within the municipality.

The purpose of this phase was to try and investigate if there were interesting findings within the Concito reports rankings, other connections, and to choose cases based on shared aspects to eliminate issues of compatibility. However, ultimately not much was revealed beyond there being no apparent connection between budget size and ranking, region and ranking, coastal line or ranking, screening or ranking, or combinations of these.

Following that, the focus was shifted over to municipalities within the capital region and surrounding Zealand, and excluded all municipalities that had not had their plans screened. This was done to limit the distance between the researchers, to make it possible to travel to the given municipality to carry out interviews. Furthermore, due to there being no connection between regions and the ranking, choosing closer located municipalities would not have any huge impact on the ranking distribution. Visiting the municipalities was unfortunately made unavailable later, as the global outbreak of Covid-19 happened not long after the municipalities had been chosen, locking down any idea of travel while the municipality had to convert to "work-from-home" models to continue functioning, severely limiting the time available. The last aspect of removing all non-screened municipalities was to ensure that the rankings given to the municipality had the most empirical information foundation.

From this, the two highest-ranking, two mid-ranking and the two lowest-ranking municipalities were chosen as candidates. This was done to ensure that the 3 cases needed in this project would be from across the rankings to compare between, and to also have a spare municipality in case one was, or would become, unavailable through the project's duration. Each municipality's planning department was then contacted for an interview, ending up with Høje Taastrup, Brøndby and Vordingborg as the chosen municipalities for this project.

5.2 Data collection

When gathering data and empirical information for this project, 3 main quantitative methods were employed to accomplish this. These included several interviews with the chosen municipalities, a initially broad but later focussed literature study of various sources, and finally document study of several key documents that played a central role for this project.

It is important to use several different sources when gathering empirical information, in order to ensure that the information is not too limited, biased to a single source, and provides a broadened view on the topics.

5.2.1 Literature study

Literature studies were the primary contributions in the early phases of the project when the focus was quite broad. The focus was as described on several projects from multiple municipalities where the said project had "failed", that is to say the project had become abandoned or changed from its initial form too much. Later phases put the literature study to focus on climate adaptation issues in Denmark and later governance and implementation theory, providing this project with broad information in the early phases.

The literature mainly pertained to the history behind the implementation, both in Denmark but also from the EU, and any related issues and poor performances with the implementation. There was also a focus on general governance theories, and implementation theory. The sources of the literature study involved public websites, directives, laws, plans and strategies, documents, reviews, reports, evaluations, letters and books. This information were primarily found using online search engines, official websites, Aalborg University's Library online databases and physical library.

This provided the project with both basic and in-depth empirical information on the implementation of climate adaptation in Denmark and it's issues, both early on and later in the process. It also provided the project with its theoretical framework, on which the analysis is based on.

5.2.2 Document study

During the literature study of the projects, certain documents and book sources played a central role for providing this project with empirical information for this project and the cases. These included the Concito's report of 2017, "Robustness in Municipality's Climate Adaptation Plans" (Translated from Danish). The climate plans and strategies, new and old, of the selected municipalities of Høje Taastrup, Brøndby and Vordingborg.

Source:	Contribution:
Robustness in Municipality's Climate Adaptation Plans by Concito, 2017.	Provided the project with an overview of the performance of danish municipalities, delving into the issues with the implementation and recommendations for further work.
Municipality plans and strategies for Climate adaptation.	These documents supplied the project with additional information and details in the specific actions of each individual municipality. Due to the focus, only the topics of climate adaptations were looked into when studying each Municipality's plan

Table 4: Overview of thoroughly studies sources and what they contributed for this project. Source: own make.

5.2.3 Interview

Through the project several interviews were carried out with planning departments from the chosen municipalities. This was done to provide the project with direct empirical information and outside viewpoints straight from the source. These people were initially interviewed once early in the project, but again also later when further questions had to be asked or the gathered empirical information was no longer sufficient.

Choosing to only interview the planning departments of each municipality was made with the premise that the planning department's involvement with the climate adaptation was a central role, and that these would in turn be able to provide the most overview of the events which took place.

When contacting each department, it was sought to gain an interview with a source that worked on climate adaptation, or the supervisor of the department if needed. For two of the interviewed planning departments, it was possible to have two employees present for the interviews, where in the case of Høje Taastrup it was the environmental manager.

Interviews with Høje Taastrup, Brøndby and Vordingborg were carried out via online video calls in early May, followed by a repeating online interviews again in June. A third series of interviews were carried out mid September. Each interview was sought to be carried out by both authors, but for some of the early interviews, only one author was available for the interview. However to ensure that it was possible to both quote, but also avoid missing any details, all interviews were recorded, with the interviewed person's permission.

In the table below is an overview of each municipality, who was interviewed and how and when.

Municipality planning departments:	People interviewed:
Høje Taastrup Municipality Technology and Environment Center (Translated from Danish)	Anja Charlotte Keil Groth, environment- and chemical engineer Arne Schøller Larsen, Environmental manager
Brøndby Municipality's Planning Department (Translated from Danish(	Anni Svendsen, chemical engineer
Vordingborg Municipality's department for planning and cities. (Translated from Danish)	Andreas Munksgaard Weir, city planner (only present in the first interview) Karsten kolle, climate coordinator

Table 5: Overview of the interviewed departments, people, times and method in this project. Source: own make.

The interviews carried out were qualitative structured interviews. The interviews consisted of multiple specific questions, spread over topics. The questions were both meant to be a check-list of information, but also general enough to enable the interviewed person to talk freely about the topic brought up in the interview. This method allowed for a focussed, but also minorly explorative approach to obtain empirical evidence straight from the municipalities.

The focus of the interviews pertained mainly to how the municipality implemented and carried out climate adaptations in Denmark, while also drawing on the theoretical topics of governance and implementation theory. Therefore in addition to an overview of events, there were also topics of networks, citizen involvement, hierarchies, the roles of the different actors and the outcomes, which supplied the project with a wealth of information. As the theoretical framework got expanded, the

following interviews after the initial ones were also based on similar topics, but focussed on covering lacking information and new topics. An overview of the general interview guides can be found in appendix A, along with an overview of recorded interviews appendix B.

An important element worth mentioning was the duration of the interviews carried out. Each interview approximately took around an hour, give or take 15 minutes. This duration was often felt to be a bit short, and resulted in the interviewers trying to steer the interviewed people forward. This could have resulted in the change of missing information, but was often sought to be made up for in the succeeding interview where this time issue was not present.

5.3 Methodological Approach and Reflection

The following section will seek to explain the approaches and reflections of this projects in regards to the choice and use of methods to gather empirical evidence.

5.3.1 Induction

The research design for the study is inductive as the purpose of the project is to analyse and describe the processual challenges that arise in connection to the implementation of climate plans rather than testing existing theories and knowledge. Through this study it is examined if there are any consistent tendencies connected to the implementation processes, which can form the basis for a generalisation regarding implementation processes in general, and especially in connection to the implementation of climate plans. The study thus seeks to elaborate on the existing knowledge within the field and contribute with new findings and knowledge, through an inductive inquiry into the field.

5.3.2 How and why we use the different methods for the study

Initially we conducted a literature study to gain an overview of the field and the problem in focus for the project. This was done to create a solid departure point for further investigations into the field by seeking out the relevant theories, literature reviews, rapports, political documents and in general increase our insight about the state of the art. The literature study was conducted by doing searches on the academic databases: Google Scholar, Science direct, Aalborg University's databank. Furthermore, we searched on google to find municipal documents regarding municipality plans and climate plans.

Subsequently, a literature review was conducted to narrow down the specific papers, theories and documents, relevant for the study. This enabled a more in-depth review of the literature that could contribute to unfold the problem definition, describe relevant perspectives for that specific area of the field (i.e. the implementation of climate plans), provide current findings of related research and theories regarding the aspects related to implementation of decisions in organisations. This was done to create a foundation of knowledge, based on current research and academic papers, hence optimising the conditions for further inquiry into the field.

Through the literature review of peer reviewed literature reviews of the field, and scientific articles in peer reviewed papers, theoretical aspects for the study were assessed and selected. This narrowed down which specific perspectives were relevant for further inquiry as well as providing applicable scientific concepts, topics and aspects, and contributed to qualify already gathered information and presumptions, or discard the presumptions if they were not consistent with the empirical findings in the literature.

Finally, the literature study and review provided a knowledge-based foundation as a departure point to construct and qualify scientifically pertinent research questions. In regard to the theory of science of the project, i.e. hermeneutics, both the literature study and the literature review, facilitated two

journeys through the hermeneutical circle, where the departure point for the study was an initial horizon composed of the presumptions and current knowledge of the researchers, each time culminating with a scientifically improved horizon for further research.

To evaluate and assess the literature found, a document analysis was conducted to assure an attention to how the different documents should be read, how and in which context the content should be understood and what kind of information the document in question could provide for the study. The document analysis thus ensured an attention to which types of scientific information could be yielded from the varying types of documents, through consideration of, amongst others, the sender and the motivation behind the texts.

In regard to each document an examination of the sender, the publisher and any potential mission statements, were conducted to inquire how the documents were positioned in relation to the problem (e.g. political, organisational or scientifical), which potential interest could be at play, if the sender is representing themselves, someone else or an organisation, and how this potentially could affect the arguments and information presented in the texts.

This was especially relevant when assessing information gathered from documents published from e.g. think tanks such as Concito, which occupies a semi-political position within the field, or from organisations that bears a connection to actors that could have special political interest, and from private actors, in regard to the premise that they compile their rapports on. This attention to the position and motivation behind the documents also contributed to map the different positions, layers and interests at play in the field.

Furthermore, the interviews, that were conducted to gather information from relevant actors within the different municipalities, were decided to be conducted as structured, to create the possibility for the respondents to convey their insights in an open manner and thus facilitating them to unfold their knowledge and understandings concerning the field. The decision to conduct the interviews as structured was due to an attention to the dynamics between an interviewer and interviewee in an interview situation, and the different types of information different dynamics can produce.

This approach to interviewing informed the manner of how the interviews were prepared, where topics were created rather than specific questions, and interview guides were constructed based on the researcher's presumptions and prior knowledge about the field, the organisation and/or the interviewee. Both topics and interview guides were hence to a large extent constructed on the basis of the prior literature study and document analysis.

The theories for the study were chosen on the basis of how they could contribute to unfold the problem in focus for the study. As the focus was the challenges connected to the implementation of climate plans it was thus mainly theories regarding implementation and governance that were included in the theoretical framework. Though, as the implementation of the plans was taking place within organisations it could be argued that an inclusion of organisation theories could have strengthened the analysis, but this might at the same have unfocused the analysis by including aspects that to a higher degree concerns processes within single organisations in general than aspects concerning the processual challenges connected with the implementation of climate plans across a number of organisations. However, due to the fact that the implementation to a certain extent are taking place within an organisational context, organisational theoretical considerations have formed a contextual background understanding, throughout the study, regarding how organisations function in general and the processes within.

Organisational theories have thus not been directly utilized analytically, but instead used contextually and informatively. Similarly, knowledge from management theories have contributed with information and contextual understanding that provided theoretical notions and insight regarding the management of organisations, especially in connection to the implementation taking place within a

principal-agent relationship, which should not be ignored. However, these theories have not been utilized actively analytically, to enable the project to ensure a stringent focus on the processual challenges in implementation processes across a number of different actors, with different internal relations between one another.

Finally, the theories included for the study have all contributed, in different ways, to continuously establishing improved horizons of understanding, that provided research-based perspectives to unfold the research questions. Epistemologically the study has thus journeyed through the hermeneutical circle a number of times, concluding with an elaborated understanding of the field, the problem, and the mechanisms at play.

5.3.3 limitations

An important starting point for addressing the problem is the municipalities' understanding, navigation and challenges regarding the implementation of the climate plans. This project do not deal with the technical side and the related infrastructure, the technological side or the legislative process,

It is not an in depth report on the subject. It is limited due to the broadness of the topic. The report does not go into depth with the theoretical roots of organisation culture or theory or any related theory.

This project have only looked into mid-sized municipalities. I have not interviewed more people in the municipalities' different departments. I have not interviewed any politicians in Denmark nor have I looked at EU legislation or initiatives. The reason for not interviewing politicians or any of the network was because the focus was on implementers.

Different instruments may help to address the report's problem, but it will be on an overall level and the same will apply to the conceptual framework for the different types of instruments that the municipality can use to influence the development and potential of the sustainability approach.

6 Analysis

The analysis is the in-depth part of the project, where the components are examined specifically in order to clarify and explain the problem. The analysis part of this project dive into the core of the individual elements and assess them at a theoretical and methodological angle. The essential theoretical elements are transferred to the analytical part, which can thus be processed and assessed in the context of the empirical evidence.

For the analysis of this chapter, the goal will be to answer the first two of the three sub-question:

What have the Danish municipalities done in relation to climate adaptation?

What are the organisational barriers and challenges that are preventing the implementation of climate adaptation in the municipalities?

To answer the questions, the analysis will carry out one analysis for each question. In each of these analyses, the theory will be related to a practical context, so that the problem is clarified and analysed in a context-based context.

The analysis is based on the overall empirical data, and the two analyses of the case studies are done by using all the sources used to gather the empirical evidence. The aim is thus to create an in-depth overview of the empirical evidence in relation to the analysis topics, as well as through the analysis, to provide new empirical evidence for the project's discussion that ultimately answers the research questions.

6.1 Climate Adaptation in Danish Municipalities

For the first chapter of the analysis of this project, the focus will be on answering the first sub-question of: *What have the Danish municipalities done in relation to climate adaptation?*

In order to do so, each municipality's case will now be presented and described in order of their relative vulnerability score ranking in the Concito report, starting from lowest score to highest score.

For each municipality, there will be delved into the climate actions done by the municipality, using the climate adaptation plans and strategies published by the municipality, supplied with the interviews carried out with said municipality's planning department, what Concito's report said about the municipality and other online articles.

This focus will be on introducing the municipality, briefly going over its organisational structure and history of climate adaptation in the municipality, and then focus on what the municipality has done so far and is doing now, who did it, and what they did to accomplish their goals. Each case description will be supplied with a summary, a time horizon and a chart of the network of actors found through our literature and interviews.

The chapter will then end with a part-conclusion, summarizing the findings, answering the first sub-question, and will provide an empirical basis for the next analysis part in the following analysis.

6.1.1 Høje-Taastrup Municipality

Høje-Taastrup municipality is in the south-westernmost edge of the capital region of Denmark, putting it in the north-eastern part of Danish island of Zealand. The municipality Covers a land-locked surface area of 78,3 square kilometres, and a population of 50.923. This makes it the 10 largest and populous municipality in the capital region (Danmarks Statistik, 2020a; Danmarks Statistik, 2020b).

The municipality describes itself as one of the main access points between the capital region and the rest of the country and has a rich culture and beautiful nature. The municipality experiences around 27.000 commuters every day travelling to and from work, using the S-trains, Intercity and connecting regional trains to, from and through the municipality (Høje-Taastrup kommune, n.d.a). This means that in the event of a violent cloudburst, it can have serious consequences for public transport and affect many commuters.

In the Concito report, Høje-Taastrup was one of the municipalities which were both screened and had semi-structured interviews and questionnaires carried out on it. The municipality was estimated, along with 2 others, to have an overall general vulnerability score of 2/10. Its other scores included a 1/6 score of vulnerability against seawater, 2/6 vulnerability against groundwater and a score of 2/8 vulnerability against streams. (Concito, 2017)

Interviews with Høje-Taastrup municipality revealed that the municipality in general is a "top municipality", meaning that water in general moves downstream and away from the municipality, and that the only real issue was their high groundwater levels. It was also explained that many homes have pumps in their basements to deal with this and prevent flooding. This fact, along with the fact that the municipality has no coasts, helps explain the low scores given by Concito.

In the municipality, the planning focus on climate has only recently been broadened from a primary focus on CO2 reductions and more energy efficiency, to also include climate adaptation against rain and flood.

In the early municipality plans from 2010, the primary focus for climate in the municipality was on reducing CO2 emissions and switching from fossil fuels to sustainable energy while also increasing the energy efficiency and reducing energy use. The only primary focus on water and rain that the municipality focussed on was the establishment of rainwater basins in newer construction projects, the expansion of existing basins that were no longer sufficient, the establishment of new wet areas that can be flooded, and a focus to protect the groundwater, e.g. against pollution or overuse. There was not much of a focus on climate change. (Høje-Taastrup Kommune, Byrådscentret, 2010)

This was also confirmed in the interview with Høje-Taastrup municipality. It was not a primary focus for the municipality at the time, as any general issues with water was solved in a reactive approach.

However, in 2014, in accordance with the requirement for municipalities to rework and update their plans every fourth year, the municipality released a new plan, this time with more focus on climate change in the municipality. The new focus included intents to mitigate floods in low-lying areas from streams and heavy precipitation. Another focus was also on the high groundwater, and the associated flooding of many basements in the municipality (Høje-Taastrup Kommune, Orbicon A/S, 2014). But it was not until February 2015, that the municipality's first climate adaptation plan was published. This plan focussed on addressing the issues of insufficient sewer capacity, rising streams and groundwater. Along this plan that was also a strategy for handling of rainwater released, on the 1st of January, that stipulates the long-term goals of climate adaptation (Høje-Taastrup Kommune, n.d.b; Høje-Taastrup Kommune, 2015).

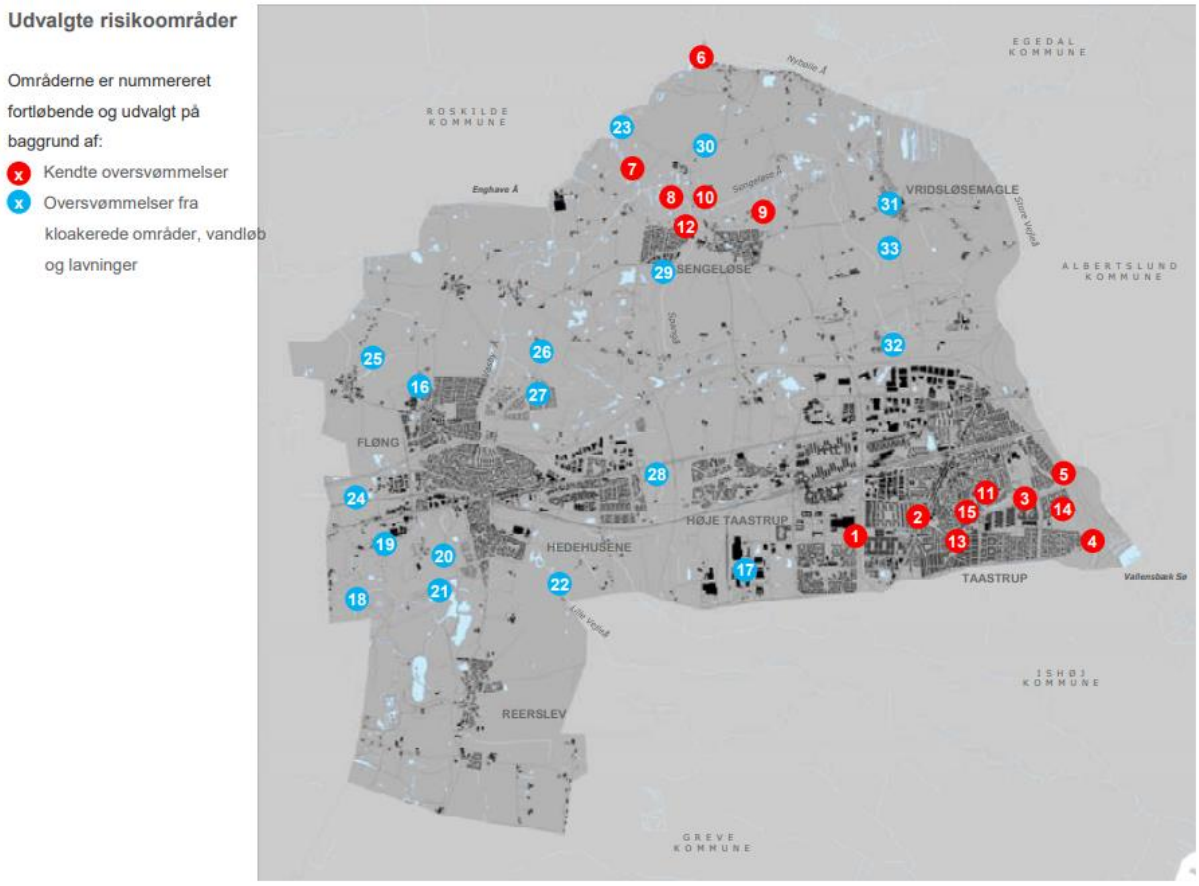
In the interview with the municipality it was explained that the municipality was to make its first climate adaptation plan due to the government's policy for standardising climate adaptation efforts across Denmark. Every municipality was tasked with making climate adaptation a part of their municipality plans, or as an addition to it.

It was stated that once the Danish government published the official guide rules for how this climate adaptation plans the municipality began developing the climate adaptation plan as an addition to their municipality plan in 2014.

