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The Governance of Climate Adaptation in Sweden at Multiple -scales and -levels

A CASE-STUDY ON THE ACTORS AND POLITICAL INFLUENCE ON CLIMATE ADAPTATION IN THE REGIONS SURROUNDING VÄNERN AND GÖTA ÄLV

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Glossary

Appropriation bills	- An *appropriation bill* is a proposal placed before the legislative branch of the government by a ministry to earmark a particular portion of general revenue or treasury funds for use for a governmental objective.
Climate adaptation	- Climate adaptation is more commonly mentioned as climate change adaptation. However, since adaptation includes actions towards both present and future climate, this thesis will only use climate adaptation.
EU	- European Union
GR	- The Göteborg Region Association of Local Authorities
NAS	- National Adaptation Strategy
Politics	- Politics in this thesis are the political decisions and priorities made by the elected majority within the governance system at different levels. These can be both spoken and written through formal and informal processes.
PTS	- The Swedish Post and Telecom Authority
Public administrators	- Non-elected public servants working in public sectors and agencies, at all levels of government.
SA	- Stakeholder analysis
SMHI	- The Swedish Meteorological and Hydrological Institute

Abstract

This case study analyses the public multi –scale and –level governance of climate adaptation in the regions surrounding Vänern and Göta Älv in Sweden. It's done in a governmental context and analyses how political priorities at different –scales and –levels affect adaptation processes. The study shows that governance challenges are present within as well as across different scales and levels, in relation to which political priorities influences all analyzed actors. This is true from long-term planning processes to the harmonization of actors and the structures that govern them. The thesis outlines the landscape of public actors and their level of involvement in adaptation processes connected to the regions. Additionally, it shows the importance of mutual understanding, a sense of responsibility and knowledge, where the means available to adapt are vital.

Key words: Governance; Climate adaptation; Multi –scale; Multi –level; Political priorities; Sweden

1 Introduction

International research (IPCC 2014) conclude that the climate is changing across the globe and even if emissions should drastically reduce, the climate will continue to change for decades to come. Some of the expected changes in climate will be temperature rise, sea level rise, heavier downpours, and more common and intense droughts. These changes will in turn result in extensive impacts on both natural and human systems (Ministry of the Environment and Energy 2007, IPCC 2014). Subsequently, there is a need to adapt in order to respond to current and future changes. (IPCC (2) 2014, EEA 2013). Following the definition of adaptation in the IPCC fifth assessment report (IPCC (2) 2014), it's the process to adjust human and natural systems to current and expected climate effects. The adjustments to these changes might include early warning systems, changes in planning and building regulations or the development of local, regional, national or international adaptation strategies.

The global nature of climate change disregards national, regional and local boundaries. This creates complexity in the governance of adaptation processes, where it demands interaction and cooperation across all levels of the global society. Looking closer at the nation state, it's dependent on a complicated web of overlapping systems and actors including, local authorities, regions, nations, unions of different kinds, networks, private actors and groups. This in turn creates challenges regarding the distribution of responsibilities in relation to governance (Cash, et al. 2006).

In the case of Sweden, the governance and responsibilities for climate adaptation is a subject currently discussed in the government. The present governance system is in many ways insufficient and face a lack of coordination. There are 26 different national authorities responsible for their respective sectors in relation to climate adaptation, where the Swedish Meteorological and Hydrological Institute (SMHI) have a special role to develop a national knowledge center. Twenty regional offices have the responsibility to coordinate the 290 municipalities, which in turn have the responsibility to develop local climate adaptation plans (Klimatanpassningsportalen 2014). Subsequently, the governance of climate adaptation in Sweden can be described as "taking place within a political context on multiple levels, within which responses are formed by multiple interests, including those in the existing political and administrative systems" (Keskitalo 2010, 4).

The thesis strives to deepen the understanding of Swedish climate adaptation governance and how different actors' involvement affects the work in regions consisting of different administrative, political and spatial boundaries. First by developing a stakeholder analysis

(SA) framework to identify key stakeholders and relevant actors' involvement and focus. Second, by using the governance scales and levels framework proposed by Cash et al. (2006), that contributes with the identification of important aspects in and across scales and levels that are crucial for a deeper understanding of the political influence on, and governance of climate adaptation. The framework hasn't been used in the context of Swedish climate adaptation before, but together with the SA, it helps create a contextual overview of climate adaptation when analyzing the cross –scale and –level interactions.

Scales in this context are the governmental dimensions used to measure and study a phenomenon, such as knowledge or jurisdictions. Levels are then the units for analysis along each scales. For example, along the knowledge scale there may exist different levels of knowledge (from general to contextual) or different types of truths (from universal to specific). Along the jurisdictional scale, we may for example find inter-governmental, national, provincial and local administrations.

The thesis focus on global processes such as climate change, climate adaptation and governance are linked both to previous research (Bennett, et al. 2014, Nightingale 2014, Godsäter 2015) at the school of global studies, and to much of the central literature (W. N. Adger 2007, H.-M. Füssel 2007, O'Brien, et al. 2007, Beck 2009) and courses during the master program at the institution of global studies. The thesis therefore has a high relevance for global studies.

1.1 Formulation of research problem

Political decision-making play a vital role in climate adaptation, all through the local, regional, national and international levels (Nilsson, Swartling and Eckerberg 2012). Previous research (Adger, Arnell and Tompkins 2005, Glaas and Juhola 2013, Hjerpe, Storbjörk and Alberth 2014, Nilsson, Swartling and Eckerberg 2012) also establishes the importance of local involvement in climate adaptation. However, it also shows that local governance autonomy in climate adaptation brings challenges and limitations across different levels of society (Adger, Arnell and Tompkins 2005, Nilsson, Swartling and Eckerberg 2012), where responses are influenced by political priorities, knowledge and economic resources. On top of that, it puts a bigger responsibility on the regional offices and municipalities to coordinate differentiated adaptation responses across the different levels of society (Glaas and Juhola 2013, Hjerpe, Storbjörk and Alberth 2014). Many of these obstacles in the current structures are in the case of Sweden well established (Andersson, et al. 2015, 96). However, some

researchers point out that there is a tendency in existing research to have a rather narrow focus when analyzing an environmental issue, which tend to lead to important interactions, connections and perspectives are left out (Cash, et al. 2006, Keskitalo 2010). This is visible in the case of climate adaptation in Sweden where there is a lack of research that takes a more comprehensive approach; looking at the interrelationship between different aspects, such as laws, knowledge, finance, structures and networks. There is also a lack of research regarding how political decision-making within the present governance system affects climate adaptation and how involved actors handles and coordinate trans-boundary adaptation across affected sectors.

Looking closer at the predicted climate changes for Sweden, existing research (Ministry of the Environment and Energy 2007) primarily shows increased precipitation and changes in water levels. Two of the most exposed regions for such changes in Sweden are Västra Götaland and Värmland. These regions are also interconnected through the water bodies of Vänern and Göta Älv, creating a dependency and heavy incitements for cooperation across multiple scales and levels. On top of this, there are ongoing debates and projects in both regions related to climate adaptation. Therefore, the Vänern and Göta Älv region is a relevant case-study of how political priorities influence multi-scale and multi-level climate adaptation in Sweden.

1.2 Aim and research questions

The aim of the thesis is to contribute to the existing research by providing a more comprehensive method to analyze the governance of climate adaptation in order to deepen the understanding of Swedish climate adaptation governance.

Based on sequential design of 1) a developed stakeholder analysis (SA) and 2) qualitative interviews with key stakeholders (stakeholders with a high degree of involvement in climate adaptation in the case), the thesis will in analyze how political priorities at multiple levels and scales influences the governance of climate adaptation. The following research questions will guide the study:

How are political priorities influencing the multi-scale and multi-level coordination and collaboration of climate adaptation in the Vänern and Göta Älv regions?

a *What claims do the stakeholders make in relation to the question of responsibility for developing adaptation measures and collaboration?*

b *In the context of multi-level governance of climate adaptation measures in the regions, how are political priorities framed?*

c *What are the different perceptions of the need for adaptation measures and collaboration among different actors in the regions?*

1.3 Delimitations

The thesis has a clear focus on the governmental structures regarding climate adaptation. The concept of politics are therefore, in the thesis, limited to the formal and informal political decisions and priorities made by elected representatives within the governance system at different levels. Additionally, the thesis will not include private actors such as companies or other organizations or groups in the analysis. These actors also have an important role in climate adaptation (Cash, et al. 2006), but due to the focus on the political priorities and that it would affect the analytical quality thanks to the vast number of actors, these were left out. The County councils in the two regions has also been left out. They are part of the governmental structures in the two regions, but were through the SA found to have a very low involvement in the issues covered by the study.

The clear focus of the governmental structures and interest in the political context also makes the thesis focus on the overarching structures rather than on specific issues connected to the municipality's challenges in relation to climate adaptation.
Another delimitation is the focus on the most involved stakeholders. This was done in order to obtain empirical material of high quality and to get a deeper understanding and analysis of the climate adaptation work in the two regions. However, by expanding the thesis by interviewing and comparing more actors, including the ones rated lower in the SA, the reliability would have been enhanced.

2 Climate adaptation governance in Sweden: A literature review

This chapter presents previous research in relation to the European and Swedish governance of climate adaptation and furthermore introduces the case-study context. The chapter starts wide and narrows down to the case-study regions.

2.1 Climate adaptation and mitigation

Two themes are prominent in the climate change discourse: adaptation and mitigation. While mitigation refers to measures taken in order to cut greenhouse gas emissions in order to

prevent unacceptable rise in global temperature. Adaptation refers to measures taken in relation to the already changing climate. Scientists (IPCC 2014) agree that the anthropogenic effects on the climate already are so severe that certain changes in the climate are inevitable. In fact, many geographical areas around the world today already experience the effects from climate change, such as reduced access to water resources and more frequent and powerful storms. The global community therefore has to work on two fronts, first to mitigate climate change in order to avoid passing more severe thresholds that could result in major irreversible environmental changes on a global scale. Simultaneously, the global community needs to adapt to the present and future changes that the already changed climate will bring (Rockström, et al. 2009).

Implementation of adaptation measures are increasing across different levels in society and are more and more being included in development plans. Europe has come further than many other regions in the world, in the development of adaptation policies at the inter-governmental level (IPCC (2) 2014). Still, in the European Union (EU), member states are at different paths and stages of developing climate change adaptation strategies. One debated challenge is the governance of adaptation, where questions such as the appropriate level of governance and policy integration have risen on the agenda. The dominant approach to climate adaptation governance is the development of national adaptation strategies (NAS) to climate change in accordance to a framework developed by the EU. The EU framework promotes the adoption of comprehensive adaptation strategies where greater coordination and information sharing between different levels are important parts. They also help member countries to map vulnerable sectors and strive to increase the resilience in the region (Biesbroek, et al. 2010, European Environment Agency u.d.).

To exemplify different approaches Keskitalo (2010) compares Finland and Sweden, two neighboring countries, who have chosen different paths in their adaptation strategy. Finland has developed a NAS in accordance to the EU framework, including national goals, follow up systems, and a responsible national agency. As described in the introduction, Sweden has in comparison taken a more decentralized approach and is not in the process of developing a NAS or a responsible national agency. Sweden has, in contrast to Finland, implemented adaptation coordinators at the regional level and implemented support systems for local governments, moving the responsibility and the direct implementation of, for example EU directions, to the regional and local level (Glaas and Juhola 2013). This has, according to Keskitalo (2010), resulted in Sweden having a larger focus on climate mitigation and has been a somewhat slow mover in adaptation, while Finland has tended to develop more successful

adaptation measures throughout the jurisdictional levels, following a more top-down approach (Keskitalo 2010).

2.2 Climate adaptation in Sweden

The expected impacts of climate change in Scandinavia and Sweden is a warmer and wetter climate. Future scenarios point to that the number of days of heavy precipitation will increase significantly and runoff will increase most in the western parts of the country. High flows will considerably increase, especially in Västra Götaland, southwestern Svealand and northwestern Norrland. Flooding such as the one in Lake Vänern 2000/2001, when Vänern, due to heavy downpours, was flooded for about six months, causing major effects on both human and natural systems will increase in the future. Other expected changes are increased groundwater levels and increased flows in watercourses. In the Göta Älv region, this increases the risk for landslides, and if not handled in time, it can have devastating effects because of the many societies and contaminated landmasses in the risk zone. Additionally around 700 000 people depend on Göta Älv for their fresh water supply (Ministry of the Environment and Energy 2007, SGI 2012).

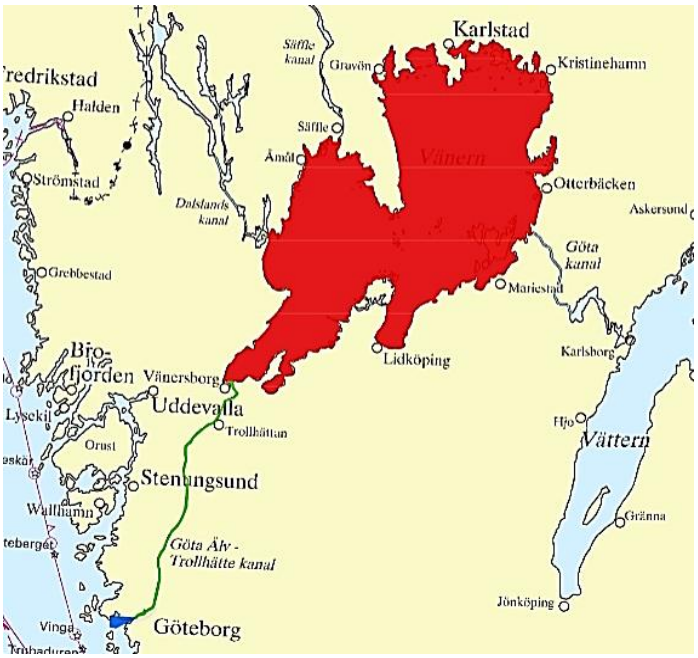
Looking closer at research regarding the Swedish heritage of governance (Keskitalo 2010), it includes local authorities that compared to most other countries have a very strong local self-government. Consequently, the structure of governance for climate adaptation follows more of a bottom-up approach, compared to many other countries, which in turn gives a big responsibility to the local authorities. However, studies show (Keskitalo 2010, IPCC (2) 2014, Nilsson, Swartling and Eckerberg 2012) that this creates a big challenge for many municipalities in Sweden, and demonstrate a correlation between low local political priority to climate adaptation and a lack of any recent extreme weather event. Local level politicians also feel a lack of national cooperation, guidelines and weak established incentives such as funding. Glaas and Juhola (2013) argues, however, that the local level political decision-making within climate adaptation is crucial since adaptation is a context-based problem and that the changes will affect geographical areas in different ways. Therefore, climate adaptation needs to be locally based, while coordination across different levels of decision-making remains necessary (Glaas and Juhola 2013).

While research attributes big importance to local political involvement in climate adaptation (Adger, Arnell and Tompkins 2005, Glaas and Juhola 2013, Hjerpe, Storbjörk and Alberth 2014, Nilsson, Swartling and Eckerberg 2012), it also criticizes the current

organization in Sweden, arguing that the knowledge exchange and coordination across levels is too weak, especially between the local and the national level. Sweden's decentralized approach to climate adaptation currently creates a situation where the degree of adaptation at the municipal level, largely, is depending on local political priorities, knowledge and economic resources. It also puts a big responsibility on the regions and municipalities to coordinate their adaptation measures and it creates a situation where the local initiatives rely heavily on the interest and engagement of local politicians and public administrators. This in turn leads to significant differences in the way the municipalities approach adaptation across the country, with some working proactively and others having a more "wait and see" approach (Hjerpe, Storbjörk and Alberth 2014, Nilsson, Swartling and Eckerberg 2012, Storbjörk and Isaksson 2013, Storbjörk 2010, Länsstyrelsen Västra Götalands Län 2014, Länstyrelsen Värmland 2014).

Many parts of the climate adaptation challenges faced in Sweden are well documented but according to Cach et.al. (2006) not connected enough. They see, as discussed earlier, a tendency too many times disregard or overlook the width of the issues and the relations between the different aspects in existing research, management and political priorities. This might in turn lead to a way of governing that is ineffective or don't capture the full extent of the issue. An example of this is the perceived low political campaign value of climate adaptation because of its long-term nature (Hjerpe, Storbjörk and Alberth 2014).

2.3 The regional outlook



Picture 1 (Transportstyrelsen n.d.)

Klarälven, Vänern and Göta Älv is Sweden's longest watercourse passing through multiple jurisdictional levels and the water levels in Vänern and Göta Älv are to a big extent connected to one another. Göta Älv is primarily regulated by the dam in Vänersborg that lies at the mouth of the river. Estimations conclude that around 200,000 buildings in the most exposed areas around Lake Vänern, the valley of Göta Älv river, eastern Svealand and big parts of the east coast are located so close to the water that they will be heavily affected in case of a flood (Ministry of the Environment and Energy 2007, Persson, et al. 2014). From this background, Värmland, Västra Götaland and the responsible regulating authority Vattenfall settled a managing agreement in 2008 regarding the regulation of water levels in Lake Vänern. Although it's only a temporary solution where high levels still can take place. Studies (Länstyrelsen Värmland 2014) shows that there is a need to be able to release more water than the today agreed amounts. Fourteen leading politicians from municipalities surrounding Vänern recently wrote an article in the national press. They described their fears and concerns with the problem of rising water levels due to climate change in Vänern. They further argued that todays' allowed water levels in Vänern are too high and in case of maximum levels, the damages to the cities would be substantial and too expensive for them to handle alone. Therefore, they argue, that they cannot allow the water levels in Vänern become too high (DN 2014).

If all the water instead would be drained at larger volumes into Göta Älv, this will in turn increase the water levels and drastically increase the risk for flooding and landslides along the shores, where contaminations from old industries exist, which pose risk to the fresh water supplies for the 700 000 people living downstream (SGI 2012, Larsson 2014). Gothenburg, Sweden's second largest city, is at the same time planning to build major ports in Göta Älv to the cost of billions of kronor in order to lead the water through Nordre Älv and pass Kungälv instead to avoid major flooding. All actors on the municipal level agree that the question is too big and expensive for them to handle alone. Therefore, they have each contacted the government regarding their challenges and all received the same answer: that the regional offices govern the climate adaptation measures and that they will handle these questions (Larsson 2014, DN 2014, SWECO 2014).

3 Key concepts and analytical framework

This chapter first describes three key concepts that are central in existing research related to climate adaptation: risk, adaptive capacity and vulnerability. The concepts are not part of the analytical framework that is guiding the analysis in this thesis, but their theoretical connotations have been used when formulating the interview guide, when conducting the interviews and when creating the SA framework.

The second part of the chapter explores the connection between climate adaptation and governance based on Cash et. al. (2006) framework on cross-scale and cross-level governance, providing an analytical framework for the study.

3.1 Key concepts in climate adaptation

3.1.1 Risk

Risk can relate to anything from, a natural phenomenon to a product or a behavior and is, in the context of climate change adaptation, intertwined with complex interactions between multiple scales and levels of society. For example when incoherent interpretations in framing, communication, cooperation and attitudes towards risks between actors might create multiple conflicting interests within one project or one spatial area (Beck 2009).

