AALBORG UNIVERSITY
STUDENT REPORT

**Study Board of Planning, Geography and Surveying**
CREATE Aalborg University
Rendsburggade 14
9000 Aalborg

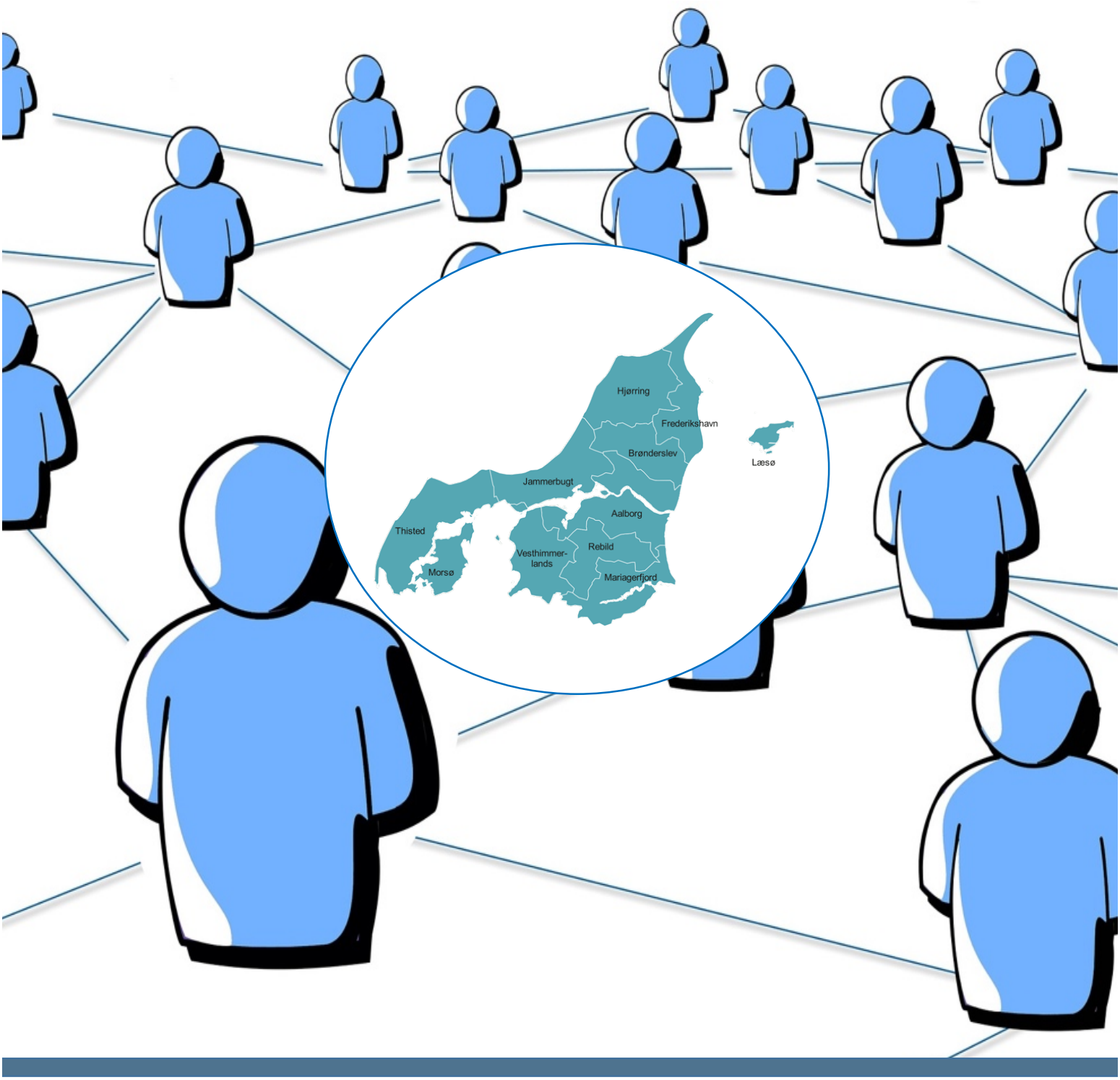
**Title:** *Rethinking Municipal Climate Action: Increasing Cross-sectorial Coordination through Network Governance*
**Semester:** 4th
**Semester theme:** *Master Thesis*
**Project period:** 01.02.2020 - 04.06.2020
**ECTS: 30**

Pages: 49
Annexes: 2 documents

Steffen Foldager Jensen

**Synopsis:** Municipalities are increasingly experiencing an inability to coordinate a holistic climate effort, in which sectors are being coupled in order to achieve synergetic effects. This thesis examines the reasons for the shortage of coordination and situates the challenges within the theoretical tradition of transitioning from *government* to *governance*. It is concluded that coordination of cross-sectorial climate activities is hampered by the hierarchical structure of municipalities and vertical interaction flows. As a response to this, an alternative structural model for organising climate action in loosely-coupled governance networks is proposed.

**By signing this document, I take full responsibility for the content of the project.**




RETHINKING MUNICIPAL CLIMATE ACTION:

# INCREASING CROSS-SECTORIAL COORDINATION THROUGH NETWORK GOVERNANCE

## Abstract

As municipalities are increasingly expected to raise the level of ambition of their climate effort, it is vital that climate action pervades the entire organisation across departments and sectors. This way, a holistic climate effort is organised, in which synergetic climate potentials are explored. However, municipalities experience a lacking ability to coordinate a plurality of climate projects, which makes it difficult to assess the degree, to which the effort coheres with overall policy objectives. Using this challenge as a starting point, this thesis examines the reasons behind the shortage of coordination, on the ground of which suggestions are proposed to improve the conditions for coordinating a cross-sectorial climate effort. The empirical object is limited to five municipalities in Northern Jutland, in which a series of interviews with mayors and planners constructs a methodological foundation and shapes a theoretical framework. By positioning the project within the tradition of transitioning from *government* to *governance* and actor-centred institutionalism, focus is directed at the structural approach to steering. It is concluded that a transition from vertical interaction flows in hierarchical organisational structures towards horizontal collaborations in loosely-coupled governance networks would add flexibility to municipalities and enable them to coordinate a cross-sectorial climate effort in an ever-changing society.