This process was explained in the interview to begin with a brainstorm between different relevant departments of the municipality and actors took place. The actors from the municipality included Driftsbyen, the City Council, the Environment Department and the Planning Department. Other actors were at the time HTK Sewer Utility company (now HTK Utility A/S) and the private consultancy of Orbicon. (Høje-Taastrup Kommune, Orbicon A/S, 2014)

The interview revealed that following this involvement of actors, different tasks and assignments were split between them based on respective fields of knowledge. The HTK was meanwhile responsible for developing 5 different 100-years plan scenarios, with the consultant producing the value-, risk- and flood-maps for 1 mill. DKK. Shortly before the climate adaptation plan was finished, citizens were sought to be included, but according to the interview there was a huge lack of interest. Shortly after, the plan was completed and accepted.

This new climate plan presents a 3-step strategy of contingency plan to prevent flooding, initiation of measures for climate protection of properties and lastly the municipality's and utility's efforts regarding climate adaptation. It is based upon 33 risk focus points (see map 1 below), which had been pointed out by the final risk map developed by Orbicon for the municipality. This risk-map was produced by the combination of a map showing the areas in risk of flooding, and a map showing the damage costs, (human, financial, environmental and societal) in the municipality. (Høje-Taastrup Kommune, Orbicon A/S, 2015)



Map 1: Risk map of Høje-Taastrup municipality, along with the 33 focus points. The red is known flooding locations, and the blue are flooding from areas with sewage systems, streams and soil depressions. Source: (Høje-Taastrup Kommune, Orbicon A/S, 2015)

The plan also further appoints responsibility of financing and carrying out the climate adaptation to four actors. (Høje-Taastrup Kommune, Orbicon A/S, 2015)

- Høje-Taastrup municipality, who is responsible for preparing contingency plans, climate adaptation plans, climate adaptation of municipality properties, etc.
- HTK Sewer Utility, who participates in the development of contingency plans and the adaptation of sewage infrastructure in both old and new construction.
- Landowners in the municipality, who are responsible for protecting their own basements against flooding, as well as carrying out climate adaptation on their property and installation of possible solutions.
- The landowners along streams are responsible for maintaining their own drainage and instalments and adaptations. If there are still trouble with flooding, and the landowner(s) has carried out the necessary climate adaptation action(s) on their property, they can file regulation claims against suspected landowner(s) along the stream for not following regulation, maintenance and adaptation.

Amongst the different tasks to carry out, are several sewer system expansions to handle the increased load, LAR solutions like rainwater infiltration into the soil or drainages, expansion of lakes, etc. Of the more concrete projects, the municipality had 4 immediate focus projects to carry out and finish by the end of 2015. These were financed by the landowners and HTK Sewer Utility, with the inclusion of collaborating with HOFOR (Greater Copenhagen Utility) in implementing these (Høje-Taastrup Kommune, Orbicon A/S, 2015):

- Focus area 1: Expansion of rainwater basin by City 2

- Focus area 2: Expansion of rainwater basin at Rønnevangs church
- Focus area 17: Expansion of rainwater basin at the transport area
- Focus area 3: Expansion of rainwater basin at Mølleholmen
- Additional risk areas: investigating and research if action is required

Interview with the municipality also revealed that other projects had taken place both before and after the four focus areas, with projects like a water park feature, expansion of lakes, and a groundwater heat plant.

An early project was the expansion of a rainwater basin at Selsmoseparken, which through an architect competition, won by Force4Architects, led to the creation of a water feature park that enriched the area and was implemented relatively fast. It began in 2008 and was finished in May 2012. (Force4Architects, n.d.)

Another project that was completed after the climate adaptation plan, but was already launched in 2013, was the construction of 3 rainwater lakes in the municipality. This project was a result of the Danish railway company, Banedanmark, compensating the municipality for the removal of Vallensbæk lake in relation to a construction project in 2012. The project was in cooperation between Albertslund, Høje-Taastrup, Ishøj, Vallensbæk, Glostrup and Brøndby municipalities, with Banedanmark being the primary financial source. The lakes allow for the cleansing of rainwater drained from the municipalities. Work on it began in September 2015 and was done by the beginning of 2016. (Klimatilpasning, n.d.)

A more recent project combined the municipality's climate strategy for clean energy and climate adaptation, by having the Høje-Taastrup District Heating Utility Company establish a heat plant that utilised the ground water to generate heat. By pumping up the groundwater, the heat in it can be utilised to provide heat for district heating, and releasing the cooled water into a nearby stream, the groundwater in the local area can be lowered and mitigate the flooding of basements which is a frequent problem in the municipality. This project was ready and started pumping groundwater at the end of January 2019. (Pedersen, 2019)

The interview with the municipality revealed that this project was an opportunistic event, that under a public meeting got proposed and was met with great acceptance, as an older pumping station in the area had been closed in 2014 and left many surrounding basements flooded due to the rising groundwater levels.

The interview also revealed that in addition to the projects and goals, Høje-Taastrup municipality is also participating in networks, such as a Groundwater Network Collaboration and a climate adaptation network of the Capital Region, along with the network Agency for Digitisation Hydrological Prognosis and Digitalisation Systems (translated from Danish), in which HOFOR, DMI (Denmark's Meteorological Institute), GEUS (Geological Survey of Denmark and Greenland) and other municipalities and Utilities are a part of to gather information and experiences. Additional actors like CALL (Copenhagen Climate Adaptation Living Lab) were also collaborated with, along with other actors. But not every solution and recommendation were used.

Currently however, there is no further work regarding the climate adaptation in Høje-Taastrup municipality as stated during the interview. The climate adaptation plan has yet to be updated, and 29 risk areas still need to be addressed. Not much more focus on climate adaptation will occur in the municipality, unless the need arises, or other events demand it. However, the municipality, along with 19 others, has been chosen by the consultant agency RealDania, together with the network C40 and Concito, for the DK2020 project. The purpose of the project is to promote green planning and help reach the goals of CO2 neutrality of the Paris agreement. In that regard the climate plan has

been revised to develop a new climate plan to address CO2. It may result in the revamping of the Climate adaptation plan, but so far one cannot tell. (Realdania, n.d.)

Summarized

Høje-Taastrup municipality has recently started to focus on climate adaptation and still has far to go in order to finish the climate adaptation plan. It's geographical position has assisted it in keeping low on the vulnerability scores of Concito's report, which is further explained in the interview to also be the reason for why it has not yet had a focus on climate adaptation plans until it became obligatory.

In its plans and what it has done to reach its goals of climate adaptation, the municipality engaged in a broad cooperation between actors and networks, both to gather knowledge and resources, and to implement and develop its climate adaptation plan. It has also furthermore clearly stipulated the direction and focus of its intentions and who is accountable. However, not all goals are reached yet, and future work is needed to finish the plan. Below in figure 3 and table 6, is a general timeline of events in Høje-Taastrup, and the networks and actors it engaged with during this process.

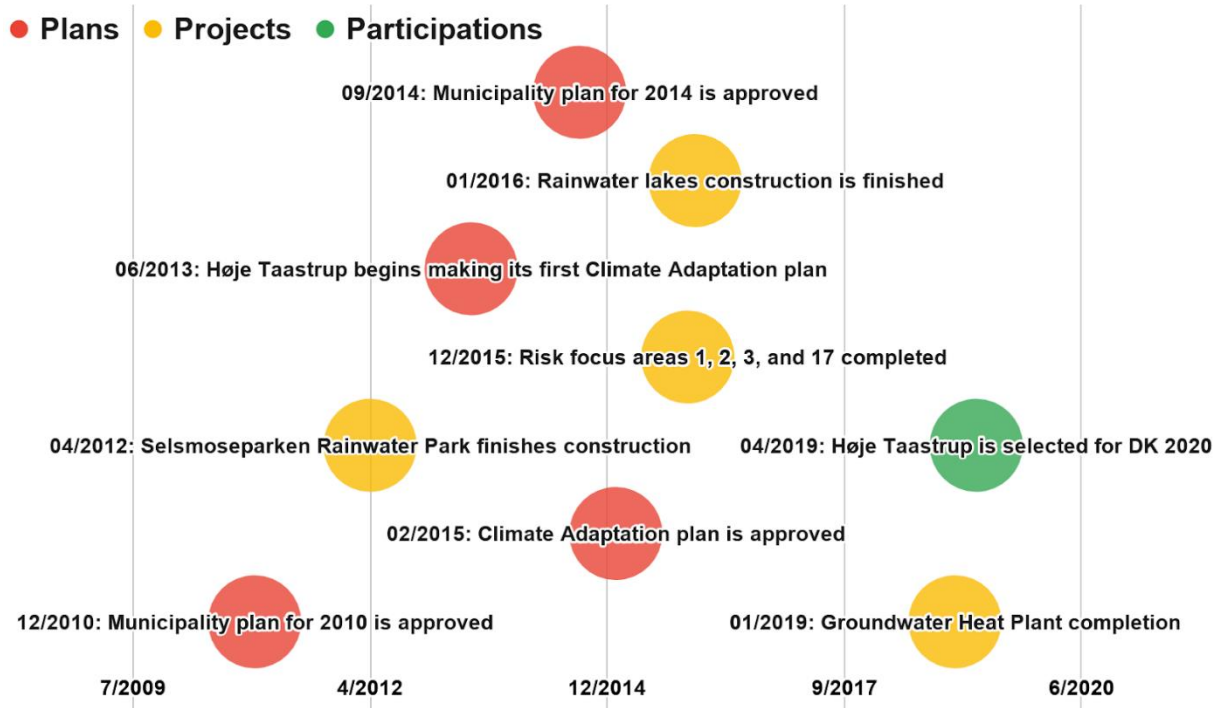


Figure 3: Timeline of Climate Adaptation events in Høje-Taastrup Municipality, categorised by whether the event was a plan (red) or project (yellow), and the municipality participating (green). Source: own make.

This timeline of events illustrated the earlier conclusion of Høje-Taastrup being new with the climate adaptation plan first coming in 2015, not long after the Danish Government had the municipalities implement them. It can also be noted that only a few projects have been carried out, enabling this timeline to be as detailed as possible.

Networks and actors

Actor	Role
Planning department	Early planning phase + production of the climate plan
Environmental department	Early planning phase

The city council	Early planning phase
Landowners (City2, etc)	Financial support and information
DK 2020	C40, Realdania, Concito and 19 other municipalities
CALL + other actors	Corporation for solutions and recommendations
A Groundwater Network	Knowledge sharing
A Climate Adaptation Network for the Capital Region	Knowledge sharing
Agency for Digitisation Hydro-logical Prognosis and Digitalisa-tion Systems Network	Knowledge sharing + HOFOR, DMI (Denmark's Meteorological Institute), GEUS (Geological Survey of Denmark and Greenland) and other municipalities and Utilities are a part of
Høje-Taastrup District heating	Cooperated with the municipality to provide heat and lower the groundwater level to prevent flooding of basements.
HTK Sewer Utility	Early planning phase - production of 5 100-year rain scenarios - financial support - implementation agent
Orbicon	Early planning phase - Produced the maps needed for worth of 1 million DKK
Driftsbyen	Early planning phase
HOFOR	Cooperative partner in projects
Citizen	Input and information
Political leaders	Ordered the new plans to be made
Bane Denmark, Albertslund, Ishøj, Vallensbæk, Glostrup and Brøndby	The rainwater lakes.

Table 6: Overview of the actors and networks involved in the climate adaptation process. Source: own make.

The list of networks and actors reveal that a many of these are solely in connection with the develop-ment phase and financing. Following that is the knowledge sharing networks, illustrating that Høje-Taastrup is engaged in gathering information, but whether they are currently engaged in them has not been stated beyond their interest for DK2020. The remaining networks and actors are in relation to the few projects outside of the climate adaptation plans, namely the lakes, heating pump and the Selsmoseparken.

6.1.2 Brøndby Municipality

Brøndby is a Danish suburban municipality in the capital region. It is located circa 11 km southwest of the capital Copenhagen and belongs under the region of 'Capital Region' which covers a large part of the north eastern part of Zealand. The municipality covers a surface area of 20,9 square kilometres (Danmarks Statistik, 2020a; Danmarks Statistik, 2020b), has a 6 km long stretch of coast towards Køge Bay and has a population of 35.541 inhabitants. (Brøndby municipality 2019)

The Capital Region of Denmark has several municipalities, which are designated according to the flood directive on vulnerability in connection to water and Brøndby municipality is one of them and the municipality is also one of the most vulnerable municipalities in the region with high damage statistics from cloudbursts in the region. Therefore, the municipality has been appointed to draw up a risk management plan against sea floods. The reason is that Køge Bay is designated as one of the risk areas in Denmark where there may be danger and risk for flooding. Based on Concito's mapping of the individual municipalities, a picture is formed of the damage statistics as illustrated in table 7 below.

Fordeling af kommuner på relativt største andele af skader efter type af oversvømmelse		
Skybrud	**Stormflod**	**Vandløb og søer**
Gentofte	Slagelse	Frederikshavn
Frederiksberg	Kerteminde	Guldborgsund
Hvidovre	Frederikssund	Holstebro
Hørsholm	Kalundborg	Vejle
Rødovre	Guldborgsund	Ringkøbing-Skjern
København	Nordfyn	Lolland
Tårnby	Lolland	Norddjurs
Brøndby	Odsherred	Brønderslev
Glostrup	Roskilde	Tønder
Lyngby-Taarbæk	Vesthimmerland	Aabenraa

Table 7: Overview of the top ten municipalities with the relatively highest share of damages after each type of flood. Source: Concito, 2017.

The table shows the affected municipalities on damage from cloudbursts, storm surges and inland waterways, respectively. It is seen that Brøndby municipality is vulnerable to cloudbursts. In the Concito report, Brøndby was one of the municipalities which were both screened and had semi-structured interviews and questionnaires carried out to better understand the challenges. The municipality was estimated to have an overall general vulnerability score of 6/10. Its other scores included a 2/6 score of vulnerability against seawater, 5/6 vulnerability against groundwater and a score of 3/8 vulnerability against streams. The reason for the low score in connection to the vulnerability against seawater is the Køge Bay Beach Park from 1980. Køge Bay Beach Park is a coherent protection against sea flooding - both as erosion protection and flood protection and it was also confirmed during the interview with the municipality. (Concito, 2017)

According to Brøndby municipality's climate strategy *Brøndby 2030,* which was politically adopted in May 2020, Brøndby must be a more climate-friendly municipality that takes co-responsibility for solving the climate challenges while working to reduce the climate footprint. This is done by the municipality involving citizens, public employees and experts in the development of the efforts that are to realise the objectives. The municipality does this by setting measurable goals, which they tweak or replace when reality changes. (Brøndby Kommune, 2020)

As mentioned in the problem analysis, intense cloudbursts in 2011 lead to an agreement in 2013 between the government and KL which obliged all municipalities to carry out risk-mapping and prepare climate adaptation plans. Document analysis from Brøndby municipality shows that the 'rainwater' problem in climate adaptation only really became an important theme after the cloudburst in 2011. This is also confirmed in the interview with Brøndby municipality. Up until 2005 the climate as a theme was absent in the municipality planning, in 2008, the Municipal Council adopted a climate strategy with two focus areas: 1.) To reduce CO2 emissions in the municipality and 2.) Adapt Brøndby to climate change and from 2008 and onwards the theme sustainability was mentioned in various contexts where the focus was on green recreational areas and energy efficiency. (Brøndby kommune, 2008)

In the Brøndby municipal plan from 2013, we can read that climate change has received more focus and especially the challenges around new precipitation patterns, local floods and rising sea levels.

"*Fewer and fewer overflows from the sewage pipes due to rainwater, fewer and less rainwater floods in homes and other buildings and fewer societal costs of floods in the municipality. A possible solution is that rainwater can be collected in recreational areas, so that climate challenges are solved at the same time as the city is beautified. For example, rainwater basins or canals can attract both adults and children to play and stay".* (Brøndby kommune, 2013)

To deal with these climate challenges, Brøndby and Vallensbæk municipality joined forces with the municipalities' sewerage and utilities companies (HOFOR and Biofos) and prepared a climate adaptation plan for handling rainwater and flooding. The climate adaptation plan from 2013 focused on these themes: climate protection of transport corridors, inter-municipal climate preparedness, coastal planning, the Green H recreational areas and climate-adapted business and urban development. (Brøndby kommune, 2013)

As mentioned above, Brøndby and Vallensbæk municipality collaborated to make the first climate adaptation plan because both municipalities had common challenges with changing climate and according to the interview with Brøndby municipality, the reason was that;

"water knows no boundaries"… "and this was the first time we had to make a climate plan" ... "so let's go together with the neighbouring municipality so we can get a little wiser on it" (Brøndby municipality interview, translated from Danish)

From 2011 and onwards, the 'water' in climate adaptation becomes a central part of Brøndby municipality's plans, this can be seen in both the municipal plan and climate adaptation plan from 2013 and especially in the very latest municipal plan and climate adaptation plan from 2019 where emphasis is placed on the municipality to implement;

"climate adaptation based on economically sustainable solutions, visible solutions that use the water to create a better city with good recreational areas, citizen involvement, cooperation across professional boundaries and municipal boundaries" … "prioritise activities in relation to climate adaptation" … "climate adaptation and flooding must be considered every time construction is to take place" (Brøndby Kommune, 2019a) and this is also confirmed in the interview with the municipality; … *"that we get climate adaptation thought into the projects we start up"* (Brøndby municipality interview, translated from Danish).

In Brøndby municipality, they have an overall climate adaptation strategy which is integrated into the municipal plan and which basically aims to reduce CO2 and adapt Brøndby to the future climate changes. In terms of adapting to future climate change, they have created a new climate plan called '*Climate Plan for Rain and Sea 2018*' and it is made in the Environmental department which is a part of the Technical and Environmental Administration. (Brøndby Kommune, 2018)

The climate plan is included as part of the municipal plan as prescribed by legislation and is considered as a sector plan. In contrast to the first climate plan, the new climate plan is made exclusively in and by Brøndby municipality, during the preparation of the plan there has been a close collaboration and coordination between different departments in the municipality. (Brøndby Kommune, 2018)

According to the informant from Brøndby municipality, there has been a strong focus on broad cooperation.

"*in Brøndby municipality we have a great focus on a wide circle of cooperation when it comes to water*" (Brøndby municipality interview, translated from Danish)

The climate plan (and now projects related to water) are planned and made in a team called 'Brøndby Water Team', here are planners from the various departments in the Technical and Environmental Administration as well as the municipality's utility companies (HOFOR, Biofos). According to the municipal plan 2019, the starting point for planning climate adaptation regarding water must be in accordance with the climate plan for rain and sea 2018 (Brøndby Kommune, 2019a).

The climate plan can be divided into two parts: 1.) Adaptation to future increased rainfall and patterns and 2.) The management of cloudbursts. The vision for the plan is to protect the city's values e.g. infrastructure, cultural sites, buildings etc., ensure urban quality, urban lifestyle and create synergies. Emphasis is placed on developing, presenting and prioritising visible and robust solutions that **(Brøndby Kommune, 2018)**;

"In addition to climate adaptation, offer added value in the form of recreational opportunities and make the municipality "greener", so we use rainwater as a visible quality and resource" (Brøndby Kommune, 2018)

Climate plan for rain and sea 2018 focuses on 6 themes: Possible waterways, Climate adaptation of roads, Light rail, railways etc. Emergency preparedness, Recreational contexts, Climate-adapted business and urban development, Storm surge / coastal planning. A few suggestions from the plan can be read below. (Brøndby Kommune, 2018)

Possible waterways: We need to adapt streams and other waterways so that they can handle more rainwater and rising seawater. (Brøndby Kommune, 2018)

Climate adaptation of roads, Light rail, railways etc.: When constructing new local roads, the possibility of planting trees and a road profile that ensures that there is drainage to rain basins must be considered. (Brøndby Kommune, 2018)

Emergency preparedness: Be part of a cross-sector and cross-disciplinary climate collaboration that is central to being able to quickly and efficiently monitor, warn and handle unintentional overflows from sewers and floods on municipal properties and infrastructure.