When developing climate adaptation measures in order to reduce the harm of present and expected changes, the orientation can differ as discussed above. As different actors can have different historical contexts, structures or understandings of the world, so can the interpretations of the same risk differ and their actions can therefore be inconsistent (Beck

2009). It can also, depending on the governance and focus of adaptation, favor different paths of development and focus on different kind of risks (Adger and Jordan 2009, O'Brien, et al. 2007, Storbjörk and Hedrén 2011). As shown in the background, these conditions can further cause climate adaptation to take different forms within nations, depending on the different needs, priorities and focus of local governments. For example, there might be municipalities, or separate actors within a municipality, that are energetic and eagerly working with the question, while others barely touch upon the surface of a climate risk nor prioritize it. In the case of more engaged municipalities, some base their measures more on current climate variability and extreme weather events while others focus on more on predicted climate change. Measures applied can vary in different degrees between technological, institutional and behavioral adjustments (Storbjörk and Hedrén 2011, W. N. Adger 2007, Hjerpe, Storbjörk and Alberth 2014). According to Hjerpe et al. (2014), there have to be a balance between seizing the opportunities and reducing harm in the focus on climate adaptation. Therefore, knowledge sharing and clarity about the identified risks is necessary across all relevant levels in order to work towards the same direction (Shiroyama 2012).

3.1.2 Adaptive capacity

Related to the previous discussion is the concept of adaptive capacity that regards the societal adaptation practices and knowledge of the adaptation process in terms of when, why and under what conditions climate adaptation to the perceived risks occur. It also entails questions about what influences the success or failure of different adaptation strategies. The concept of adaptive capacity is important since it specifically deals with critical factors influencing the societal ability to respond to climate change hazards, reducing expected negative- and capture positive- impacts (W. N. Adger 2007, Füssel and Klein 2006, Glaas 2013). One such factor is the institutional capacity, where there is a need for increased knowledge on how institutional aspects limit or enable the mainstreaming of climate change considerations in policy-making, planning and decision-making in different settings (Indeberg and Eikeland 2011, W. N. Adger 2007, O'Brien, et al. 2007, Næss, o.a. 2005). Other commonly used determinants for adaptive capacity are economic resources, access to technology, quality of infrastructure, knowledge systems and equity (W. N. Adger 2007, Glaas 2013). Research (H.-M. Füssel 2007, Glaas 2013) further shows that these determinants, their availability, their synergies and their interactions across multiple levels all affect the adaptive capacity of a society.

3.1.3 Vulnerability

When discussing impacts of climate change on societies or systems and their possibilities to adapt to risks, a common concept used is vulnerability (IPCC (2) 2014, O'Brien, et al. 2007, H.-M. Füssel 2007, Füssel and Klein 2006, Länsstyrelsen Västra Götalands Län 2014, Länstyrelsen Värmland 2014, SWECO 2014, Ministry of the Environment and Energy 2007).

IPCC sees it as a term that encompasses many different concepts and interpretations where one common use is sensitivity to harm (IPCC (2) 2014). The most common interpretation of the concept according to Füssel (2007) goes much in line with the IPCC interpretation. It's defined "the degree to which a system is likely to experience harm due to exposure to a hazard" (H.-M. Füssel 2007, 155). However, vulnerability is used in many different ways and there is a scholarly disagreement about the appropriate definition. Some of the underlying reasons for this diversity of interpretations lie in the various research fields that use it and how authorities use the term in policies. There are also diversity when talking about vulnerability regarding different hazards and contexts. All these different interpretations on how to conceptualize vulnerability have made it complicated to use within climate change research, where different disciplines many times come together (H.-M. Füssel 2007, O'Brien, et al. 2007). O'Brien, et. al. (2007) discusses the difference between two major interpretations of vulnerability. The first interpretation, outcome vulnerability has a linear framing where vulnerability is the negative outcome of climate change at different levels and firm boundaries between nature and society are drawn. The second interpretation, contextual vulnerability, view nature and society more interconnected and widen the boundaries where vulnerability is not only seen as affected by biophysical conditions. Instead, it includes dynamic, social, economic, political, institutional and technological structures that could include aspects such as equality and influence.

In order to create clarity when using the concept, Füssel (2007) argues that a consistent terminology and transparent communication is necessary. This doesn't imply that only one conceptual framework is needed between disciplines but rather a clear understanding of the different interpretations of vulnerability (H.-M. Füssel 2007). Following the interpretation of vulnerability by Füssel (2007) with a contextual framing. The human dependency and interconnectedness with natural systems creates hazards but the risk can vary depending on the level of vulnerability. A society's location, can at the simplest level, influence its vulnerability, but when a disaster occur, the hazard's effects are to a big extent depending on the adaptive capacity. This means that the location alone is not what puts the society at risk or that vulnerability is a human condition that is increasing only by being in a dangerous

location. Instead, the society and the individuals are part of a socio-economic and ecological system that handles risk and vulnerability prevention unequally between sectors and levels in the global community. A consequence of this interpretation of vulnerability is that the extent of disasters are a consequence of the vulnerability and the level of vulnerability is dependent on socio-economic and –ecologic priorities. Therefore, if it's possible to reduce vulnerability, disasters can also be reduced or avoided (Cannon 2008).

3.2 Climate adaptation and Multi- scale and -level governance

Looking closer at the adaptation to present and expected changes. The majority of research agrees that one of the major challenges lies in that the climate change is global, but the adjustments needed to adapt to it are mainly local where local governments play a key role (Keskitalo 2010, Adger, Arnell and Tompkins 2005, Hjerpe, Storbjörk and Alberth 2014, Nilsson, Swartling and Eckerberg 2012). In the existing research regarding governance of environmental issues, a common way is also to try to capture the complexity of the issue by using different levels of governance (Glaas and Juhola 2013, Nilsson, Swartling and Eckerberg 2012, Keskitalo 2010, Brondizio, Ostrom and Young 2009). This literature presents analyses of different factors in relation to multi-level governance, such as knowledge integration (Nilsson, Swartling and Eckerberg 2012) or adaptive capacity and policy integration (Keskitalo 2010). The governance of climate adaptation can therefore be said to incorporate multiple levels of society, where it has developed into a complicated, interconnected web of overlapping systems and actors (Kjaer 2010). So, while decisions, policies and directions are negotiated internationally, there are other levels of the global society that are actively involved in and affected by climate adaptation. A consequence is for example when implementing an international policy on national levels, then, factors such as existing structures and political heritage influences how a country addresses the issue and creates different approaches and actions (Keskitalo 2010).

> "…each nation's regulatory style is a function of its unique political heritage' indicating that 'actors in different governance systems don't necessarily propose the same course of action when faced with similar policy problems'. Therefore coordination across multiple levels are necessary and crucial for successful adaptation measures" (Keskitalo 2010).

In addition, preconditions such as identified risks, vulnerability and the adaptive capacity influences the meaning, impact and significance of adaptation to climate change of a society and is therefore interpreted differently, from the local to the international levels. This means

that successful adaptation measures always depend on how results and objectives are formulated, and therefore, successful measures for one part might not be perceived as successful for another (Adger, Arnell and Tompkins 2005). There is therefore a need to coordinate views and interests along multiple levels in order to find common goals and pathways forward (W. N. Adger 2007). Here, the discussion about roles and distribution of responsibilities regarding the adaptation becomes relevant. For example how the local and regional authorities work in relation to the national and international government.

This thesis has a clear focus on the political governance of climate adaptation in Sweden and will therefore analyze the concept of governance in that context. From that perspective, governance is about "affecting the frameworks within which citizens and officials act and politics occurs, and which shape the identities and institutions of civil society" (Kjaer 2010, 10). A broad definition of the concept could therefore be "the setting, application and enforcement of the rules of the game" (Kjaer 2010, 10). With such a broad definition of the concept, different interpretations will and can be applied, for example to promote different systems of governance. This is, however, according to Kjaer (2010) not the purpose, but rather to explore changes, the political practices and their implications for the political rules of the game.

The concepts of multi-level governance and management of climate adaptation are also used in the discussions of the cooperation between authorities, the understanding of power sharing among local, regional, national and international levels, and the integration of different levels of knowledge systems and parameters (Plummer 2009, Keskitalo 2010, Emerson och Gerlak 2014). According to Seghezzo (2009), the spatial and temporal boundaries are essential levels when working with multi-level governance and climate adaptation. Tools such as sustainability indicators many times neglect these parameters and by doing so, risk the long-term sustainability of societies.

Brondizio et al. (2009) however, argues, "No fixed spatial or temporal level is appropriate for governing ecosystems and their services sustainably, effectively, and equitably" (Brondizio, Ostrom and Young 2009, 253). They highlight the multilevel nature of ecosystems and argue for the importance of strong institutions that manage to facilitate cross-level environmental governance. Such institutions have to manage and ensure future wellbeing of societies and handle the social capital without risking the protection of important ecosystems. Yet, ecosystems are diverse and embedded in different levels of social organization from local to global, just as the humans who depend on them are organized in different levels. Therefore, multilevel institutional cooperation is essential for the long-term

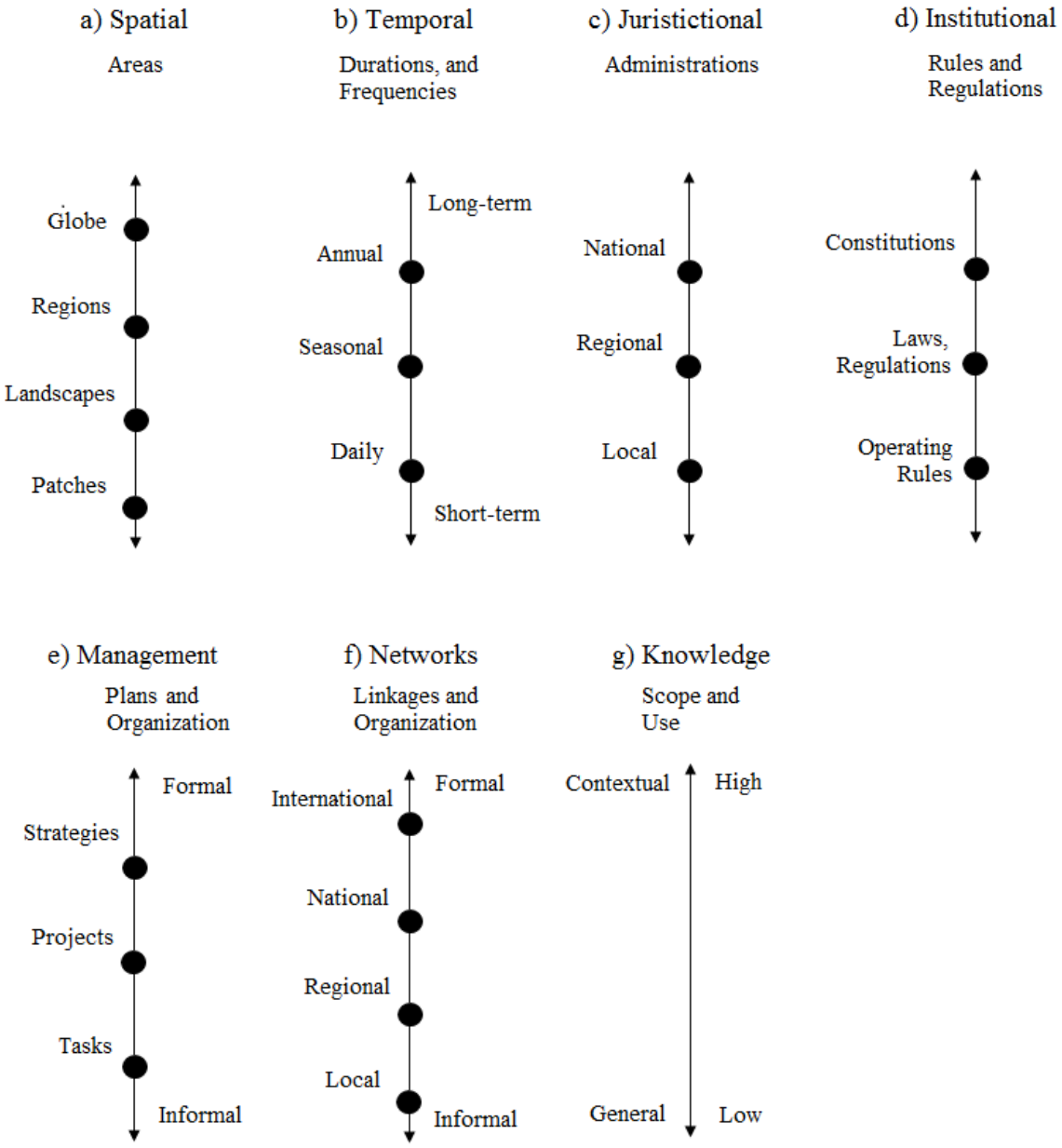
protection of ecosystems and understanding of the interlinkages between global markets, resource-use, nations and climate change (Brondizio, Ostrom and Young 2009).

Cash, et al. (2006) develops the concept further, adding another dimension to the multi-level governance discourse. They emphasize the importance of working coherently through all scales and levels in all human-environment interactions. However, they also discuss the embedded complexity across different scales and levels that both public administrators and politicians many times disregard. Cash et al. (2006) also concludes that there is a lack of cross-scale studies that goes beyond the temporal, jurisdictional and spatial scales (Cash, et al. 2006). The understanding and practice of the concept of scales and levels is therefore, according to Cash, et al. (2006) fundamental in order to be able to understand and develop long-term sustainability. In this context they define

> ""scale" as the spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon, and "levels" as the units of analysis that are located at different positions on a scale" (Cash, et al. 2006, 2).

They have furthermore identified seven different scales that they see as crucial to analyze in order to get a more contextual understanding of the governance of an environmental issue and to be able to achieve long-term sustainability.

Figure 1. A schematic illustration of the scales and levels framework adapted for this thesis to understand and connect governance in climate adaptation. The framework is developed from Cash et al. (2006) framework.



The framework was originally focusing on the governance of environmental issues, the levels have therefore been defined from the context of climate adaptation.

a) The Spatial scale is the biophysical areas affected by climate change and the different levels represent the different perspectives on the areas that are relevant to analyze. For example, the focus of the thesis is the region of Vänern and Göta Älv, but measures

taken can revolve anything from securing a road (patches) or building walls to protect an entire society (landscapes) from water level rise.

b) The Temporal scale includes two types of levels where the first type is the short-term – long-term levels. This, for example, regards the temporal perspective on the political agenda or measures taken such as the amount of years a wall should withstand water-level rise. The second perspective is about frequency where election periods, or frequency of flooding, are relevant. The temporal scale and levels can also relate to different perspectives between actors regarding historical events or timeframe. A good example is the negotiations of the Kyoto protocol where temporal questions were highly disputed (Seghezzo 2009, Cash, et al. 2006).

c) The Jurisdictional scale consists of the administrative levels from the local to the intergovernmental. There are also two types of perspectives needed in this scale, the official and the political. The public administrators is in the context of this study acting on the levels; local municipalities, regional offices, county councils, national agencies and national ministries. The other relevant levels regard the politicians at the local municipalities, the regions and the national governmental level.

d) The Institutional scale consist of the rules and regulations where the level laws and regulations for example can be the Swedish environmental code. Operating rules include directives or responsibilities where, for example, the regional offices have the directive to coordinate the municipalities.

e) The Management scale consists of two types of levels, first plans, specific tasks to more comprehensive strategies and the political budgets and collaborations. Secondly, informal to formal management. There is, at some points, a fine line between the management and institutional scale. This is the case with the appropriation bills, that in this case study is part of the management scale. This due to its strategic nature while operating rules, such as the regional offices assignment to coordinate the work in the regions, fall in under the institutional scale. The management levels, in this case study, are also closely connected to the jurisdictional levels where the budget, for example, can be found on all three political jurisdictional levels. The higher levels also influences the lower jurisdictional levels management.

f) The Networks scale is divided into two different perspectives of networks, where one side regards the linkages, from small and local to bigger and international, and the other to the organization of the networks where the levels are from informal to formal. The levels don’t imply that only actors from a certain level can participate, instead it

signifies the size and focus of the networks. Networks don't include collaborations that lie under the management scale in the thesis, this due to that the understanding of networks consist of different types of actors that work together – some more closely than others, where they share information and actors can come and go. Collaborations can instead happen within levels where two or more actors in a more organized way, with the right to take decisions work together.

g) The Knowledge scale incorporate the scope of knowledge, from general - contextual and the level of its use regarding available knowledge, low to high. An example is that there are good contextual knowledge available regarding a phenomenon but there might be other interests receiving higher priority.

When analyzing an issue through multiple scales and levels, interactions within or across scales and levels can occur which increases the complexity of the issue. An example of this can be found in the institutional scale where the level laws and regulations, such as environmental laws or building laws, affects the jurisdictional scale on the municipal level. Multi –scale and –levels is then used to indicate the presence of more than one level or scale regarding an issue where cross –scale and –level interactions may occur. Climate adaptation, therefore, can be said to be an issue regarding multiple –scales and –levels with both cross –scale and –level interactions.

4 Research method

This thesis is based on a qualitative, cross-sectional study, combining stakeholder analysis (SA) and semi structured interviews. The chapter starts with a description of the construction of the SA framework. The second part of the chapter develops the 10 semi-structured interviews that have been completed with openly formulated interview questions, targeting their perceptions, experiences and ways of approaching climate adaptation and cooperation at different levels.

The SA, in turn, did not only generate the ten actors to interview, it also mapped all relevant actors' involvement in climate adaptation in the regions on different jurisdictional levels (figure 2, 3 and 4) and is, therefore, also used in the analysis together with the material from the semi-structured interviews.

4.1 Stakeholder Analysis

The origin of the stakeholder theory is generally tracked back to Freemans (1984) publication, and the business sector where he started to develop tools to help companies to take strategic decisions in relations to their stakeholders. Companies today commonly use SA to understand their stakeholders' interest and influence on the market and how this can support or threaten their business (Reed, et al. 2009). In policy development or natural resource management, SA have been developed to find and empower marginalized stakeholders. In natural resource management, the SA also helps understand power dynamics and enhance transparency. In political science, SA is generally used in order to create more harmony and understanding of the stakeholders. A good example is policy research that generate information on affected stakeholders such as behaviors, interests and influence (Reed, et al. 2009).

A SA framework was developed for this thesis due to the lack of research on relevant institutional actors in the Swedish decentralized system and the lack of a framework able to analyze and identify the most crucial actors on different jurisdictional levels in a societal challenge, such as climate adaptation. This framework will follow the structures of a natural resource management SA combined with structures from policy research. This combination can within the limitations of the case study map out the key actor in a transparent and organized way, which, together with the interviews, will help understand the power dynamics between key stakeholders, which is crucial in the scope of multi –scale and –level governance. Focusing on the key stakeholders provides better quality to the interviews because of their involvement. The aim of the SA is therefore to map out and understand the power dynamics and involvement regarding climate adaptation activities in the two regions along Vänern and Göta Älv.

From this, it's necessary to identify who holds a stake in the phenomenon in order to identify the stakeholders that are involved in, and affect the work with climate adaptation in the regions, this is traditionally done through participatory approaches such as focus groups or interviews (Reed, et al. 2009, De Lopez 2001). This thesis will however primarily, use a non-participatory approach because of the limited scope of the study, focusing on official governance actors involved in climate adaptation. In addition, the large amounts of information easily available on climate adaptation work in the regions such as policy documents and public information creates a good foundation for the SA (Reed, et al. 2009).