## Dansk resume

Med forventningen om et stedse stigende ambitionsniveau for den kommunale klimaindsats, er det afgørende, at klimahandling forankres bredt i organisationen på tværs af forvaltninger og sektorer. På denne måde skabes en helhedsorienteret indsats, der udforsker potentialerne for synergiske klimagevinster. Kommuner oplever dog, at det stigende antal sideløbende klimaprojekter gør det vanskeligt at koordinere indsatsen i forhold til overordnede målsætninger og dermed vurdere, hvorvidt kommunerne er på rette spor. Med afsæt i denne udfordring søger dette specialeprojekt at afdække årsagerne til koordineringsunderskuddet og på baggrund heraf fremlægge løsningsforslag til at forbedre betingelserne for at koordinere en holistisk klimaindsats med et tværsektorielt fokus. Projektets empiriske genstandsfelt begrænser sig til fem nordjyske kommuner, hvori interviews med aktører på borgmester- og ledelsesniveau såvel som planlægningsniveau udgør projektets metodiske grundlag og former dets teoretiske rammer. Ved at placere projektet inden for traditionen, der beskæftiger sig med skiftet fra *government* til *governance* og den aktørcentrerede institutionalisme, rettes der fokus mod de strukturelle styringsmekanismer, som klimaplanlægningen underlægges. Det konkluderes, at overgangen fra vertikale interaktionsflows i hierarkiske organisationsstrukturer til større grader af horisontale partnerskaber i løst-koblede styringsnetværk vil tilføre samfundsstyringen den fornødne fleksibilitet, der kræves for at koordinere tværsektorielle klimaindsatser i en verden under konstant forandring.

# Table of content

## Preface

My passion for the role of municipalities and the attempts of such local governments to organise a cross-sectorial climate effort was evoked by an internship at CONCITO – The Green Think Tank of Denmark in the fall of 2019. Being involved in the DK2020-project, in which 20 Danish municipalities strive to develop climate action plans that are compatible with the ambitions of the Paris Agreement, I became aware of the complex landscape of regulation, policy-making and interests, within which practices of climate action planning are situated. Due to the complexity of climate change, municipalities were enthusiastic about engaging in a climate network and a platform for knowledge-sharing, onto which local planning challenges could be projected. Municipalities simply recognised that they needed each other in order to respond to the wickedness of climate change.

I started to wonder, whether such networking perspectives and a similar degree of interdependency between climate actors were reflected in processes of local climate action planning in order to form an integrated effort. As I conducted preliminary research for this thesis, I contacted a group of municipalities. I asked for an employee, who had an overview of the climate effort and was able to reflect upon planning practices in general. To my surprise, it was difficult for municipalities to understand my inquiry. Did I refer to an employee within the field of waste management or public buildings? Perhaps someone who was familiar with climate adaption? Gradually, I began to depict current practices of municipal climate action planning as comprised by a range of clearly demarcated systems, and I realised that my inquiry touched upon a much more fundamental challenge, than I first imagined. This evoked a curiosity, on the basis of which this project is developed.

I wish to thank all interviewees for setting aside time in a turbulent period of time to provide insight into municipal visions and practices on climate action planning. Additionally, I would like to thank my supervisor, Professor Arne Remmen, for strengthening my ability to navigate within a municipal planning context and encouraging me to explore alternative paths.

# 1. Problem analysis

This chapter outlines to problem, upon which this inquiry is built. Initially, the concept of municipal climate action planning is concretised by delineating the broader political frames and the local context, within which climate planning practices are situated. Subsequently, focus is directed at the formation of an integrated climate effort, and the notion of sector coupling is scrutinised through a literature review. At last, a document analysis of a selection of plans and strategies from a group of five municipalities serves the purpose of establishing an empirical foundation, on the basis of which the ability to couple sectors and create an integrated effort is assessed.

## 1.1 Political frames for climate action planning

Climate action in the shape of an effort that integrates mitigation measures and adaptation initiatives remains a relatively new and cross-sectoral discipline that builds upon a series of international agreements and national plans (Wejs et. al, 2017). These will briefly be outlined in this section.

On an international scale *The United Nations Framework Convention on Climate Change* was presented in 1992 (United Nations, 1992A). Revolving around the need for a collaborative effort across its parties in order for greenhouse gas emissions to be stabilised, the framework established a foundation on the basis of which climate action was interpreted on a national scale. Additionally, in 1992 the UN Conference on Environment and Development in Rio de Janeiro led to the formulation of *Agenda 21*, in which the role of mayoral leadership was explicitly introduced as a tool for accelerating a green transition. In paragraph 23.2 it is stated:

*"One of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision-making. Furthermore, in the more specific context of environment and development, the need for new forms of participation has emerged. This includes the need of individuals, groups and organizations to participate in environmental impact assessment procedures and to know about and participate in decisions, particularly those which potentially affect the communities in which they live and work."* (United Nations, 1992B)

Five years later, in 1997, the Kyoto Protocol added concrete substance to international climate agenda by shaping a *European Union Greenhouse Gas Emission Trading* Scheme and presenting a reduction target on 5,2% by 2008-2012 compared to 1990-levels. The most recent corner stone within the landscape of international climate politics, *The Paris Agreement*, was formulated in 2015 with the overall ambition of limiting rising temperature to 2 degrees, while aiming towards a 1,5 degree rise in relation to 1990 levels (United Nations, 2015). In spite of these agreements being essential for a global effort on climate change, the notion of climate agency is often assigned to state parties, and thus the relation to municipalities as sub-national agents of climate action remains indirect.

The role of municipalities and the potential of ambitious climate planning became a central theme to the COP15 meeting in Copenhagen in 2009, as it was introduced as a voluntary option for municipalities. Even though municipalities had been conducting energy planning and considered energy-efficiency for several decades, impetus was given to the importance of decentralising

climate action. Hitherto, discussions of climate action within a Danish context were primarily reduced to a matter of reducing GHG-emissions, particularly through a transition towards renewable energy with the overall ambition of becoming fossil-free by 2050. Even though a national strategy on climate adaption was presented in 2008, ambitious efforts remained absent due to a lack of legal requirements (Wejs et. al, 2017). However, with the supranational directive of *The Flood Directive*, the Danish *Coastal Protection Act* and the requirement for municipalities to develop climate adaption plans by 2013 adding substance to the preventing effort of increasing resilience by adapting to climate change, a second element to the climate planning agenda was added.