Recreational contexts: When establishing new rainwater basins, recreational opportunities must be considered. Handling the water should go hand in hand with recreational initiatives where possible. (Brøndby Kommune, 2018)

Climate-adapted business and urban development: Climate adaptation must be considered in building and construction projects. Rainwater must basically be handled locally (LAR). (Brøndby Kommune, 2018)

Storm surge / coastal planning: The coast must be secured against seawater rises and storm surges. (Brøndby Kommune, 2018)

A look at the municipality's other plans, such as the wastewater plan and the water supply plan, it can be clearly seen that there is a connection between the plans which stems from coordination in the Brøndby Water Team. For example, this can be read in the wastewater plan from 2019 (Brøndby kommune, 2019b):

"The climate plan for rain and sea is connected with the Wastewater Plan 2019. And "*Brøndby municipality wants to promote biological diversity and ensure a water environment that provides opportunities for activities and experiences"* and "*Brøndby municipality will as much as possible integrate the water in the city and use the water for recreational purposes*" (Brøndby kommune, 2019b)

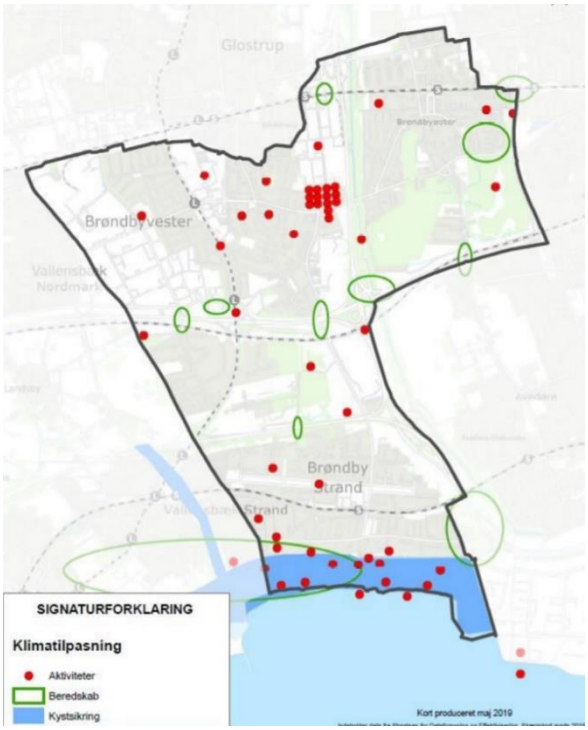
Both points are from the focus themes from the climate plan 2018. In the same way, it can be read in the water supply plan (Brøndby Kommune, 2018):

"*That the other municipal plans that are in close interaction with the water supply plan are: the climate plan for rain and sea and the wastewater plan"* (Brøndby Kommune, 2018)

The point is that when reviewing these plans, it becomes clear that they have been prepared on a common basis. This connection of plans is also confirmed in the interview, according to the informant from Brøndby municipality, all climate adaptation in connection with water is planned and carried out by Brøndby Vand Team where there are planners and technicians from different departments from the municipality and the municipality's utilities (HOFOR, Biofos).

"*When we start a project regarding water, it starts in the team where our utility companies are involved and they are involved in the project description*" and "*the environmental department is responsible for thinking climate in other tasks in the municipality*" (Brøndby municipality interview, translated from Danish)

Brøndby Vand Team has gathered the specific activities for the 6 themes in an action plan, all the activities and projects to be carried out in connection with the climate plan for rain and sea 2018 can be seen in this action plan, e.g. a project at Brøndbyvester School where they use the surroundings to apply LAR solutions like rainwater infiltration into the soil and a rainwater basin or a climate-proof parking place that consists of a permeable asphalt pavement that can drain large amounts of water together with a rainwater basin and other technical projects. (Brøndby Kommune, 2018)



Map 2. Source: Brøndby Kommune, 2018.

Map 2 shows an overview of climate adaptation activities and projects in Brøndby municipality. The red dots are ongoing climate adaptation activities in 2019, the green circles are vulnerable areas, and the blue are coastal protection areas.

It becomes clear that Brøndby municipality is very much engaged in its climate adaptation planning and ongoing projects as explained in its interviews. While not many specific projects have been mentioned and this analysis does not delve into these, Brøndby is always busy. The interview with Brøndby municipality has revealed that they are also interested in partaking in DK2020 by Realdania and are applying for becoming a part of it.

Summarized

Brøndby municipality has focused on the environment for many years, they have also focused on flooding but only from the sea but after the violent cloudbursts in recent years, the municipality has gained a greater focus on water from above. This has resulted in targeted policies and a separate climate plan focusing only on water challenges in the municipality.

To address and plan for activities and projects related to water in the municipality, they have set up a Water Team under the Environmental Department. They have also made a climate action plan where climate protection projects and climate adaptation projects are outlined with time horizons. Based on both document analysis and interview, Brøndby municipality is focused on the challenges from cloudburst and flooding and they have launched initiatives to mitigate it. Below in figure 4 and table 8, can be seen a timeline of events and a chart of the relevant actors and networks the municipality engaged in to accomplish its goals.

Figure 4: Timeline of Climate Adaptation events in Brøndby Municipality. Only one category is shown, and that is plans (red). Source: own make.

The timeline shows a clear historical progression in the different plans the municipality has produced that puts focus on climate adaptation. It is constantly producing and developing its plans to further its goals of climate adaptation. The timeline is void of projects, but this choice was based on the interview with Brøndby explaining that multiple projects are being carried out currently and are ongoing.

Networks and actors

Actor	Role
The Danish Ministry of the Environment The Danish Nature Agency	Formal networks where the municipality is represented. Guidance and information.
The Danish Coastal Authority KL, Local Government Denmark. The Capital Region of Denmark Vandråd	Formal networks where the municipality is represented. Guidance and information. Knowledge sharing.
Municipality Departments HOFOR, Greater Copenhagen Utility BIOFOS Wastewater Center Avedøre A/S	Partners included in the development phase of various climate adaptation plans. Partner in municipal projects Involved in planning Provide services to the municipality Information and knowledge sharing.

Brøndby Havn Strandparken Strandens venner Housing Associations Landlords/Landowners	Informal local networks, knowledge and experience sharing.
Klimatilpasning på tværs Det Nationale Netværk for Klimapasning The Danish society for Nature Conservation Neighbouring municipalities Bane Danmark Regnvandsforum Gate 21 DAKOFA	Informal (regional) networks, knowledge and experience sharing.

Table 8: Overview of the actors and networks involved in the climate adaptation process. Source: own make.

The networks and actors involved with Brøndby confirm its claim of coordination and participating in many networks for sharing information and carrying out the development of climate adaptation plans. It also becomes clear that the majority, if not exclusively, all the actors and networks pertain to knowledge and information sharing. The interview with Brøndby municipality revealed that the nature of information sharing varied greatly. Some was cooperation between municipalities, other was guidance, some was for general information, but the local networks are primarily for development and inclusion of individuals in the planning of projects.

6.1.3 Vordingborg Municipality

The third and final municipality is located on the southernmost part of Zealand and the Zealand region, the municipality also includes the islands of Møn, Bogø, Lindholm, Nyord, Farø, Tærø, Masnedø, Langø, Ægholm, Masnedø Kalv and Tyreholm. Together, the municipality covers 618,2 square kilometres, making it the 4th largest municipality in the region of Zealand, along with a population of 45.426, making it the 9th largest municipality of the region. (Danmarks Statistik, 2020a; Danmarks Statistik, 2020b)

The municipality once consisted of Møn, Præstø, Vordingborg and Langebæk municipalities, but during the municipality reform of 2007, these four municipalities were merged under Vordingborg municipality. The intent of the municipality reform was to strengthen the public sector and the municipalities, by partly reducing the number of total municipalities of 271 down to 98 more bigger and resourceful municipalities with populations of at least 20.000. In addition, the counties were removed,

and replaced by 5 regions acting under the state level, responsible for broad public sector responsibilities such as resource mapping, the public healthcare, etc. In addition, other responsibilities and powers were reassigned and given to the municipalities. (Indenrigs- og Sundhedsministeriet, 2005)

In their report, Concito gave Vordingborg municipality a general vulnerability score of 8/10 against flooding, with a score of 3/6 of vulnerability against seawater, a score of 6/8 against streams and a score of 5/6 against groundwater. In addition, Concito mentions that Vordingborg municipality is one of the top 20 municipalities with the most damages from heavy precipitation and flooding from streams, with respective spots of 19 and 13 on the lists. Finally, Concito also mentions that the municipality is also on the list of the Coastal Directorate's 25 most vulnerable coastal municipalities in relation to flooding. (Concito, 2017)

During the interview with the municipality, it was stated very early that the municipality has been familiar with climate adaptation plans far before the demand from the government about making climate adaptation planning mandatory. Due to this, the workload of the municipality was quite low, and only small changes had to be made in order to ensure that the climate adaptation plans followed the government's guidelines. In addition to the municipality being on the list of the 25 most vulnerable municipalities, it is also in danger of major financial losses in connection with flooding and at the same time there is a concern that the city's cultural and historical values will be damaged in the event of flooding. Three of the old market towns, now cities, of Præstø, Vordingborg and Stege, are located within the city and contain numerous historical buildings. This creates an additional incentive to protect these valuable buildings from climate change.

When looking into the history of climate adaptation in the municipality, the first instances of these occur in the old municipality plans before the reform (Vordingborg kommune, n.d.a):

- Møn municipality plan 1997-2009, approved circa~ 1997
- Vordingborg municipality plan 1999-2011, approved October 2001
- Langebæk municipality plan 2000-2012, approved November 2001
- Præstø municipality plan 2000-2010, approved June 2000

Shared amongst the 4 different plans, there is not much focus on climate or rainwater in general. Summarized, the plans focus on the protection of groundwater, streams, and lowlands, along with the establishing of areas for natural flooding. They also focus on the topic of coastal lines, in which no construction is allowed between the coast and up to 300 meters away, except for summer housing. However, Vordingborg municipality did address the removal of old coastal protection installations to be completed by 2002. All in all, there is not much other focus on the topic. (Vordingborg kommune, 2001; Langebæk kommune, 2000; Møn kommune, 1997; Præstø kommune, 2000)

Following the Municipality Reform, all the old plans were made obsolete and were cancelled as per October 2009. They were promptly replaced with a new municipality plan in October 2009, stretching from 2009 to 2021, and another municipality plan in September 2013, stretching 12 years into the future. This plan was replaced in November 2019, replaced by the current municipality plan. (Vordingborg kommune, n.d.a)

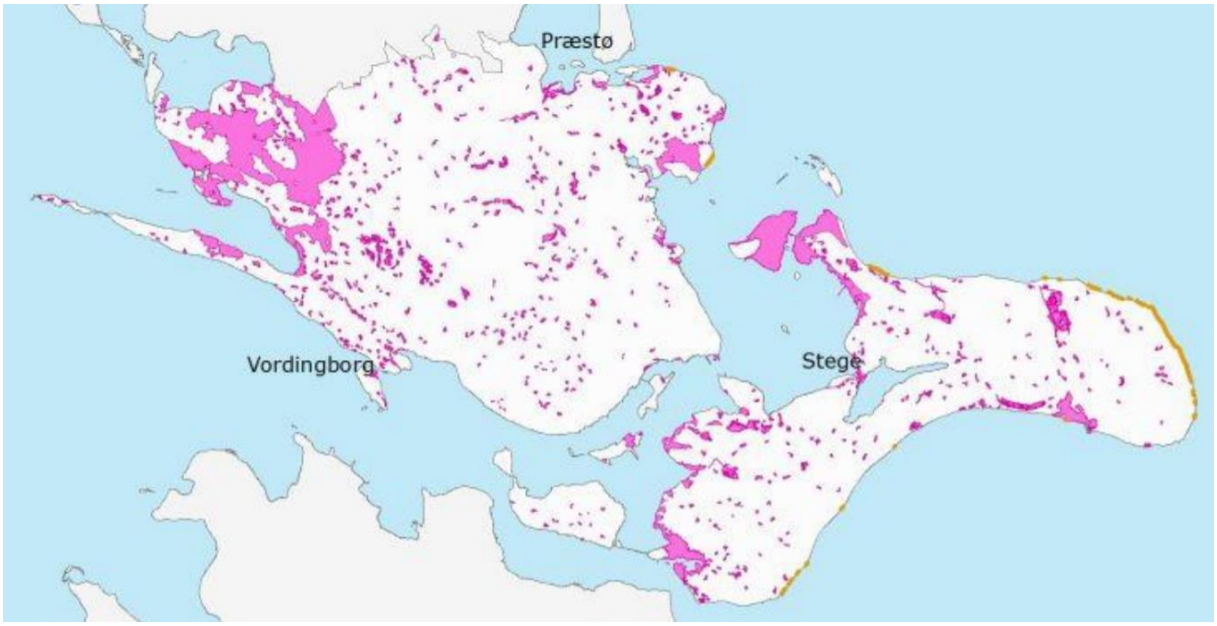
It is with these newer plans, starting with the first one after the reform and continuing to the current plan, where a clearer focus on climate change and adaptation is made. The 2009-2021 and 2013 plans both stipulate a clear focus on lowering CO2, increasing energy efficiency, and to protect against unwanted climate effects such as floods, rising groundwater, streams and heavy precipitation. Based on a chart of vulnerable areas for flooding and seawater level increases, the plan focuses on topics of ensuring the capacity of streams and sewer systems to handle the increased level, and to

discourage the construction of buildings in vulnerable areas. They also focus on the creation of recreational areas that can store large amounts of water, rainwater basins and even dikes. (Vordingborg kommune, 2007; Vordingborg Spildevand A/S, NIRAS & Vordingborg Kommune., 2013)

Currently, the climate adaptation plan is split between the mapping and focus on areas at risk of flooding in the climate-section of the digital municipality plan, the focus of handling rainwater and sewer systems in the municipality's waste water plan, and the old climate action plan of 2012. (Vordingborg kommune, n.d.b; Vordingborg kommune, n.d.c)

The work with climate adaptation was described during the interview as being a relatively easy process due to the already existing focus as explained earlier. The work is primarily carried out by the planning department, Plan and City, who produces the plans, but information and research along with other knowledge specific tasks is a shared process between the different departments.

The current municipality plan 2018-2030, still has a focus on climate adaptation and solutions to mitigate climate change, focussing on the issues of streams, heavy precipitation, rising sea waters and weak points along neighbouring municipality borders. It also includes scenarios for 100 years rains, and provides a mapping of the municipality, showing the areas in risk of flooding due to rain or seawater in the year 2050 (Vordingborg kommune, 2019). The map can be seen below in map 3.



Map 3: Chart of areas in Vordingborg municipality at risk of flooding due to rain or seawater in the year 2050. Source: (Vordingborg kommune, 2019)

The wastewater plan of 2013-2024, developed between the municipality, Vordingborg Wastewater Utility and the consulting company NIRAS was approved in 2013, meanwhile it put focus on the expansion of sewer systems, either by establishing new sewers, separate the systems, and injunctions in the open country, to ensure that properties in areas in risk of flooding, have proper water treatments options. The work will include both landowners, the municipality and the Vordingborg Wastewater Utility, placing shared responsibility on all three, and the subject of financing on the Utility and landowners. (Vordingborg Spildevand A/S, NIRAS & Vordingborg Kommune., 2013)

The first climate action plan 2012 for the municipality, approved in December 2011, delves into how the municipality will prioritise its course of action. It stipulates 4 focus areas, sewers, coast, streams, and emergency preparedness, split over the open land, summerhouse areas, and cities. Furthermore, the plan also stipulates areas of responsibility, who is accountable, and lists primary financers. The list of accountable people is (Cowi A/S & Projektgruppen for klimatilpasning, 2012):

- Landowners (citizens, municipality, companies, landowner associations, etc)
- The utilities (Vordingborg Water sewerage Company)
- Privately owned and shared pumping stations

The primary financiers are (Cowi A/S & Projektgruppen for klimatilpasning, 2012):

- The utilities and municipality for sewers
- The municipality and landowners for protection against seawater
- The municipality for protection against general flooding from land and on roads.

Revealed in the third interview with Vordingborg municipality, the plan has not been followed extensively, and many of the timelines it stipulates has been only roughly followed. Despite this, it has still served as the primary guide for how the municipality should focus its resources and actions.

Additional plans and projects that have also been started up to not only focus on climate adaptation, but also on city renewal cultural enrichment, and to create synergies between infrastructure and leisure. Of these, there are 3 big plans for each of the major market towns.

During the interview it was explained that the background for this development was in due long-standing political wishes to modernise, update, and protect the old market towns (Vordingborg kommune, n.d.d). Ceasing the opportunity to act on the grounds of the climate adaptation plans, the municipality created a consortium, consisting of actors from across the municipality organisation, including departments and politicians, and began the process of making plans.

During this process there was a longer period of initial idea phases, clearing of goals, and the active involvement of relevant actors and citizens in the three cities. This involvement process started in early May 2019, with the main actors, and then with the citizens via workshops in the rest of May. Final drafts were then made public in all the three cities in June 2019, where the citizens and actors could submit their feedback. Lastly, the plans were finally approved in December 2019. (Vordingborg kommune, n.d.f; Vordingborg kommune, n.d.g)

As mentioned above the municipal council approved the plans for development of the Port of Præstø, Stege Kyst and Vordingborg Nordhavn. The municipal council has also decided to initiate three pre-development small start-up projects at each development site. These 'Opening Move' projects are meant to kickstart the realisation and show that the municipality is getting started, the idea is that these kind of small start-up projects can create awareness, create an immediate quality and value for the citizens. By making these small investments in each port the individual project will provide immediate quality to each port and illustrate the variation in the coastal protection measures across the three ports and as far as possible, be independent of other construction projects. (Vordingborg kommune, n.d.f)

So far approximately DKK 2 mill. has been approved for each 'opening move' and they will be used at Præstø Harbour to build a new stream which will support the natural quality, biodiversity and everyday life in Præstø. At Vordingborg Nordhavn the idea is to build an educational playground which allows children to explore the maritime environment and thus make the place an attractive and visible resting place for both the adults and the children. The last opening move project on Stege coast will be a new beach which will be built to replace the existing one and the plan is for all three projects to be completed by 2022. (Vordingborg kommune, n.d.f)

Currently Vordingborg municipality has many climate adaptation projects running, but despite that their climate adaptation action plan has yet to be updated. Explained in the third interview with the municipality, there will be a future project to update the plan 2021 and bring it into the new year. Additionally, a future project for the municipality is to become part of DK2020 municipalities. The

municipality will apply to the project on the 1st November later this year and use the opportunity to put more focus on climate in its planning.

Summarized

Vordingborg municipality has had a natural focus on flooding as it is a coastal municipality. Over the years, it has also drawn up plans in relation to flooding from the sea and, like other Danish municipalities, it has also focused on reducing CO2 in the municipality. After the municipality's expansion in connection with the reform, there has been a period where the different plans were mixed up a bit, but since the combined municipalities had roughly the same challenges, they quickly summarize the different plans.

The current municipality plan 2018-2030, still has a focus on climate adaptation but also on recreational areas along the coast and preserving the cultural and historic values as well as new projects e.g. three big plans for each of the major market towns. Below in figure 5 and table 9, can be seen a timeline of events and a chart of the relevant actors and networks the municipality engaged in to accomplish its goals.

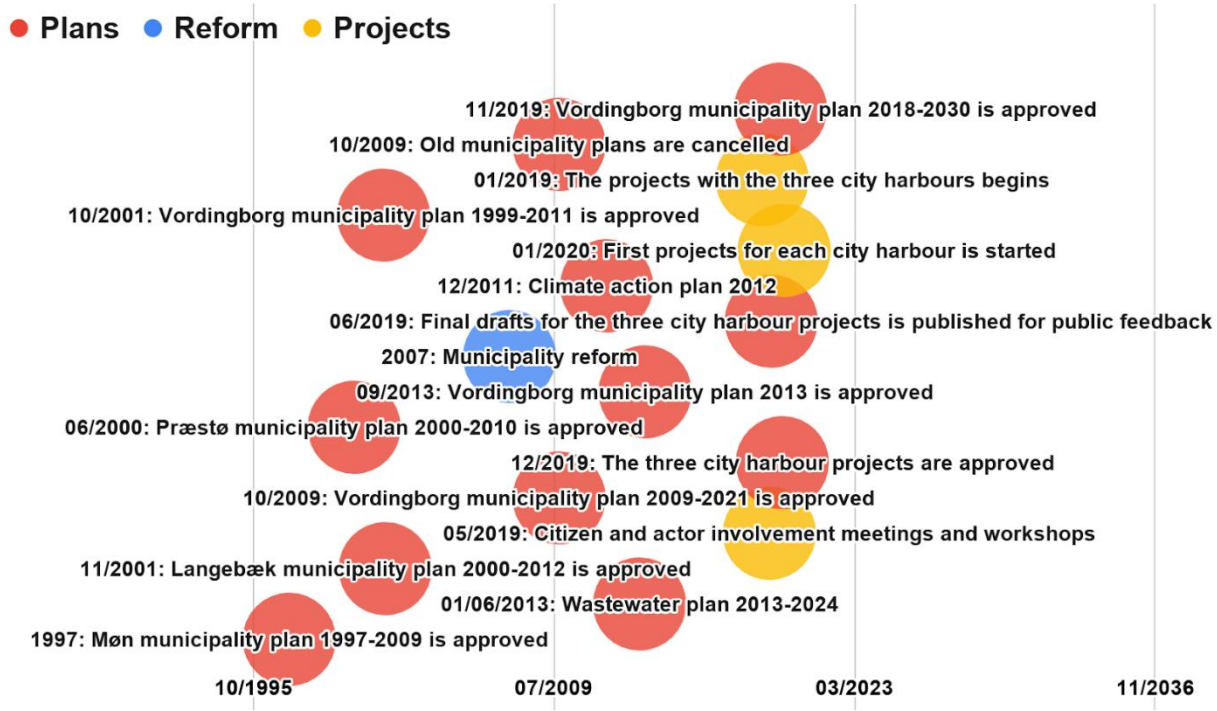


Figure 5: Timeline of Climate Adaptation events in Brøndby municipality, categorised by whether the event was a plan (red) or reform (blue), and projects (yellow). Source: own make.