The initial identification of stakeholders takes its base from the municipalities surrounding Vänern and Göta Älv. From this, a first contact through e-mail was taken to all identified

stakeholders in order to get their picture of their work and who they think are the most crucial actors in the regions. Additionally, throughout the thesis and during interviews with identified key stakeholders, the SA have continued in order to verify that important stakeholders haven't been overlooked (Reed, et al. 2009). The SA was from the initial results categorized into three different SA:s based on the relevant jurisdictional scales; ministries, authorities and municipalities in the two regions. The reason for this is that the thesis has its focus on the governance across scales and levels. A fourth, regional level could arguably be included in the analysis but from the results in the background and the initial contacts in the SA, it could be established early in the process that this jurisdictional level is not part of the key actors regarding climate adaptation in the regions, and could therefore be ruled out. However, it would be interesting to look closer at this issue in further research, and see why such an important scale is not included in the climate adaptation structures on a higher degree. Next, all ministries, authorities and municipalities identified were contacted in order to get their spokespersons perspective. In the contact with the stakeholders, the question about the most relevant actors were put forward again in order to verify that no important stakeholder or scales were overlooked and to find the most influential stakeholders according to their perspective.

When it comes to the analytical categorization, in order to identify the key stakeholders to interview, the commonly used concepts of 'interest' and 'influence' from policy research SA have been used. This gives the author a certain freedom to form the concepts to fit the societal challenge in order to get the most accurate results. To be able to decide what parameters are relevant to analyze in contrast to the research questions, influence and interests then need to be defined (Reed, et al. 2009). In the scope of this thesis, interest can be said to include the level of commitment, involvement and/or vulnerability to climate change. Influence then in the scope of this thesis is defined as the action or process of producing effects on actions, behavior or opinions, of others. The chosen parameters are then formulated as specific as possible in order to map out the most involved actors on each jurisdictional level.

A weakness of the SA is that it might be seen as a subjective method were the definition of the concepts and chosen parameters are based on the authors perception of what is relevant. In order to avoid this, the concepts of interest and influence together with the research questions and theory, guides the selection of parameters. Additionally, the natural resource management and policy research SA frameworks includes certain boundaries that shapes the framework, such as the basic definition of interest and influence and the full transparency of all parameters for the reader. However, the choice to conduct a SA instead of a simpler selection

of actors to interview such as a snowball selection, where selections are made entirely from the author's subjective interest together with the interviewees' perceptions (Creswell 2009), creates a higher quality. It also ensures, in a transparent manner and in accordance with the purpose of the thesis, that the actors most involved are interviewed in order to generate good material for the analysis.

All stakeholders were graded in interest, influence actor tables (Table 1, 2 and 3) with six parameters for each jurisdictional level that helped map the relevance of different stakeholders and identify key stakeholders. It's a simple but effective way to visualize how the stakeholders are valued, in order to increase the transparency of conclusions drawn in the thesis and help identify issues that could be used in the interviews (Biggs and Matsaert 1999). The analysis of the chosen parameters was done with the help of information from the stakeholders, previous research, reports and information on their homepages. Table 1, 2 and 3 summarizes the list of stakeholder groups and the analysis. Appendix 1 gives a more in depth picture and explanation where sources are specified and how all parameters in the interest and influence categories are valued and graded. The influence and interest parameters are all in the scope of the analytical framework equally valued in a scale from 0-3 in order to avoid subjective grading's (Bryman 2008). Thus, where stakeholder X is graded 0 in parameter e.g. 'recommended and referred to by others" it means that the actor is not recommended or referred to at all, while higher grading (1, 2 & 3) implies that the actor is recommended and referred to by others. The different grading (1, 2 & 3) indicates a set amount given to the grades which depends on the parameter, take the parameter of 'Active in adaptation networks (Second interest parameter in Table 1.) where the grading is based on 0. Not participating. 1. Participating in one group. 2. Participating in two groups. 3. Participating in three groups or more. To see the basis for the grading of all parameters see Appendix 1.

Starting with the parameters for the analysis of the municipal scale, because of the spatial limitation of the thesis it will focus on the 18 municipalities surrounding Vänern and Göta Älv. The first *influence* parameter, analyzes the municipalities' structures and ongoing work with climate adaptation based on two studies. The second parameter is based on contacts with individuals representing all different stakeholders asked; which municipalities in the regions they see as progressive and influential. The third regards the different municipalities' population and their national political representatives.

The parameters for *interest* captures first the political commitment to the issue in their control documents for the budget and in the budget. Second the municipality's priority to the

issue and their participation in networks. Third, their vulnerability according to available literature regarding climate change in the regions.

Table 1: Results of SA on relevant municipalities.

	Influence				Interest			
Municipalities	Clear structures and ongoing work with climate change	Recommended and referred to by others	Population and national political representatives	Total	Statements in the municipal budget or objectives and orientation documents 2015	Active in climate adaptation networks	Vulnerability to climate change according to previous studies	Total
Göteborg	3	3	3	9	2	3	3	8
Kungälv	2	1	1	4	0	1	2	3
Ale	2	0	1	3	1	0	1	2
Lilla Edet	1	0	0	1	0	1	3	4
Trollhättan	3	1	1	5	2	1	2	5
Vänersborg	1	2	1	4	0	0	1	1
Mellerud	1	0	0	1	0	0	1	1
Åmål	1	2	0	3	0	1	1	2
Säffle	2	2	0	4	0	1	1	2
Grums	1	1	0	2	0	0	1	1
Karlstad	3	3	1	7	1	3	3	7
Hammarö	3	0	0	3	0	1	2	3
Kristinehamn	3	1	1	5	0	0	2	2
Gullspång	0	0	0	0	0	0	1	1
Mariestad	0	1	1	2	0	1	2	3
Götene	1	0	0	1	0	1	1	2
Lidköping	3	2	1	6	1	2	3	6
Grästorp	2	0	0	2	0	0	1	1

The second SA table regards the agencies and is based on the *Swedish Portal for Climate Change Adaptation* that lists all agencies involved in climate adaptation in Sweden (Swedish Portal for Climate Change Adaptation 2014, Swedish Portal for Climate Change Adaptation 2015). The first *influence* parameter analyzes the agencies influence through produced material towards other actors. The second parameter is based on contacts with individuals representing all different stakeholders asked which authorities in the regions they see as progressive and influential. The third parameter grades how they work with climate adaptation on national, regional and local scales.

The first *interest* parameter is based on the amount of dedicated founds, which creates pressure to work with the issue. The second parameter regards if the stakeholders are active partners in the Swedish portal for Climate Change that shows that they, on their own, take active steps to be involved. The last parameter grades their participation in networks regarding climate adaptation.

Table 2: Results of SA on relevant agencies.

	Influence				Interest			
Agencies	Produces material and information for other actors	Recommended and referred to by others	Working actively with climate adaptation national/in the regions	Total	Dedicated founding for climate adaptation. Budget 2015	Part of the Swedish portal for climate change adaptation	Active in climate adaptation collaborations	Total
Swedish National Board of Housing, Building and Planning	3	1	3	7	0	3	2	5
Swedish Energy Agency	1	0	1	2	0	3	1	4
Public Health Agency of Sweden	1	1	0	2	0	3	1	4
Swedish Agency for Marine and Water Management	1	0	2	3	0	3	2	5
Swedish Board of Agriculture	1	0	0	1	0	3	0	3
Swedish Mapping, Cadastral and Land Registration Authority	3	1	1	5	3	3	1	7
National Food Agency	2	0	1	3	0	3	3	6
Swedish Civil Contingencies Agency	3	3	2	8	2	3	3	8
Swedish Environmental Protection Agency	2	1	3	6	0	3	3	6
Swedish National Heritage Board	2	0	2	4	0	3	1	4
Swedish Forest Agency	2	0	3	5	0	3	1	4
Swedish Geotechnical Institute	2	1	3	6	2	3	3	8
National Veterinary Institute	1	0	0	1	0	0	0	0
Geological Survey of Sweden	2	0	1	3	0	3	2	5
Swedish Meteorological and Hydrological Institute	3	3	3	9	2	3	3	8
Swedish Transport Administration	2	1	3	6	0	0	2	2
Swedish Post and Telecom Authority	0	0	0	0	0	0	0	0
Sami Parliament	0	0	1	1	0	0	0	0
Swedish Maritime Administration	0	0	2	2	0	0	1	1
The National Board of Health and Welfare	1	0	1	2	0	0	1	1
The National Property Board of Sweden	0	0	2	2	0	0	1	1
Swedish National Road and Transport Research Institute	0	0	1	1	0	0	0	0
Swedish National Grid Agency	0	0	1	1	0	0	1	1
Swedish Agency for Economic and Regional Growth	0	0	0	0	0	0	0	0
Transport Analysis agency	0	0	0	0	0	0	0	0
Swedish Transport Agency	0	0	0	0	0	3	0	3
Regional office Västra Götaland	2	3	3	8	1	3	3	7
Regional office Värmland	2	3	3	8	1	3	3	7

The third SA table is based on the Swedish government that consists of 10 ministries. However, no ministry has an outspoken responsibility for the climate adaptation questions (Andersson, et al. 2015) and therefore the SA is needed in order to map out the structures. *Influence* is graded first on the political power through the governing of important agencies that the ministries are responsible for. Secondly, how important and influential other stakeholders find the ministry and third, the climate adaptation funds the ministries receive to allocate.

The first parameter in *interest* grades their own perception of their responsibility and work effort. Secondly, it analyzes how much the ministry actively discuss climate adaptation on the governmental homepage and thirdly, how much dedicated funds for climate adaptation the agencies that lie under their jurisdiction receive. The last parameter is chosen as an interest parameter because this creates a situation where their agencies work with climate adaptation and forces the ministries to create the structures to handle this.

Table 3: Results of SA on the ministries.

	Influence				Interest			
Ministries	Influential authorities they govern	Recommended and referred to by others	Climate adaptation founding from budget	Total	They, according to themselves, have a responsibility	They discuss the question on the governmental homepage	Dedicated founds to their agencies 2015	Total
Prime Minister's Office	0	0	0	0	1	1	0	2
Ministry of Culture	1	0	0	0	1	0	0	1
Ministry of defence	0	1	0	1	1	0	0	1
Ministry of Education and Research	0	0	0	0	1	0	0	1
Ministry of Employment	0	0	0	0	0	0	0	0
Ministry of Enterprise and Innovation	3	2	0	5	2	0	3	5
Ministry of the Environment and Energy	2	3	3	8	3	3	2	8
Ministry of Finance	1	0	0	1	1	1	2	4
Ministry for Foreign Affairs	0	1	0	1	1	2	0	3
Ministry of Health and Social Affairs	1	0	0	1	1	0	0	1
Ministry of Justice	1	1	0	2	1	1	0	2

From this, an interest, influence actor matrix was created for each SA table (Figure 2, 3 and 4 in the analysis) in order to classify and find the most relevant actors in the light of this study. Matrix 1, 2 and 3 together with the tables 2, 3 and 4 maps the interest and influence and creates in depth material and a good overview of how the analyzed 54 stakeholders at different levels on the jurisdictional scale are involved in the work with climate adaptation in the two regions. The SA therefore plays two roles in the thesis, first by generating the most involved actors to interview and secondly it is used in the analysis together with the material from the interviews.

In order to identify the relevant stakeholders to interview, a common way is to sort the stakeholders into four groups “key players”, “context setters”, “subjects” and “crowd”. Key players here represent high interest and high influence, and are therefore the most involved (Reed, et al. 2009, Eden and Ackermann 1998, De Lopez 2001) and the relevant group to interview. This is because they can provide a deeper insight and material in the interviews that can deepen the analysis. Only the key players with the highest scores were selected (total of 7) with consideration to get a good balance between the different levels and stakeholders of the Swedish governance system. In order to find the right person to interview, the identified stakeholder organization was asked to help find the responsible for climate adaptation. Additionally, during the interviews the question regarding important actors on other levels was asked and whom to contact. This reinforced many of the chosen subjects.

Important to denote is that both interest and influence might change over time. The SA and thesis is therefore reflecting the relations and involvement as is during the writing of the thesis. Consequently, if used as a reference at a later time the thesis needs to be updated.

4.2 Semi-structured interviews

Due to the scope of the topic and chosen method, qualitative semi-structured interviews have´ been conducted with key stakeholders from the local, regional and national levels. The choice to interview both politicians and public administrators were made due to the scope of the research questions and to get different perspectives in order to provide a better foundation for source criticism. Additionally, due to the results of the SA, the need to interview both sides were reinforced.

The interviews have been directed by an interview guide with open-ended questions (Appendix 2) focusing on the respondents’ role, their perceptions and the collaboration between the different interests on local, regional and national level. A total of 10 interviews of approximately 1 hour each were conducted, recorded and transcribed. Six of the interviews

were face to face and four were over telephone due to financial reasons and lack of time for some of the subjects.

Table 4: Interview objects

Interviewed actors:	Title:	Method:
1. Ulf Moback (Public administrator) - Gothenburg	Landscape architect on the strategic department on the city planning administration. Responsible for climate adaptation.	Face to face
2. Ulf Kamne (Politician) - Gothenburg	City Councilor, First Vice-President responsible for urban development, housing, land, environment, climate and sustainability.	Face to face
3. Anna Sjödin (Public administrator) - Karlstad	Flooding coordinator on the technology and property administration. Responsible for climate adaptation.	Face to face
4. Maria Frisk (Politician) - Karlstad	City Councilor, Second Vice-President responsible for growth, infrastructure and urban planning.	Face to face
5. Ida Wall Axelsson (Public administrator) Regional office Värmland	Climate coordinator	Face to face
6. Maria Ädel (Public administrator) Regional Office Västra Götaland	Climate coordinator	Face to face
7. David Hirdman (Public administrator) SMHI	Climate communicator at SMHI where the Swedish National Knowledge Centre for Climate Change Adaptation is located	Telephone
8. Cecilia Alfredsson (Public administrator) Swedish Civil Contingencies Agency	Department for risk- and vulnerability reducing activity. Responsible for climate adaptation.	Telephone
9. Kerstin Grönman (Public administrator) Ministry of the Environment and Energy	Responsible for climate adaptation at the Climate department.	Telephone
10. Fredrik Hannerz (Politician) Ministry of the Environment and Energy	Political advisor responsible for climate adaptation.	Telephone

Ethical conflicts can appear in the process of research as well as after publication. Therefore, ethical consideration is a critical part in every research process and Bryman (2008) states four main areas of consideration: whether there is harm of participants, lack of informed consent, invasion of privacy or deception (Bryman 2008, 118). In order to avoid such issues, participants have been informed before the interview about the basis of the project and the considerations made by the researcher. The interviewees have all had the opportunity not to answer questions and ask the researcher to make them anonymous whenever they consider appropriate, as well as to ask the researcher not to mention certain aspects of the interview in the final document. Another step taken to ensure the credibility, transparency and to avoid

misunderstandings, the interviewees have had the possibility to read the complete thesis before publication in order to get the possibility to take further ethical concerns. The interviews were conducted in Swedish and the Swedish quotes are attached in Appendix 3.

4.3 Thematic Analysis

The analysis is using a thematic analysis technique. Thematic analysis is a matrix-based method where the researcher constructs an index of central themes and sub-themes gathered from extensive analysis of the transcribed material. The data analysis then uses the themes to categorize the data, organizing it into core themes and sub-themes in different levels, enabling good possibilities to explore how the discussions on the relevant topics may differ in certain ways or maybe the understanding of the topic itself. It can also act as a good stable ground developing theories from the findings (Bryman 2008, 554-555).

In the analysis of the interviews and the SA, the seven different scales from Cash et al. (2006) framework make up the themes for the analysis, within which sub-themes emerging from the empirical data have been used in order to sort the information. In the complete thesis however, the sub-themes have been removed due to lack of relevance and in order to connect the different sub-themes better to the scales and levels framework and create a better flow in the text. Some of these themes are already discussed in previous studies as shown in previous chapters, but they are important factors influencing the climate adaptation work and the governing in the two regions. It's also important to analyze these themes across all scales and levels because of the lack of such studies, as shown in the theory chapter.

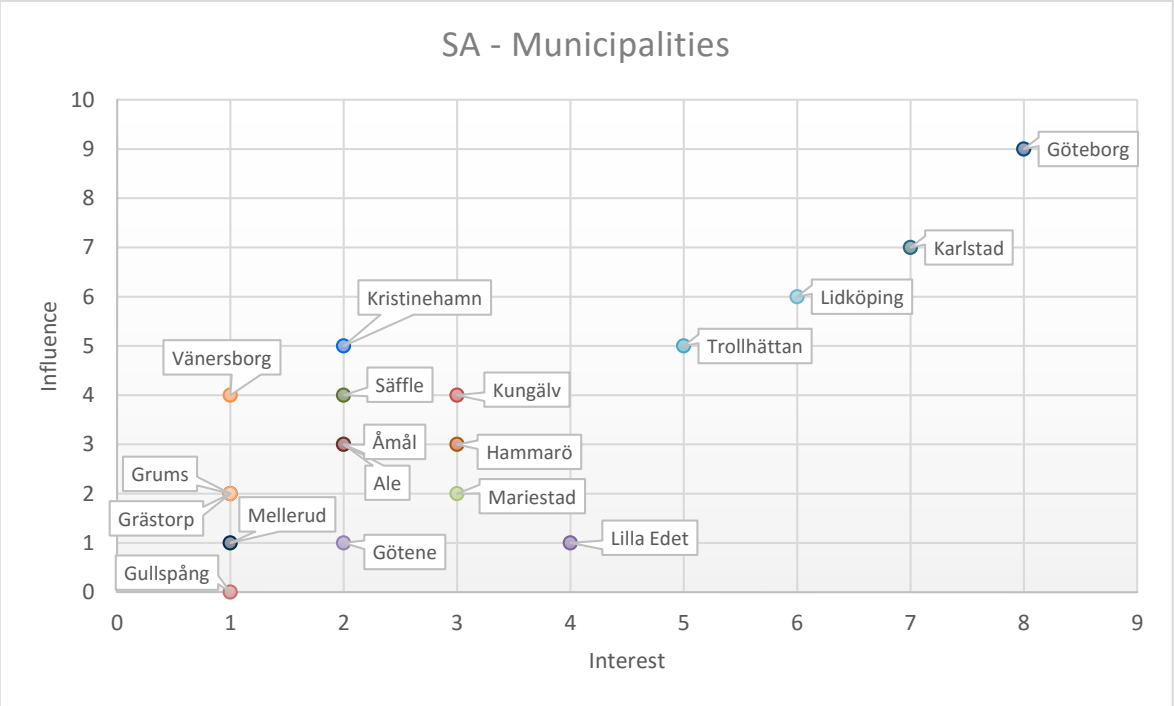
5 Analysis

The order of the analytical framework will guide the analysis and therefore, the subchapters will be divided according to Cash et al. (2006) seven different scales. The levels within the scales are presented in the headlines within parentheses, for example "Jurisdictional scale (Local – National Administrations)" where the parentheses states the levels. Furthermore, the data for analysis consists of the 54 stakeholders analyzed in the SA and 10 semi-structured interviews. Every subchapter analyze the interviews across scales and levels together with the results from the SA. Through this, a more comprehensive perspective of the work in the regions can be developed, in order to be able to draw conclusions and analyze on deeper levels.