Most recently a climate law was formulated, in which Denmark commits to the process of reducing national greenhouse gas emissions by 70% by 2030 compared to 1990 levels (Danish Ministry of Climate, Energy and Utilities, 2019A). Aiding to this ambition, an Integrated National Energy and Climate Plan was formulated in 2019. By focusing on five dimensions, i.e. decarbonisation, energy efficiency, energy security, internal energy market and research, national state actors have delineated a series of policy objectives (Danish Ministry of Climate, Energy and Utilities, 2019B). Now, the government faces the upcoming task of outlining a roadmap for achieving such target. In relation to this, the question remains as to what degree and in which role municipalities as sub-national governments are expected to deliver on the climate agenda.

## 1.2 Climate planning in a municipal context

In spite of the emergence of regulative perspectives that directly addresses the agency of municipalities, the notion of climate action planning has not solidified as a well-defined discipline. Thus, ranging from the sectors of energy and transport to climate adaptation, the scope of municipal climate action plans differs to a great extent. (Wejs, et. al, 2017). In spite of such differences, climate action plans all build upon the same set of pillars in terms of *mitigation* measures and *adaptation* initiatives as well as potential synergetic effects between such efforts. The overall purpose of mitigation measures relates to the reduction of greenhouse-gas emissions through an integrated climate planning process that holistically addresses the production and use of heat and energy as well as agriculture and transport. In line with this ambition, municipal planning practices on mitigation measures serve the purpose of prioritising and organising activities that cohere with long-term strategies and reduction pathways. On the other hand, municipalities are already experiencing the consequences of a changing climate, and forecasts indicate that rising sea levels and heavy amounts of rain will occur more frequently. Therefore, a key element of climate action planning also lies within the process of increasing the level of resilience towards climate change through climate adaptation initiatives. Nevertheless, with the development of climate action plans being covered by only little regulation, practices of climate action planning are perceived in various ways. (Wejs et. al, 2017)

In order to ensure that climate action planning is approached holistically and integrates mitigation measures and adaptation efforts throughout the municipal organisation, Wejs et. al. (2017) present a series of phases and principles for shaping an integrated climate action planning process. Inspired by this, figure 1 provides a general model of climate action planning.

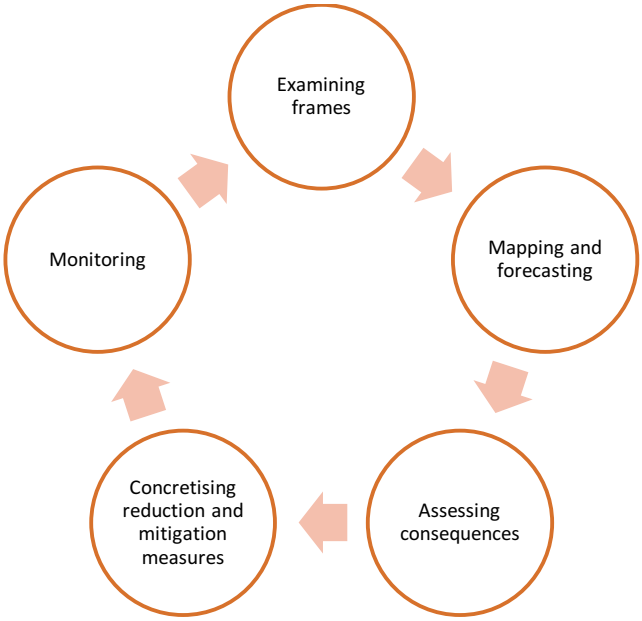



*Figure 1: Phases of climate action planning. Inspired by Wejs et. al. (2017).*

The first phase of climate action planning relates to the process of assessing the local as well as the national context, in which the planning effort is situated, in terms of regulatory requirements and political ambitions. Adding to this, central tasks within such initial phase resides within allocating resources, identifying internal as well as external stakeholders, and scoping an initial focus for further planning practices. The second phase revolves around practices of mapping the development of greenhouse-gas emissions and climate changes historically as well as through the establishment of scenarios that take population growth and technological development into consideration. Third, potential mitigation measures and adaptation initiatives are identified, on the basis of which an assessment of consequences of the climate action plans is conducted. The fourth phase relates to processes of determining long-term strategies and concretising initiatives that support the formulated visions. Subsequently, a roadmap is developed, in which responsibility and ownership of initiatives are delegated. Building upon this, the fifth phase revolves around monitoring and evaluation practices as well as formulating strategies for sharing the results. (Wejs et. al, 2017)

As a means of establishing a foundation, upon which practices of developing a climate action plan are understood, Wejs et. al (2017) introduce a series of principles. First, it is essential that the planning process builds upon *long-term visions* in order to secure continuity throughout the desired reduction pathways and accumulate resilience towards climate change. The second principle regards the importance of analyses being based on *scenarios* that take environmental as well as socio-economic matters into account. As climate action planning transcends sectors, the third principle describes to the necessity of prioritising *internal coordination*, and being closely related to this, the fourth principle introduces the importance of *external coordination* in order to invite companies and citizens to engage in the planning process and take *ownership* of reduction and adaptation activities, which is the fifth principle (Wejs et. al, 2017). By integrating such principles into climate planning phases as visualised in figure 1, a foundation for shaping an integrated climate action planning process has been established.

## 1.3 The potentials of municipal climate action

Sub-national governments in terms of municipalities and cities are widely perceived to hold great potential in the formation of new policy arrangements on climate change (Corfee-Morlot et. al, 2009; Bäckstrand et. al, 2017). Corfee-Morlot et. al (2009) take point of departure in the fact that urban development is a major source to the problem of a changing climate and thus is an essential part of the solution in order for long-term strategies to emerge. Particularly the position of sub-national actors in relation to state actors is recognised as a vital part of such development process. *"As cities, corporations and NGOs have begun to develop their own rules and standards that others chose to follow, they are no longer merely complying with the directives of nation-states or intergovernmental treaties. They have become governors in their own right and established 'private spheres of authority' dislodged from the sovereign state"* (Bäckstrand et. al, 2017:568). For Corfee-Morlot et. al (2009), the potential of such polycentric division of power and authority resides within the increased ability to evoke local engagement and establish partnerships across actors. Thereby, local settings become arenas of experimentation. In addition to this, the advantage of municipal climate action relates to the ability to tailor long-term strategies and initiatives to the specific context of the local area and to geographical, economical and societal conditions.

In spite of a series of advantages for municipalities as agents of climate action, the novelty of an integrated effort that transcends sectors causes what Hajer (2003) refers to as an *institutional void* to emerge across planning actors, as the lack of legal requirements has caused municipal climate action to be decoupled from the accelerated focus on climate change during the last decade (Wejs et. al, 2017).