The timeline of events for Vordingborg municipality is clearly marked by the municipal reform of 2007, leading to a great deal of plans that had to be cancelled and then written together into a new municipality plan. Interview with Vordingborg municipality indicated that this change, despite its difficulty, was also an opportunity to push past the old planning culture and was what enabled the municipality to finally focus on climate adaptation in its first municipality plan. Along with the events the three city projects can also be seen, showing their very recent start.

Networks and actors

Actors	Role

The Danish Coastal Authority	Appointed as one of the 25 municipalities at risk of flooding. As such there is close cooperation between this network and the municipality regarding climate adapt Vordingborg city and assist in developing and carrying out the plans.
Other municipality departments	Was used in the early phases of climate adaptation planning - Information sharing and research - ongoing shared work
Plan and City department	Primary actor responsible for production and updating of plans
The municipality	Primary actor in ensuring climate adaptation on coasts, roads and general open land. Primary finance in most projects
Landowners	Involved in the establishing of proper water treatment and climate adaptation solutions. Primary financer for these. Also partly financed for sewer systems
Vordingborg Wastewater Utility	Involved in the development of rain scenarios and sewer system infrastructure. Primary financier for anything related to sewers. Responsible for sewers
The three city project consortium	Group of actors responsible for the projects regarding the 3 city harbours.
Private, and shared, pumping stations	Involved in the expansion and ensuring of proper wastewater treatment. Investors
Citizens	Involved in the projects of the three city harbours - main source of local information
Local private actors	Involved in the projects of the three city harbours - main source of local information + possibly investors in the new city harbour projects
NIRAS	Consultant involved in the wastewater plan production. Was responsible for the charting of risk areas and appointment of areas where certain action was required

Table 9: Overview of the actors and networks involved in the climate adaptation process. *Source: own make.*

The networks and actors of this municipality are very internal so far, which matches with the interview of Vordingborg where it was started that they did not engage in broad networks outside the municipality with the exception of the Danish Coastal Authority and possibly future collaboration with RealDania in DK2020.

6.1.4 Part Conclusion on Climate Adaptation in Danish Municipalities

The purpose of this analysis was to answer the project's first research question: *What have the Danish municipalities done in relation to climate adaptation?*

To do so the analysis has delved into the historical, current and possible future events of each municipality chosen for this project, providing a deep insight into how climate adaptation was carried out and implemented.

The findings show that there are differences between the approach to climate adaptation depending on which municipality it is. It is also clear that the history of municipalities with climate adaptation varies over time and in addition, the municipalities' involvement also varies as well as the results they have achieved. Below is a list of our main findings, each focussing on a different aspect.

- ***Geography plays a role in whether a municipality engages in climate adaptation prior to the Danish government making it obligatory in 2013.*** The findings in this analysis implies that geographical positions, such as ground elevation and whether a municipality is a coastal municipality, may influence when a municipality has begun to focus on climate adaptation. Brøndby and Vordingborg, due to being coastal municipalities, has longer planning history in regard to climate adaptation compared to Høje-Taastrup, who due to its geographical position, had no focus on climate adaptation until it was made obligatory by the Danish government. These approaches by the municipalities make sense, as the geographical position of a municipality may expose it to threats from climate change more frequently, thereby creating early needs to mitigate and prevent these.

- ***The planning history of each municipality illustrates the paradigm shift in environmental concerns.*** The variation in each municipality's planning history regarding climate adaptation is broad and can be connected to the prior result of geographical positions' influence on the municipality's priorities. The results also provide an insight into the historical prioritisation of climate adaptation and other concerns in each municipality, aligning with the shift and continued rising global focus on environmental concerns. The empirical data shows that historically, in the municipalities, the focus on the environment follows this trend of, avoiding pollution, reduction of CO2 and now climate adaptation. However, it must be said that the municipalities have an overall focus on it, and work with all three trends simultaneously, but in terms of trend, it can be summarized as mentioned.

- ***The municipality's engagement depends on both geography and how severely the precipitation affects the municipality's infrastructure.*** In the empirical evidence from the document analysis, all three municipalities have had the environment as a theme, but it has been more in connection with reducing pollution. Following the Paris Agreement in 2015, the environment became a key issue and through legislation, emphasis was placed on energy efficiency and the reduction of GHG. However, it was not until the beginning of the 2000s that climate adaptation really became a point of attention in connection with changing weather conditions and the economic consequences thereof, and the cloudbursts in 2007, 2010 and 2011, respectively, were the turning point in putting 'the water from above' in focus.

  If we look at the empirical data from the document analysis and the interviews, a difference can be seen in the involvement, commitment and especially in the engagement in the respective municipalities, e.g. in addition to focusing on the environment and climate in the municipal plan, Brøndby municipality also has a separate climate plan to meet the challenge

in connection with cloudbursts and floods. This plan is not a result of demands from the government but a recognition that climate adaptation is necessary for the municipality. In addition, the empirical evidence from the interviews shows that Brøndby municipality strives to think about climate adaptation in the municipality's other tasks and that they have an interdisciplinary water team in the environmental department that plans and is responsible for everything in the municipality that relates to water. Brøndby municipality also stands out by having an updated database to a greater extent, as they have collaborated both internally and externally on continuous updating of the climate challenges in the municipality. At the same time, it is also clear that Brøndby municipality's climate planning is carried out on a 'voluntary' basis, which is reflected in a large range for the scope of the municipalities' climate plans and ambitions. Empirical evidence shows that Brøndby's efforts are strategically anchored in the climate plan.

The empirical evidence indicates that municipalities work with climate in many ways. For some municipalities such as Brøndby, the effort is strategically anchored in a climate plan, but for Høje-Taastrup municipality, the effort is 'distributed' more ad hoc. The empirical evidence indicates that Høje-Taastrup municipality's level of ambition and scope is lagging, at least when it comes to climate adaptation regarding precipitation, the empirical evidence also shows that it has something to do with the municipality being a so-called top municipality and the main challenges with water are flooding of basements due to intrusive groundwater which is solved ad hoc and with known technical solutions. The empirical evidence also shows that Høje-Taastrup municipality works with climate adaptation based on requirements and legislation and not voluntariness, so they only focus on what the government has obliged them to do. However, empirical evidence also shows that Høje-Taastrup works together both internally and externally to address climate problems and to gain relevant knowledge and experience.

Empirical evidence shows that Vordingborg municipality works with climate plans in a slightly different way, they have always focused on flooding from the sea and they have followed the government's requirements regarding the preparation of environmental goals and climate plans. According to the informant, the climate plan does not govern their climate efforts in the municipality, they are more concerned with sustainable urban development projects where elements from the climate plan are considered such as new projects along the harbour or beach which should also act as a measure against flooding. Empirical evidence also shows that there is more focus on reducing CO2, sustainable urban development and countermeasures against flooding from the sea and not so much from rainwater. It appears from the empirical data that Vordingborg municipality has an interest in climate planning and has set climate goals, but the scope of climate goals, type and climate plans is very wide, empirical data analysis shows that they have several geographical climate goals where they will realise their climate planning through urban development. Overall, the empirical evidence indicates that Vordingborg municipality's level of ambition and scope support the climate change in the municipality.

- ***The essence of the strategies of the different municipalities is the same, but the means to carry out the strategy varies depending on the specific location and situation in each municipality.*** According to the document analysis, all three municipalities have different strategies regarding climate adaptation; Brøndby municipality follows a strategy with a focus on adapting Brøndby to climate change. Høje-Taastrup municipality's strategy is based on the implementation of various initiatives for climate protection of properties, while Vordingborg municipality's strategy is about integrating climate considerations at an early stage in all forms of planning. The empirical evidence shows that although the essence is the same, the instruments differ from municipality to municipality, the empirical evidence suggests that

both Vordingborg and Høje-Taastrup municipality see climate adaptation, urban development and economic growth go hand in hand, whereas Brøndby will create solutions in the climate area in close collaboration with relevant actors.

- ***Each municipality practices a high degree of self-autonomy and governance in their varying approaches to climate adaptation.*** The basic premise of governance is the decentralisation of the decision-making process, working through the inclusion of multiple actors, participation and creation of networks to reach decisions and act. Thanks to the danish laws, the municipalities of Denmark possess this decentral decision making through their high level of self-governing rule. They only must follow certain laws of the government and other regulations but can otherwise fully govern themselves. This high level of self-autonomy can also be seen in how each municipality has approached climate adaptation through time up until now. While the demand from the government did force the municipalities to carry out climate adaptation and use certain methods, the municipalities were free to make all other decisions in regards to how to approach it and to continue working with the planning processes and projects. This can be seen in that each municipality not only was able to make their own decisions on who to include and should exclude in the planning and implementation process, but also in how they were able to choose where to prioritise climate adaptation and who were responsible for doing so. Amongst these were the municipalities themselves, the landowners and the utilities, who are also considered the main financers.

  The municipalities also followed the other aspects of governance regarding the inclusion of actors and networks. Each municipality has not only engaged in networking internally between departments and externally with other actors, but has also engaged in cooperation with landowners, the utilities and local actors. For all three municipalities, the departments collaborated with each other to ensure knowledge sharing and effective planning. All of them also included their utilities in this process with Høje-Taastrup and Vordingborg municipality also having included consultant agencies for mapping. The municipalities have also engaged in information sharing networks, along with establishing their own networks consisting of either politician, important managers from the municipality, citizens and private actors responsible for certain projects or tasks. In addition, the municipalities have also included the citizens and private actors through various means of open participation, such as workshops, public hearings and meetings. They also work along with landowners, private actors and investors to accomplish goals of climate adaptation, with Brøndby and Vordingborg leading this example. Høje-Taastrup also have engaged in this, but currently remain inactive on this front until further work will be done.

- ***The progress of climate adaptation is still an ongoing process in the municipalities, with various projects having already been finished, currently ongoing, and have yet to be started.*** As found in each of the municipalities in this analysis, many projects have been carried out, but no municipality is yet done with any of the list of concrete projects or focus points. Currently, only Brøndby municipality is engaging with climate adaptation in both planning and projects, meanwhile Vordingborg municipality appears to only be engaged in ongoing projects and Høje-Taastrup municipality has meanwhile stopped all focus on climate adaptation. However, despite the various states, DK2020 by Realdania is collectively seen as a future endeavour that all the municipalities would like to be a part of.

To summarize and answer to the first sub-question, "*What have the Danish municipalities done in relation to climate adaptation?*", municipalities have all been engaged in climate adaptation, with some starting earlier than some due to local reasons. The action of the government making climate planning obligatory in municipalities, and making them follow certain guidelines, have standardised the process and forced the remaining municipalities to join the effort. To this regard there have been carried out a multitude of plans and mapping of focus areas in the municipalities, which has in so far

followed the general adherence of general governance. Many parts of their planning and strategies match up, possibly due to the standardisation imposed by the government, but also very greatly depending on the local situation and goals. There have been sought to be an inclusion of not just the municipality and utility, but also citizens and local actors with the intents of creating a good planning foundation. As a result, multiple projects such as infrastructure, city renewal and Climate adaptation measures have been planned and carried out that would not have been possible to the degree they were, if not for the cooperation between actors. All municipalities have approached climate adaptation with a great degree of freedom, being able to not only appoint who is responsible and have to finance the projects, but also in the level of engagement and to what degree the plans have been completed. More work still needs to be done, but progress has been, and is being, made by all the municipalities.

6.2 Barriers and challenges for implementation of Climate Adaptation in Municipalities

In the prior analysis the focus was on what happened in the climate adaptation process in Danish Municipalities and the events which took place.

In this analysis the project will focus on answering the sub-question of: *What are the organisational barriers and challenges that are preventing the implementation of climate adaptation in the municipalities?*

To do so, this analysis will draw upon all the governance theory and implementation theory. The structure will combine the theories into topics on shared focal points, in which each theory point will be analysed for barriers and challenges.

The analysis will start out with governance spaces, policy design and goodness of fit. The next analysis will be the hierarchy, followed by governance models.

Lastly, the analysis will focus on networks, drawing upon Stoker's 5 propositions, and the implementation process, analysed after the Integrated Implementation model.

The analysis will end with a part-conclusion, answering the first sub-question and summarizing the barriers and challenges found in through the analysis. The results will be the basis for the next chapter.

6.2.1 Governance Spaces, Policy Designs and Goodness of Fit

The first part of this analysis will focus on governance and the spaces in which it took place, followed by how well the policy design fits downwards from the international space to service space.

Governance Spaces

As explained in the theory chapter, governance itself can take place on different "spaces", ranging from international space to community space. Depending on these spaces, the type of actors and goals can vary greatly in nature, becoming more focussed or broad and general depending on which governance space is being dealt with. These scales may apply to the climate adaptation plans too, in not just how they are carried out, but also in how they were initiated and began.

International Space, the European Union

Starting with analysing the origin of the climate adaptation in the municipalities, the European Union comes into focus first. As previously explained in the theory chapter, the European Union is the government that operates in the international governance space and is where the EU Adaptation Strategy and Floods Directive implemented by the Danish government originates from.

Already explained in the problem analysis, the Adaptation Strategy and Flood Risk Directive was decided upon by the European Commission.

The Floods Directive was focussed on each member state carrying out a mapping of areas in risk of flooding, creating flood management plans that prevent, protect and mitigate those floods by 2015. Being a directive, this meant that all member states must implement it into their own planning. (European Commission, 2019)

The adaptation strategy focused on promoting action, to climate proof the union and create better decision making processes by providing knowledge. The adaptation strategy provides a series of documents and a general set of guidelines for how each member state can implement climate adaptation planning. Following the idea of not 'one solution fits all' it presents an open ruleset that allows for each member state to make their own laws and strategic planning implementation. In addition, several agencies with counselling and funding programmes made available to facilitate projects and action. The choice to adapt the climate strategy was made in agreement by all the state members of the EU and the EU commission in 2013. The Climate adaptation strategy is however not a directive or law, but an agreement between the members to engage in this strategy. Depending on the evaluation of the implementation process, the commission might decide to propose legally binding instruments to ensure the implementation. (European Commission, 2013)

The European Commission is responsible for the intentions of the EU in mind and setting the direction and priorities of the EU and policies. Together with other EU institutions, they develop strategies and the political direction. They have the ability to propose new laws, policies, and are also responsible for implementing decisions from the EU parliament and Council in the member states. To do so it has a register of Commission expert groups and similar groups, able to provide expertise and advice on a multitude of aspects such as background knowledge to make informed decisions or how best to implement decisions. (European Commission, n.d.a; European Commission, n.d.b)

The commission consists of 27 members, one from each member state, chosen by the member state governments and approved by the European Parliament with a 5 year tenure. These members make up a collage of commissioners, with a president nominated by the EU Council and appointed by the EU parliament. (European Commission, n.d.a; European Commission, n.d.b)

The process to reach decisions consists of a collective decision making progress, with each member having equal say and weight on these decisions. Each member must be consulted on every proposal and must make a decision. Additionally, decisions may also be voted on, with a majority in favour meaning a decision has been made. (European Commission, n.d.a; European Commission, n.d.b)

This means that the decisions of the commission are a matter of representative democracy and limited to reflecting the interests of national governments and EU parliament through a majority of vote. Even with the inclusion of the experts, the involved actors are mainly only politicians.

In terms of governance theory, this structure confirms the governance space theory of international governance spaces being highly institutionalised. The nature of the Adaptation Strategy and the Floods Directives both exemplifies this though it is open structure and general set of goals. Meanwhile the European Union and the EU commission are also both examples of highly institutionalised governance.

The general understanding of governance is decentralisation of power and placing decision making on the local scale. It is about the involvement of many actors and networking in order to reach solutions.

When the EU decides on laws and directives, such as the Floods Directive, they must be implemented in the member states within a time limit. This comes into conflict with one of the main aspects of governance, decentralisation. This is problematic, for it means that the decision making is then removed from the local spaces and is far away. However, this is not the same case for the Adaptation Strategy of the EU.

By having made the decision to follow through with implementing climate adaptation strategies voluntarily, the decentralisation of decision making is not as far removed as it possibly could be, but instead will be found on the level of the member state. However, if the EU commission does follow

through with proposing legally binding instruments it would fully put the decision making on the international governance space, fully removed from the local situation as much as possible.

However, despite this there is also adherence to governance in the strategy. By making the goals and guidelines so open and general, it becomes possible for individual member states to implement the strategy how they see fit. This high level of adaptability does however provide the opportunity to mitigate the centralised decision making progress.

In addition, the fact that there are not many local leaders involved in the decision making process that lead to the adoption of the EU adaptation Strategy further enhances the issue and puts conflict on the involvement of relevant actors. Only 27 commissioners made the decision to adopt the strategy.

Only the aspect of networking can be argued to be a maintained aspect within the EU and the EU commission. The involvement of expert groups to provide guidance and expertise enables that the final decisions made are not uninformed or ignorant. Furthermore, there are several agencies and funds that are in place which can provide knowledge and resources to member states and local projects that assists with making decisions on both a national space and on more local levels.

National Space, the Danish Government

The next space of climate adaptation took place in the national space, where the Danish Government operates.

As mentioned in the problem analysis, Denmark was already engaged in working with climate adaptation prior to the EU Adaptation Strategy. It can be argued that it made sense that the government would therefore make the voice to accept the Adaptation Strategy from the EU and implement it when the choice was given.

The climate adaptation already began 1 year prior to the EU's Adaptation Strategy, with the danish government taking a leading role based on the implementation of the Floods Directive from the EU.

Already in 2012 the government had reached an agreement with Local Government Denmark, the association representing all municipalities and interests (Kommunernes Landsforening, n.d.), that all municipalities were obligated to engage in climate adaptation planning by 2013, and the head announced that there were guidelines in works for how this planning was to be carried out. (Klimatilpasning, 2018)

This was also stipulated by the government's action plan for climate adaptation in Denmark in December 2012 (Klimatilpasning, 2019). The plan presents 5 main areas of focus that the government will work on:

1. Ensuring the best framework for the municipalities climate adaptation
2. To secure shared knowledge base work and guidance about the consequences of climate change
3. Coordinating across authorities, private sector and citizens
4. Focus on financial growth via new solutions contributing to sustainability
5. Lead in reducing the consequences of climate change internationally and to make an ambitious climate adaptation in EU

In addition, the action plan also delved into the implementation of the EU's Floods Directive, describing it as the main jumping board for the climate adaptation for Denmark and that it is soon complete.

In January 2013, Denmark adopted the EU Adaptation Strategy (European Commission, 2013), and in March 2013, the government had produced the guideline for climate adaptation in municipality plans and local climate plans.

This guide not only presented how planning regarding Climate adaptation would occur, but also the methods. Amongst these were the procedure of mapping the areas in risk of flooding, assessing value and creating risk maps that would show where the primary focus should be. The guidelines also further stipulated how this new planning was to be carried out in terms of debate, and as either part of municipality plans or as an addition to it. It also proposed methods of cooperation and organisation, along with financing and other rules. (Naturstyrelsen, 2013)

In addition, the state has also actively supported the climate adaptation implementation process with data and maps and other relevant information on the topic, along with examples and inspirational material. (Klimatilpasning, 2018; Naturstyrelsen, 2013)

Following the publication of the guidelines, the responsibility then fell to the municipalities to carry them out as per their obligation to do so.

Similarly, to the international space, governance is practiced through a central institution, in this case it is the Danish government. The goals also now take the second step of approaching climate adaptation more directly, setting the basis using set methodology, rules and procedures for the municipality to follow. In addition, the government also encourages the process through providing information, inspiration and data. In the interview with Brøndby municipality, this last step of providing data, inspiration and information played a key role for connecting the national and service space.

Meanwhile, the governance aspect, the image improves on some aspects, but it is still not fitting into the meaning of governance. There is still a centralised decision making that involved a far too short list of actors and networks. However, this time there is a more representational approach to it. Including the Local Government Denmark into the decision making process means that the municipalities, which the government had intended to carry out the climate adaptation in the end, were more represented. Networks meanwhile are now down to only between the two actors of government and the Local Government Denmark, as the decision makers, with the addition of information sharing networks as a form of encouragement. In addition, the free choice of engaging in climate adaptation is transformed into an obligation for the municipalities.

This disconnect between the municipality and the state was commented on by the interviewed municipalities. That while there was a wish and goal by the government to have Denmark become fully engaged in climate adaptation, in the end it was not the state, but the municipalities which was not only put in charge, but also forced to start this work. The state is in a way not taking responsibility, at least not directly as an active actor, but more as a facilitator that provides information, data and guidelines.

The saving grace, as similarly with the international space, is that the guidelines published by the state were still very open for allowing creative problem solving. This was pointed out in the interview with Vordingborg, that explained that the freedom of choosing what solutions and how to reach them creates a vast room for prioritisation, and decision making.

Service Space, the Municipalities

The next and final space is service space. This is where the municipalities come in, having to carry out the climate adaptation implementation process.

The governance perspective here moves quickly away from few actors to a broad collective working process involving many actors.

As explained in the prior analysis, each of the different municipalities interviewed in this project all engaged in an internal cooperation network between the various departments, along with consultants and the utilities when developing their plans. The interviews revealed here that the goals and certain solutions gets broadly decided upon in the climate adaptation plans. The interview with Vordingborg adds that the topic of creating additional value and not just to implement climate adaptations is a huge debate that is actively engaged within the municipality.