5.1 Jurisdictional scale (Local – National Administrations)

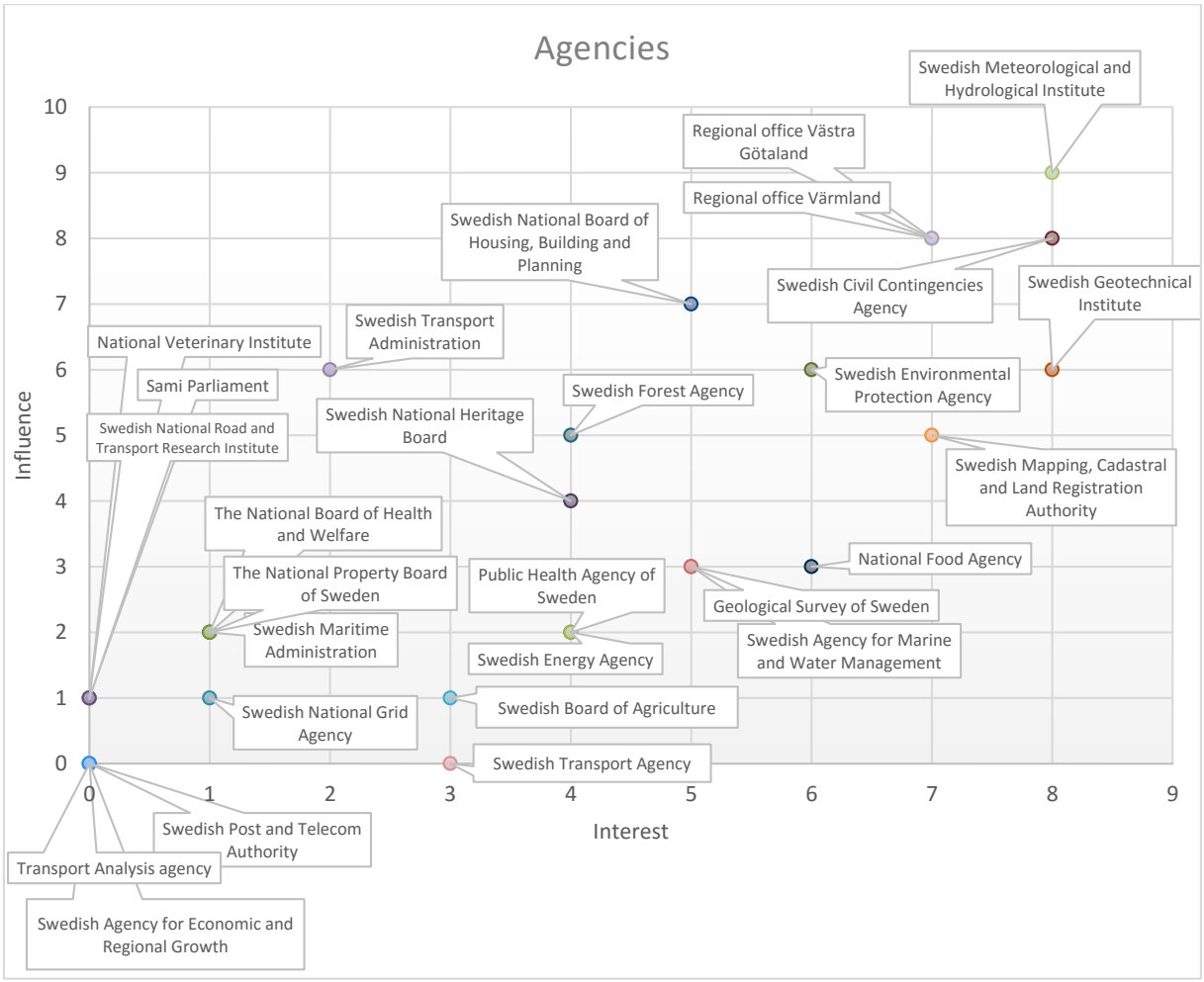
When looking at the three SA matrixes it's clear that there are big differences between actors on all levels, but there are also interesting connections between the used parameters. Reviewing Table 1. and the results in parameter; 'population and national political representatives', it reflects the municipalities overall rating in the SA matrix below.

Figure 2: Municipal interest, influence actor matrix.



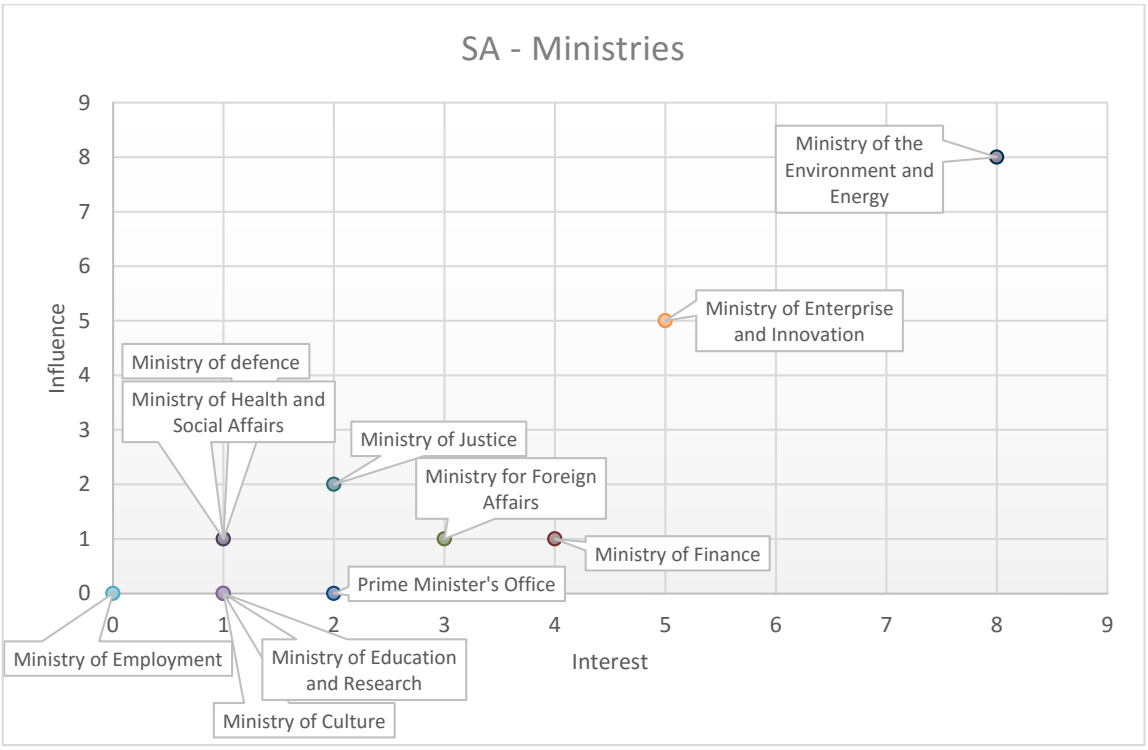
All parameters except the 'vulnerability parameter', more or less follows this pattern. This can be connected to the discussion regarding the smaller municipalities' possibilities to handle big issues such as climate adaptation. These tendencies will be discussed further in this and the following chapters of the analysis

Figure 3: Agencies interest, influence actor matrix.



The agencies matrix (Fig.3, above) clearly illustrates the big differences between the different stakeholders and the fact that some are barely active, nor interested in the issue. On the other hand, some actors do have an interest and actively work with the issue, even though their influence are low. The Swedish Transport Agency is an example of this. Reviewing Table 2. an interesting result was that different municipalities recommended different agencies when asked for the most influential ones. This can in turn be related to that the municipalities have a tendency to work with selected parts of climate adaptation issue, rather than taking on the whole picture. This discussion will also be developed further during the analysis.

Figure 4: Ministries interest, influence actor matrix.



At the ministry level, the picture is less complicated, where the Ministry of the Environment and Energy unthreatened is the most influential and interested. Looking closer at the parameters in Table 3, the majority of the ministries only acknowledges climate adaptation, but don't speak of any active measures. Another interesting observation is that even though the Ministry of Enterprise and Innovation rate in the middle range, the agencies it governs are widespread, from the bottom to the top of the agencies matrix.

These differences between actors in the different levels and the lack of active participation in the climate adaptation issue from some parts reflects one of the most dominant questions. As shown in the background, and discussed in all interviews, was the question of money and who has the responsibility to pay for what is needed. Both Gothenburg and Karlstad were chosen based on the SA because they scored the highest in the interest, influence matrix in their respective region. However, when asked if they, as the biggest economic actors in each region, could handle the consequences of the identified present and expected future changes, the answer was No:

> "That money just doesn't exist. We are talking about huge amounts of money and we as a municipality may have a small chance to cope because of our size and good economy, but for many other municipalities it's hopeless, because that money just doesn't exist" (3. 2015).

Here the connection to the low ratings in the matrix and the population parameter connects to the issue of finance and having enough resources to work with climate adaptation. A similar tendency can be seen on the governmental level as well, where the Ministry of the Environment and Energy handles the question of climate adaptation today, but only because it's connected to the climate change issue. No explicit responsibility of who should have the overarching responsibility for the climate adaptation issue has officially been decided and even though they handle the question today, it's not certain that they will do so in the future (10. 2015).

> "…it's a bit of a 'hot potato' at the moment, whose lap this shall land in. …I think that everyone who participated in the discussion within the government office understands that this is a question that will demand a lot of resources and, because of that, you don't want it to land in 'your own lap'. At least not without good insurances of strong reinforcement regarding these issues. So, until we have clarified who doesn't have the responsibility for these questions, it's hard to establish the dialogues with different actors in society that are needed" (10. 2015).

Even though the Ministry of the Environment and Energy collaborate and communicate with other ministries regarding climate adaptation, this lack of clear responsibility and the subsequent uncertainty at the governmental level can be seen to create ripple effects through different scales and jurisdictional levels in society.

It also creates challenges at the municipal level and as evidence, of the frustration from local level politicians over the unclear structures and lack of a responsible ministry on the governmental level; an article written in the beginning of 2014 by the municipalities regarding the water level rise in Vänern is referred. "A debate article like that just shows that you have tried communicating on the inside and failed, therefore you try to create some kind of public opinion" (2. 2015). It also reflect the big differences between different municipalities and agencies seen in the SA matrix. These differences are also visible between different agencies that lie under the jurisdiction of the same ministry. The Ministry of Enterprise and Innovation is the best example, where they govern many of the agencies scoring the lowest, such as the Swedish Agency for Economic and Regional Growth, and the ones scoring among the highest, such as the Swedish Civil Contingency Agency. Looking closer at the agencies under the Ministry of the Environment and Energy, the differences are less obvious. This indicates that the governing from the respective ministry plays an important role and the lack of responsibility at the higher level influences the lower. This could however be because the agencies under the respective ministry work with different things that might not have equally

much to do with climate adaptation issues, but on the other hand, all interviewees agreed that this was a question touching on all scales and levels of society (1-10 2015).

When it comes to financing the work needed for climate adaptation, the views differ. Even though the ministries themselves have a hard time taking responsibility for the question without insurances of financing, the attitude towards financing the agencies is questionable.

> "…it's not given that one need to find them new money. …All the time, different kinds of changes occurs in society and the agencies adapt their business accordingly. …It's primarily about getting it in the agencies existing structures. …I don't think we can send 'a bag with money' to every agency that have to work with climate adaptation issues. That money just doesn't exist" (10. 2015).

The agencies however see a risk with the lack of funds and a need for funds dedicated towards climate adaptation issues.

> "It's crucial that the respective authority receives the funds needed to work with the question and that they get dedicated funds. Because very few will put enough of their so to speak 'free money', if anyone have any, to make this question a priority" (7. 2015).

The governmental level acknowledges that climate adaptation will need a lot of money but at the same time they focus on using existing funds (10. 2015). This discussion is a crucial point according to one interviewee, and might together with a lack of instructions or structures, affect the agencies willingness to work with the issue.

> "It's not rare that people, who don't really have any expert knowledge in this area, but for other reasons see this as a problematic issue. …and then there might exist a resistance at organizations to work with an issue that they find diffuse and unclear if they don't get the funding for it" (7. 2015).

Another clear tendency brought up by the interviewees is the bad communication and collaboration between the jurisdictional levels and actors. One politician brought up the lack of communication and collaboration between the jurisdictional levels that sometimes can act as obstacles for important processes.

> "…there is a dividing line between local politicians on the one side and national politicians on the other, and it feels like it's very hard to get your point of view through. They probably feel the same but the other way around" (2. 2015).

There is a general view that todays' structures have a tendency of working in separately, where collaboration and communication between different scales and levels, as well as in their own organizations are deficient in many aspects. One interviewee says regarding the

municipal level that “It’s a challenge just within the own organization and it’s not everyone who has contingency coordinators or adaptation coordinators or anything like that at their administrations” (4. 2015). The lack of structures and clear responsibilities causes challenges when working with climate adaptation. One of the clear risks this brings is that municipalities, that lack a responsible person, appoint persons for tasks, for example, developing an action plan. When the plan later is finished, the report is published, the responsible public administrator goes back to the ordinary chores and the document risks to be forgotten if it’s not implemented in the organization (6. 2015).

Further problems can be seen in the structures between levels. A good example is the coordination between municipalities and regions regarding what limitations to set regarding building permits to combat water level rise, where the synchronization works very bad. “Gothenburg have their levels, Kungälv theirs and Ale has lower levels than Gothenburg” (1. 2015). The complexity deepens when discussing the lack of a holistic approach within the existing structures.

> “…today the contingency coordinators meet and talk contingency issues. At the same time the adaptation coordinators have their meetings discussing adaptation and the environmental coordinators are discussing mitigation…today we can clearly see these divisions, and this doesn’t only go for us, the same thing goes for the regional and governmental levels” (4. 2015).

The critique also regards the regional offices static view in their decisions. One example is the publication “Stigande Vatten” (Rising Water) that was produced as a handbook to help the municipalities with their physical planning. Both regional offices highlight the book as one of their achievements but in the two municipalities the public administrators directs critique against the material.

> “…it just works in new development areas where you, for example, can rise the land or can make other such measures, but such measures doesn’t work for existing buildings in the city. This material disregards that aspect entirely and therefore we cannot follow the guidelines” (4. 2015).

5.2 Knowledge scale (General – Contextual Scope and Low – High Interest)

Creating a common, general level of knowledge and clear structures to share and distribute it constitutes a challenge in such a decentralized system as Sweden has (9. 2015). None of the interviewees argues that there is a lack of available knowledge, but possibilities of the actors

to handle the existing knowledge and putting it to action are sometimes not good enough. The communication and collaboration processes between agencies are therefore important parts to coordinate, that furthermore ensures the municipalities a coordinated view of the present and assumed climate changes. Otherwise, it creates a risk where the municipalities can get information from agencies using different values, standards or climate models (7. 2015).

SMHI have through their mission to establish the National Knowledge Centre for Climate Change Adaptation, developed a portal 'the Swedish Portal for Climate Change Adaptation', where the different authorities can gather their knowledge to support municipalities and regional offices. However, even though seventeen agencies take an active role in the portal, one interviewee brings up that the unclear structures and funding creates poor conditions to put enough priority to the issue.

> "…many agencies involved in the Swedish Portal for Climate Change Adaptation haven't received dedicated funds for a number of years in order to work with climate adaptation. (7. 2015)."

The interviewee further talks about the limitations this brings, for example, on how to think and work with infrastructure in a changed climate, which is one area that they don't have any material on in the portal. "That doesn't mean that we don't find it important or that we don't want the material, but the purpose of the portal is that each agency shall contribute with the expertise in their area…" (7. 2015). This can in turn be complicated when it comes down to priorities outside of the original budget posts, as previously discussed, but also, when questions regarding agencies that for unknown reason doesn't have any ongoing work regarding climate adaptation.

Following the previous example regarding infrastructure, where there actually are two responsible agencies; the Swedish Transport Administration and the Swedish Post and Telecom Authority (PTS). SMHI have tried to contact PTS regarding the knowledge center and their need for contributions, but hasn't been able to establish any contact regarding the issue (7. 2015). Adding the results from the SA, we can clearly see that PTS were one of the agencies scoring zero interest and zero influence. Another option is if, for example SMHI order and buy the material they lack from the affected authorities. However, this is again limited by the funds available.

> "…we depend on that the agencies themselves, produce the material, with their own money. …But of course, we try to highlight the importance of material within certain

> fields we find more important. However, we are still dependent on that each agency produce this material themselves.

Looking closer at the challenges on the municipal level, the possibilities for the municipalities to locate the knowledge needed and being able to handle the knowledge produced are many times deficient. Connections can here be drawn to the discussion in the previous jurisdictional scale regarding having the resources needed to work with the issue.

> "If we look at the municipal level, many even lack the resources needed to handle that kind of knowledge-based information, instead they conduct their work in different ways. So it's a question about resources and knowledge in many aspects" (10. 2015).

All interviewees agree to the importance of the political representative's role in the work with climate adaptation. Yet, as seen in the previous chapter, there is a lack of responsibility and structure on all jurisdictional levels, where another clear effect of that is the lack of political statements regarding climate adaptation on the municipal level. As shown in the SA (Table 1), only five out of the eighteen municipal stakeholders mentions climate adaptation in their budget or instructions to the public administrators. Two out of those five discusses the issue and measures needed, but no one has specific goals, missions or funding. This doesn't mean that the municipalities don't have any ongoing work with climate adaptation. Instead, some municipalities have integrated this work into other parts of their business, but it's still far from all municipalities that have done this. Further, this can be connected to the knowledge scale where the politicians will to act and their understanding about the consequences are a necessity, when risks or vulnerabilities are identified (5. 2015). One of the interviewed politicians reinforce this connection when describing the differences in the level of understanding and knowledge compared to other politicians in the regions when meeting in different networks.

> "When one met in these contexts one noticed that the knowledge level is very diverse. We have, in that context, very good knowledge and capability regarding these issues while many of the others are still stuck in the belief that if we only build that tunnel to the Western sea, we have solved everything" (4. 2015).

Even though the interviewed municipal politicians represent relatively strong actors in climate adaptation, there was a tendency in the interviews that they occasionally had a hard time to separate climate adaptation measures with mitigation measures, this also relates to a comment from one of the public administrators.

> "When you talk about climate related questions, then everybody are aware of the climate change but they don't have the same knowledge about what climate adaptation is, what it's about or that the two needs to complement one another" (5. 2015).

Another clear tendency by the interviewees is the limited focus of the climate adaptation measures needed in the two municipalities, it circulates very much on the technical parts of the water related issues. Both Karlstad and Gothenburg work with other parts of the adaptation challenge, but they agree that their focus revolves around the water related issues. "I would say that the focus has mostly been about raised water levels or flows of water" (3. 2015). This can further be seen in the activities of the regional offices work, and one of the regional offices in turn, talks about the ambition to widen the perspective:

> "…if we look at our work right now, there is a big focus on community planning and the aspects revolving the risk of flooding. But there is absolutely an ambition to be able to capture other parts of climate change" (6. 2015).

When the regional office of Värmland visited all municipalities in the region, the tendency was obvious.

> …many questions were brought up, but water related issues came up every time. Water, flooding or storm water management. It's more obvious that the municipalities have the responsibility for those questions" (5. 2015).

The last sentence in the previous quote further reflects how the lack of structures and responsibility in the different scales creates limitations. This tendency to have a bigger focus on the water related issues together with knowledge gaps or lack of interest may in turn affect municipalities' vulnerability and adaptive capacity. Where some municipalities may perceive themselves in a light where they will not be affected by the climate change because they are not located near any big rivers or sea, and will therefore not take any measures for other risks (6. 2015). This narrow focus on climate adaption can also be seen to shape the SA where the available and used research on vulnerability of the municipalities in the regions have a primary focus on water related issues.

A reason for the challenges discussed above, brought up during the interviews is, the problem and complexity of the issue and the politicians possibilities to handle the knowledge and being able to put it into action. There is a challenge in finding the time and motivation to really understand these questions when the schedules are constantly full and issues that are more short-term take up their time (2., 3. & 4. 2015).