### 1.3.1 Sector coupling in an institutional void

As municipalities are to a great extent bureaucratic organisations, the process of responding to the complexity of climate change through ambitious planning efforts suffers under a clear sectorial division of labour (Wejs et. al, 2017). The complexity of the municipal planning aspect emerges from attempts to partially unify climate efforts, while maintaining individual priorities, which has caused several institutional arrangements on climate action within municipalities to arise. In particular, two closely interwoven tendencies take shape. From a traditional perspective, municipal climate planning is effectuated as a response to internationally and nationally constructed policies and agreements, whereas a more modernistic perspective embraces the autonomy of municipalities and therefore primarily relies on internal potentials as a driving force for climate action (Anguelovski & Carmin, 2011). Both are closely tied to the process of legitimising and democratising municipal climate action through ongoing coordination with internal and external stakeholders (Biesbroek et. al, 2009). However, as the climate agenda colonises multiple sectors in an organisation with vertical communication flows, the coordinative effort is hampered, and climate planning is being dealt with in single departments. Thereby, sector coupling becomes difficult and municipalities remain unable to respond to the complexity of climate change.

## 1.4 The notion of sector coupling

As climate action started to pervade multiple department within municipalities, the potential of coupling sectors in order for synergetic effects to arise began to appear in the landscape of scientific literature. This section first seeks to concretise the definition of sectors coupling as well

as principles for such integrative effort. Afterwards, a literature review is conducted with the purpose of examining state of the art examples of activities that can be subjected to such integrated effort.

### 1.4.1 Defining the concept of sector coupling

Even though the potential of sector coupling as means for increasing resource efficiency and reduce greenhouse gas emissions has been known for a while, the primary impetus to the concept was given by the adoption of the Paris Agreement (Robinius et. al, 2017). Such increased level of ambition requires new ways of perceiving climate action on a strategic as well as an operational level, and this is what sector coupling provides. According to Robinius et. al (2017) sector coupling revolves around the principle of using surplus in resources from one sector as an input for other sectors. BDEW (The German Association of Energy and Water) defines this correlation as:

*"[…] the energy engineering and energy economy of the connection of electricity, heat, mobility and industrial processes, as well as their infrastructures, with the aim of decarbonization, while simultaneously increasing the flexibility of energy use in the sectors of industry and commercial/trade, households and transport under the premises of profitability, sustainability and security of supply."* (BDEW, 2017:2, translated by Robinius et. al, 2017)

Based on this definition, energy as a resource is considered a vital component of sector coupling, which harmonises with the definition that is provided by the European Union, stating that the concept of sector coupling refers to *"[…] a strategy to provide greater flexibility to the energy system so that decarbonisation can be achieved in a more cost-effective way."* (Van Nuffel et. al, 2018:9) Thereby, sector coupling becomes an essential means in securing a transition from an energy system that is largely based on fossil fuels to one that is entirely built on renewable energy. The notion of sector coupling has undergone a shift from focusing extensively on end-use energy to a broader definition that also includes energy supply. Nevertheless, a set of barriers have proven it difficult to implement policy objectives of sector coupling. With the purpose of ensuring a cost-effective decarbonisation process, lack of competitiveness across technological solutions causes actors to refrain from substituting low-cost fossil fuels. In addition to this, lacking integratedness of the planning process as well as regulative barriers constitute a series of challenges that must be circumvented in order for sector coupling to fully pervade the energy system. (Van Nuffel et. al, 2018)

In spite of the aforementioned techno-economic and regulative barriers, innovative solutions on sector coupling emerges from the scientific landscape. Thus, the following section serves the purpose of constituting a state-of-the-art knowledge foundation, on the basis of which the notion of sector coupling will be understood.

### 1.4.2 Literature review on sector coupling

Scientific literature on the concept of sector coupling addresses two closely interrelated aspects of implementation in order to achieve synergetic effects. First, a group of scientists seeks to improve the performance of technological solutions and thus provides empirically based experiences on such attempts, whereas a second tendency among scholars lies within addressing the regulative and market barriers, by which implementation processes are affected. Both scientific scopes share

the view that the notion of "coupling" sectors is to a great extent carried by technological development. This way, conversion of power becomes possible. Olczak & Piebalgs (2018) argue that an essential technological solution relates to the broad term that is commonly referred to as Power-to-X, within which a series of sub-technologies such as Power-to-Gas, Power-to-Heat and Power-to-Liquid exist. Aiding to the process of ensuring a cost-effective decarbonisation process, these conversion technologies provide a wide range of ways to capitalise on the excess energy from renewable sources and thus reduce the demand for fossil fuels (Olczak & Piebalgs, 2018).

Maruf (2019) argues that successful implementation of sector coupling technologies depends on a complex interplay of variables. Spanning from infrastructural elements in terms of national grids and district heating networks to geographical conditions, the process of subjecting areas to sector coupling must be tailored to the specific local or regional context. Schaber et. al. (2013) exemplifies this by addressing the large share of wind energy in northern Germany, whereas southern regions largely benefit from solar photovoltaics. In general, sector coupling as a field of scientific research has expanded within the last decade from being of interest to a few countries to now affecting research on energy system planning around the world (Maruf, 2019).

As a result of such global interest, the notion of sector coupling is applied in various ways and thus provides perspectives on synergetic effects across multiple sectors. Particularly the potentials of power-to-heat technologies have colonised sector coupling as a research field, spanning from large scale projects on the potential of storing excess electricity in the heat sector (Schaber et. al, 2013; Böttger et. al, 2014) to a focus on coupling electricity and heat in domestic housing systems (Jambagi et. al, 2015).

In spite of a wide range of papers demonstrating the potential for sector coupling technologies to contribute to the decarbonisation agenda, the process of fully implementing the technological solutions on a broad scale is hampered. Olczak & Piebalgs (2018) identify four pillars that are essential to the adoption of sector coupling. First, infrastructure planning should be a cross-sectoral effort in order to *"[…] ensure the best use of existing infrastructure and prevent unnecessary and costly infrastructural investments"* (Olczak & Piebalgs, 2018:4). The second pillar relates to market conditions and the necessity of adjusting prices on electricity to increase attractiveness of sector coupling technologies. Third, the potential of sector coupling depends on changes in present regulation, and lastly, the fourth pillar revolves around the importance of continuing research and development projects in order to improve performance and cost-efficiency of sector coupling technologies.