Following this, each municipality had over time engaged in various information sharing networks or established networks between actors. Both Høje-Taastrup, Brøndby and Vordingborg engaged in networks that shares knowledge, but only Brøndby and Vordingborg also created their own networks that could act as information and decision networks.

When it then comes to implementing the solutions, all municipalities put focus on including the municipality itself, the landowners, citizens, and utilities. The specific project could influence which actor was not involved, such as the utility not being involved in non-utility related projects. The interview with Brøndby supplies that when approaching any project, a good project description that frames the situation is key to not only find the relevant actors, but also to support future cooperation. They also add that active engagement between the municipality and landowners is key when implementing climate adaptation, as the understanding process and negotiation

Drawing back to the governance space model, it is here that the institutional aspect falls away to an organisational approach, with various actors and networks. This broad networking and inclusion of actors, along with the local decision making process is in alignment with the aspects of governance. Brøndby municipality explains that this is a natural process that occurs. That when a municipality is engaging in solving problems, it will naturally seek out information networks to gain insight into possible solutions. It will try to work across its internal departments and leaderships to reach optimal consensus and knowledge sharing.

But even though governance now seems to fulfil the focus of decentralised decision making and broad involvement of actors and networks, it is also here that issues come up in terms of interests and focus for the actors involved.

In the interview with Høje-Taastrup two main issues were exemplified with the high degree of decentralised decision making and actor involvement. The first issue is the lack of a political incentive or pressure to continue the climate adaptation implementation. As presented in the first analysis, the municipality has stopped engaging in climate adaptation, and was caused by a lack of political will. Another issue is also a lack of ambition, in the case of the municipality, the utility's lack of interest can also influence the ambition of the goals.

Summary

Summarized in table 10 below, the findings of this analysis reveal the following regarding barriers and challenges when it comes to governance spaces and how governance is practiced in each space.

Governance space	Decision Making placement	Climate adaptation goals	Types of actors and networks involved	Barriers and/or challenges
International governance space (The	Highly centralised far away from the local level	That all member states implement climate adaptation strategies and knowledge sharing	Limited number of elected politicians and officials Experts	Highly uninfluenced central decision making processes involving few actors and lacking awareness at the local level

European Union)			Information and funding networks	
National governance space	Centralised from the municipalities	guidelines, forms, methodological basis,	Representative for the municipalities, Government Information networks	Still a centralised decision making process with few representative actors, which pushes responsibility away from state and forces the municipalities into action
Service space	Highly decentralised and local.	Local implementation of solutions Establishing plans and projects	Citizens, municipality, information networks, utility, private actors, consultants	Highly influential decision making processes that enables conflict of interests and responsibility issues

Table 10: Table shows how governance is practiced in each governance space and what barrier and challenge that occurred regarding climate adaptation. Source, own make.

Policy design

Policy design is not a direct factor in an implementation process but according to the implementation theory it has a great impact on it because the policy design itself defines the basic framework for the implementation process and therefore it can affect the outcome.

Our empirical evidence indicates that policy design is something the municipalities are aware of and have an attitude towards. For example, Høje-Taastrup municipality does not think that there is a connection between the policy objectives and the instruments attached, they do not believe that one template can be made for the climate plan because the problems are so different from municipality to municipality that it does not make sense, the informant from Høje-Taastrup municipality says that:

"Legislation is a problem, always, in this" … "it was just a commissioned job, it was a waste of time for us" (Translated from Danish)

Vordingborg municipality also believes that policy design has an impact on the result one arrives at. In Vordingborg municipality, the politicians have more focus on flooding from the sea than on cloudbursts and this means that the policy pursued regarding coastal protection fills more in their climate policy, the informant says:

"There is a clear focus on seawater ... The rainwater problems are a little more intangible ... It is a bit difficult to understand the political direction in that" (Translated from Danish)

He goes on to say that the policy can change form and content if and when the administration receives money from, for example, the EU or other Danish organisations:

"Yes, it can definitely happen, and the economy also plays a role and if you get external money, it also affects the outcome" (Translated from Danish)

In addition to that, he also believes that policy design can be understood and perceived in different ways internally in the municipality, depending on which department you are in:

"Yes, because internally there can be different views on it" (Translated from Danish)

Brøndby municipality also believes that there may well be challenges regarding the policy design:

"It's also a bit politically driven" (Translated from Danish)

On the topic of climate, Brøndby municipality has not actually had any problems. They have followed the guidelines that have been presented but otherwise they have had the freedom to formulate it internally. In the area of coastal protection, however, there may be some challenges with the policy, but it has something to do with the fact that it's a very serious area and there are more municipalities and actors involved, the informant says:

"We follow the state's guidelines, the legislation sets the framework so it is up to the municipality how it should be filled in"… "However, there is a challenge when it comes to the Coastal Protection Act" (Translated from Danish)

Summary

All three municipalities agree that policy design can be a problem. The most critical municipality is Høje-Taastrup, which believes that legislation is always a problem, at least in connection with climate adaptation. Vordingborg municipality has difficulty calculating the politicians' climate policy when it comes to cloudburst and that policy design also tends to be perceived differently internally between the departments. Brøndby municipality follows the indicated guidelines and then has the freedom to act in relation to it but recognises that there are challenges in understanding when it comes to policies regarding the coast.

The next section is about the concept of 'Goodness of fit', which can have an influence on the implementation process.

Goodness of fit

A relatively new factor to be aware of in the implementation theory is 'goodness of fit'. In short, the less the 'fit' is, the greater the likelihood is that there will be challenges in the implementation process. In order to assess the extent to which the climate adaptation policy fits with the administration it is important to know how the implementers view the policy from "above". The claim is that if there is a 'connection' between a policy and either an administration, management or implementer then the implementation process will be smooth and there will be ownership of the process.

In connection with the climate plans, it is interesting to find out how much ownership there is in the administrations. It may be a bit reminiscent of policy design, but the difference is that it is not about the policy and the attached instruments but only about if the policy fits into either the administrations tradition or with the implementers.

According to the empirical data, Høje-Taastrup municipality does not think that the climate plan suited them, when asked the informant answered:

"Don't think that the climate plan fits in" (Translated from Danish)

This answer is somewhat in line with their position on the policy design regarding the climate plan, but it may have something to do with the fact that their department has a different focus regarding the climate. Further into the conversation the informant told that they saw no reason to make the plan but did so only because they had to, the informant stated that:

"It was a typical top intervention because they think municipalities can't figure it out and then they push it down on us" (Translated from Danish)

But this does not mean that the municipality does not understand the problem, they just do not understand the plan because according to the informant, municipalities have different types of problems and what they miss is a total and complete legislation they can act on.

According to Vordingborg municipality, they had a clash with the government because the EU flood directive pointed out the wrong places in the municipality but it did not mean that they thought that the climate adaptation agenda did not fit into the municipalities tradition, the informant explained:

"There is a possibility of conflict, but the role of the EU is to think about the broad context for the whole EU, and the state must do the same for the whole country. However, more thought should be given to the coherence between the levels" (Translated from Danish)

This indicates that Vordingborg municipality understands the 'connection' and when asked if there was a fit between them, the informant replied:

"Yes. The leadership sets the direction for what it is you have to do" (Translated from Danish)

This goodness of fit in Vordingborg municipality may have to do with the fact that before the adoption of the climate plan, plans had already been made in Vordingborg municipality that were very similar to what the government wants.

According to the empirical data, Brøndby municipality is also a municipality that has this fit, a review of their plans regarding the environment and especially around water, it is clear that they have a stronger focus on the problem regarding cloudbursts, the informant explains:

"Yes, there is a connection between the policy from above and us" … "The political climate and the climate agenda are closely linked to both global focus and local events" … "it is well connected; the water problem is based in the environmental department and it fits very well" (Translated from Danish)

The informant further explains that:

"There is a fit otherwise it does not make sense, we work much more in the spirit of cooperation and how we get the best out of what we want"

This suggests that there is a fit between the climate agenda and the municipality of Brøndby.

The empirical evidence shows that the degree of this fit can be read in the results of the municipalities' efforts regarding climate adaptation. Høje-Taastrup's results are far down the scale, it can be seen from the activities they have done and in addition they also express it themselves. Vordingborg municipality also has challenges in implementing the climate efforts, but their level of activity testifies that they are doing okay. Brøndby municipality confirms the claim in the goodness of fit concept, the municipality has a high success rate in implementing their climate plan precisely because of the consensus in the municipality about the importance of climate efforts.

Summary

Høje-Taastrup municipality understands the problem but does not believe that the task fits in with them, they believe that it is imposed on them and that they want complete legislation on the area. Brøndby municipality is committed to climate adaptation and they have this fit, Vordingborg municipality also has this fit and it has something to do with the fact that they already had plans in the climate adaptation area long before the government entered into the agreement with KL.

6.2.1 Hierarchy

Hierarchy is about the organisational structures and laws that are being used to enforce power by the government and regulate these. Given the nature of the implementation, governments and governance just explained in the analysis of governance spaces, hierarchy has played a central role.

The first part that becomes clear, is the hierarchy between the national space and international space. Or in the case of this project, the Danish government and the EU. Hierarchy takes the form of once the EU makes decisions such as laws, policies and directives, it is member states must follow soon after.

This could potentially lead to challenges of implementation nature if there is no clear fit between the decisions, policy, laws and directives made and the member states and their intentions. It would also present a major barrier for active engagement.

In the case of climate adaptation, this played out differently. The EU Floods directive was indeed passed down via hierarchy to the member states, but the Adaptation Strategy meanwhile was a voluntary endeavour that Denmark decided to adopt.

Due to the scope of the directive and the open general goals of the strategy, there were not any hierarchical barriers or challenges between national space and international space.

Meanwhile the hierarchy between national space and service space was different in several ways and was quite more supported by the interviews with the municipalities rather than between the EU and the municipalities.

Hierarchy here took the form of an agreement between the Local Government Denmark and the government, along with a set of guidelines on how to carry out the climate adaptation planning, the methods and procedures.

From there, the hierarchy dictated that the municipalities had to therefore develop climate adaptation plans in accordance and follow them to the letter. In the interviews, there was no exception, and this enforced a standardised procedure for all the municipalities to follow through with. For some municipalities that had already started working with climate adaptation, this meant that they had to re-evaluate their plans so far, and update these so they would be valid. For the municipalities that had yet to begin, this forced them to immediately do so within the given time limit proposed by the law of having developed climate adaptation plans by 2013.

It also took the form of the Floods Directive, setting the order for the Danish Coastal Authority and the list of 25 municipalities selected based on their risk of flooding and put pressure on them in terms of giving them responsibility to have climate plans, flood management plans. This applies to both Brøndby and Vordingborg municipality. Vordingborg municipality supplied in their interview the pressure of this directive putting focus on the city of Vordingborg due to flood, but it was not where the municipality experienced the floods occurring.

However, once the climate adaptation plans had been developed by the municipalities, hierarchy did not entirely disappear, but did however, in accordance to our interviews, no longer play as much of a central role as it did during the initiation of the plans. All the interviews established that while there is a hierarchy between the departments and the managers, there is only a horizontal focus when it comes to the planning process.

Bar the internal hierarchy of the Danish municipalities and their organisational structures, interviews revealed that the implementation of the climate plans rarely were enforced through hierarchy be-

yond the general statements of “having to make plans because the state demanded it”. The implementation of the plans was, and are, mostly a horizontal and bottom-up process according to the interviews. Høje-Taastrup argued that up until the adaptation strategy was enforced by the danish state and EU, climate adaptation planning was already a bottom up process that municipalities were engaged in.

This created a problem that when once this entire hierarchical process began, already existing climate adaptation planning on Danish municipalities paused as the Danish state had to formulate and decide on instructions on, and goals of, how the climate adaptation planning was to take place. A point can therefore be made here that the hierarchy essentially acted as a temporary barrier for the Danish municipalities, making some of them choose to rather wait and avoid the issue of wasted efforts on planning if the Danish state formulated different objectives and instructions than the municipalities had originally done. Revealed in the interview with Høje-Taastrup municipality, waiting until the state had finalized and published the law would avoid unnecessary “double-work”. Ultimately this was resolved with time, and a municipality stated that the entire process was in general a “waste of time” for the municipalities already working on climate adaptation. Brøndby supplied this, stating that the EU has a role in trying to see the big picture, as well as the government, but that they should probably think more detailed when trying to avoid issues like these.

But beyond the initiation, the problems associated with hierarchy in the implementation did not present many problems on its own. The internal structure of the municipality is of course hierarchical, but with this had little to no effect on the planning. The interviewed municipalities argued that a more hierarchical structure or approach would have only obstructed and limited the individual municipality's ability to follow through with the implementation of the plans. In addition, Both Brøndby and Høje-Taastrup established in their interviews that while the policy to give municipalities as much freedom to find solutions as possible, it was un-ambitious of the climate adaptation from the government to solely put responsibility on the municipality.

However, despite this, a certain element that can be argued to be hierarchical, is the fact that often the law can be an issue in solving certain issues with water. Vordingborg municipality stated that the laws themselves are not neatly set-up, presenting an issue in not only finding out if certain solutions are legal, but also if there are details to be aware of. Therefore, on the argument that laws a form of hierarchy, that the laws present a yet-to-be-solved hierarchical barrier. Interviews and literature have here revealed that this issue is sought to be solved though pushing this agenda to the state and engaging in debate.

Lastly, interviews with Vordingborg also revealed that the actions and intentions of the politicians of the government and what solution for climate adaptation can play a huge role. When the government withholds a political action, or for example gives a political direction in the form of subsidies to certain technology, or to encourage certain operating methods, it has serious effects on what becomes relevant to look at. Added to this is also the conflict of the government changing their focus and approach relatively fast too, destabilizing the decision making process in the municipality. There is a huge challenge in trying to avoid this hierarchical influence, and so far, the only solution is to go stick with the goals and focus solely on these, making the municipality ignore their government actions which is problematic.

Summary

There are many hierarchical barriers and challenges. Presented below is a table of the hierarchical challenges and barriers there occurred regarding climate adaptation

Barriers and challenges

The EU Floods Directive established a pre-existing pressure for the involved municipalities to prioritise climate adaptation on certain areas selected by the state prior, and currently sidelong with the climate adaptation process.
The government's plans leading up to making the municipalities to work with climate adaptation by the end of 2013 disrupted the existing climate adaptation in Denmark, causing the municipalities to prefer waiting.
There is a challenge in interpreting the political wishes and goals of the government regarding subsidies to technologies, environmental concerns and programmes. There is also a challenge in finding stability when the government changes focus.
The laws regarding certain planning areas, such as coastal and wastewater, can make it impossible to overcome planning processes and find good legal and viable solutions for climate adaptation.
The high degree of freedom given to municipalities creates opportunity for ambitious projects but presents a challenge in terms of responsibility only falling to the municipality which may be too demanding.

Table 11: Overview of the challenges and barriers regarding hierarchy and its effect on climate adaptation implementation in the municipalities. Source, own make.

6.2.1 Governance Models

Governance theory says that there are different models for governance to carry out in. These models are primarily about how governance is carried out regarding providing services and accomplishing goals. Applying these to the municipality cases help shed light into the general governance approach.

Repeating from the theory chapter on governance, there are four performance governance models. The market model, the participatory state model, the flexible government model, and the deregulated government model. Each model deals with a primary ideal form of governance viewpoint, and how to solve issues.

The Market model

The first model can be broadly applied to all the investigated municipalities in this project. In each of the municipalities, the Utilities adhere to the market model's ideal of services provided to citizens is best done so through a market. Where it deviates, is that the Utilities in Denmark are often publicly owned by the municipalities, but regardless they still operate from a market perspective in trying to find the best solutions for the least amount of money.

In addition, this market is also applied to the implementation of various projects that are in relation to the Utilities, namely sewers and wastewater. In all the municipalities it has been possible to get the Utility responsible to carry out projects, putting the responsibility to finding solutions and financing on the Utilities.

The market model also applies to all municipalities in the form of providing small term services, such as the involvement of consultants in the planning process for the municipality's climate adaptation plans.

Only the municipality of Vordingborg has revealed in their interviews that they are taking a step further and actively seeking private investors for their three city plans regarding Stege, Vordingborg and Præstø. Their heavy focus on city renewal and enrichment has them appeal to possible investors to buy, develop and invest in each of the harbour areas. This also means that their plans are dependent on the success of finding investors to carry out the project.

The Participatory state model

The participatory state model puts emphasis on the broadest including as many actors and individuals as possible and having the authority engage on a local level that is flat. This may often involve a broad set of actors and networks when reaching decisions.

When it came to the development of some projects, then as explained in the previous analysis chapter and in governance spaces, there was a great inclusion of additional actors through networks that was employed by both Brøndby and Vordingborg.

In Brøndby, many networks are used to gather local information and to involve the citizens in the climate adaptation as possible with projects.

Meanwhile Vordingborg explained that in their three city projects of Vordingborg, Præstø and Stege went out and involved both citizens and private actors through various workshops and meetings in order to get ideas and feedback for the urban renewal projects which had climate adaptation elements.

However both municipalities have also during their interviews made it clear that in order to maintain such a huge involvement, there needs to be a constant focus on ensuring that every actor involved is informed in the correct way and feels like they are a part of the process. If failed to do so, politicians, citizens or other actors may leave the project, or no longer understand it, creating tension and stopping development.

The model has also been observed in Høje-Taastrup, in the form of the Selsmoseparken project which involved architects, and in the form of the climate lakes, which involved many municipalities and the National Railway Company. However, they did not explain many of the same challenges.

The Flexible Government model

This model adheres to the idea of contextuality and flexibility. In order to best address needs, appropriate policies should be made to meet these demands and free the potential. Amongst these acts is the relevant involvement of actors when approaching a given situation.

This approach can also be applied to all the municipalities when it comes to reaching solutions and developing the climate adaptation plans.

The interviews with the municipalities all explained that when they started the planning process, they involved all the departments within the municipality, along with the Utility and consultants, as these were the only actors relevant for implementing the plans.

Additionally, all the municipalities stated that when approaching any project, it is key to know who should be involved and when, further enhancing this flexible model.

However, a drawback of this model may come in the form of lack of interests from an actor. In Høje-Taastrup, this was exemplified as mentioned earlier in governance spaces, as a lack of ambition from either politicians and the utility company. An additional challenge is also when the citizen involve-

ment is attempted, but no citizens want to partake. Høje-Taastrup explained that there was no interest from the citizens when it came to climate adaptation. It is only when there was something wrong, such as flooded basements, that the citizens became engaged.

The Deregulated Government model

The final model is about the government deviating from following strict guidelines and procedures in order to reach its goals. It focuses on lessening bureaucratic control and provides the open limits for actors to reach new solutions and decisions.

For this model to apply to the municipalities, the climate plans and decisions they made must be in support of giving the final decision makers as much decision making freedom as possible. During the interviews with the municipalities, it was revealed that while the landowners, the municipality, citizens, housing associations, utilities, etc. are the financial provider of climate adapting their own lot of lands, there is a huge freedom in what solutions they may choose.

Interviews with Brøndby and Høje-Taastrup both exemplified this freedom. In the case of Høje-Taastrup, the choice of carrying out climate adaptation was completely up to the landowners, except for the Utility, which had to carry out the climate adaptation to their sewer systems to avoid insufficient service. This however also came with the result of actors not actively engaging in climate adaptation, resorting to not doing them until there was no other choice.

Brøndby meanwhile supplied the challenge of slow decision making processes too. Housing associations employ residence democracy, in which decision making processes can be slow and result in projects and climate adaptation shifting between projects.

Summary

There is no single model that is applicable to any municipality analysed in this project, as all of them are practicing some form of governance model depending on the context of the situation and status of projects in the municipality. However, it is worth noting that all the municipalities fall into the same governance model patterns, with some varying by using the model more. This in turn presents unique barriers and challenges depending on the governance model used. All can be seen below in table 12.

Municipality	Høje-Taastrup	Brøndby	Vordingborg	Barriers and challenges
Market model	Utilized for appointing the Utility in carrying out climate adaptation on sewers. Applied to the involvement of consultants in the planning development process.	Utilized for appointing the Utility in carrying out climate adaptation on sewers. Applied to the involvement of consultants in the planning development process.	Utilized for appointing the Utility in carrying out climate adaptation on sewers. Applied to the involvement of consultants in the planning development process. Private investors involved in urban projects involving	Finding investors can be hard. Putting the responsibility of financing climate adaptation on landowners' risks slowing or preventing the process.

			climate adaptation.	
Participatory state model	For developing big projects that has multiple qualities	For developing big projects that has multiple qualities	For developing big projects that has multiple qualities	There is a challenge in making sure that everyone is properly involved and on the same page to ensure future cooperation and engagement
Flexible model	Was utilized during the development of the climate adaptation plans	Was utilized during the development of the climate adaptation plans	Was utilized during the development of the climate adaptation plans	Challenged by actors lacking interest or ambition to carry out the implementation, resulting in un-ambitious goals and results.
Deregulated model	Freedom to the landowners in choosing whether to implement climate adaptation and which solution to pick	Freedom to the landowners in choosing whether to implement climate adaptation and which solution to pick	Freedom to the landowners in choosing whether to implement climate adaptation and which solution to pick	Slow decision making process. No action being taken at all

Table 12: overview of governance model approaches, where they are applied and the challenges and barriers that may result from them. Source, own make.