> "…as a politician you might have a hard time to see a course like this, and to really find the time to familiarize yourself enough with the questions. Then there are the acute questions always standing and 'knocking on the door' as well. …questions that are closer to, and affect people in general, while these questions are further away" (1. 2015).

This challenge also relates to the size of the municipalities and the limited possibilities smaller ones have to handle such issues, where fewer politicians need to handle a bigger agenda. It also contributes to the complexity where unclear responsibilities at different scales and levels can be a part of hindering knowledge and capacity building and in turn hinder or slow adaptation processes down. A clear evidence of the frustration and complexity is that at the same time as some municipalities almost completely lack adaptation activities others feel that the municipalities are the carriers of climate adaptation.

> "…I can feel that it's the municipalities that handles this work and they are also far ahead, which is very tough for the municipalities…" (4. 2015)

On the other hand, there are also structural challenges that in some ways may hinder politicians from initiating the adaptation work. "There are some conflicts of interest here and there in building close to the water versus being safe from floods and how to handle them…" (5. 2015)

The challenge of the attractiveness of living close to the water versus climate adaptation was a question many recognized as complicated, even though knowledge about the present and posed climate changes were good. A good example is the new building plans in the central river-city area in Gothenburg.

> "…we actually want to build in the water which actually, might not be that clever. So it's conflict of interest between vulnerability, money and the interest of building more households" (2. 2015).

This can also affect a municipalities approach towards certain adaptation issues that might be contradictory in the long-run and put them in a more vulnerable situation climate vise. Hammarö is a good example of this, where they are exposed to the water level rise of Vänern, and a more stable level of water would be beneficial in that point of view. However, "Hammarö, as a city, survive almost entirely on the fact that people can live close to the beaches and have boats. Therefore they don't want the beaches to disappear…" (3. 2015) which would be one of the effects, keeping the water levels in Vänern more stable.

5.3 Networks scale (Small – Big Linkages and Informal – Formal Organization)

In such a decentralized system as the Swedish one, a necessary consequence in order to be able to work effectively is the use of networks and collaborations, which play a crucial role in exchanging knowledge, experiences and innovative solutions (8. 2015).

The question about the most beneficial way to organize networks reflects the previous discussions regarding lack of structures. However, when setting structures, less creates a freedom for the actors to create their own through informal and formal networks. On the other hand, too little structure creates an opportunity for uninterested actors to stand aside and not participate (10. 2015). Looking at the SA tables, the amount of formal networks or collaborations that the municipalities or agencies participate in varies significantly. This, can in turn be interpreted as that the use of more informal contacts are more common, but when connecting it to other parameters such as activity in the climate adaptation and the previous discussions in the analysis, this becomes less probable. However, many of the important formal networks today are derived from informal formations. The Swedish Portal for Climate Change Adaptation is one of those networks. Another example is the regional offices national network that they decided to create when they got the mission to coordinate the climate adaptation work. Within that network, they have also developed subject-related groups that work with different questions (5. and 7. 2015).

> "No one has told them that they have to work with specific groups, instead it's they, themselves that have identified that they can get great added value if some or a few can collaborate with a certain question and that all the regions then can benefit from the knowledge produced" (7. 2015).

These networks are shaped in a dynamic way where the actors find it relevant to cooperate in certain questions. The informal networks are often formed around a common nominator or that some have made contact and they see that they can benefit when working together (7. 2015). This freedom and possibility to form informal networks also opens up possibilities to form alliances and put pressure on certain issues. One such example is the Vänern network that argued for the need of national assistance regarding the water level rise (4. 2015).

This might also generate other positive effects "I think that many got help from this cooperation that we had around Vänern… and that it got several of the municipalities on track" (3. 2015). Another example is one of the regional offices who has formed a network consisting of representatives from the different departments within the organization, in order

to be able to share information more effectively. From this, they invited themselves to all municipalities and held lectures and many times the municipalities were so small that the same person were responsible for environmental, waste and climate adaptation questions (5. 2015).

However, there is also a need for the formal structures, especially when it comes to actors that haven't worked much with the questions earlier.

> "…it's incredibly important to have the networks in order to get help and support and to avoid reinventing the wheel when someone has done it before. Especially in the beginning when you start working with new questions, it's great to have that kind of support" (4. 2015).

This is important in order to start the process of creating a foundation for the work, meet different actors and being able to create the network of contacts that is needed for the issues facing the municipality. Especially when it's time for public administrators to try to implement this work within the own organization and find their own cooperative paths (4. 2015). It's also clear that the need for networks differs between municipalities and that stronger municipalities have a tendency to look more abroad in order to gain new experiences, ideas and improve their adaptive capacity (4. 2015). What the SA (table 1) also show is that both Karlstad and Gothenburg are the two municipalities that are a part of the most formal networks and the only ones active in international networks. Additionally, they have come further in their work comparing to the rest of the municipalities in the regions, so they might not be in the same need of the informal networks, which can create a situation where those with the most knowledge are not involved. "We actually have no involvement in such informal networks…" (1. 2015).

In the new backdrop, *Checkpoint 2015* (Andersson, et al. 2015) from SMHI, the discussions now revolves much around how possible changes about the climate adaptation work might be formulated (10. 2015). When discussing the balance between the freedom and possibilities to form informal networks versus the need of formal structures, it's a delicate balance where too much structure might hinder the important informal processes.

> "I don't think that one should create too many formal networks. It can probably become a big administrative burden. Now they propose quite a number of networks and collaborations in Checkpoint 2015 and there might be a risk connected, that it gets too organized and that it doesn't create these informal networks" (8. 2015).

Looking closer at the existing networks, it stands clear that all climate adaptation networks primarily regard public administrators and there are today no formal climate adaptation networks that the politicians are active in. The only forums where politicians occasionally participate in are the seminars or conferences arranged by the regional offices. The closest thing to such a network is the previous mentioned Vänern network that is inactive today.

> "…it's pretty much the only cooperation where we talk about these questions with other politicians in the surrounding area" (4. 2015).

One interviewee, however, discussed that all though much of the networking is done on the public administrative level, it's only natural because it's the most crucial level.

> "Very much of the actual footwork is done by the public administrators. If they don't have any contact between each other, then it's going to be very hard to get anything good together politically, if you have completely different foundations and different structures. The same goes for the opposite, there are good collaboration once you have well-linked strategies and it becomes less problematic if you don't come to an agreement politically. So the most crucial level I would say are the public administrators." (2. 2015).

On the other hand, the regional public administrators talk about the importance of the politicians and how there are primarily public administrators that they meet and have networks with. Many times, they are full of knowledge about what needs to be done but it might be that they want help to rise these questions to the politicians in their municipality in order to get priority and funds (5., 6. 2015). Another interviewee rises the importance and need of knowledge exchange between the politicians and public administrators.

> "…some form of more organized exchange between public administrators and the politicians would be of great value because of the extent and complexity of the questions. This in order to increase the level of understanding from both ends and together being able to build structures so that we can reason about how we should proceed" (1. 2015).

5.4 Management scale (Specific tasks – strategies and budgets)

The governing of climate adaptation work has improved in the last years (8. 2015). At the governmental level, the appropriation bills are one of the most crucial tools for the ministries to govern their agencies businesses. Yet, with the generally low interest in climate adaptation, as shown in the SA matrix (figure 4), and without clear division of responsibilities between the ministries, the risk increases for a type of control that are off sync.

> "It would require better coordination on the ministry levels so that the appropriation bills that are set by the money going out don't have any contra-productive byproducts. So that it doesn't show later on, that one agency received money for a project that is contradictory to a project that another agency received funds for" (7. 2015).

On top of the appropriation bills, the governmental level has a tendency to govern the activities of their agencies through assigned funds or assigned tasks. One example is the SGI investigation of landslide hazards in Göta Älv that have been a good tool for both municipalities and regional offices (5. and 8. 2015). Another is the Swedish Civil Contingencies Agency assignment to investigate what consequences a water level rise in Mälaren would have for different sectors in society, they looked at the consequences of every 10 cm rise while the same hasn't been done with Vänern. They received this assignment from the government when there were similar problems in that region and it's only if they receive a similar assignment for Vänern and Göta Älv, that they will do any larger actions. In the meantime, they will continue their supporting activities to the regions and municipalities (8. 2015). This kind of governing is also visible in the appropriation bills where SMHI in 2015 received 14 million kronor together with multiple dedicated assignments, leaving almost none of the funds for themselves to distribute.

> "…the money is then assigned, where, for example, some millions are assigned to go to marine surveying and other millions are assigned for heavy downpours. From this, the budget shrinks pretty fast and becomes slim towards what we, ourselves, have the freedom to produce" (7. 2015).

This creates a situation where the agencies tries to do as much as they can with as little as possible in the areas outside of the frame.

Even though there is a tendency in the appropriation bills and in larger undertakings to govern the agencies in detail, which creates clear structures, but low flexibility for the agencies. That is not a preferred way of governing even for the political side in the ministry. "…overall it's better to have another kind of governing of the agencies business than to control their funds in detail. You should try to keep away from that" (10. 2015).
This illustrates an interesting contradiction where the preferred way of governing the agencies seems to be that the agencies, whom are experts at their respective field (7. 2015), sets the more detailed agenda while the politicians guide the direction and govern at the important crossroads. In reality, however, when looking at climate adaptation, the tendency is more

towards a big dependency to get the assignments or funds that enable them to handle certain issues. *"...*we are very controlled by the governmental assignments and instructions that we have" (8. 2015). This creates a big dependency on the political administrations and, considering the previous discussions, it could be part of creating obstacles for the climate adaptation processes. On the other hand, it could be argued that the politicians have a more constant dialogue through both formal and informal contacts with the public administrators (10. 2015) and therefore form the appropriation bills and given tasks from the guidance of the expert authorities. However, it also creates a limited space for the agencies to act on issues they find relevant outside of the given frame when the so-called 'free money' is scarce or non-existent (7. 2015). Additionally, in cases such as the Swedish Civil Contingencies Agency, where they will not start investigate or work with certain issues until they get that assignment from the politicians, which is, considering the Vänern network debate article, easier said than done.

Looking closer at the two regions, the question regarding water is, as previously shown, the most debated issue in the regions when it comes to climate adaptation. The complexity and dependency between the regions creates a situation where all above tendencies becomes relevant. Today the question of the water level of Vänern is handled together between the two regions where the regional office in Västra Götaland is the governing part. However, there are different opinions between the interviewees for who should take the necessary steps to find an agreement when it comes to such transboundary issues, even though institutional operating rules exist. Even the governmental level have different opinions regarding the responsibility: "…right now it's the municipalities that are responsible for what may affect their municipality…" (8. 2015) or on the other hand: "…I think this seems to be an obvious question for the regional office, two regional offices in this case" (9. 2015). While the regional level see themselves more as mediators (5. 2015) and the local level thinks that it's hard for municipalities to alone solve questions of this magnitude (4. 2015). However, all agree that it in the end falls down to the municipalities and that the politicians still have the responsibility for the municipalities' inhabitants:

> "…if we understand or know that many of our businesses, inhabitants or so are threatened, we, of course, have to make that a priority. But, in order to get there, I think it has to be very concrete." (3. 2015).

The municipalities reasons for this are primarily financial and electoral (1.-4. 2015). According to one interviewee, the core difficulty is financing, and if it that was secured, the

cooperation between the regions and municipalities could be much better (2. 2015). Yet, other interviewees bring up issues that in spite of secured finances could hinder the process. One such issue is the relationships between politicians and municipalities.

> "… already today, we have conflicts between municipalities, where some want to increase the amount of water flow from Vänern to Göta Älv, while at the same time we don't want that water… then we also have a little bit of an infected discussion regarding our bridge here in Gothenburg that some of the municipalities upstream find very irresponsible. That in turn limits the possibilities and space to have good talks" (2. 2015).

This lack of structures in turn, creates a situation where the municipalities push such complicated questions aside because of their extent.

> "I can imagine that there is a certain delay in activity. Partly because it's such a big project and it's a lot of money that it regards. Additionally, it's about what different municipalities and their differences in what to gain or lose depending on the measures taken and who should finance it…" (5. 2015).

One strategy applied, in order to try to manage these challenges, is organizing and govern through formal and informal collaborations where municipalities go together to handle transboundary issues.

> "…they have different collaborations such as the rescue services around the Karlstad region… Other municipalities in the region might have mutual arrangements regarding water issues…" (4. 2015).

When conducting the SA a number of these collaborations popped up. One example is Dalsland that consists of Mellerud, Färglanda, Dals Ed and Bengtsfors and they together have a common environmental board, handling questions such as climate change and adaptation. Mariestad, Gullspång and Mellerud are another example, Åmål, and Säffle a third. A more formal way of organizing is through associations, an example is the water conservation associations that don't have any deciding mandates but work as a good place to discuss issues and exchange information. The biggest formal collaborative actor in the two regions is the Göteborg Region Association of Local Authorities (GR). They focus on areas such as regional planning, environment and traffic.

> "…there's a strength and a weakness at the same time one could say because it's a very consensus-oriented work due to the awareness that there are different majorities and that these majorities can change, either in one or in multiple municipalities, so therefore we settle about the things we can. Then we work with those things we agree upon while the

> other issues get to bide their time. It's a strength at the same time as it becomes a weakness because there are many things we don't agree upon and then cannot really cooperate. That in turn limits what we work with" (2. 2015).

The challenge of making these collaborations, take responsibility for climate adaptation can also be seen in the existing forums such as the (GR) "I have tried to get GR to handle this question but they refuse, I think that it depends on the fact that they know that all their resources would be used up" (1. 2015).

These kind of collaborations are possible because municipalities see it as a way to handle, and benefit from, transboundary issues. On the other hand, there is also a challenge today for the smaller municipalities to handle all the demands put on them. "I have worked a lot with smaller municipalities and sometimes you come to a point where you say, 'what law should we violate today?'" (2. 2015). There are many important questions that smaller municipalities are supposed to handle with their limited resources, and climate adaptation is one of them.

> "…so for me this becomes another part that makes it more difficult for the smallest municipalities to handle their job. I know, for example, that smaller municipalities today collaborate more and more and have practically joined forces without doing it in a more formal way, for example a lot of municipal associations and such" (2. 2015).

Some interviewees also saw this as an interesting development where the possibilities for municipalities to handle these issues with less resources might open up for more activities (10. 2015), but it also brings other issues. "It might be very good and maybe even necessary. However it's a little bit of a democratic dilemma when things move further away from the citizens" (2. 2015).

Another issue with the system today that was raised during the interviews was that the participation in the existing networks depends much of interest, this creates a situation where uninterested actors can choose not to participate (5. and 10. 2015). Two actors that surprisingly enough did not appear in any networks and were left out of the SA because of the lack of involvement are the County councils in the two regions. They are important actors but also seem to be reluctant to handle the issue.

> "I have also tried to raise the issue at the Västra Götaland County council, but they are trapped in the dilemma that their work have to benefit all their member municipalities and not just a few. They are, therefore, not an active part of the work and there are additionally no national directives to the counties to handle this question" (1. 2015).

When looking at the two municipalities Karlstad and Gothenburg again, the focus is as previously discussed, narrow and revolves primarily around the water issue. In these questions, both municipal public administrators feel a support from the politicians, but the political management is very narrow in this sense.

> "…it has been very unclear, except the flooding program… Therefore, I have pushed the issue about the need for a general adaptation plan in order to capture the big picture. This has taken some time but the decision to start the work with such a program was finally made this spring" (4. 2015).

This can be connected to the discussions in the interviews about how there are agencies and municipalities that with existing funds do a lot of work "…but this often is thanks to enthusiastic people that have managed to push it through" (7. 2015). It's also quite clear that the progress and ongoing work in the two regions is much thanks to enthusiastic public administrators, and not by political initiatives. "It's on the most part driven by the public administrators and then the work is supported by the politicians" (1. 2015). Another evidence of this is as discussed earlier that not many municipalities that have taken a political stance to work with climate adaptation.

The majority of the interviewees also talked about the need of a system where there are not only enthusiastic persons that drives the work forwards, because this creates a vulnerable situation where if that person would quit, a lot of knowledge and activity might disappear. "…it creates a vulnerability, preferably there should be routines and similar so that the work isn't connected to persons" (5. 2015).

When asked about the importance of the politicians in this regard, all agreed that they play a crucial role for many of the organizations that are central here; municipalities, regional offices and the governmental level are all political governed (1-10 2015). They decide what should be done and to what degree organizations should build up their knowledge about the challenges connected to a changing climate (9. 2015). They are also the ones that decide if there are resources available to make the question a priority and what type of competence they seek when employing the top managers (2. 2015). "Therefore we need more politics regarding climate adaptation, or else we will not succeed" (10. 2015). "The political decisions are very important because it's, in the end of the day, about how we choose to direct the resources" (9. 2015). There are also clear differences between the municipalities that can be related to this. Both public administrators in Karlstad and Gothenburg feel supported from the political level: "I feel that we actually have a big support from the elected representatives in Gothenburg,

which is a necessity in order to work with these questions like we do" (1. 2015). While, as mentioned earlier, the regional offices often have to help public administrators from other municipalities with creating opportunities of working with the issue. The results in the SA also reflects this picture where most municipalities that score high on the parameter 'Statements in the municipal budget or objectives and orientation documents' also score high on 'Clear structures and ongoing work with climate adaptation'. Important to mention is that many municipalities have structures and ongoing work even without political statements. This can be connected to the work of the driven public administrators but also to the fact that the parameter 'Clear structures and ongoing work with climate adaptation' only captures how it's organized and not how far they have come or if they capture the width of the issue.

5.5 Temporal scale (Short-term – Long-term duration and Fast – Slow Frequency)

The political administrations are based on political parties and representatives that are elected every four years. This creates a situation where relatively short-term election periods, in some ways, go against abstract and long-term questions such as climate adaptation. "You might not win any elections on many of these things and there is a big competition over other areas such as school and medical care" (5. 2015). Even the politicians themselves acknowledged this tendency:

> "If I am totally honest, it's always easier to talk about the fun parts, it's also easier to take decisions about the fun parts... But to invest 15 million in water related climate adaptation is not that sexy. Additionally, a question like that is hard to understand, and it's a pedagogic challenge to explain and to understand, maybe even for other politicians… It's like the rest of the agenda if you look at the bigger picture, a question with low priority" (3. 2015).

The politicians can therefore be said to be ruled by what gives them their mandate or votes which in turn creates a situation where the governing are quite short-term.

> "…the politicians really want to get reelected and what guides them is therefore questions that are close to the heart of the people. Additionally, the human memory is incredibly short, so what lies closest to the heart is often what lies close to the family and the own self. …if you don't feel directly exposed to the climate or climate changes, then school or medical care are often more important" (7. 2015).

There are also visible challenges that connect to the discussion at the jurisdictional scale where municipalities adapt for different water levels (1. 2015), adjusting for different

temporal perspectives which may create challenges when cooperating. This can sometimes create obstacles when the views differ and "…a proposition that they at the national level see as a must, the view can be the revers at the municipal level and there are today no apparent processes to work with this" (2. 2015). Additionally, there has been an attitude within some political parties, on the national level, to focus more on the climate mitigation rather than the adaptation measures (2. 2015).

Some interviewees (2. 2015, 7. 2015, 9. 2015) further talked about the political parties' responsibility outside of the municipalities' formal structures, where the political parties ought to show bigger commitment in the goals and directions that shape their politics.