### 1.4.3 Broadening the scope of sector coupling as strategic mind-set

The literature review reveals that the concept of sector coupling is perceived to be inseparable from the field of energy system planning. With the notion of power being the starting point for conversion of resources and heat, gas or liquids being the endpoint, the subject of inquiry within the landscape of research revolves around the operationality of such solutions. Thus, the structural embeddedness of sector coupling becomes to a great extend a matter of assessing the degree to which the market has reached maturity for such technologies. Recognising the importance of such assessments and the sector coupling potential within energy system planning, it remains interesting as to what degree an expansion of such scope would be beneficial for

organisations, whose decarbonisation activities extends beyond energy systems. Even though energy planning is vital to the municipal climate effort on reducing green house gas emissions, municipalities risk adopting a technologically driven notion of sector coupling that restricts the cross-sectorial focus in terms of converting power to heat, gas or liquids instead of using sector coupling projects as examples of the synergetic potentials that emerges from minimising the gap between any given sectors. Seeing that agricultural activities and the health sector are rarely subjected to sector coupling principles, a broader understanding of sector coupling and the conversion of resource surplus would arguably be a beneficial strategic means for rooting climate action throughout the organisation and increase the ability to respond to the wickedness of climate change. Therefore, within the context of this thesis, the notion of sector coupling is approached as a strategic attempt to minimise sectorial demarcations by increasing coordination, collaboration and the use excess resources across sectors.

## 1.5 Differentiated climate action in Northern Jutland

A report from CONCITO (2020) maps out and analyses the current status of municipal climate action in Denmark. It is concluded that climate planning has become a priority for Danish municipalities. In spite of various types of targets and levels of ambition, municipalities find themselves in a transition towards a more sustainable future. Figure 2 illustrates types of climate targets divided into regions.

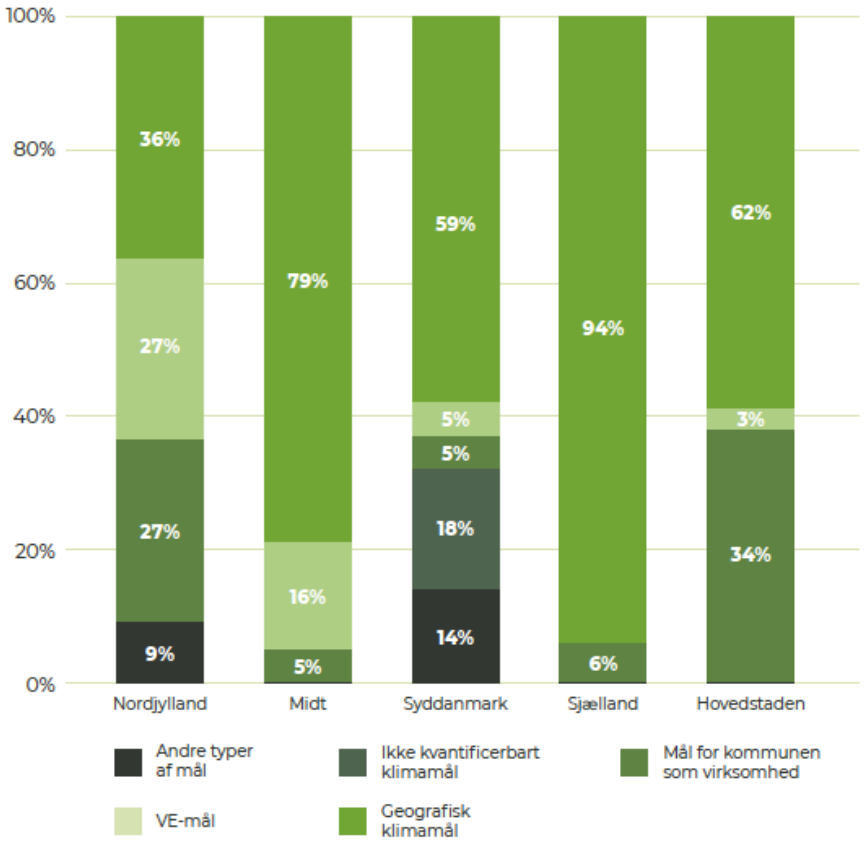
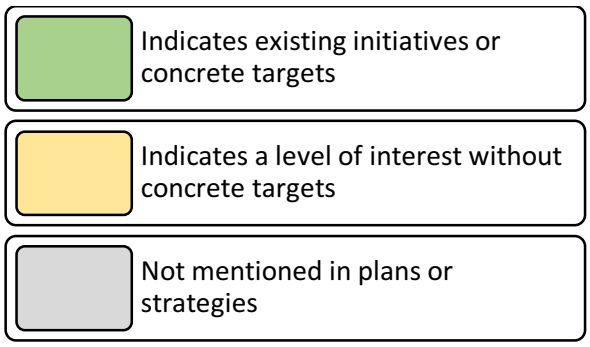



*Figure 2: Targets for climate action (CONCITO, 2020)*

It appears that climate action largely differs within as well as across regions, which is caused by a missing regulatory framework for municipalities to act upon climate change (CONCITO, 2020). The diversity clearly shows the tendency for sub-national governments to use their level of autonomy to tailor climate action to local conditions. As such locally-embedded climate effort might arguably increase legitimacy of initiatives, it is not necessarily a hindrance for ambitious planning. However, climate action risks becoming reactive and tied to current subjects instead of being integrated in the sense that preventive efforts are also included. Additionally, the figure reveals relatively unified climate targets across municipalities from the regions of Middle Jutland and Zealand, whereas Southern Denmark and Northern Jutland remain the most diverse. The Region of Northern Jutland stands out as having the fewest number of municipalities with geographical reduction targets, and instead the largest share of targets on renewable energy is found in this region. Based on such diversified targets, the question arises, as to what degree climate planning across municipalities in Northern Jutland remains equally diverse as well as the implications of such diversity for sector coupling purposes. For examining this, a group of five municipalities have been selected, namely Aalborg, Frederikshavn, Rebild, Hjørring and Jammerbugt. The following section provides an overview of climate action planning within these municipalities by reviewing the degree to which a group of sectorial categories is included.

### 1.5.1 Review of municipal strategies and climate action plans

In order to establish coherency between the national and the regional mapping of municipal climate action, the review is partially systemised with inspiration from the report by CONCITO. However, focus has been tailored to the context of Northern Jutland. Thus, six categories have been subjected to examination, each of which are accompanied by a range of priorities that are widely regarded beneficial for working towards climate neutrality. Acknowledging that municipal climate action is not limited to these activities, such delimitation serves the purpose of narrowing a scope for the research and thus qualifies the interrelatedness of the categories. Throughout the review the following distinction has been made:




This threefold characterisation is used to assess the degree to which categories of climate action are prioritised by the selected group of municipalities. Methodologically, the process of systemising the review of municipal plans and reports is elaborated in section 3.2. Additionally, the the list of reviewed documents is itemised in appendix A. Notice should be given to fact that the review builds upon priorities that appear in publicly available municipal documents. Thus, climate projects that are conducted within the jurisdiction of a certain municipality, but are left out of municipal plans, are not included in this review.