6.2.1 Networks and Implementation

This analysis will be done in two steps. The first step will be a network analysis using Stoker's governance theory. The second step is an analysis of the implementation process, using the implementation theory focussing on the integrated implementation model.

Networks

As revealed in analysis 1, each of the municipalities has, and is, engaged in various networks in order to both accomplish goals, sharing information, starting projects and to develop their climate adaptation plans.

The Governance theory on Networks states that there are different types of networks depending on the relationship, and long term goals. According to Stoker's Five Propositions, these networks are responsible for decision making but may present issues and dilemmas if they are not managed properly, such as accountability, responsibility, trust and lack of inclusion.

1st Proposition

The empirical evidence of the first analysis in this project illustrates the first proposition well, that governance is about institutions and actors that are both inside and outside of government bodies. For all the municipalities and on the different governance spaces there are actors from European institutions, the Danish Government, Municipality departments and politicians, along with information networks, citizens, landowners, Utilities and consultants. So, regarding climate adaptation, there is no exception to this proposition.

The associated dilemma is that accountability and responsibility are being spread amongst different faced and faceless actors and networks, resulting in a lack of trust and inability to understand the government. And as found in the first analysis and current analysis so far, responsibility and accountability are indeed spread out.

In international governance space the EU is neither responsible or accountable for implementing either the Floods Directive, or the Adaptation Strategy. The EU only provides guidance, some information and funding to assist the implementation.

Meanwhile in the national space, the Danish government is both responsible and held accountable for the EU floods Directive but shares a similar nature regarding Climate adaptation. They were responsible for developing the guidelines, but beyond that their position is like the EU. They are neither accountable, nor responsible for the climate adaption, and only provide information and service with some funding.

In service space, responsibility and accountability finally reaches their end destinations. The municipality is both responsible for developing the climate adaptation plans, as well as carrying them out. However, they are only held accountable to the Danish Government on developing the plans, otherwise, they are only accountable to themselves. In addition, they are also responsible for implementing climate adaptation on their own properties and financing them.

Meanwhile landowners are responsible for financing climate adaptation, but not for carrying them out. However, they can be held accountable, as is the case with Høje-Taastrup.

Utilities meanwhile are both responsible for contributing to the development of the climate adaptation plans, and for carrying out and financing climate adaptation regarding the service they provide.

Lastly, the consultants involved in climate adaptation are both responsible for providing proper service, and held accountable if the service is insufficient, but otherwise it stops there.

But despite this, there was not any apparent mistrust, neither between the citizens and the municipality, or the municipality and the Danish Government. There still has been expressions of frustration and issues. Vordingborg, Høje-Taastrup and Brøndby have expressed that there are issues with responsibility and accountability, as there is not a clear overview in the laws and guidelines. repeating from the Hierarchy analysis, putting the responsibility on the municipalities was un-ambitious and left them with the issues of funding, finding solutions and implementing them.

In addition, the case of Høje-Taastrup's citizens not caring about the climate adaptation in the municipality could be argued to be a sign of this lack of accountability and spread responsibility, but there might just be a genuine case of citizens not caring in the first place in regards to climate adaptation.

This lack of mistrust could be attributed to the fact that despite the spread responsibility and unclear accountability, the implementation and climate adaptations plans were clear in placing the responsibility and at least describe how actors may be held responsible. As for the networks that also make

decisions in Brøndby and Vordingborg, it could be attributed to the fact that each of these networks are known and is transparent in their work.

However, the lack of accountability and responsibility beyond carrying out climate plans by 2013 is what has enabled Høje-Taastrup to not actively continue engaging in climate adaptation, whilst Vordingborg municipality has not updated the climate adaptation plans.

2nd Proposition

The second proposition of Stoker is that governance points out the blurring of boundaries and responsibilities for handling issues such as social and economic, but there is an issue of this blurring allowing for actors to blame others and scapegoating.

This project did not find many of these issues in its first and current analysis so far.

The interviews with all municipalities explained that there had not been any open blaming or scapegoating regarding this, and as explained in the prior proposition, this may be part in due to the plans having been good in appointing responsibility.

However, in the case of Høje-Taastrup, it was revealed that due to a lack of interest from the politicians, there is an ignoring of responsibility. The interview revealed that the lack of political focus and the citizens not caring for climate change, then combined with the lack of municipalities having to continue working on climate adaptation, the politicians are therefore neither responsible, nor are they accountable to the citizens.

3rd Proposition

The third proposition is about how governance can identify the power balance and intentions between institutions, and the collective of actors and networks, and that this brings issues of creating unintended consequences for governments and goals.

In this project so far, there is a vast list of networks and actors responsible for climate adaptation. These actors and networks each have their own intentions and power relations, which can influence the decision making. Stoker describes in this process three network forms, the principal-agent form, inter-organisational form and systemic coordination form, each with a different set of issues.

Principal-agent form can be applied to the relationship between the municipalities and utilities, and the municipality and the consultants involved in the planning development process. For the municipalities in this project here was no issue associated with this network form, which states that there might be a risk of the agent carrying out their tasks differently than intended. This was avoided in the municipalities by including both the utilities and the consultant agencies in the process to reach results that were in alignment with the goals.

Regarding inter-organisational networks, this form applies fully to only a few networks, but only partly to some others depending how you view it.

In general, this network form can be applied to the networks responsible for knowledge sharing and guidance, as well as local networks established by the municipalities to carry out projects such as the consortium of Vordingborg municipality in charge of the three city projects. It can also be applied to the development process of the climate plans between the departments of the municipalities. However, due to the fact that the information sharing, and guidance networks do not make decisions, nor does the development phase of the climate plans involve actors that were independent and had conflicting goals, the network is not truly applicable to these. Meanwhile the project related networks fully apply to the network form, both with Brøndby's beach networks and the three city project in

Vordingborg. However, they have in so far not encountered any issue with conflicting goals so far, due to constantly engaging in dialogue as explained earlier.

The last network form however does not exist in any form regarding climate adaptation. A loose argument could be made that the municipalities and the internal network of departments and politicians could constitute an autonomous self-governing network with the intention of long term climate adaptation goals, however it does not fully apply. The first being that the municipalities, while capable of making decisions on many aspects, cannot make decisions on the individual properties and are still somewhat limited on what decisions they can make due to being under the state. They are highly independent, but not fully autonomous regarding climate adaptation. Another aspect is also that they ultimately are an organisation, and that the Danish Government has a degree of control over them. If they were a systemic Organisation network, then the politicians of Høje-Taastrup and its utility company having no interests on climate adaptation would be a perfect example of conflict that would lower the ambition of the goals and create issues for the Danish government by having municipalities drop the climate adaptation process.

4th Proposition

This proposition states that governance is about independent self-governing networks, but this leads to issues of accountability regarding inclusion.

As previously mentioned, there are no true autonomous self-governing networks, or networks using the systematic organisation form. Therefore Stokers 4th proposition does not apply.

But even if municipalities as previously explained was a self-governing network, there would not be the issues described with this proposition due to the high level of inclusion that occurs in the municipality in terms of the development of the climate adaptation plans, projects and the general implementation process between municipality and landowners.

5th Proposition

The fifth and final proposition says that governance acknowledges the needed actions and decisions to obtain goals, which may be outside the power of governments. The dilemma here is, that even if the government is flexible in steering collective action, governance may still fail due to conflicts.

During the first and current analysis, there has yet to be found an example of this dilemma. It is true that governance has enabled the realisation of climate adaptation projects in the municipalities, by including actors outside of the government's control, and that the municipalities have played the role of consultants and facilitators. However there has not been a situation where governance has truly failed.

One can make the argument that Høje-Taastrup no longer actively engaging in the climate adaptation process and Vordingborg no longer updating the plans might be a sign of failing governance, but they have not stopped fully.

Summary

Several of Stokers five Propositions can be applied to the municipalities in this project, along with their associated issues. Seen below in table 13 is an overview of these.

Barriers or challenges

There is a lack of accountability and responsibility beyond carrying out climate plans by 2013, as seen with Høje-Taastrup not actively continuing engaging in climate adaptation, whilst Vordingborg municipality has not updated the climate adaptation plans.
In the case of Høje-Taastrup, it has been revealed that politicians having a lack of political focus and the citizens not caring for climate change, combined with the lack of municipalities having to continue working on climate adaptation, the politicians are therefore neither responsible, nor are they accountable to the uncaring citizens.

Table 13: Overview of the barriers and challenges regarding Stoker's theory towards climate adaptation implementation in the municipalities. Source, own make.

Implementation

These following sections present which factors may appear as obstacles from decision to actual change and thus stop, delay or derail the implementation process and in the end the challenges will be presented.

Start-up problems

Based on the collected empirical data, several experiences have emerged regarding the start-up problems that may be experienced in connection with the work on the climate adaptation plan. As it could be read in the theory chapter, it is essential to understand the factors that can affect the implementation, although start-up problems are not a point in our analysis, it is still an important point to mention, according to Winter & Nielsen (2008):

"Implementation analyses of almost all reforms and major experiments in the last 25 years have shown that there have been problems in the beginning of all of them" (Translated from Danish)

According to the empirical evidence, one of the start-up problems experienced around the implementation of the climate adaptation plan is a lack of knowledge of the plan's content. The consequence of this is an uncertainty about which employees and professional competencies are needed to start the process, which may be to blame for a slow and sluggish start-up on the organisation's climate adaptation work.

According to the empirical evidence from Høje-Taastrup municipality, start-up problems can exist in relation to the framework within which the central partners - the municipalities and the utilities companies - must operate. The two parties relate to different laws and stakeholders, while also having different interests to be safeguarded. It is therefore a challenge to come together on a joint project when the two key actors must at the same time look after their own interests and comply with the rules to which they are subject. This means that in general one of the first barriers to implementation can be start-up problems.

However, our empirical evidence shows that neither Brøndby nor Høje-Taastrup municipality had these start-up problems. Brøndby municipality stated that:

"When we start with planning or projects" ... "we do SWOT analysis, so we get to take very good care of things before they become problems" (Translated from Danish)

Høje-Taastrup stated:

"We brainstormed with people from the department and handed out the tasks and then it was done" (Translated from Danish)

Vordingborg municipality also did not have any problems but stated that if start-up problems are experienced, it could be, for example:

"Different types, it can be in the understanding of which local community you have to work in, get the right people involved and get the right understanding from them as well. Priorities and different political interests" (Translated from Danish)

It is thus important to be aware of any problems that may arise in connection with start-up as it may have an impact on the process. Against this background, it should be clear from the government's side what is desired in or from the plan, so that the work is not unnecessarily slowed down in the preparation of a plan.

Substantial interest

According to the implementation theory, almost no legislation or other forms of political decision-making are self-implementing. Almost all implementation requires the involvement of one or more organisations and according to the theory, it is characteristic that organisations pursue interests that can be distinguished between substantial- and institutional interests and represent different forms of knowledge and ways of understanding. However, this section will only deal with the substantial interests.

The empirical evidence shows that Brøndby municipality's own substantial interest is in accordance with the legislation and their political course in connection with climate adaptation is completely in line with the government's view of which way Danish climate adaptation should go. The empirical data from Brøndby municipality also shows that Brøndby municipality has ownership of their climate efforts.

"We have ownership of our climate plan, everything else will be foolish, it is our basis for work and our climate management tool" (Translated from Danish)

It is clear when looking at their municipality in terms of their climate efforts that the climate is one of the work areas they want to work with. They have a Water Team in the Environmental department which only takes care of tasks that have something to do with water:

"Current climate planning for water is handled by the 'Brøndby Water Team' in the Technical & Environmental administrations Environmental department. This team consists of employees from other departments and employees from the water supply and the water treatment plant. They meet once a month to follow up on things" (Translated from Danish)

Brøndby municipality is also the only one in our study that has prepared a climate plan for the near future and integrated it into other water-related plans, the informant states that:

"There is a focus on the climate right now. Our leadership is committed because the department's management has an interest in the climate. In general, the municipality is concerned about the aquatic environment" (Translated from Danish)

When asked why they have made a new climate plan when it is no longer a requirement, the informant replied that:

"Because we look at the situation of cloudbursts and how to get it fitted into our climate adaptation and because we promised the politicians that we will look into how we can protect the municipality against cloudbursts and seawater and put it in one plan" (Translated from Danish)

Asked if there are any framework conditions that can affect their work with climate adaptation, the informant replied that:

"Yes, always, for example new legislation, the politicians set the framework, so it is up to the administration to fill the framework. With us, there is a tradition of innovating, it opens up to that you can do things in a different way, but we do not do anything other than what the framework has set. It does not happen. One must follow the plan that has been laid, we work in a political system and then it is the politicians who show the way" (Translated from Danish)

And the informant went on to explain that:

"Projects and activities regarding the climate plan are a cross-sector issue in the municipality and there are internal consultations when something needs to be implemented. For example, we are transforming a former business area into a residential area and doing so in collaboration with the other departments in the administration, the environmental department is responsible for thinking environment into other tasks, there is now an action plan to think climate into other projects and activities in the municipality" (Translated from Danish)

Although Vordingborg municipality's substantial interests also correspond with the government's legislation, it is not like in Brøndby municipality, the informant says that:

"There is a strong political will regarding the climate area but it is not proactive when it comes to cloudburst, it is more event driven, the management has set up a decision unit for climate adaptation but it is in connection with project development in the ports" (Translated from Danish)

In Vordingborg municipality, it is the planning department that handles the water problem, in it sits a group that handles wastewater, streams and urban planning which are the three primary topics for handling rainwater and seawater. The empirical data shows that Vordingborg municipalities strategy is to first think of urban development and then "put" climate adaptation in it. The informant says:

"My department takes initiatives for climate protection when it comes to urban areas, we talk about what problems there are and where we can link it to urban renewal" (Translated from Danish)

According to the informant in Høje-Taastrup municipality, they did not even need to make a climate plan at all.

"We did not have much need to make a plan, but it was ordered by the government so we had to make a plan, we followed what the other municipalities were doing, developed maps of vulnerable areas and produced a plan, there are not so big problems yet and the things that have been done are believed to last for a long time" (Translated from Danish)

Later in the interview the informant says that:

"The truth is that these climate plans are actually forgotten in general by the municipality" (Translated from Danish)

Based on the empirical evidence, it indicates that the reason why Vordingborg and Brøndby is more successful in their climate efforts may be because their views on the policy they pursue regarding climate adaptation are in accordance with the goals pursued by the government and the idea behind the climate adaptation plans. The empirical evidence also shows significant differences in the extent to which the administrative leadership in the municipalities have backed the mindset and rules regarding climate policy in relation to cloudbursts.

Summary

Brøndby municipality's own substantial interest is in accordance with the climate adaptation mindset and their political course in connection with climate adaptation is in line with the government's view of climate adaptation and Brøndby municipality has ownership of their climate efforts. Although Vordingborg municipality's substantial interests also correspond with the government's, they do not have a sharp focus on cloudburst, their strategy is to first think of urban development and then "put" climate adaptation in it. Høje-Taastrup's main interests are not like the other two municipalities', they only made the plan because they were forced to, and they believe it was a waste of their time.

Cooperation and coordination

According to the implementation theory the nature of cooperation and coordination is an important factor which can create problems in an implementation process. Much implementation requires that several stakeholders cooperate. However, the necessary cooperation and coordination between different administrations, departments, implementers and stakeholders can still fail if actors involved have different interests and / or different priorities of time, resources and attention to implement the desired policy.

Empirical evidence shows that in the case of Vordingborg municipality, the cooperation between the planning department and the environment department lags due to different perceptions of the core tasks, and for example Høje-Taastrup's substantial interests are not the same as those proposed by the policy, it hinders any sincere cooperation in connection with climate adaptation. The approach to cooperation is also of great importance for the result, for example if you follow The Participatory State Model then it requires that the municipality has enough resources for the broad cooperation but the disadvantage may be that at some point a veto can be imposed.

Regarding veto points, Brøndby municipality states that:

"The municipality does not go in and veto because then it is not a collaboration. It is not something I have experienced. I do not see it as a challenge" (Translated from Danish)

Anchoring interdisciplinary collaboration can be difficult in the municipalities, as the organisation typically consists of a division into a number of departments and sectors. A particularly important element in the anchoring process of climate adaptation is the formation of a clear and common understanding of the problem, through which the actors working with climate adaptation can create a common understanding of the challenges that may arise. In connection with a common goal of cooperation and problem understanding between municipalities and departments, the informant from Brøndby municipality says that:

"It plays a big role and therefore it is important with project description when we start with those processes" (Translated from Danish)

And the informant from Vordingborg municipality states that:

"Yes, because internally there can be different views on it, and it's about articulating the challenge you face. You talk to each other" (Translated from Danish)

The empirical evidence points out that it is a significant barrier to climate adaptation that there is a general lack of interdisciplinary cooperation in the municipalities, which hampers complete integration and anchoring of climate adaptation.

According to Vordingborg municipality, a problem, which probably constitutes the basic challenge for the municipalities is that the municipalities are not used to cooperating as extensively across municipalities as it is planned in connection with the climate adaptation plan:

"We are organised in sectors and departments that work with our own part of the water planning" ... having to coordinate this work is therefore a comprehensive task, and at the same time it is a new way of water planning and organising oneself" (Translated from Danish)

Høje-Taastrup municipality describes the problem as follows:

"People in the municipality do not think about climate adaptation cooperation in their heads, but they will start doing so if it becomes too political" (Translated from Danish)

The empirical evidence suggests that there is a challenge in collaborating across municipal boundaries and even within boundaries as well. Asked about how to ensure anchoring across administrations and departments the informant from Vordingborg municipality answered:

"This is ensured by the fact that when you start, you have to get all the relevant actors from different departments, and we have to include urban renewal and development in climate adaptation, and make sure that everyone has an interest in what you make, it is limited who you can include if it is only climate adaptation, but if it is an urban renewal project, then you get many with you and then it anchors across the organisation" (Translated from Danish)

The empirical evidence also suggests that not every municipality have trouble with cooperation and coordination, Brøndby municipality states that:

"We spend a lot of time coordinating things, so we don't have to put out fires"

"When we collaborate with others, we talk about things. When there are conflicts of interest, we resolve them through dialogue" (Translated from Danish)

"It's a dilemma I do not know from my world, we go for close dialogue. Everyone must share. The very reason is that we do it for the citizens" (Translated from Danish)

There are thus several challenges in terms of cooperation and coordination but something all municipalities agreed on was how it could be solved. All three municipalities emphasized conversation and dialogue.

Summary

Both Høje-Taastrup and Vordingborg have experienced problems with cooperation and coordination. In Vordingborg, there are challenges with coordination between two departments due to different perceptions of core tasks. Brøndby has not experienced very significant challenges in this area. All three municipalities agree that there must be cross-disciplinary cooperation and that common problem understanding is important, as well as conversation and dialogue is the solution if problems arise.

Organisational leadership

According to the theory, management plays an important role in an implementation process and is a factor of importance. The administrative management has a significant importance in connection with inter-organisational cooperation and a significance when decisions are to be translated into action among the implementers. A significant management task in connection with the implementation of political decisions is also the practical organising of the implementation process itself.

Based on the empirical evidence, it can be deduced that two out of three municipalities have had a management that has supported the climate adaptation effort, with the exception of Høje-Taastrup municipality where the management thought it was not something they should focus on. But in general, all three municipalities believed that there should be a trusting relationship between the management and the implementers.

The informant from Brøndby municipality states that:

"There is a positive indication from all management layers in the municipality" (Translated from Danish)

The empirical evidence also shows that ownership of the climate adaptation plan has been created in the administrative management of the municipality and that the management has played a positive role as a link between politicians and the administration and this has had a positive effect on climate efforts in the municipality.

Vordingborg municipality says:

"*They have played a positive role*" (Translated from Danish)

Empirical evidence from Brøndby municipality show that the administrative management has in particular had a role in anchoring the overall, municipal visions to the respective administrations in relation to climate adaptation.

The empirical evidence also shows that the management in both municipalities has focused on allocating resources, sending the right signals in connection with climate efforts.

"There is a focus on whether there are sufficient resources and there is a focus on whether we have the knowledge we need to perform the work" (Brøndby)

and

"The management takes care of it well, so we have the resources. We have enough resources allocated to the planned activities. The management has been good at ensuring that there are enough resources and knowledge available for our tasks" (Vordingborg)

Summary

There is an ownership of the climate adaptation efforts in both Brøndby and Vordingborg municipality. The management in both municipalities has focused on allocating resources, sending the right signals in connection with climate efforts. All three municipalities believed that there should be a trusting relationship between the management and the implementers.

Implementers

According to the theory another significant factor in the implementation process is the implementers who in practice perform and solve the tasks and problems of the organisation, and who therefore often in connection with new policies and new political decisions have to do something different than usual, they are responsible for many of the most central activities of the public apparatus and they exercise considerable discretion.

Based on the empirical evidence, it can be seen that except for Høje-Taastrup municipality, the implementers have full ownership of the climate plan and its implementation in the respective municipalities. According to the theory, implementers can influence the outcome of the implementation process because of their will and ability, the empirical evidence in this study confirms this.