> "…an important aspect is what kind of community we want to have or how we build a good community more concrete, and how we prepare our society for the changing conditions. The politicians do have a role to manage and take care of our society…" (9. 2015).

Some interviewees also pointed out the absence of climate adaptation discussions in the elections in 2014 even though there were four clear, extreme weather events before the elections; a big forest fire, multiple floods, a heat wave and lightning storms.

> "It's very unfortunate because everything depends on that we have a society in the future and we need to take care of it now. It also gives signals down to the local levels that they [government] don't handle the questions nationally and then it might get tough to prioritize on local levels" (5. 2015).

The tendency to be more short-term and to put priority to mitigation instead of combining mitigation and adaptation can be connected to how short-term and foresight the politics in general, is today in connection with the level of knowledge the actors possesses.

5.6 Spatial scale (Patches – Regional Areas)

Climate change is, as described in the background, an issue that disregards jurisdictional borders and have impacts on a global scale and affects local areas differently. This is at the basis of this thesis, with the relation of Vänern and Göta Älv that in turn creates challenges stretching across the two regions. This can be seen in the SA (Table 1, parameter 'Vulnerability to climate change according to previous studies') where the municipalities' local vulnerability to water level rise differs, all though it the regards the same watercourse.

The spatial scale can also be seen in the priorities and focus of the agencies, where the SA parameter 'Produces material and information for other actors' shows that some agencies said

that they only focus on the national, unless anything else is said by the politicians as discussed before. During the interviews, it was also interesting to see the different spatial focus where the ministry had the national focus, the agencies had the national and regional, while municipalities primarily focused on the municipality (1., 3., 5-9. 2015). The national political focus, however, was a little bit wider, where the national politicians had a clear national focus but also an international focus. “That's one of the climate adaptation areas that we are working most intensively with at the moment” (10. 2015). These differences in spatial focus can be connected to the lack of institutional and managing structures, which in turn might limit the spatial focus to the areas that the actors are certain, are under their responsibility.

The spatial challenge of climate adaptation can be related to the discussion about financing and responsibility, where the principle has been that those who benefit from the measure also have to handle and finance it.

> “Which means that the municipalities have a very big responsibility. There are then areas such as Vänern and Göta Älv, which involves several regions and affects several municipalities where small municipalities have big problems. It’s complicated” (8. 2015).

5.7 Institutional scale (Guiding rules – Constitutions)

Following the discussion of structures and responsibilities, are the institutional obstacles that connects well to the spatial and jurisdictional challenges where there are many examples of barriers in existing legislation, for example to take actions and invest money in a municipality other than where the money has been collected (7. 2015). The challenge to get such an investment done is connected to the challenges discussed at the management scale earlier regarding the associations where there are challenges when finances are limited and measures needed don’t help the inhabitants in the existing municipality. There are therefore also low political incitements which creates a situation where the investments needed, maybe have to be done in a location where it’s not as beneficial, or not done at all (7. 2015). These institutional challenges, however, are well documented, as shown in the background, and is something that is already discussed on the national levels where many of the municipalities’ challenges have been listened to regard institutional challenges (3. 2015). During these discussions, it’s important not to oversee the connections across scales and levels.

Another common obstacle for the municipalities in the regions is the Swedish environmental code that creates challenges on multiple levels and is not in-sync with climate adaptation. A clear example is the challenges brought by the preservation of important

habitats and the need to intervene in order to safeguard the habitat but also surrounding societies (1. and 3. 2015). Both in Karlstad and Gothenburg this kind of challenges are visible where Gothenburg for example plans to build major ports in Göta Älv in order to protect themselves from the risk of flooding. However the optimal location for construction lies in a natural reserve (1. 2015).

The institutional scale also captures the discussion about how to organize the climate adaptation work in order to create clear responsibilities, increase the activity and decrease the obstacles. As shown above in the discussion in the management scale, even though operating rules exist, such as the regional responsibility to coordinate climate adaptation in and between regions (9. 2015), the different jurisdictional levels still push the issue of the transboundary challenges between each other (1., 5., 9., 10. 2015). All actors agree that some kind of expanded responsibility on regional or national level is needed in order to create clearer structures and responsibilities, the form however, the views differ. One interviewee points out that:

> "Traditionally, the majority of the environmental politics have been top-down. All environmental goals and everything are supposed to trickle down so I don't know if that is what we are used to" (3. 2015).

This reflects a general opinion among the interviewees that more responsibility on all actors is needed and when formulating regulations or operating rules on different levels they need to have clear structures in order to get more momentum to the question. Having clear structures however, is not the same as creating new structures according to one interviewee. "…to a large extent, this question will have to be integrated into already existing structures. Much at the public administrators working with planning issues…" (10. 2015). When looking closer at Gothenburg, they have their responsible public administrator for climate adaptation in the building administration.

> "…one obvious advantage is that he is well integrated in the procedures regarding plans, strategies and such. That is a clear advantage, but then there is also the disadvantage that he is very far from all other climate adaptation work that is going on" (2. 2015).

This connects to the common perception that the collaboration today, within the interviewees own organizations is deficient (1. 2015, 2. 2015, 3. 2015, 5. 2015, 6. 2015). One interviewee pointed out that a big part of the problem is that the responsibilities are too far out in the organizations.

> "I think it needs to get tied together better and I also think that it would have been a strength if the question would have been on the municipal executive level or similar because then you get much more momentum to the directions" (1. 2015).

Both the municipal public administrators are placed in planning administrations and the strategic part of the work surpasses the practical issues.

> "As mentioned before, it's very hard to tell all administrations what to do if they don't even have the knowledge about the issue, or what will happen. So therefore, there should exist a strategic thinking on how to do this… So, from a strategical standpoint maybe I should be placed somewhere else" (4. 2015).

Another important issue to consider is that too much set structures might also create risks. "It might also lead to that those who are not part of the structures don't feel responsible for the question" (10. 2015). It might also create work or costs that don't generate any actual adaptation measures. In order to avoid this, the question of climate adaptation must be everybody's responsibility (4. and 10. 2015).

> "We can compare it to the equality question. It's, maybe in many ways, a bigger question but it's a question that we actively try to integrate in 'agency Sweden' only because we want to avoid that it's only certain people engaging in the subject" (10. 2015).

The climate adaptation issue is, one could say, sadly or luckily enough dependent that all collaborate and that all affected actors have a good dialogue (7. 2015).

6 Concluding discussion

The final chapter of the thesis will summarize and link the findings, discuss their importance and implications along with stating gaps that have emerged and can be investigated in future research.

6.1 Answers to the research questions

The analysis was designed to answer a specific set of questions. In order to get a clear structure for the final discussion, the questions are stated here again to guide the concluding discussion.

Beginning with answering the first sub question, *a) What claims do the stakeholders make in relation to the question of responsibility for developing adaptation measures and collaboration between different scales and levels?*

All interviewees agree that the responsibility to adjust to climate change crosses all scales and levels of governing. The politicians, however, have a crucial role in the governance of climate adaptation because of their role in deciding the budget, objectives and orientation for the jurisdictional levels. There is, however, a big uncertainty and complexity regarding the question of responsibility. This is visible in both the management and institutional scale. Take, for example, the question of operating rules where stakeholders on different levels have different perceptions and interpretations about their and others responsibility in different ways. Actors at the national level finds the local level actors responsible to cooperate and the regional offices responsible to solve issues. While actors at the local levels see themselves as unable to act due to the extent of many of the challenges within and across scales, but also the lack of resources and obstacles to collaborate with other actors on the same level. The institutional challenges also create regulatory barriers and situations where the regional perspectives can be prioritized at the expense of the local need. The same tendency is seen in the management of agencies, where the governmental level generally directs their focus, which in turn creates obstacles for the municipalities. There are, however, exceptions such as the regional offices that have had very little assigned funds and objectives.

Another issue is the differences in the knowledge scope of public administrators and politicians in and between different jurisdictional levels, networks or collaborations that, for example, can affect the different measures they see as effective. This can be exemplified from the Vänern network, where some politicians only want to build a giant tunnel to solve the issue of increased water levels. Such challenges cause difficulties in the implementation of measures across the jurisdictional levels, but also in the management within levels. It can also, together with the lack of structure, result in actors pushing responsibilities to other levels. However, even if the municipalities agree to take responsibility and put measures in place, their different interests, views and use of available knowledge can create barriers. The spatial focus on measures therefore has a tendency to be more local, such as streets or landscapes, rather than regional.

Climate adaptation is today a question mostly managed and handled by public administrators in the municipalities, often only by single persons and at part time. This creates a dependency where if that person would quit, the knowledge and competence might be lost. Here there seems to be an agreement about the responsibility of all actors to create structures, policies and such to avoid this kind of dependency. It was also agreed that the political parties have a responsibility outside of the public governmental structures, in their own political organizations to develop the politics that can handle the climate change adaptation challenges.

b) *In the context of multi-level governance of climate adaptation measures in the regions, how are political priorities, at different scales and levels, framed?*

As shown in the SA matrixes there are big differences between the different stakeholder's involvement and the lack of political priority on the national level, which is seen to create ripple effects through all scales and levels. The national political level's lack of structure and responsibility can also be seen to affect the regional and local political representatives' attitudes and possibilities to handle the questions. It's rather telling and surprising that the regional politicians are so excluded from the existing climate adaptation processes, that they were not even included in the SA. The local levels in turn, lack national cooperation, guidelines and find weak management incentives such as funding. Additionally, the low political priority to the question creates a situation where the communication between different governmental levels is deficient. There can be several reasons for the lack of political priority to the issue such as the lack of will, resources, knowledge, and the long-term nature of the problem. There is, however, not a clear connection between political priority to the issue and clear structures because driven public administrators can act as a counterpart to this.

The amount of time politicians and public administrators manage to put in understanding the issue reflects what kind of focus it gets. On the municipal level the connection as well as separation between mitigation and adaptation was not always clear for the political representatives. Looking closer at the municipalities that have more political statements regarding climate adaptation in the regions, a connection to recent extreme weather events can be seen in the regions. This was however not the case on the national level during the elections of 2014 in spite of the four big natural disasters that occurred the same year.

The long-term nature, complexity and political unattractiveness of climate adaptation has also shown to affect the political priorities at all scales and levels. It's the short-term perspective connected to what gives the votes, which creates a situation where measures to climate change is given low priority. In order for local level politicians to put priority to the issue, as it's structured today, it needs to be very concrete, like the situation after a disaster. This is further connected to the knowledge scale and narrow focus in the management in the regions, where questions primarily regarding water related issues are handled. Yet, it doesn't seem to be any lack of knowledge available in order to take a wider perspective. One part in this might be the lack of priority to climate adaptation in the agencies that in turn reflects in the perspectives they represent. This is in turn related to the national levels political priorities

in the management and institutional structures. Another part can be that the responsible local level public administrators often are located in more practical administrations and therefore are limited by this, but also the challenge for smaller municipalities where the responsible public administrator might have responsibility for multiple questions, where climate adaptation is just one of many. One solution that is applied in the regions to handle this is the use of collaborations where municipalities form associations or share administrations that can handle transboundary challenges or opportunities.

The political priorities at the national level also seem to have a tendency to govern the agencies through assigned funds, although there is a clear lack of structures and responsibility to handle climate adaptation. The assigned funds further limit the agencies possibilities to take measures they see as needed through the lack of free funds and a dependency at the agencies of political assignments in order handle bigger endeavors.

c) *What are the different perceptions of the need for adaptation measures and collaboration between different scales and levels?*

There is a common view that all actors need to be engaged in climate adaptation and that it's a question that stretches across the society. There is also a need for better understanding, structures, responsibilities, networks, collaborations and communication for the processes in and between the governmental levels. Today there is a tendency to work separately and there is a need of more and more effective networking and collaboration where both formal and informal structures needs to be given space. Furthermore, there is a delicate balance between having too much and too little structures regarding collaborations and networks in order to be able to work with the questions as beneficial as possible. A working structure regarding networks can lift actors that are not as advanced, but there is a risk that too much networks will limit the important informal exchanges. Formal and informal collaborations can for example, help municipalities overcome financial obstacles for adaptation measures. However, such collaborations move the decisions further away from the citizens. Therefore, there has to exist flexibility and freedom for the actors to choose the ways that are right for their specific interests and context.

In order not to slow processes down, which agencies and municipalities do today by ignoring or pushing the question ahead, a common view is that climate adaptation needs to be integrated into the existing structures. However, the views differ whether the solutions lie in the otherwise traditionally institutional top down approach, or a combination of institutional operating rules together with better management. If declaring all actors responsible it's crucial

that there are structures enough to handle that and maintain the sense of responsibility by all actors. On the other hand, a risk with declaring one actor responsible for the issue is the possibility for other actors not to feel or take responsibility.

There is also a clear need for good knowledge at all levels even if the municipalities are considered to be advanced in their adaptation measures, there are as mentioned still tendencies of a narrow focus. This regards both politicians and public administrators; however, the education and information directed towards political representatives are highly deficient.

One clear message was also that adaptation will and must cost a lot of money. However, most actors on the jurisdictional levels ask for dedicated funds while the governmental level see the need to use existing funds. Contradictory, there is a reluctance of handling the issue between the ministries until there are dedicated funds. Connected to this, the affected municipalities asked for more support from the agencies and the ministries regarding the water level rise in Vänern and Göta Älv.

These conclusions lead down to the answer of the main research question: *How are political priorities, at different levels, influencing the coordination and collaboration of climate adaptation, at different scales and levels between the regions surrounding Vänern and Göta Älv?*

Political priorities at local and national levels in large affect the climate adaptation in the regions. The regional level politicians however are excluded to such a degree that they are not included in the SA or have any directives on neither the institutional nor the management scale. The present lack of progressive politics primarily at the national level, but also the local levels, create a situation where responsibilities are unclear and adaptation processes tend to be local at the local levels while they become national or international at the national levels. This in turn creates a gap of inactivity and slow processes that affects regional, transboundary challenges such as Vänern and Göta Älv.

The priorities on the national level influences all governmental levels analyzed. The national level direct the financial resources that are given and are the ones deciding how the work shall be structured. They are also the ones deciding the institutional structures but also in big parts, the management of climate adaptation that today is recognized as unstructured and constitutes obstacles. They influence agencies to conduct investigations related to increased water levels in Vänern and Göta Älv and they also decide what focus the agencies will have through the funds and assignments they distribute. This, even though they

themselves lack clear structures. Their passivity regarding the challenges posed to the municipalities in the regions further create the versatility in responses and opens up for the different levels of involvement from the actors. It can also be connected to the differences in knowledge levels together with the national lack of focus of climate adaptation during the elections in 2014 that in turn can be part of the explanation why public administrators primarily develop the work on climate adaptation rather than the politicians.

The local level politics is in a great dependency on the national level of governance, still local political priorities influence how the local municipalities work with climate adaptation and what they will prioritize. The local level politicians seem to be more affected to natural disasters than the national level when it comes to in what extent it affects their directives and the measures that are applied.

The local level politicians further influences in what spatial context they will work through the budget, objectives and orientations given to the public administrators. However, the public administrators are most often the ones driving the work forward. This is also connected to the temporal challenge of having the time to really understand the issue and giving the long-term priority instead of the short-term, acute issues. The local political priorities further govern what measures are possible and desirable to invest in and govern the public administrators' space to work with the issues, yet, even without local political statements, work can still be undertaken. The local politicians also decide how to manage the issue, if they put the responsible public administrators in a more technical administration or a strategic administration where the issue can be integrated more in the organizations.

The issue of participating in networks, be a part of associations or collaborations also rely on the politicians where their use of such structures might help to take measures that otherwise would be politically bad or financially impossible. The use of associations and administrate collaborations between municipalities however moves the democracy further away from the inhabitants.

6.2 Political discussion

According to the results of the thesis, todays multi-level governance approach places high demands on the regional offices and local actors. The most important factors are to recognize the issue, give political support and priority to it and integrate the work at all jurisdictional levels. A common sense of responsibility for the question together with structures that forces actors to take responsibility is needed. At the same time, this have to be countered by

structural and financial support in order to get all municipalities to have equal possibilities to handle the issue. The municipalities are central due to the local context of many of the effects from climate change, but transboundary issues such as Vänern and Göta Älv needs to be organized across levels in order to be able to overcome financial debates and make the priorities needed. Because the municipalities all have their own interests in first place these actors further needs to be able to take decisions without the dependency of an agreement from all actors involved or the demand that investments shall benefit all involved such as the county council have.

The networks and collaborations between actors are central parts in the climate adaptation work in order to share experiences and develop important contacts. There is, however, a delicate balance where too much structure can limit actors possibilities to form their own networks and collaborations in order to create more efficiency. An increased use of collaboration should also be analyzed from a democratic perspective. The same can be discussed in the governance of the agencies where there is a tendency of too much assigned tasks that limits the free space of the agencies to adapt their business where they see it most needed. The political priority and development of climate adaptation has to start at the national level in order to trickle down. The complexity of the long-term nature of many of the measures also constitutes a challenge that preferably would be discussed and developed in the political parties own politics, so that it is a part of the development and ideology they campaign for in the elections.

6.3 Research Gap and future research

This thesis contributes to the existing research by a comprehensive case-study on the Swedish climate adaptation governance. In contrast to previous research, the analysis includes more aspects and their interrelationships by analyzing multiple scales and levels. The thesis has also produced a SA that maps the regions 54 stakeholders' involvement and that produces important material that is used in the analysis that in turn enhances the understanding of the governance of climate adaptation in the case study.

The thesis shows that today's approach places high demands on the regional and local actors but a common sense of responsibility for the question together with structures that make actors cooperate and collaborate are insufficient. The results show that more knowledge is not the issue, instead the SA and the key-stakeholders comment that their and other actors focus on the climate adaptation is to narrow and sometimes lacking. This is in turn connected

to the general low political priority to the issue, which is visible at all governmental levels. This raises the question; how to create structures where politicians feel a mandate to invest in climate adaptation, that also favors collaborating and cooperation between governmental actors in Sweden?

Interesting research that would complement this study would be to do a similar study, but on another region and see if the tendencies are the same. Alternatively, to investigate the view of the less involved governmental actors. This could give the interesting perspective of the regional politicians and the county councils. Adding to that perspective would be to study the private actors, their work, collaborations and networking. A comparing study to a similar issue in a country with a NAS would also create the opportunity to compare the different approaches.

Another interesting path to follow further would be to analyze these formal and informal collaborations between municipalities and see how extensive this trend is and what type of implications this might have. There is also the discussion of the political parties' responsibility outside of the governmental structures and the political parties' politics of climate adaptation.