On the basis of such structure, the review of documents enables an itemisation of municipal climate initiatives. These are presented in the following tables.

| Energy | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Energy-efficiency | Individual heating | District heating | Excess heat | Wind | Biogas | Waste | Solar | Biomass |
| Aalborg | | | | | | | | | |
| Frederikshavn | | | | | | | | | |
| Rebild | | | | | | | | | |
| Hjørring | | | | | | | | | |
| Jammerbugt | | | | | | | | | |

*Table 1: Overview of targets and initiatives related to energy.*

| Transport | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Low-emission cars | Freight | Heavy transport | Bicycles and pedestrians | Public transport | Infra-structure | Carpools |
| Aalborg | | | | | | | |
| Frederikshavn | | | | | | | |
| Rebild | | | | | | | |
| Hjørring | | | | | | | |
| Jammerbugt | | | | | | | |

*Table 2: Overview of targets and initiatives related to transport and mobility.*

| Technological development | | | | |
|---|---|---|---|---|
| | Carbon capture storage | Geothermal energy | Large heat pumps | Other |
| Aalborg | | | | |
| Frederikshavn | | | | |
| Rebild | | | | |
| Hjørring | | | | |
| Jammerbugt | | | | |

*Table 3: Overview of targets and initiatives focusing on technological development.*

| AFOLU | | | |
|---|---|---|---|
| | Agricultural production | Extraction of wetlands | Reforestation |
| Aalborg | | | |
| Frederikshavn | | | |
| Rebild | | | |
| Hjørring | | | |
| Jammerbugt | | | |

*Table 4: Overview of targets and initiatives related to AFOLU (Agriculture, Forestry and Land-Use).*

| Waste and circular economy | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Household waste sorting | Waste water | Hazardous substances | Reuse of products | Recycling of products | Prevention of waste | Extending lifetime of products |
| Aalborg | | | | | | | |
| Frederikshavn | | | | | | | |
| Rebild | | | | | | | |
| Hjørring | | | | | | | |
| Jammerbugt | | | | | | | |

*Table 5: Overview of targets and initiatives related to waste management.*

| Climate adaption | | | | | |
|---|---|---|---|---|---|
| | Mapping vulnerable areas | Rainwater basins | Coastal protection | Sewage renewal | Green rooftops |
| Aalborg | | | | | |
| Frederikshavn | | | | | |
| Rebild | | | | | |
| Hjørring | | | | | |
| Jammerbugt | | | | | |

*Table 6: Overview of targets and initiatives related to climate adaption.*

### 1.5.2 Synthesis

The review reveals a tendency for reports and strategies across the selected group of municipalities to cohere with national prioritisations in the sense that initiatives on energy and transport have colonised climate planning processes, whereas AFOLU and the potentials of technological development remain less explored. In spite of this coherency, a positive tendency emerges from subjecting the sectoral initiatives to further scrutiny. In terms of initiatives that contribute to the transition towards renewable energy and ensure efficient energy use, the comprehensiveness of municipal prioritisations indicates a holistic and an ambitious energy planning process in relation to national numbers, which is presented in table 7.

| | Selected group of municipalities | All municipalities |
|---|---|---|
| Energy-efficiency | 100% | 58% |
| Individual heating | 60% | 70% |
| Excesss heat | 60% | 20% |
| Wind | 100% | 51% |
| Biogas | 60% | 50% |
| Solar | 80% | 50% |
| Other RE (Biomass) | 80% | 24% |

*Table 7: Relating climate efforts on energy-related activities within the five selected municipalities to national numbers as provided by CONCITO (2020).*

A similar tendency is identified within the ambition of reducing the climate impact from transportation:

| | Selected group of municipalities | All municipalities |
|---|---|---|
| Low-emission transport | 60% | 37% |
| Freight | 0% | 3% |
| Heavy transport | 20% | 3% |
| Bicycles and pedestrians | 80% | 40% |
| Public transport | 60% | 54% |
| Infrastructure | 40% | 28% |
| Carpools | 20% | 27% |

*Table 8: Relating climate efforts on transportation to national numbers as provided by CONCITO (2020).*

To a great extent, reports and strategies from the selected municipalities contain a variety of efforts that surpass national numbers. Where some are largely affected by geographical conditions, e.g. wind power, others emerge from commitment to climate action, networks or mere municipal will.

## 1.6 Assessing level of sector coupling

Having the multi-sited focus from municipalities in mind, the question remains as to what extent the potentials of sector coupling, as identified in section 1.4, is being released. Strategies for climate planning reveal an interest across municipalities to increase the level of interrelatedness between sectorial actors and initiatives in order to benefit from synergetic effects. The Municipality of Frederikshavn gives mention to the importance of collaboration across actors as a tool for achieving such effects: *"Having the municipal border as an area of action, the Energy City will be able to include all citizens, companies and institutions in a development process that generates dynamics and creates synergy, so that all actors collaborate on the process of realising the potential of the growth paths."* (The Municipality of Frederikshavn, 2014:4, own translation)

Additionally, The Municipality of Hjørring states that *"[…] from a future perspective, a focus must be directed at exploiting the synergetic effects across sectors, e.g. heat, electricity and transport […]"* (The Municipality of Hjørring, 2019:36, own translation). All municipalities share the emphasis on ensuring a collaborative effort by engaging a wide range of actors in the climate planning process. However, actual collaborative activities and the interrelatedness of sectors tend to be absent from municipal evaluation reports on climate action, and seeing that municipal climate planning has undergone little development during the last decade (CONCITO, 2020), climate action arguably still poses a coordinative challenge throughout all sectors.

# 2. Research question

Based on the coordination challenge, this research revolves around the following research question and subsequent research questions:

To what degree do municipalities experience a coordination challenge to embed climate planning across sectors? Which measures can be taken to overcome such a challenge?

1. What characterises the the embeddedness of climate planning processes within municipal organisations?
2. How is the process of climate planning affected by such embeddedness?
3. Which measures can increase the coordination effort throughout municipal sectors?