The empirical evidence showed that the implementers willingness and motivation to feel this ownership was increased through the formation of a shared vision. The empirical evidence also showed that the climate adaptation plan is prepared and implemented with great motivation and will, the informant from Vordingborg municipality said:

"The will has something to say but here there is engagement beyond the usual"

The administrative will to focus on climate adaptation is also pointed out as extremely important for climate adaptation efforts. The empirical evidence showed that the high priority of climate adaptation both among politicians and in the administrative management affected the implementers motivation, the informants also pointed out that the motivating management style affects them in a positive direction, the informant from Brøndby municipality said:

"We do our best to do a good job so that politicians have the best decision basis"

The general perception from the empirical evidence is that the institutional conditions regarding management style and organisation thus directly affect the implementers will, motivation and commitment and it is assessed from the empirical evidence that the implementers have sufficient competencies to be able to implement the climate adaptation plan. The empirical evidence also shows that all three municipalities agreed but expressed it in different ways that you must do what is said if you want to keep your job.

Summary

Apart from Høje-Taastrup municipality, the implementers have full ownership of the climate plan and its implementation.

Citizens and Businesses

According to the theory another important factor with significance for the implementation, is in the last stage of the implementation process, namely with the citizens and companies whose welfare the new policy or legislation seeks to influence and the success of the implementation of a policy depends on the members of society and the level of either co-operation or opposition they provide.

According to the informant from Vordingborg municipality climate adaptation means in many cases that projects must be implemented or decisions made regarding private property and therefore, different actors that safeguard specific values must be involved in the implementation and if climate adaptation is to be based on holistic solutions, it requires support and cooperation with landowners, interest groups, businesses and citizens.

Citizens are an important actor in the implementation, and a well-designed involvement of citizens plays a major role in ensuring the success of a project or the entire climate adaptation plan, the informant from Vordingborg municipality states that:

“It is about creating synergies and urban quality” (Translated from Danish)

In general, the involvement of a wide range of stakeholders must ensure that different perspectives on challenges and solutions in connection with climate adaptation emerge. At the same time, this involvement contributes to the creation of a planning that is relevant to the stakeholders and that is in line with the society in which the climate planning is to operate, the informant from Brøndby municipality states that:

“And we do citizen hearings to tell about plans and to explain what it means to the them because they all have their own interests, and we talk with them about it” (Translated from Danish)

However, citizens and businesses also have another important role in the implementation, as they often seek to influence the implementers decisions, they can not only influence the implementations outcome but also the administration's performance, the informant from Vordingborg municipality states that:

"Lobbying in the municipality!? Yes, different players want investments in their area or at their ports, they lobby in relation to prioritisation of investments in the municipality, politicians' attitudes are coloured from many places" (Translated from Danish)

The general perception from the empirical evidence is that the members of society have an important role when the political decisions are to be translated into effects in relation to the companies and citizens daily lives.

Socioeconomic Conditions

A final but indirect factor that can affect an implementation process is the socio-economic condition. It should be mentioned that the implementation process and its results are often affected by the surroundings, including changes in the socio-economic situation and in public opinion. Finally, it must also be mentioned that the municipality sometimes faces what the literature calls wicked problems - that is, complex problems where there are no unambiguous solutions and no matter how well-planned and optimal the implementation process is, it can be difficult to solve.

Implementation summary

In terms of the implementation process itself the empirical evidence suggests that it is completely different how policy design is perceived, and which administrations are responsible for implementing the political decision. All three municipalities agreed that policy design can be a problem with Høje-Taastrup being the most critical. The implementation of a policy is thus dependent on how it is perceived by the implementers and which policy-instruments the political decision makes available to the implementers. Therefore, policy design can often be crucial to whether a policy can be implemented, and it is therefore particularly important to signal the political rationale to the implementers and thus stimulate their commitment to the task.

The goodness of fit concept is an important factor because it helps to clarify potential challenges already in advance via simple studies at both organisational and employee level. By using this concept, one can prevent climate planning and climate efforts from getting off to a slow start and possibly hitting a wall. This approach to implementation in the municipalities can assess the potential implementation challenges of a given political decision and assess the extent to which the political decision fits with existing interests, competencies and ways of understanding at both organisational as well as at management and employee level. The study showed that both Vordingborg and Brøndby had this fit but not Høje-Taastrup.

Brøndby municipality's own substantial interest is in accordance with the climate adaptation mindset and their political course in connection with climate adaptation is in line with the government's view of climate adaptation. Although Vordingborg municipality's substantial interests also correspond with the government's, they do not have a sharp focus on cloudburst, their strategy is to first think of urban development and then "put" climate adaptation in it. Høje-Taastrup's main interests are not like the other two municipalities', they only made the plan because they were forced to, and they believe it was a waste of their time. When these different organisational interests are interesting, it is because of their effects on the implementation of public policy. These interests can be either conducive or inhibiting to goal realisation. This can be a major challenge for an implementation process.

A possible suggestion of where problems may arise in connection with cooperation and coordination is in the commitment of the responsible municipalities and administrations. There may be conflicting

substantial interests or different perceptions of areas of responsibility. Both Høje-Taastrup and Vordingborg have experienced problems with cooperation and coordination. In Vordingborg, there are challenges with coordination between two departments due to different perceptions of core tasks. Brøndby has not experienced very significant challenges in this area. All three municipalities agree that there must be cross-disciplinary cooperation and that common problem understanding is important, as well as conversation and dialogue is the solution if problems arise.

There is an ownership of the climate adaptation efforts in both Brøndby and Vordingborg municipality. The management in both municipalities has focused on allocating resources, sending the right signals in connection with climate efforts, but this was not the case in Høje-Taastrup municipality.

Apart from Høje-Taastrup municipality both Vordingborg and Brøndby have ownership over their climate adaptation efforts and the implementers in both municipalities have full ownership of the climate plan and its implementation. The institutional conditions regarding management style and organisation directly affect the implementers will, motivation and commitment and it is assessed from the empirical data that the implementers have sufficient competencies to be able to implement the climate adaptation plan. The empirical evidence also shows that the motivating management style affects the implementers in a positive direction.

6.2.2 Part Conclusion on Barriers and challenges for implementation of Climate Adaptation in Municipalities

The sub-question of this analysis was *What are the organisational barriers and challenges that are preventing the implementation of climate adaptation in the municipalities?*

To answer this, the case municipalities were analysed in depth based on the theoretical framework of governance and implementation theory. Using this approach of analysing the cases for each theoretical framework topic resulted in the finding of several different barriers and challenges for each topic, of which many are of duplicate nature or share overlaps of causes and topics.

To make sense of these barriers and challenges, they will be consolidated and combined into two lists, each focussing on governance and then implementation. Within these lists, the barriers and challenges that were found for multiple municipalities will be presented first, followed by the barriers and challenges that were only found in one municipality. After barriers and challenges have been presented, a summary will connect these barriers and challenges found in implementation with governance.

Governance

The governance theoretical framework revealed a numerous set of barriers and challenges that were founded in governance, hierarchical, model and network related nature. Many of these barriers and issues affected not just one, but multiple municipalities. Only 3 issues affect singular municipalities, namely Høje-Taastrup and Vordingborg. The list of barriers and challenges can be seen below.

General governance barriers and challenges
• The governance in the EU is a highly uninfluenced central decision making process, with a huge risk of lacking awareness of the situation at the local level. This is caused by the central government model of the EU not aligning with the concept of governance.

- The governance in the Danish State pushes responsibility away from the state. In addition, the municipalities were not given a say, "forcing" them into action. This is also once again caused by the centralised government model demanding action.
- There is a hierarchical challenge in interpreting the political wishes and goals of the Danish Government regarding subsidies to technologies, environmental concerns and programmes. There is also a challenge in finding stability when the government changes focus. This very same issue also resulted in the issue of when government's plans leading up to making the municipalities work with climate adaptation by the end of 2013 disrupting the existing climate adaptation in Denmark, causing the municipalities to prefer waiting.
- The laws regarding certain planning areas, such as coastal and wastewater, can make it impossible to overcome planning processes and find good legal and viable solutions for climate adaptation.
- The high degree of freedom given to municipalities creates opportunity for ambitious projects but presents a challenge in terms of responsibility only falling to the municipality which may be too demanding. This is supported by the lack of accountability and responsibility beyond carrying out climate plans by 2013, as seen with Høje-Taastrup not actively continuing engaging in climate adaptation, whilst Vordingborg municipality has not updated the climate adaptation plans. This happens when, according to Stoker's 2nd proposition, there are not clearly defined boundaries of accountability and responsibility.
- When using the participatory state model there is a challenge in making sure that everyone is properly involved and on the same page to ensure future cooperation and engagement
- The deregulated government model used by the municipalities that gives landowners the choice of how, when and what to do in regards to climate adaptation can result in a slow decision making process or no action being taken at all due to landowners being able to freely decide on when to do climate adaptation and which solutions to apply. This is also further enhanced by the market model which places the responsibility of financing climate adaptation on landowners' risks slowing or preventing the process

Høje-Taastrup municipality

- The politicians have a lack of political focus and the citizens not caring for climate change, combined with the lack of municipalities having to continue working on climate adaptation, the politicians are therefore neither responsible, nor are they accountable to the uncaring citizens. Together with the utility now showing interests, this challenges the climate adaptation implementation, resulting in un-ambitious goals and results. Currently, the municipality is as a result not actively engaged in climate adaptation or planning. This is caused by issues arising from Stoker's 2nd proposition, that there are no clear lasting accountability and responsibility roles, along with the flexible government model of only involving relevant actors can risk running this course of no one having an interest for the problem.

Vordingborg municipality

- The EU Floods Directive established a pre-existing pressure for the involved municipalities to prioritise climate adaptation on certain areas selected by the state prior, and currently sidelong with the climate adaptation process. For Vordingborg, this means that the city of Vordingborg is prioritized above the areas where the municipality experiences climate change issues such as flooding. This is the result of hierarchy affecting the municipality through a directive from EU

• When relying on the marketing model for the three city projects there is a huge process needed to find investors that can pay.

Table 14: Overview of the governance related barriers and challenges, along with their associated cause. Sauce, own make.

Implementation

Presented below in table 15 is an overview of the barriers and challenges present in municipalities regarding climate adaptation. Similarly, to governance related barriers and challenges above, there are many issues that are shared amongst the cases, with only three barriers and challenges affecting singular municipalities.

General implementation barriers and challenges
Policy design: • All three municipalities agree that policy design can be a problem. The challenge with policy design is that it is completely different how policy design is perceived and what topic the policy is about, and administration is responsible for implementing the political decision. Another challenge is which policy-instruments the political decision makes available to the implementers. There is a lack of coherence between objectives on the one hand and policy-instruments. Goodness of fit: • There is a possibility of lack of coherence and to what extent the interests converge. Inter- and intra-organisational cooperation and coordination: • There is a challenge in collaborating across municipal boundaries and even between departments in the municipalities. Anchoring interdisciplinary collaboration can be difficult in the municipalities. Common understanding of the problem: • The formation of a clear and common understanding of the problem is a challenge within the municipalities. Anchoring of climate adaptation: • Ensure that the climate plan is anchored in the various departments. Contribution model (Bidragsmodel) • The economy is a challenge and how to agree on a contribution model for climate projects.
Høje-Taastrup municipality

• Høje-Taastrup believes that the climate plan does not fit into their area of responsibility. Nor do they think it is a sensible approach. They think that the climate adaptation legislation is deficient and that there is no coherence between the instruments and policy objectives. They also believe that the necessary funding is not included.
Vordingborg municipality
• Vordingborg municipality has a challenge in establishing an interdisciplinary collaboration. They also believe that the politicians' focus is on flooding from the sea and not so much on cloudbursts. They have a huge challenge with the economy.
Brøndby municipality
• Brøndby municipality's challenge is the economy.

Table 15: Overview of the implementation related barriers and challenges. Source, own make.

There is a connection between governance scales and policy design as in both cases the practitioners have to deal with something that they have no influence on, this can be illustrated with the EU Water Framework Directive which the state had to deal with and which was "pushed" down to the municipalities. And following the same pattern, the actions of the Danish state via its open guidelines and passing of responsibility arguments why the municipalities do not agree with the policy design.

This is also evident in the case of the concept of 'Goodness of fit', where issues associated with hierarchy are concerned. Some of the municipalities expressed that it is difficult to understand the political wishes and this result in that the municipalities don't see how the governments wishes fit into their own interests and this challenge trickles down the system where the employees don't see the interest of their department converge with their own. The biggest conflict here is when the municipalities paused their climate adaptation efforts while waiting for the Danish Government to publish their guidelines.

It can also be seen once again on the topic of inter- and intra-organisational cooperation and coordination and the networks in governance. The relationships and issues found in governance add dimension to why the collaboration between actors, such as regarding projects or the development of plans, can present challenges.

The answer to the second sub-question, "*What are the organisational barriers and challenges that are preventing the implementation of climate adaptation in the municipalities?*", is that there are a number of barriers and challenges, many of which share both causes with focus points within both the theoretical and governance related theory frameworks.

Only a few of the barriers and challenges were unique to the municipalities themselves, as multiple barriers and challenges were present for all of them. However, despite this, only a few of the barriers and challenges originate outside of the nation.

The EU has only had a small impact on climate adaptation in terms of barriers and challenges, despite being thought of as having started and forced climate adaptation.

The Danish Government seems to be the biggest source of the barriers and challenges that exist across the municipalities, primarily in terms of hierarchical issues such as laws, intentions, provided means, policy design, mis-fit and the delegation of accountability and responsibility. The municipalities agree that the Danish Government should provide, and guide more, but that the Danish Government should not control more.

The barriers and challenges that exist amongst the municipalities are meanwhile mainly caused by the fact that in order to adhere to governance practices, involvement and participation must be carried out, and this in turn presents certain cooperative risks amongst actors and networks.

Of the unique barriers and issues of each municipality, Høje-Taastrup appears to be dealing with the most process breaking of barriers, mainly a lack of interest in key actors of politicians and citizens. Vordingborg municipality meanwhile deals with more varied unique issues, but these are mainly related to the collaboration and cooperation between actors and networks. Lastly, Brøndby is the municipality where the only limit is the economy to carry out the climate adaptation.

7 Discussion

The discussion in a project is where the empirical evidence and theoretical framework is put into a new perspective. Through the discussion, theory and evidence is combined, and it becomes possible for new ideas and concepts to be made, founded on scientific empirical evidence and prior conclusions.

For this chapter, the third and last sub-question is sought to be answered: *How can the implementation of climate adaptation in Danish municipalities be strengthened?*

The discussion will focus on a selection of barriers and challenges deemed central for the implementation of climate adaptation in Danish municipalities. For these problems, the theoretical framework will be drawn back into the discussion, picking apart each major problem and its causes. The discussion will then draw upon the recommendations by Concito's report that addresses similar issues, using these to form new recommendations for the climate adaptation implementation.

The chapter will end with a part-conclusion, answering the sub-question and presenting a list of findings that support the strengthening of implementation on Climate adaptation.

7.1 Strengthening the climate adaptation implementation

When a new policy is "put in place", the goal will be a new practice that is well organised, productive and efficient in terms of cost and resource use. This is the case for both the individual planner and the overall climate adaptation management. Basically, if the implementation process is not efficient, the administration will experience negative results. If so, it is necessary to investigate this by identifying the problems and searching for new solutions.

As the analysis has highlighted, the implementation of the climate plan is a complicated process in which the significance and interrelationship of different factors influence each other and effect the process. The complex nature of implementation causes that there is not just one causal explanation as to why the climate plan has not been successfully implemented.

From the empirical evidence, these significant factors can be identified which may have a negative impact on the implementation process.

- Policy design and governance spaces
- Goodness of fit and hierarchy
- Inter- and intra-organisational cooperation and coordination and networks

On the basis of the theory, it has been established that although policy design is not a direct factor, it can be decisive for whether a policy can be realised and that it matters whether there is a fit between the policy and the administration's interests, i.e. whether their interests converge. This opens up for practical problems and potential battles between organisational and individual interest, and it can have a major impact on interdisciplinary cooperation and coordination in the municipalities. The governance perspective adds that whenever governance is carried out in a space that is further removed from the given context of the situation and only involves a limited set of actors and a central decision making process, the risk of bad policy design increases. For the climate adaptation, this has led to a particular result of responsibility being passed down from both the EU and the Danish Government, leading to a policy design that is perceived as unambitious and at times confusing due to issues with regulations. This issue of accountability and responsibility was part of Stoker's 2nd proposition's dilemma, that when boundaries of responsibility and accountability are unclear, a shifting of

these may occur that create unsatisfactory results and destroy trust and faith in the system. The blurring must be cleared in order to overcome this question.

The empirical evidence indicates that there are challenges with policy design; the implementers have problems with understanding the objective of the policy and a dissatisfaction with the choice of instruments that accompany the policy and at the same time, there may be an additional barrier in the form of goodness of fit, i.e. to what extent the political decision fits with existing interests and ways of understanding at organisational, inter-organisational and individual level. This is supported by the governance perspective of hierarchy, and how laws and regulations reflecting the interests of the Danish Government may contribute to increased confusion about policy design, due to topics like subsidies, favouring certain technologies and shifting political focus creating uncertainty. The problem of law also shows up here again, leaving municipalities unable to get a clear overview of the rules regarding climate adaptation. Based on the overall empirical evidence it can be said that a transition toward higher degree of network governance would increase the ability for municipalities to coordinate cross-sectorial climate activities. For example, Stokers fourth proposition "*Governance is about autonomous self-governing networks of actors*." could be a possible way forward to establish a collaboration that could handle the climate adaptation challenges. Something similar has also been recommended by Concito in their report : "*That the municipalities to a greater extent prioritize - and find together in - inter-municipal efforts - especially around the handling of common challenges*" (Concito, 2017) (Translated from Danish)

However, it is important to then remember that with self-governing networks, Stoker points to the problem of power imbalances, interests and the tendency to create limited and closed off networks between strong key actors can result in uneven game rules. These game rules would not be fair, favouring only the "elite-actors" and leaving a hollow governance process that ignores the voices of other actors and networks. To solve this, the government must take a seat at the table and steer the networks. It should not have a position of power, but a position of facilitator with the sole purpose of allowing an optimal democratic governance process.

The literature study shows that the implementation research formed the basis for the entire governance discussion - because it was found that instead of looking at implementation top-down to understand policy processes, one should look at policy processes bottom up to see what actually happened in the processes, and here they found out that governance networks were the way to get something to happen.

The question is how to manage this challenge and cope with the problems, we have based on the empirical evidence and the theoretical background found out, that an implementation process can potentially be a complex affair characterized by conflicting organisational and individual interests and ways of understanding as well as with many interacting and conditioned factors and that it is neither automatic, trivial nor apolitical.

It is not possible to make one how-to-do template as the implementation varies from implementation situation to implementation situation and you cannot expect everyone to agree on the policy that is decided. An opportunity to overcome all three points is to focus on anchoring the climate adaptation mindset in the municipality's DNA and the efforts must be initiated in the upper political layers of the municipality.

Politicians' motivation and signals about the seriousness of climate adaptation can be of crucial importance for the climate adaptation plan's overall implementation and anchoring within the municipality. This will ensure pressure on the administrative management, which thereby loses the opportunity to downgrade or deselect climate adaptation projects and the substantial interests in the administration will be toned down through political pressure. A political ownership of climate adaptation will also make it a common issue on which the entire municipality's organisation is common. But

here an associated challenge arises; how to get politicians to prioritise the climate over their own interests and thereby another challenge arises in getting the citizens to put pressure on the municipal politicians because it will not happen from within for the empirical evidence confirmed the theory about the employee's self-interest.

In terms of cooperation and coordination, we need to think in new directions, the interdisciplinary collaboration and coordination with other sector planning in the municipality can generally take place through several forms of coordination, of which the one that creates the best opportunities for a broad anchoring and a broad ownership of the climate planning takes place by establishing actual collaboration groups. In such groups, a common understanding and desired direction for the next climate adaptation plan can be created, which can be implemented in joint projects. One possible initiative that can solve this challenge is the creation of definite arenas of collaboration across the organisational division in the municipalities. In order to promote a common understanding of the problem between the participants, it is recommended that these arenas be supported by professional instructors in collaborative processes.

7.1.1 Recommendations

Based on the collective empirical evidence gathered both in literature, analysis and theory, this project proposes the following recommendations to strengthen the climate adaptation implementation in Danish municipalities.

Politicians

The motivation and signals of local politicians about climate adaptation are of crucial importance for the overall implementation and anchoring of the climate adaptation plan within the municipality.

It must be initiated at the upper political strata of the municipality and must from there spread to first the administrative management and then permeate the entire organization.

Support must thus ensure pressure on the administrative management, which thereby loses the opportunity to downgrade or deselect climate adaptation efforts.

The substantial interests that may exist in the administrative management must be toned down through political pressure. A political focus on climate adaptation can also form the basis for allocating sufficient resources to the climate adaptation activities.

Creating political ownership of the climate adaptation plan is crucial. Politicians must therefore be involved early and take an active part in the implementation process in order to be able to relate to the measures that must be taken in connection with climate adaptation.