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8 Appendixes

8.1 Appendix 1: SA framework

Municipalities

<table>
<tr><td>Influence</td><td>Grading 0-3 based on the information below</td></tr>
<tr><td>Clear structures and ongoing work with climate change issues (Miljöaktuellt 2013)</td><td>Grading is based the municipalities place in a national study that analyzed and graded the climate change work in Swedish municipalities. This studies partly base their analysis on the municipalities own comprehension of what they do and how far they have come.
0. = 295-216. 1. = 215-144. 2. = 143-72. 3. = 71-1.</td></tr>
<tr><td>Recommended and referred to by others</td><td>I have in all contacts with individuals representing the different stakeholders asked which municipalities in the regions they see as progressive and influential. The result from that is the base for the assessment. Contacts have been done through e-mail, telephone, and interviews. Grading is based on the number of times that they are recommended and referred to in relation to the other stakeholders.
0. = 0 times. 1. = 1-3 times. 2. = 4-7 times. 3. = 7-11 times.
<table>
<tr><td>Göteborg</td><td>11 times</td></tr>
<tr><td>Kungälv</td><td>1 time</td></tr>
<tr><td>Ale</td><td>0 times</td></tr>
<tr><td>Lilla Edet</td><td>0 times</td></tr>
<tr><td>Trollhättan</td><td>2 times</td></tr>
<tr><td>Vänersborg</td><td>4 times</td></tr>
<tr><td>Mellerud</td><td>0 times</td></tr>
<tr><td>Åmål</td><td>4 times</td></tr>
<tr><td>Säffle</td><td>3 times</td></tr>
<tr><td>Grums</td><td>1 time</td></tr>
<tr><td>Karlstad</td><td>9 times</td></tr>
<tr><td>Hammarö</td><td>0 times</td></tr>
<tr><td>Kristinehamn</td><td>2 times</td></tr>
<tr><td>Gullspång</td><td>0 times</td></tr>
<tr><td>Mariestad</td><td>1 time</td></tr>
<tr><td>Götene</td><td>0 times</td></tr>
<tr><td>Lidköping</td><td>7 times</td></tr>
<tr><td>Grästorp</td><td>0 times</td></tr>
</table></td></tr>
<tr><td>Population and national political representatives (SCB 2015)
(Sveriges Riksdag 2015)</td><td>Grading is based on population size and national political influence calculated on the basis of the constituencies and estimated seats in the Swedish parliament.</td><td>Värmland
11 mandates. Total pop. 274 691
Stakeholders total pop. 152 012
152 012 / 274 691 ≈ 55% ≈ 6 mandates
Karlstad ≈ 58% ≈ 3,5 mandates
Kristinehamn ≈ 16% ≈ 1 mandates
Säffle ≈ 10% ≈ 0,5 mandates
Hammarö ≈ 10% ≈ 0,5 mandates</td></tr>
</table>

	0. = 0-0,9 mandate. 1. = 1-5 mandates 2. = 6-10 mandates. 3. = 11 mandates or more.	Grums ≈ 6% ≈ 0,5 mandates VG östra 10 mandates. Total pop. 243 961 Stakeholders total pop. 81 343 86 583 / 243 961 ≈ 35% ≈ 3,5 mandates Grästorp ≈ 6% ≈ 0,25 mandates Götene ≈ 15% ≈ 0,5 mandates Lidköping ≈ 45% ≈ 1,5 mandates Mariestad ≈ 28% ≈ 1 mandates Gullspång ≈ 6 % ≈ 0,25 mandates VG västra 13 mandates. Total pop. 358 220 Stakeholders total pop. 42 334 42 334 / 358 220 ≈ 12% ≈ 1,5 mandates Kungälv ≈ 12% ≈ 1,5 mandates VG Norra 13 mandates. Total pop. 435 124 Stakeholders total pop. 157 535 157 535 / 435 124 ≈ 36% ≈ 4,5 mandates Ale ≈ 18% ≈ 1 mandates Lilla Edet ≈ 8% ≈ 0,5 mandates Mellerrud ≈ 6% ≈ 0 mandates Trollhättan ≈ 36% ≈ 1,5 mandates Vänersborg ≈ 24% ≈ 1 mandates Åmål ≈ 7% ≈ 0,5 mandates Göteborg 17 mandates. Total pop. 541 145 541 145 = 100% = 17 mandates Göteborg = 17 mandates
	Population: Göteborg 541 145 Karlstad 88 350 Trollhättan 56 929 Kungälv 42 334 Lidköping 38 761 Vänersborg 37 890 Ale 28 423 Kristinehamn 24 114 Mariestad 23 921 Säffle 15 334 Hammarö 15 256 Götene 13 080 Lilla Edet 13 031 Åmål 12 326 Grums 8 958 Mellerud 8 936 Grästorp 5 630 Gullspång 5 240	

Interest	Grading 0-3 based on the information below
Statements in the municipal budget 2015 (Political majority of Gothenburg 2014) (Political majority of Karlstad 2014) (Political majority of Kungälv 2015) (Political majority of Ale 2015) (Political majority of Lilla Edet 2014)	Grading is based on the scope of the phrasings and if they have any specific goals or missions and funding in control documents for the budget or in the budget regarding climate adaptation. 0. No mention of climate change. 1. Mentioning the concept briefly. 2. Discussing the issue and measures around it but no specific goals or missions. 3. Discussing the issue and have specific goals or missions and funding for adjustment measures. Grums didn't hand out their budget documents in spite of several attempts. Therefore they are rated 0.

<table>
<tr><td>(Political majority of Trollhättan 2014)
(Political majority of Vänersborg 2014)
(Political majority of Åmål 2014)
(Political majority of Säffle 2014)
(Political majority of Hammarö 2015)
(Political majority of Kristinehamn 2014)
(Political majority of Gullspång 2014)
(Political majority of Mariestad 2014)
(Political majority of Götene 2014)
(Political majority of Lidköping 2014)
(Political majority of Grästorp 2014)</td><td></td></tr>
<tr><td>Active in adaptation networks
(ICLEI 2015)
(UNISDR n.d.)
(Klimatkommunerna n.d.)
(Covenant of Mayors n.d.)</td><td>Grading is based on active participation in following networks: ICLEY, Making Cities Resilient, Klimatkommunerna, SKL climate adaptation network and Covenant of Mayors. These networks have been identified through previous studies and in initial contacts with the stakeholders.

<table><tr><td>Göteborg</td><td>ICLEY, Making Cities Resilient, SKL climate adaptation network and Covenant of Mayors</td></tr><tr><td>Kungälv</td><td>Covenant of Mayors</td></tr><tr><td>Ale</td><td>-</td></tr><tr><td>Lilla Edet</td><td>SKL climate adaptation network</td></tr><tr><td>Trollhättan</td><td>Covenant of Mayors</td></tr><tr><td>Vänersborg</td><td>-</td></tr><tr><td>Mellerud</td><td>-</td></tr><tr><td>Åmål</td><td>SKL climate adaptation network</td></tr><tr><td>Säffle</td><td>SKL climate adaptation network</td></tr><tr><td>Grums</td><td>-</td></tr><tr><td>Karlstad</td><td>Making Cities Resilient, SKL climate adaptation network</td></tr></table></td></tr>
</table>

	and Covenant of Mayors
Hammarö	SKL climate adaptation network
Kristinehamn	-
Gullspång	-
Mariestad	SKL climate adaptation network
Götene	SKL climate adaptation network
Lidköping	SKL climate adaptation network and Covenant of Mayors
Grästorp	-

Grading is based on 0. Not participating. 1. Participating in one group. 2. Participating in two groups. 3. Participating in three groups or more.

Vulnerability to climate change according to previous studies (SGI 2012) (Andersson, Blumenthal and Nyberg 2013) (MSB 2011)	Grading is based on three studies analyzing the vulnerability of the municipalities in the regions. 0. Not vulnerable. 1. Low sensitivity of flooding. 2. Medium sensitivity of flooding. 3. Big sensitivity of flooding.

Agencies

Influence	Grading 0-3 based on the information below
Produces material and information for other actors national/local	I have in all contacts with individuals representing different stakeholders asked questions regarding this issue and based my assessment from this. Contacts have been done through e-mail, telephone and interviews. But also their information regarding their climate adaptation work on their homepages have contributed. Grading is based on if the actor produces material and how the material is focused. 0. Not producing 1. Some material produced regarding climate adaptation. 2. Main focus in material on national trends 3. A clear focus on local or regional actors together with the national level.
Recommended and referred to by others	I have in all contacts with individuals representing different stakeholders asked questions regarding this issue and based my assessment from this. Contacts have been done through e-mail, telephone and interviews. Grading is based on the number of times that they are recommended and referred to in relation to the work of climate adaptation. 0. = 0 times. 1. = 1-3 times. 2. = 4-7 times. 3. = 7 or more times.

Swedish National Board of Housing, Building and Planning	2 times
Swedish Energy Agency	0 times
Public Health Agency of Sweden	1 time
Swedish Agency for Marine and Water Management	0 times
Swedish Board of Agriculture	0 times
Swedish Mapping, Cadastral and Land Registration Authority	3 times
National Food Agency	1 time
Swedish Civil Contingencies Agency	10 times
Swedish Environmental Protection Agency	1 time
Swedish National Heritage Board	0 times
Swedish Forest Agency	0 times
Swedish Geotechnical Institute	3 times
National Veterinary Institute	0 times
Geological Survey of Sweden	0 times
Swedish Meteorological and Hydrological Institute	9 times
Swedish Transport Administration	2 times
Swedish Post and Telecom Authority	0 time
Sami Parliament	0 times

	Swedish Maritime Administration	0 times
	The National Board of Health and Welfare	0 times
	The National Property Board of Sweden	0 times
	Swedish National Road and Transport Research Institute	0 times
	Swedish National Grid Agency	0 times
	Swedish Agency for Economic and Regional Growth	0 times
	Transport Analysis agency	0 times
	Swedish Transport Agency	0 times
	Regional Office Västra Götaland	12 times
	Regional Office Värmland	12 times
Working actively with climate adaptation national, regional and local (Klimatanpassningsportalen 2014) (Klimatanpassningsportalen (2) 2014)	I have in all contacts with individuals representing the different stakeholder asked questions regarding this issue and based my assessment from this. Contacts have been done through e-mail, telephone, and interviews. Additional information have also been gathered from their respective homepages and the Swedish portal for climate change adaptation. Grading is based on . 0. No work. 1. Some activities primarily on national level 2. Engaged in different levels of governance, primarily national 3. Actively engaged in all levels of governance in society regarding adaptation measures.	

Interest	Grading 0-3 based on the information below	
Dedicated founding for climate adaptation measures in budget 2015 (Regeringen (2) 2014) (Hebel 2015)	Swedish National Board of Housing, Building and Planning	0:-
	Swedish Energy Agency	0:-
	Public Health Agency of Sweden	0:-

Swedish Agency for Marine and Water Management	0:-
Swedish Board of Agriculture	0:-
Swedish Mapping, Cadastral and Land Registration Authority	40 000 000:-
National Food Agency	0:-
Swedish Civil Contingencies Agency	13 000 000:-
Swedish Environmental Protection Agency	0:-
Swedish National Heritage Board	0:-
Swedish Forest Agency	0:-
Swedish Geotechnical Institute	13 000 000:-
National Veterinary Institute	0:-
Geological Survey of Sweden	0:-
Swedish Meteorological and Hydrological Institute	14 000 000:-
Swedish Transport Administration	0:-
Swedish Post and Telecom Authority	0:-
Sami Parliament	0:-
Swedish Maritime Administration	0:-
The National Board of Health and Welfare	0:-
The National Property Board of Sweden	0:-

	Swedish National Road and Transport Research Institute	0:-
	Swedish National Grid Agency	0:-
	Swedish Agency for Economic and Regional Growth	0:-
	Transport Analysis agency	0:-
	Swedish Transport Agency	0:-
	Regional Office Västra Götaland	4 144 166:-
	Regional Office Värmland	1 271 937:-
	Grading is based the amount of funds they receive in relation to each other. 0. = 0:- 1. = 1 - 10 000 000:-. 2. = 10 000 001:- – 20 000 000:- 3. = 20 000 000:- or more.	
Part of the Swedish portal for climate change adaptation (Klimatanpassningsportalen 2015)	Grading in this case is only 0 or 3, depending on if the stakeholder is an active part in the Swedish portal for climate change adaptation. 0. = Not an active partner. 3. = Active partner.	
Active in climate adaptation collaborations (Klimatanpassningsportalen (2) 2015)	The participation in formal national networks regarding climate adaptation work. Grading is based on 0. Not participating. 1. Participating in one group. 2. Participating in two groups or more. 3. Participating in two groups or more and have a leading role.	

Ministries

Influence Grading 0-3 based on the information below

Influential authorities they govern (Regeringskansliet 2015)	The number of authorities actively working with climate adaptation that the ministries govern. 0. = 0 agencies. 1. = 1-5 agencies. 2. = 6-10 agencies. 3. = 11 or more agencies.

	Prime Minister's Office	
	Ministry of Culture	Swedish National Heritage Board
	Ministry of defence	
	Ministry of Education and Research	
	Ministry of Employment	
	Ministry of Enterprise and Innovation	Swedish National Board of Housing, Building and Planning Swedish Board of Agriculture Swedish Mapping, Cadastral and Land Registration Authority National Food Agency Swedish Forest Agency National Veterinary Institute Geological Survey of Sweden Swedish Transport Administration Swedish Post and Telecom Authority Swedish Maritime Administration Swedish National Road and Transport Research Institute Swedish Agency for Economic and Regional Growth Transport Analysis agency Swedish Transport Agency
	Ministry of the Environment and Energy	Swedish Energy Agency, Swedish Agency for Marine and Water Management Swedish Environmental Protection Agency Swedish Geotechnical Institute Swedish Meteorological and Hydrological Institute Swedish National Grid Agency
	Ministry of Finance	The National Property Board of Sweden
	Ministry for Foreign Affairs	
	Ministry of Health and Social Affairs	Public Health Agency of Sweden The National Board of Health and Welfare
	Ministry of Justice	Swedish Civil Contingencies Agency
Recommended and referred to by others	Contact via mail, telephone, homepage and interviews. Grading is based on the number of times that they are recommended and referred to in relation to the other stakeholders.	

	0. = 0 times. 1. = 1-2 times. 2. = 3-5 times. 3. = 6 or more times. Prime Minister's Office: 0 times Ministry of Culture: 0 times Ministry of Defence: 2 times Ministry of Education and Research: 0 times Ministry of Employment: 0 times Ministry of Enterprise and Innovation: 3 times Ministry of the Environment and Energy: 6 times Ministry of Finance: 1 times Ministry for Foreign Affairs: 0 times Ministry of Health and Social Affairs: 1 times Ministry of Justice: 2 times
Climate adaptation founding from budget 2015 (Regeringen 2014, 103 and Regeringen (2) 2014)	How big part of the overall budget line 'climate adaptation' that the ministries are responsible to allocate. Prime Minister's Office: 0:- Ministry of Culture: 0:- Ministry of Defence: 0:- Ministry of Education and Research: 0:- Ministry of Employment: 0:- Ministry of Enterprise and Innovation: 0:- Ministry of the Environment and Energy: 165 000 000:- Ministry of Finance: 0:- Ministry for Foreign Affairs: 0:- Ministry of Health and Social Affairs: 0:- Ministry of Justice: 0:-

Interest	Grading 0-3 based on the information below
They, according to them selves, have a responsibility	I have in all contacts with individuals representing the different stakeholders asked questions regarding this issue and based my assessment from this. Contacts have been done through e-mail and telephone. Grading is based on the ministries own descriptions of their activities and responsibilities regarding climate adaptation.

<table>
<tr><td></td><td>0. No active work or responsibility taken 1. They acknowledge that it’s something they need to consider. 2. Some engagement and work. 3. Taking big responsibility and actively work.</td></tr>
<tr><td>Actively discuss climate adaptation on the governmental homepage (Regeringskansliet (2) n.d.)</td><td>Based on news regarding statements, press releases and projects published by the ministries on the governmental homepage.
0. = 0 articles. 1. = 1-3 articles. 2. = 4-7 articles. 3. = 7 or more articles.
<table>
<tr><td>Prime Minister's Office</td><td>1 article</td></tr>
<tr><td>Ministry of Culture</td><td>0 articles</td></tr>
<tr><td>Ministry of Defence</td><td>0 articles</td></tr>
<tr><td>Ministry of Education and Research</td><td>0 articles</td></tr>
<tr><td>Ministry of Employment</td><td>0 articles</td></tr>
<tr><td>Ministry of Enterprise and Innovation</td><td>0 articles</td></tr>
<tr><td>Ministry of the Environment and Energy</td><td>10 articles</td></tr>
<tr><td>Ministry of Finance</td><td>1 article</td></tr>
<tr><td>Ministry for Foreign Affairs</td><td>5 articles</td></tr>
<tr><td>Ministry of Health and Social Affairs</td><td>0 articles</td></tr>
<tr><td>Ministry of Justice</td><td>1 article</td></tr>
</table></td></tr>
<tr><td>Dedicated founds to their agencies 2015 (Regeringen (2) 2014)</td><td>Distributed and dedicated founds for climate adaptation work to the agencies the different ministries govern. Grading is based the amount of funds they receive in relation to each other. 0. = 0:- 1. = 1 - 18 000 000:-.
2. = 18 000 001:- – 36 000 000:- 3. = 36 000 001:- or more.
<table>
<tr><td>Prime Minister's Office</td><td>0:-</td></tr>
<tr><td>Ministry of Culture</td><td>0:-</td></tr>
<tr><td>Ministry of Defence</td><td>0:-</td></tr>
<tr><td>Ministry of Education and Research</td><td>0:-</td></tr>
<tr><td>Ministry of Employment</td><td>0:-</td></tr>
<tr><td>Ministry of Enterprise and Innovation</td><td>53 000 000:-</td></tr>
<tr><td>Ministry of the Environment and Energy</td><td>27 000 000:-</td></tr>
<tr><td>Ministry of Finance</td><td>35 000 000:-</td></tr>
</table></td></tr>
</table>

Ministry for Foreign Affairs	0:-
Ministry of Health and Social Affairs	0:-
Ministry of Justice	0:-

8.2 Appendix 2: Interview guide

Intervjuguide

Skapa kontakt, förtroende och orientering

- Informera om upplägget
- Berätta vad du är intresserad av (informantens upplevelser, tankar, känslor, etc.)
- Inget rätt eller fel
- Inspelning pågår och hur insamlad data behandlas
- Konfidentialitet
- Frågor eller oklarheter?
    - ***Säg namn, roll och kommun.***

Frågor:

1. Berätta om din bakgrund och vad du arbetar med.
2. Hur arbetar ni med klimatanpassning?
    a. Luska i hur de ser på klimatanpassning, teknisk, kultur,
3. Vad är de största utmaningarna i ert klimatarbete?
4. Vilka är nyckelaktörerna?
5. Vilka samarbetar ni med mest?
    a. Myndigheter
    b. Region
    c. Kommuner
6. Har ni några samarbeten utanför de traditionella strukturerna? (Så som Säffle-Åmål)
    a. Hur kommer det sig? (Personliga relationer, andra samarbeten)
4. Vilka nivåer är samarbetet viktigast på?
5. Hur fungerar det på nationell nivå?
6. Vems är ansvaret för klimatanpassningsarbete?
    a. Hur anser du ansvarsfördelningen bör se ut?
    b. Vilka delar är viktigast?
7. Hur hanteras klimatproblem som går över lokala, regionala gränser?
    a. Lokala
    b. Regionala
8. Hur viktig är politiken?
    a. Lokalt

    b. Regionalt
    c. Nationellt
9. Hur fungerar politiken?
    a. Lokalt
    b. Regionalt
    c. Nationellt
10. Hur påverkar politiken arbetet?
    a. Lokalt
    b. Regionalt
    c. Nationellt
11. Vad är politikens roll?
12. Finns det målkonflikter i klimatanpassningsarbetet?
    a. Hur hanteras dessa?
        i. Lokalt
        ii. Regionalt
        iii. Nationellt
    b. Hur borde det hanteras?
13. Om du fick bestämma hur klimatanpassningsarbetet skulle samordnas, hur skulle det se ut då?
    a. Varför?
    b. Vad vill du helst undvika?
    c.