## 2.1 Limitations

The scope of this research is limited to municipal climate action planning within the selected group of municipalities, that is comprised by The Municipality of Aalborg, The Municipality of Frederikshavn, The Municipality of Rebild, The Municipality of Jammerbugt and The Municipality of Hjørring. Thus, the research does not provide a complete overview of municipal climate planning within the Region of Northern Jutland. Instead, a group of geographically proximate municipalities is selected in order to explore differences and similarities across municipalities that are subjected to shared geographical and political conditions.

# 3. Methods

The methodological foundation of this research reflects the interest in gaining insight into processual aspects of municipal climate planning and the element of coordination across a wide range of actors. Being abductive in the sense that reviews on climate action has established a scope that is used for directing a focus, while maintaining flexibility for empirical data to reveal new patterns, this project build upon a tradition of qualitative research. Therefore, a series of semi-structured interviews and reviews of existing bodies of literature comprise the sources of empirical data collection.

## 3.1 Interviews

The rationale for using interviews as a means towards uncovering existing planning processes lies within the ability to generate an in-depth understanding of the complex interplay of activities that adds to the process of integrating climate action as a priority within municipal organisations and thus leads to the formation of climate action plans. As such plans are often target-oriented and rarely reveal the internal as well as external coordination effort, interviews are used to examine the social and institutional dynamics affecting climate planning processes as they are experienced by a range of actors. This ambition underlines the phenomenological paradigm of interviewing, by which this methodological approach is inspired. In relation to this, each interview is held in the everyday working setting of the interview persons in order to stimulate reflection and add familiarity to the topics. Tangaard & Brinkmann (2015) emphasise the connection between the interviewer and the interview person, as the outcome and the intersubjectively shaped conversational reality largely depends on such relation. Based on this, document analyses on municipal climate action plans, as described in section 3.2, serve a second purpose of establishing a shared language through thorough insight into local initiatives as well as potentials and challenges. Additionally, such common ground aids to the process of creating a scope for the interview and are used to interpret and add meaning to local experiences.

The selected group of interview persons reflects the multi-sited focus of this research. In order to cover the complexity of climate action within municipalities and add meaning to the experiences that emerge planning activities, an array of actors within each municipality as well as cross-municipal organisations are interviewed. Acknowledging that the group of municipalities are structured differently and differs on responding to climate change, attempts are made to unify the vocalisation of actors in order to increase comparability. The group of interviewees appears in table 9.

| | Aalborg | Frederikshavn | Rebild | Hjørring | Jammerbugt |
|---|---|---|---|---|---|
| Mayor | | | | | |
| Deputy Mayor | | | | | |
| Head of Department | | | | | |
| Climate planner | | | | | |
| Cross-municipal actors: Network for Sustainable Business Development | | | | | |

*Table 9: Overview of interviewees.*

Each interview is conducted in a semi-structured manner in order to maintain an overall scope, within which the subject of inquiry can be articulated. Still, a level of flexibility is kept for the interview to explore new patterns and follow what occupies the interviewees. As the interviews serve the purpose of revealing the embeddedness of climate action within organisations as perceived by municipal actors, most interviews are held individually. Thereby, the conversational setting allows for interviewees to reflect upon their own experiences of phenomena.

### 3.1.1 Processing empirical data

With the purpose of systemising empirical data, the outcome of interviews is subjected to a coding process, in which statements and expressions are sorted and divided into categories, based on shared characteristics. Thus, coding holds an analytical dimension and aids to the process of condensing the amount of collected data. Kristiansen (2005) particularly distinguishes between theoretically determined coding categories that are shaped by pre-established concepts and empirically steered categories. However, in this project the coding process supports the abductive research design. Thereby, the theoretical framework creates a scope for the coding categories, within which a flexibility for interviewees to express new concepts is maintained. In spite of the presence of software solutions for coding data, such tools rarely support the purpose of opening up the data and exploring patterns and tendencies. Thus, coding is conducted manually and appears in appendix B. As all interviews have been conducted in Danish, codes have subsequently been translated into English with respect to the native content.

## 3.2 Document analysis

As argued by Sanders (2002) there might be a discrepancy between what actors *think* they do and what they *actually* do. With interviews revealing individual perceptions of climate action and the context in which it is situated, a document analysis on municipal climate action plans and reports as secondary literature is conducted in order to examine actual activities. Additionally, it serves the function of establishing a scope for the interviews and a knowledge base that can be used for stimulating reflection among the interviewees. In spite of lacking uniformity of municipal documents, the process of identifying relevant documents has been structured by adopting a scope from the recent CONCITO-report on climate action in Danish municipalities. Still, with this scope directing a focus on points of activities, the documents in which they are described vary from being overall strategies to sector-specific analyses. Thus, the methodological approach of snowballing, as presented by Lynggaard (2015), has been used to uncover the diversity of documents by following references to other plans and reports. Documents that have been reviewed are itemised in appendix A.

## 3.3 Literature review

With the purpose of creating a knowledge base that aids to the process of assessing the state of the art of scientific knowledge on sector coupling, a structured literature review has been conducted. The process of identifying and selecting relevant literature has been systemised through selection of databases, key terms, search strings and criteria for including or excluding a paper. With the cross-sectorial focus in municipalities being the subject of inquiry, databases are selected on the basis of their relevance to the fields of environmental science, climate planning

and energy. Subsequent to this, a series of key terms have been selected, which is visualised in table 10.

| Key terms | |
|---|---|
| Strategic approach | Organisational context |
| Sector coupling | Municipalities |
| Integrated systems | Local government |

*Table 10: Overview of key terms.*

Combined with boolean symbols and the use of truncation, the selected key terms construct search strings. Subsequently, literature is subjected to a process of assessing relevance for the review. Criteria for including papers revolves around the integratedness of municipal sectors. Thus, a focus on synergetic effects from coupling sectors as well as organisational implications is required, and mono-sectorial research is excluded. In addition to this, only peer-reviewed papers are included.

# 4. Theoretical framework

Aiding to the process of systemising and adding meaning to data by providing a language of interrelated concepts, this research is shaped by a theoretical framework that combines perspectives from project management and governance theory. Being iteratively constructed, the framework partly emerges from empirical tendencies and patterns as expressed by climate planning actors, but with a solidity of analytical concepts that serves the purpose of generating new perspectives. The framework supports the twofold character of the research question. Thus, section 4.1 revolves around the process of analysing structures in political organisations through the use of governmental perspectives and governability theory. Subsequent to this, section 4.2 adds an institutional dimension to such structures, enabling an examination on the potential of moving from a largely governmental approach to managing municipal climate action towards one that builds upon governance.