Through the creation of a political ownership of the climate plans, climate adaptation can also be made a common concern, which the entire municipality's organisation shares.

The administrative management

It is particularly important to create ownership of the plan in the top administrative management layer, so that climate adaptation thereby achieves a certain focus in the ‘big picture’.

The administrative management also plays a crucial role in anchoring climate adaptation in the overall organisation, as the management forms the link between the municipal visions and the administrations that are to implement them.

The anchoring must ensure that entire administrations assume responsibility in connection with the climate adaptation efforts, and the administrative management must therefore set requirements for relevant administrations and departments.

Through these requirements, cooperation and a sense of responsibility must be promoted.

In the same way as political pressure, pressure from the administrative leadership can reduce the ability of different administrations to evade climate-adaptation-related responsibilities.

Finally, a motivated management can strengthen and encourage the respective implementers to implement the climate plans.

Internal actors

Among the internal actors in the municipality, it is essential to create an anchoring of climate adaptation and the climate plans.

This must be done through the active involvement of the administrations that are relevant to climate adaptation.

This must take place in arenas of co-operation, where the actors are equal and have the opportunity to speak their mind.

In general, the conditions regarding work culture affect the opportunities for cooperation between the internal actors. It is therefore important that the organisational conditions must provide for inter-play collaborations within the municipality.

Implementers

For the individual implementer in the municipality, it is crucial that a clear connection can be seen between the daily work with climate adaptation and the municipality's visions in the area of climate adaptation.

It is about motivating them to *want* climate adaptation.

Motivation and the willingness to *want* climate adaptation must generally be the focal point for the overall implementation of the climate adaptation plans.

7.2 Part conclusion on strengthening the climate adaptation implementation

How can the implementation of climate adaptation in Danish municipalities be strengthened?

In order to answer the sub-question, this project has presented some recommendations in connection to strengthen the process of governance and the implementation process in the municipalities.

The climate change challenges are becoming increasingly wicked. The municipalities must recognise the pervasiveness and interrelatedness of climate change. However, based on the empirical evidence their ability to organise and coordinate a holistic climate effort that transcends sectoral division is challenged by the institutional structure, into which climate action is embedded. The municipalities are shaped by a hierarchical order, a clear division of sectors and characterised by governmental con-

trol through vertical interaction flows. The way forward for the municipalities is to engage in horizontal collaborations. This will provide the municipalities with flexibility to explore synergic potentials. A transition towards a higher degree of network governance will improve the conditions for engaging in cross-sectoral collaboration and enable the municipalities to coordinate multiple climate initiatives. In addition, this project proposes some recommendations to strengthen the climate adaptation efforts.

8 Conclusion

The municipalities are the planning authority for the physical planning at the municipal level, and it is therefore interesting to investigate the role of the municipalities in implementing the climate adaptation plans. As the increase in intense cloudburst events and resulting urban floods in cities demonstrate, climate adaptation plans are an imperative that municipalities need to act upon. It requires fundamental transformations of the management and planning practices in urban settings, representing a key institutional challenge, especially for municipalities, to deal with. Accordingly, this project provides valuable insights into one of the complex contemporary issues faced by implementers within the organisational field of cloudburst management in an urban setting. Thus, these efforts need to be scrutinized, which this project seeks to address through the following research question:

"In Danish municipalities; what are the challenges and the barriers for the implementation of climate adaptation plans that address the flooding of urban areas, and how can this implementation process be strengthened?"

8.1 The background

Implementing policy is about how political decisions and new legislation become practice. It is crucial to understand how the implementation proceeds if one wants to understand how and why policy implementation works - or does not work. Cities are big contributors to climate change and at the same time highly vulnerable to climate change and yet emerging as focal points for leading the way towards sustainability.

Our choice of subject comes from a reflection of the last five years of studies of sustainable urban planning, there are countless challenges both in urban development and administratively and nowhere is it more expressed than in the physical planning with regard to sustainable urban planning. We want to help practitioners to a greater extent be able to assess how political decisions can be translated into reality. The answer will provide an opportunity to avoid the worst pitfalls, optimize management and thus in the long run increase the probability of goal fulfillment

8.2 The projects approach

Initially we conducted a literature study to gain an overview of the field and the problem in focus for the project. This was done to create a solid departure point for further investigations into the field by seeking out the relevant theories, literature reviews, rapports, political documents and in general increase our insight about the state of the art

Afterwards the methods were chosen to get an overview of what steps to take to make progress. The two main methods have been structured interviews and literature review respectively.

The second method, literature review, helped identify the right theoretical framework that helped to 1) gain a deeper understanding of the integrated Implementation Model and its theoretical roots, 2) gain a deeper understanding of how governance takes place in public organisations. Together these theories helped this project guide the analysis in this study. The theories provided a number of different elements that could be examined in practice about how the municipality implemented the climate plans as well as what and how they have done in practice.

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8.3 The Conclusion

The conclusion of this study is that the climate plan receives a lot of attention and receives growing recognition and is becoming a focal point in many Danish municipalities' but there is a big difference between how municipalities understand and define the climate plan concept. The development is still in its infancy and a concerted effort is needed. The study also shows that the municipalities work in different areas and have focus on different things. The empirical data shows that the municipalities choose to put their efforts regarding the climate plan where they think it makes the best sense to start with climate adaptation initiatives. The study shows that some municipalities find it difficult to find out exactly what the policy is and what it means for the municipality and what they need to do as well as what it takes to implement the activities in the long term. There is also a confusion and vague understanding about the transition process. There is confusion about what the adaptation requires, and why it is relevant.

There is also a lack of regulatory framework regarding a broad cooperation within the municipalities and there are a number of barriers and challenges, many of which share both causes with focus points within both the theoretical and governance related theory frameworks. Only a few of the barriers and challenges were unique to the municipalities themselves, as multiple barriers and challenges were present for all of them. However, despite this, only a few of the barriers and challenges originate outside of their domain. The Government seems to be the biggest challenge to the municipalities, primarily in terms of heiracial issues such as laws, intentions, provided means, policy design, mis-fit and the delegation of accountability and responsibility. The municipalities agree that the Government should provide, and guide more, but that the Danish Government should not control more. Of the unique barriers and issues of each municipality, Høje-Taastrup appears to be dealing with the most process breaking of barriers, mainly a lack of interest in key actors of politicians and citizens. Vordingborg municipality meanwhile deals with more varied unique issues, but these are mainly related to the collaboration and cooperation between actors and networks. Lastly, Brøndby is the municipality where the only limit is the economy to carry out the climate adaptation. Last but not least silo thinking is a major barrier and there are insufficient funds available.

9 Perspectivation

The sheer depth and wealth of the analysis is only partly represented in the discussion of this project and in extension the recommendations suggested. This vast amount of empirical evidence and other barriers and challenges could therefore serve as a starting point for future research into the topic of climate adaptation in Danish municipalities.

In addition, this future work could also seek to include other perspectives of climate adaptation in municipalities. Sources that could have been relevant, such as citizens and politicians, could have provided a wealth of knowledge to further research, enabling the theoretical framework to be based on more representable empirical evidence with multiple viewpoints.

One of the things that can be perspective, is the question of whether climate adaptation, something that seems so essential and necessary in the current urban climate, should remain a fully governance oriented process, or if it is possible to practice good governance in a national or international space. Can a set of measures that crosses boarders and reaches beyond the local boundaries in order to prevent floods be unified with a concept of governance practice in the first place, or should there be more state control over this implementation? And if not, how can a good governance be obtained if not all topics are of a governance related issue?

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11 Appendix

This part of the project contains the interview guides used during the interviews of the municipalities, along with a list of recorded interviews with each municipality. The files are uploaded to AAU's project library along with this project.

11.1 Appendix A: Interview Guidelines

Overview of the interview guides in chronological order. Interview guide 1 was used for all three municipalities, while interview guide 2 and 3 were only used for Brøndby and Vordingborg municipality.

11.1.1 Interview Guide 1

Organisatorisk/governance

- Hvordan foregår klimaplanlægning og implementering af den i jeres kommune?
  - *Er der retningslinjer, love og krav som I skal efterfølge? Hvad er hierarkiet? Hvad er processen? Netværk, marked og samarbejde? Initiativer?*
- Hvem er involveret?
  - *hvordan involveres de/hvordan samarbejdes der? Hvordan fungerer det? Aktiv rolle? Forhandler i med andre aktører?*
- Hvilke organisatoriske udfordringer er der i forbindelse med klimaplanlægningen og implementeringen?
  - *Interessekonflikter? For store krav? Tekniske eller videns-mæssige?*
- Hvad er status på klimaplanen, planlægningen og implementeringen?
  - *Er den blevet bedre? Er den gået i stå?*
- Er der en handlingsplan eller proces for hvordan klimatilpasningsplanen bliver institutionaliseret? (fortæller **os** om styringsformen)
- Ifølge lovgivningen skal kommunen udarbejde risikostyringsplaner for udpegede risikoområder. Synes du, at der er synergi mellem risikostyringsplanerne og klimatilpasningsplanerne? (vil fortælle **os** om manglende overblik, internt samarbejde, forståelse af opgaven og processen)
- Bliver der taget handling til at sikre, at man tænker over synergieffekterne, så planlægningen ikke kun har fokus på afhjælpning af fx. regnvand, men også på andre værdier såsom nye rekreative områder? Hvis ja, hvilke problemer gav det?
- Der er ikke et lovkrav om at opdatere klimatilpasningsplanen. Har I tænkt jer eller har I besluttet om I vil selv begynde at opdatere planen eller venter med om der kommer et statslig krav om opdatering af klimaplan? (vil fortælle **os** om: ejerskab af planen, noget om medarbejdere og hvilken tilgang de har om det er hierarkisk eller bottom-up).
- Det, at implementeringen og planer går i udu. Har det noget med magt at gøre? (fortæller **os** om interne forhold, både vertikalt og horisontalt)

Ledelsen

- Hvordan har ledelsen involveret sig i både opstart, og implementering af jeres klimaplan(er)?
  - *Engagerede de sig og allokerede ressourcer til klimaplanen og implementeringen? Hvilke signaler fik i fra ledelsen? Ejerskab og forpligtelse? Hvem har i fået disse signaler fra (Stat, lokalpolitikere, sov?)*

Planlæggerne (markarbejdere/civil servants)

- hvordan blev klimaplanlægning startet i kommunen?
    - *Hvilke ressourcer blev gjort tilgængelige? hvordan forstod i regeringens intentioner og mål?*
- Hvilken viden og ressourcer har i til planlægningen og implementeringen?
    - *Er der begrænsninger? Er der udfordringer? Er der dilemmaer? Hvordan kunne disse undgås?*
- Som planlæggere, var der interesser eller intentioner i forbindelse med klimaplanen?
- Burde der have været andre måde at gribe denne planlægning og implementering an på?
    - *Skulle det have været mere top-down eller bottom-up? Burde regeringen og/eller kommunens lederskab gjort noget anderledes? Flere ressourcer eller mere specifik formulering af mål og intentioner? Anden lovgivning?*
- Hvordan står klimaplanlægningen og implementeringen til lige nu?
    - *Bruges den? Er den gået i stå? Er der udfordringer?*
- Er der en fælles problemforståelse? Og hvordan kommer I frem til en fælles problemforståelse?
- Er eventuelle konflikter under belyst?
- Hvilke konflikter er der tale om? Styringsmæssigt, Fagmæssigt, kulturelt osv.
- Hvordan udspiller de sig? Og Hvordan håndteres de? Hvilke mod foranstaltninger?
- Var / Er der nogen barrierer, som ikke har nogen løsning lige nu? Hvis så: Hvordan videre herfra?

Aktører

- Hvem arbejdes der sammen med i forbindelse med jeres klimaplan(er)?
    - *Hvad er deres interesser? er det eksterne eller interne aktører fra kommunen? Var der nogle aktører som var ønsket inddraget (hvorfor/hvorfor ikke?)*
- Hvordan arbejdes der med aktørerne?
    - *Netværker? markeds samarbejde? Er der forhandlinger? konflikter? Hvordan løses disse? Er der udfordringer eller barriere med at arbejde med aktørerne?*

Socioøkonomiske påvirkninger

- Hvor mange ressourcer havde i at gøre med, da I udviklede klimaplanen, og hvor mange har i nu?
    - *Burde der allokeres mere? Er der begrænsninger?*
- Oplever kommunen internt og/eller eksternt påvirkninger på klimaplanen og implementeringen af den?
    - *hvor kommer det pres fra? Er hvorfor? Og hvordan påvirker det jer?*
- Hvordan har borgerne modtaget klimaplanen og implementeringen af den?
    - *Er der udfordringer? Hvad er deres interesser og opstår der konflikt? Hvordan inddrages og håndteres borgerne? Hvad føler borgerne der bliver gjort?*

11.1.2 Interview Guide 2

Netværk

Målet her er at få mere specifikke navne på de forskellige netværk kommunen indgår i forbindelse med klimatilpasning, og om der er egne netværk som kommunen selv oprettede. Målet er også at forstå hvordan kommunen blev en del af disse netværk og hvad deres rolle var. Dertil vil der være fokus på:

- Hvilke netværk og partnere var vigtige for enten, eller både, udviklingen af klimatilpasnings-planerne og implementeringen af disse?
- Hvordan og hvorfor kommunen blev en del af disse netværk, og om kommunen allerede var en del af dem inden klimatilpasning kom på banen?
- Erfaringer i forbindelse med disse netværker og partnere?
- Og om der var specifikke roller som jeres netværk spillede i forbindelse med både klimatil-pasningen og generelt, såsom vidensdeling, informering, finansiel støtte, rådgivning, etc.?

Politik

Vi vil rigtig gerne høre mere om politikernes rolle og hvordan politik former planlægningen i kommu-nen. Det giver selvfølgelig mening at uden politisk støtte og vilje, så kan projekter i en kommune ikke nå særlig lang, og dette punkt søges undersøgt mere i dybden. Der er fokus på om:

- Dynamikken mellem politisk vilje og projekt/plan implementering kan være modsat end ovennævnte, og hvorfor?
- Hvordan de forskellige netværk har påvirket politikken og politikerne i kommunen, og hvor-dan disse har gjort brug af netværkene?
- Hvordan politikken i kommunen oversættes i en planlægningsmæssig kontekst til planer, specielt også i forhold til klimatilpasning?
- Dertil er det også fokus på selve styrings- og koordinerings aspekter i kommen i forbindelse med klimatilpasning?

Hierarki

Det sidste emne har til mål at undersøge den mere hierarkiske styring af opgaver og ansvarsfordeling i kommunen

- Mere fokus på hvordan kommunens interne hierarki spiller sammen med klimatilpasningen, og hvordan denne struktur tilgås af de forskellige afdelinger?

Flere spørgsmål

- 1.politik - 2.hierarki, den hierarkiske styreform - 3.netværk.
- Er der projekter som bliver "omdefineret" så de ikke fremstår som værende gået "galt"?
- Er der et paradigmeskifte der gør implementeringen af klimaplanen vanskeligt?
- Evnen til at fokusere på prioritering i implementeringsprocessen? Dvs. hvordan laver I en pri-oriteringsliste som alle aktører kan være enig om? Og bliver den overholdt?
- Har udfordringerne og problemerne noget at gøre med, at vi er i en tilstand af overgang, dvs. overgang til bæredygtig udvikling?
- Hvilke særlige forhold internt i kommunen hæmmer jeres indsats i forbindelse med imple-menteringen?
- Er der nogle klimaprojekter som har mere politisk opbakning end andre?

- Er der et 'fit' mellem klimaplanen og medarbejdere?
- Er der et 'fit' mellem klimadagsordenen og medarbejdere?
- Er der et 'fit' mellem miljøpolitikken og måden at gøre tingene på hos jer?
- Hvor selvstændige er medarbejderne i forhold til implementeringen?

- Er der nogle projekter der får mere opmærksomhed?

11.1.3 Interview Guide 3

Goodness of fit:

- Policy tilpasning handler om sammenhæng mellem to politikker, mens institutionel tilpasning handler om sammenhæng mellem administrativ og organisatorisk indretning og tradition.
- We must also assess the extent/degree to which the political decision *fits* with existing interests, competencies and ways of understanding at both organisational and inter-organisational as well as at management and employee level.

Policy design:

- The implementation of a policy is thus dependent on which policy-instruments the political decision makes available to the practitioners.
- Manglende sammenhæng mellem mål på den ene side og politiske instrumenter og korrekt brug af organisering på den anden.

Organisering:

- Er der en problemforståelses proces?
- Har man lavet en proces organisering?
- Hvordan organiseres implementeringsprocessen? Af hvem? Ansvar?
- Hvilke opstartsproblemer opleves?
- Hvilke elementer er essentielle for organisering af samarbejder?
- Hvilken rolle spiller en fælles målsætning og problemforståelse?
- Er det nødvendigt at oprette deciderede aftaler/kontrakter?
- Hvordan sikres en hensigtsmæssig interesseafvejning?
- Hvilken indflydelse har organisationsformen for implementeringen og netværkssamarbejde?
- Hvordan sikres forankring på tværs af forvaltninger?
- Er der udpeget en koordinator eller ansvarlig for implementeringen af klimatilpasning indsatsen?
- Hvilken organiseringsprincip har de brugt når de implementerer deres klimatilpasning? er der nogle klare retningslinjer for det.
- Synes du at der er et "siloproblem" når det kommer til klimatilpasning

Aktør:

- Hvilke aktører skal indgå i implementering - og hvordan?
- Hvad er rollefordelingen mellem aktørerne?
- Hvornår skal de forskellige aktører inddrages?
- Hvordan kan en konflikt udfolde sig? Intern og ekstern

Ledelses Aspekt:

- Hvordan har lederskabet ageret? Ledelses signaler?
    - Ressourceallokering, virkemidler, værktøjer …
- Sætter ledelsen fokus på ressourcer og opkvalificering?
- Hvordan påvirker ledelsen implementering?
- Ownership and commitment: leder

Medarbejdere:

- Hvilken betydning har medarbejdernes evner og kompetencer for implementeringen?
- Hvilken indflydelse har medarbejdernes vilje for implementeringen?
- Påvirker manglende eller ændrede ressourcer medarbejdernes vilje og motivation til samarbejde?
- Hvordan motiveres medarbejderne?
- Hvordan håndteres individuelle interesser?
- Spiller viden en rolle?
- Hvordan oplever du det (offentlige) styringsformen i din kommune? Er det resultatorienteret? NPM? Eller NPG?
- Hvad er implementeringskvalitet?

Organisatoriske påvirkninger:

- Synes du at de institutionelle rammer påvirker processen? Hvordan?
- Påvirker de institutionelle krav (forventninger) selve implementeringen?
- Påvirker de substantielle interesser selve implementeringsprocessen?
- Påvirker de individuelle interesser selve implementeringsprocessen?
- Er der nogle andre rammebetingelser der kan påvirke implementering?
- Er der noget proceslovgivning der kan påvirke?
- Hvilken indflydelse har politikerne på implementeringen?
- Hvilken indflydelse har skiftende politiske forudsætninger?
- Hvor er det hensigtsmæssigt, at ansvaret for implementeringen placeres?
- Oplever du at der er et klar ejerskab og forpligtelse over implementeringsprocessen på tværs af forvaltningerne/afdelingerne?
- Det, at implementeringen og planer går i udu. Har det noget med magt at gøre? Eller styringsproblemer?

Hvilken rolle spiller den statslige ramme for kommunen?

Angiv venligst hvor enig du er i følgende udsagn.

Skala: Meget enig, Enig, Hverken/eller, Uenig, Meget uenig, Ved ikke/ikke relevant

a. Der er ikke meget manøvrerum til at lave vores egen indsats
b. Staten giver den nødvendige sparring og tilbyder specialiseret ekspertise
c. Statslige aktører kan være behjælpelige med svære prioriteringer
d. Det statslige regelsæt er uigennemskueligt
e. Det statslige regelsæt er for uambitiøst

Hvordan oplever du samarbejdet om klimatilpasning internt i kommunen?

Angiv venligst, hvor enig du er i følgende udsagn.

Skala: meget uenig, uenig, hverken/eller, enig, meget enig. Ved ikke/ikke relevant.

a. Der er stor interesse blandt berørte forvaltninger og afdelinger
b. Der er en udbredt opfattelse af at tilpasning ikke er presserende
c. Der mangler opbakning fra andre forvaltninger
d. Klimatilpasning skaber konflikter, fordi det skærer ind over andre forvaltningers arbejdsfelter

11.2Appendix B: Interview recordings

The interviews carried out in this project was recorded, resulting in a total of 7 interviews with an average length of 1 and 15 min each, +/- 15 min. They are uploaded along with this project to AA's project library as additional material.

11.2.1 Brøndby municipality

Interview - Brøndby 1.m4a

Interview - Brøndby 2.m4a

Interview - Brøndby 3.m4a

11.2.2 Høje-Taastrup municipality

Interview - Høje Taastrup 1.m4a

11.2.3 Vordingborg municipality

Interview - Vordingborg 1.m4a

Interview - Vordingborg 2.m4a

Interview - Vordingborg 3.m4a