Fråga endast till kommuner:

1. Har ni samarbeten på olika nivåer gällande klimatarbete med andra kommuner. Ex avlopp, stranderosion, vattenflöden. Hur håller ni ihop det? Hur lyckas andra?
2. Avslutande: Hur ser ni att kommuner och länsstyrelser arbetar över gränser för att motverka målkonflikter, ex hur era anpassningsåtgärder påverkar andra?

Fråga endast till politikerna:

1. Hur samarbetar ni över nivåer rent politiskt?

Fråga till endast myndigheter:

1. Hur samarbetar ni mellan myndigheter?
2. Vad styr samarbetena?

3. Initieras klimatarbete av er i kommuner utan efterfrågan?
4. Hur påverkar politiken samarbetet?
    a. Lokalt
    b. Regionalt
    c. Nationellt

Avrundning av intervjun

- Har du något mer att tillägga?
- Gör eventuellt en kort sammanfattning och fråga informanten om du uppfattat henne/honom rätt - möjlighet till rättelse/komplettering
- Berätta när jag stänger av ljudupptagningen

  Off the record eller on? Ok att använda detta?
- Hur data behandlas (studiens syfte, redovisning,…)
- Eventuell återföring till informanterna

Under hela tiden ska jag be dem utveckla och laborera. Jag ska särskilt leta efter de koncept jag anser relevanta och försöka få de att utveckla.

8.3 Appendix 3: Original quotes

5.1 JURISDICTIONAL SCALE

1. För dom pengarna finns inte helt enkelt. Det handlar ju om jättemycket pengar och Karlstad kanske en liten rimlig chans att klara sig eftersom vi är en relativt stor kommun med bra ekonomi och så men för många andra kommuner är det ju helt hopplöst för dom pengarna finns inte. (3. 2015)
2. Ska jag vara helt uppriktig så är det väl lite av en het potatis för tillfället i vems knä det här ska landa….jag tror alla som har varit med i diskussionen inom regeringskansliet förstår att det här är en fråga som kommer att kräva en hel del resurser och då vill man inte att det landar i ens eget knä. I alla fall inte utan att man är försäkrad om en ordentlig förstärkning inom det här frågorna. Så tills dess att vi har tydliggjort vem som har inte har ansvar så är det svårt att etablera de dialoger med olika aktörer i samhället som behöver komma till stånd. (10. 2015)
3. Just en sådan debattartikel, då har man försökt inne vägen och misslyckats och försöker då i någon slags offentlighet skapa opinion. (2. 2015)
4. …det är ju inte givet så att man ska hitta nya pengar till dem. …Det sker ju förändringar av olika slag i samhället hela tiden och myndigheterna anpassar sin verksamhet utefter de här förändringarna. … Det gäller nog primärt att jobba in det i det arbete som myndigheterna ändå bedriver. … jag tror inte att vi kan skicka med en påse pengar till alla myndigheter som överhuvudtaget ska behöva jobba med klimatanpassning frågor. Dom pengarna finns inte riktigt. (10. 2015)
5. Det är jätteviktigt att respektive myndighet får medel att jobba med frågan. Att man får dedikerade medel för väldigt få kommer lägga ner tillräckligt med resurser av deras så att säga fria pengar om det är någon som ens har överhuvudtaget fria pengar för att prioritera den här frågan. (7. 2015)
6. Det är inte sällan det är folk som inte direkt har någon expertkunskap inom området utan ute av andra anledningar ser det här som en problematisk fråga. …då kan finnas motstånd då hos organisationer att jobba med en fråga som de tycker känns diffus om de inte får medel till det. (7. 2015)
7. …sedan är det en skiljelinje mellan lokal politiker å ena sidan och rikspolitiker på den andra, och det är väldigt svårt att få fram sin syn känns det som. Dom tycker säkert samma sak fast tvärtom. (2. 2015)

8. Jo, det en utmaning bara inom den egna koncernen. Nu är det inte alla som har beredskapssamordnare eller klimatanpassningssamordnare eller något sånt inom alla verksamheter. (4. 2015)
9. Göteborg har sina nivåer. Kungälv har sina nivåer Ale har lägre nivåer än Göteborg. (1. 2015)
10. Idag så har beredskapssamordnarna träffar och då pratar man beredskap, sedan har klimatanpassningssamordnarna träffar och då pratar man klimatanpassning samtidigt har miljösamordnarna träffar och pratar mitigation… Där är det idag tydliga stuprör, och det gäller inte bara oss utan det gäller även regionsnivå och i regeringsnivå. (4. 2015)
11. …det funkar ju bara i nya områden i exploateringsområden där man kan höja hela marken t ex eller göra sådana typer av åtgärder, anpassa om det går men är inne i stan. Handboken bortser från det helt. Vi kan omöjligen följa de riktlinjerna. (4. 2015)

5.2 KNOWLEDGE SCALE

12. …många myndigheter i vårat nätverk kring klimatanpassningsportalen har inte fått dedikerade klimatanpassningspengar som till exempel Boverket som inte fått det på ett antal år, samman med Trafikverket. (7. 2015)
13. Det är inte för att vi inte tycker det är viktigt och det är inte för att vi inte vill ha fram det här men syftet med portalen är att respektive expertmyndighet ska stå för sitt expertkunnande… (7. 2015)
14. …vi är beroende av att de själva tar fram det. För sina pengar. …Men det är klart att vi försöker belysa vikten av att material kommer fram inom vissa områden som vi identifierar som viktiga men vi är fortfarande väldigt beroende av att respektive myndighet själva tar fram det här materialet. (7. 2015)
15. Ser vi på kommunnivå så är det inte alls alla kommuner som har resurser att överhuvudtaget röra sig med den typen av kunskapsbaserade underlag utan man bedriver sitt arbete kanske på ett annat sätt. Så det är en kunskapsfråga och en resursfråga i mångt och mycket. (10. 2015)
16. När man träffades i de här sammanhangen så märkte man ju också att kunskapsnivån är väldigt skiftande. Vi har ju i det sammanhanget väldigt god kunskap och bra kompetens kring de här frågorna medan många andra fortfarande är inne på att om vi bara bygger den där tunneln till Västerhavet då är vi hemma. (3. 2015)
17. När man pratar om klimatfrågor så är alla medvetna om klimatfrågan men man oftast inte samma kunskap om vad klimatanpassning är och vad det handlar om och att de hör ju ihop och måste komplettera varandra. (5. 2015)

18. Jag skulle vilja säga att det handlar mest egentligen om höjda vattennivåer eller vattenflöden att det är där fokus har legat. (3. 2015)
19. …om vi ser i vårt arbete så är det just mycket fokus på samhällsplanering frågor och att beakta klimataspekterna utifrån just översvämnings riskerna. Men det finns absolut en sådan ambition att kunna fånga in andra delar av klimatförändringarna. (6. 2015)
20. …mycket togs upp men vattten är väl en sån sak som alltid diskuteras. Vatten, översvämmingar eller mer dagvattenhantering, det är mer uppenbart kommunerna som har ansvar för den (6. 2015)
21. …som politiker har man nog svårt att se ett sånt här förlopp. Och svårt att riktigt hinna sätta sig in ordentligt i frågorna. Ju mindre kommun det är ju bredare blir ofta upptagen för politiker också. Och sen är det ju det akuta som knackar på dörren också. …frågor som ligger väldigt nära och påverkar folk i allmänhet. Dessa frågor ligger ju ganska långt bort. (1. 2015)
22. …jag kan känna att det är kommunerna som driver det här arbetet vi ligger långt före och det är väldigt jobbigt för kommuner… (4. 2015)
23. Det är väl lite målkonflikter här och var i att bygga nära vatten kontra vara säker mot översvämningar och hur vi hanterar dom… (5. 2015)
24. …vi vill gärna bygga ner i vattnet och det är gentligen inte särskilt smart får man väl säga… Så att det är en målkonflikt mellan intressen och pengar. (2. 2015)
25. Hammarö som stad livnär sig ju nästan enbart på att folk kan bo nära strand och har båt och så vill man nog att stränderna inte ska växa igen... (3. 2015)

5.3 NETWORK SCALE

26. Det är ingen som har sagt åt dem att ni måste jobba med de här grupperna utan det har själva identifierat att det kan få ett stort mervärde av att någon eller några av länen kan samarbeta med en viss fråga som alla län sedan kan ta nytta av den kunskap det har kommit fram till. (7. 2015)
27. Jag tror att många fick hjälp av den här, det samarbetet som vi hade kring Vänern … och fick många kommuner med på banan. (3. 2015)
28. …det är otroligt viktigt att få ha nätverken för att kunna få stöd och hjälp och för att man inte ska behöva uppfinna hjulet två gånger, när det finns någon annan som redan gjort det. För just i det här start skedet när man börjar att jobba med nya frågor så är det ju jättebra att ha sånt stöd. (4. 2015)
29. Vi har egentligen ingen delaktighet i sådana mer informella nätverk... (1. 2015)

30. Jag tror inte man ska skapa för många formella nätverk. Det kan nog bli väldigt administrativt jobbigt att det här ska finnas också. Nu föreslår man ganska många nätverk och samarbeten i kontrollstation 20.15 och det kan finnas en risk i det, att det blir för organiserat och att det inte skapar de här informella nätverken. (8. 2015)
31. …det är mer egentligen det enda samarbetet där vi pratar om de här frågorna så med andra politiker i närområdet. (3. 2015)
32. Alltså, någonstans så sker ju väldigt mycket av det faktiskt faktiska fotarbetet ju på tjänstemannanivå. Om de inte har kontakt med varandra så blir det väldigt väldigt svårt att få någonting bra tillsammans politiskt. Om man har helt olika underlag, olika uppbyggnad och motsatsen, det finns en bra samverkan när man har väl sammanlänkade strategier så blir det ju mindre problematiskt om man inte kommer överens rent politiskt. Så den viktigaste nivån skulle jag vilja säga är tjänstemannasidan. (2. 2015)
33. …någon form av mer organiserat utbyte mellan tjänstemän och förtroendevalda det vore värdefullt. Då det är tunga och svåra frågor. Det för att öka förståelsen från båda håll och kunna tillsammans bygga strukturer så vi kan resonera fram hur vi tillsammans driver detta smartast. (1. 2015)

5.4 MANAGEMENT SCALE

34. Det skulle behövas bättre samordning av det på departements håll så att de regleringsbrev som går ut på de pengar som sätts av inte har kontraproduktiva biprodukter. Så att inte det visar sig att vi får pengar för det här och sedan är det en annan aktörer myndighet som att har fått pengar för ett annat projekt och dessa två projekt går i klinch med varandra… (7. 2015)
35. …där i är pengarna sedan öronmärkta var av så och så många miljoner ska gå till havskartering och si och så många miljoner ska gå till skyfall. Därmed så krymper budgeten ganska snabbt och blir en ganska slimmad budget ändå till vad vi själva har frihet att ta fram. (7. 2015)
36. …överlag så är det bättre att ha en annan styrning för myndigheternas verksamhet en och styra anslagen i detalj. Det bör man ju från hålla sig. (10. 2015)
37. …vi är ju väldigt styrda av de regeringsuppdrag och de instruktionerna vi har.
38. … just nu är det kommunen som ansvarar för det som påverkar deras kommun… (8. 2015)
39. …jag tycker att det här uppenbart verkar vara en fråga för länsstyrelsen och två länsstyrelser i det här fallet. (9. 2015)

40. …om vi förstår eller vet om att många av våra verksamheter invånare eller så hotas så är det ju klart att vi måste prioritera det. Men för att ska det ska hamna där så tror jag att det måste vara, väldigt konkret. (3. 2015)
41. …vi har ju idag redan konflikter mellan kommuner när man vill släppa vatten från Vänern däruppe så att säga samtidigt som vi inte vill ha det vattnet och det finns massa diskussioner om detta. … Sedan har vi ju också en lite infekterad diskussion med vår bro här i Göteborg som några av kommunerna uppströms tycker är väldigt dum. Det minskar lite möjligheterna och utrymmet att prata bra. (2. 2015)
42. Jag kan tänka mig att det finns en viss fördröjning i aktivitet. Dels för att det är så stort projekt och det är så mycket pengar det handlar om och olika kommuner har olika mycket att vinna eller förlora på olika åtgärder samt vem ska finansiera… (5. 2015)
43. …de har ju olika samarbeten exempelvis som räddningstjänsterna kring Karlstad regionen det är några kommuner har gemensam. Andra kommuner i länet kanske har gemensamt kring vattenfrågor… (4. 2015)
44. …det finns en styrka och en svaghet på en och samma gång kan man säga då det är ett väldigt konsensusinriktat arbete eftersom man vet så väl om att man har olika majoriteter och man vet om att majoriteterna kan förändras, antingen i den en kommun eller i flera olika kommuner, så att därför är måna om att om man kommer överens så är man överens och så då jobbar vi med dom sakerna vi är överens om och de andra frågorna får bida sin tid. Det är en styrka på ett plan samtidigt så blir det en svaghet för det är många saker vi inte kommer överens om som vi inte riktigt då kan samarbeta. Det begränsar ju då vad vi jobbar med. (2. 2015)
45. Jag har försökt få GR att ta tag i frågan för den här frågan men de vägrar. Det tror jag beror på att de förstår att alla deras resurser skulle behöva läggas på klimatanpassning. (1. 2015)
46. Jag arbetat mycket med mindre kommuner och ibland så kommer man till ett lägre man säger vilken lag ska vi bryta mot idag? (2. 2015)
47. …så då måste ju kommunen kunna ta hand om det här och omsätta det på något sätt så för mig blir det här som att det är ytterligare en del som gör att det blir svårare och svårare för de minsta kommunerna att klara sitt uppdrag. Jag vet till exempel att mindre kommuner idag samverkar allt mer och har i praktiken gått ihop utan att i formell mening göra så, till exempel mycket kommunal förbundsarbeten och så. (2. 2015)
48. Det är kanske jättebra, och kanske nödvändigt. Men lite av ett demokratiskt problem då sakerna flyttas längre bort från invånarna. (2. 2015)
49. Jag har även varit på VG regionen, men de sitter i den rävsaxen att deras arbete måste gynna alla deras medlemskommuner. Och inte bara några enskilda, därför driver inte dom den här

frågan. Det finns inte heller några nationella direktiv för regionen att driva den här frågan. (1. 2015)

50. …det har varit väldigt oklart förutom översvämningsprogrammet... Därför har jag drivit frågan om att vi även behöver ta fram en klimatanpassningsplan för att ta det stora hela. Det har tagit en viss tid men nu är i våras har det tagit beslut på att det ska köras igång ett arbete. (4. 2015)
51. …men ofta så beror det på eldsjälar som har lyckats driva igenom det. (7. 2015)
52. Det är nog mest tjänstemans
53. drivet. Och så supporter de förtroendevalda det arbetet. (1. 2015)
54. det gör ju sårbart för helst ska vi finnas rutiner och liknande så att det inte är kopplat till personer hur det är med arbetet. (5. 2015)
55. Så det krävs mer politik kring klimatanpassning annars kommer vi inte lyckas. (10. 2015)
56. Politiken är väldigt viktig för det handlar i slutändan om hur man väljer att prioritera resurser. Så oavsett om du är på nationell, kanske inte i lika stor utsträckning regional men kommunal nivå så beslutar man ju om en budget. Man styr ju också verksamheten, alltså i hur stor utsträckning ska man bygga upp kunskaper om klimatets förändringar och vad det kan påverka i kommunerna. (9. 2015)
57. Jag upplever i Göteborg att vi har ett stort stöd faktiskt. Från de förtroendevalda. Vilket är en förutsättning för att kunna jobba med de här frågorna på det sätt vi gör. (1. 2015)

5.5 TEMPORAL SCALE

58. Man vinner kanske inga val på många av de här sakerna och det är ju hög konkurrens med skola vård av andra områden. (5. 2015)
59. Om jag ska vara helt ärlig. Där är det alltid lättare att säga det här med det roliga, det är ju alltid lättare att fatta beslut om roliga saker. … Men en sådan satsning som att vi ska genomföra vattenrelaterad klimatanpassning för 15.000.000 kr, nej inte så sexigt. Dessutom är en sådan fråga svår att förstå och är pedagogiskt svår att förklara för berörda och svårt att förstå till och med kanske för de politiker som är längre ifrån... Det här är ju, precis som resten av agendan om man tittar på helheten en ganska lågt prioriterad fråga. (3. 2015)
60. …man vill gärna bli omvald det som är och det som styr är då vilka frågor som ligger folk närmast om hjärtat och då är det mänskliga minnet otroligt kort så då är det som ligger närmst om hjärtat ofta det som ligger nära familjen i den egna sfären främst … Känner man sig inte då direkt utsatt för klimatet eller klimatförändringarna då är skolfrågan viktig eller vården viktigare. (7. 2015)

61. …ett förslag som man ser på riksnivå att det här måste vi göra kan man se helt annorlunda på i kommunerna och det finns uppe uppenbarligen inga processer för att jobba med det. (2. 2015)
62. …en viktig aspekt av vad ska vi ha för samhälle eller hur bygger vi bra samhälle mer konkret, och hur förbereder vi vårt samhälle för förändrade förutsättningar. Politikerna har ju en roll att förvalta och ta om hand vårt samhälle… (9. 2015)
63. Det är jätte tråkigt för att det bygger på att vi har ett samhälle framöver och då behöver vi ta hand om det redan nu. Det ger signaler då vidare till den lokala nivån att man inte tar de frågorna på nationell nivå och det är kanske svårt då att få ett prioriterat på lokal nivå. (5. 2015)

5.6 SPATIAL SCALE

64. Det är väl en av de klimat anpassningsområden som vi jobbar mest intensivt med för tillfället. (10. 2015)
65. Vilket innebär att kommunerna har ett väldigt stort ansvar. Det finns ju då områden såsom vännen och Göta älv som involverar flera områden som påverkar flera kommuner och småkommuner har stora problem, och det är komplicerat helt enkelt. (8. 2015)

5.7 INSTITUTIONAL SCALE

66. Traditionellt sätt har även varit så att mycket av miljöpolitiken har kommit uppifrån. Alla miljömål och allting ska ju sippra ner uppifrån så jag vet inte om vi är vana det. (3. 2015)
67. …i hög grad så kommer den här frågan behöver integreras i redan existerande strukturer. Mycket hos dem som arbetar med planeringsfrågor i samhället…. (10. 2015)
68. …det finns ju en uppenbar fördel han är ju väl förankrad i hela planförfarandet och strategier jag vad vi gör med detaljplan, översiktsplanplanering och sådant. Så det är ju en klar fördel att han är väl förankrad där. Sedan har vi ju den nackdelen att han är väldigt långt från allt annat klimatarbete som sker. (2. 2015)
69. Jag tror det behöver knytas ihop bättre och det tror jag också hade varit en styrka om frågan hade legat på kommunledningskontoret eller liknande de för då kan man på ett helt annat sätt peka med hela handen. (1. 2015)
70. Som sagt så är det väldigt svårt att säga att alla verksamheter ska göra det här själva om de inte ens kanske har kunskapen om, eller vet vad som ska hända. Så därför bör det ju ändå finnas ett strategiskt tänkande på hur man ska göra det här… Så rent strategiskt kanske jag skulle sitta på något annat ställe. (4. 2015)

71. Det kan också leda till att de som inte är med i de strukturerna inte känner något ansvar i frågan. (10. 2015)
72. Vi kan jämföra med jämställdhetsfrågan. Det är väl på många sätt kanske en större fråga men det är ju en fråga som vi aktivt försöker integrera i myndighets Sverige just för att undvika att det är liksom bara vissa människor som engagerar sig i det. (10. 2015)