## 4.1 A shift from government to governance

A prerequisite for being able to advocate for change within organisations lies within understanding the relationship between the organisational structure and the actors that affect and are affected by such structure in order for the structural embeddedness of climate planning to be characterised. By coupling analytical points from the literature review on sector coupling, as presented in section 1.4, with empirical insights from initial interviews, municipal climate planning efforts are to a great extent affected by vertically structured interaction flows. Nevertheless, Sørensen (2002) argues that politically steered organisations find themselves in a transformation process with the emergence of self-regulating networks. Thus, the the concepts of *government* and *governance* create a span, on the basis of which present organisational structures and desirable structures for climate planning purposes in municipalities are analysed.

### 4.1.1 Governmental theory

Perspectives on the process of governing political organisations in the modern world have to a great extend been structured around hierarchical order with vertical rule enforcement and policy-making processes (Sørensen, 2002). Being based on the view that linear relations and one-way causalities throughout hierarchical layers of societal entities would secure a centralisation of social organisation, the idea of a central intelligence dominated the field of social theory for a long time. (Kenis & Schneider, 1991). Tannembaum et. al (1974) argue that the hierarchical structure is present in almost every single organisation. However, the shape of the hierarchy might differ. *"Some organizations are tall (having many levels) and others are flat. Some have ambiguous lines of authority, and others have a clearly defined system of ranks. Some organizations contain a single, simple chain of command; other organizations may be more complicated […]"* (Tannenbaum et. al, 1974:2) In spite of such differences, all organizational hierarchies serve the purpose of maintaining a system of order that ensures a correlation between decision-making and operationalization. As employees at lower levels lack what Tannembaum et. al (1974) refer to as *industriousness*, agency is rarely dispersed throughout organisations. Instead, the ability to influence decision-making processes is limited to a central intelligence.

From a governmental perspective, hierarchical structures also contain a psychological dimension by delineating a path for employees to transition from being a peripheral participant in decision-making processes to becoming a legitimate member of the central intelligence. By performing

well, employees are able to elevate in rank and gradually achieve more status, be assigned with greater responsibility and a variety of privileges. Thus, hierarchal structures also function as a motivational element that optimises the performance of the organization.

### 4.1.2 From government to governance

With the emerging modernist focus on individuality, the reflexive actor and increased fragmentation of society, the epistemology that is mirrored in governmental theory faced a loss of support (Sørensen & Torfing, 2013). Kooiman (1993) argues:

*"Everything in nature is liable to changing and maintaining forces; in other words nature is basically dynamic. Even the smallest physical and biological particles consist of even smaller elements which cohere in manifold ways; that is to say they are complex. And all phenomena in biological and social life show an immense and fundamentally uncomprehensible scope of differentiation and variability. In other words: they are basically diverse. The difficulties we have in coping with these qualities might have to do with these qualities themselves, with our methods to cope with them or with the lack of position to observe them."* (Kooiman, 1993:63)

As a response to the rigidity of organisations, the concept of networks started to pervade social theory as a means for decentralising social organisation in a way that allows rational actors to be self-regulating in an interplay of expectations and norms. This tendency harmonised with the recognition that the process of organising responses to increasingly wicked societal challenges should be dispersed in a more fragmented but interrelated structure. Supporting the argument that such multitiered dispersion adds flexibility to societal governance, Hooghe & Marks (2003:235) argue that *"Large jurisdictions are bad when they impose a single policy on diverse ecological systems or territorially heterogeneous populations"*. In relation to this, proponents of networks as a new strategic and operational approach to organisational management called for a shift from government to governance (Sørensen & Torfing, 2013), and the idea of polycentric but mutually dependent decision making processes across supranational, national and local levels took shape.

As theoretical framework, such shift serves the purpose of establishing a foundation, on the basis of which it can be examined as to what degree the approach to municipal policy making on climate action develops in line with scientific research. Even though proponents of governance agree on the overall need for decentralisation, they struggle to agree on the operationality and structure of such new forms of decision making (Hooghe & Marks, 2003).

### 4.1.3 Governability theory

Subsequent to the emerging focus on network relations within organisational theory, a series of theoretical traditions have taken shape, all of which provide different perspectives on the concept of governance. Being based on a shared acknowledgement of the potentials of transitioning from a largely vertical governmental structure to a more horizontal governance structure, the traditions are closely interrelated. Nevertheless, Sørensen & Torfing (2013) present two dimensions, on the basis of which the traditions differ. The first dimension is comprised by the theoretical approach to action, and within this scope Sørensen & Torfing distinguish between, as to what extent action

across actors is based on rational calculation or determined by the institutional culture, in which decisions are made. The second dimension relates to perspectives on the core of management, and a distinction is made between the view that societal management is a matter of mediating conflicts or a matter of coordination. On the basis on this, Sørensen & Torfing (2013) visualise the interrelatedness of the four main traditions, which is presented in table 11.

| | Calculation | Culture |
|---|---|---|
| Conflict | Interdependency theory | Governmentality theory |
| Coordination | Governability theory | Integration theory |

*Table 11: Overview of theoretical traditions as presented by Sørensen & Torfing (2013). Own translation.*

Acknowledging that demarcations between each tradition are not as clear as presented above, Sørensen & Torfing (2013) identify patterns of shared characteristics and differences by scrutinising the theoretical core. Thus, each theoretical track presents a perspective on the construction and the functional implications of a governance network, and by relating it to the subject of inquiry within the context of this project, a scope is established for the analysis, within which meaning is added to empirical data. Initial empirical data collection in terms of semi-structured interviews as well as reviews of municipal documents and scientific articles has served the purpose of creating an empirically based foundation, on the basis of which tendencies emerge. Such tendencies are used to examine the characteristics of action across municipal actors and their approach to societal management in order to assess which theoretical approach to network governance that cohere with the empirical reality.

Coding processes reveal a paradoxical discrepancy among both municipal planners and mayors, which is elaborated in section 5.1. Seeing that climate action planning is extensively acknowledged to be a matter of coordinating activities across departments, the level of organisational and sub-organisational autonomy combined with the absence of a guiding coalition challenges a coordinative approach towards achieving climate targets. With regards to the question as to what degree action is affected by rational calculation or determined by cultural routines, a clear distinction is neither possible nor desirable to make, as the removal of institutional elements in terms of a regulative, a normative, and a cultural-cognitive pillar would entail ignoring the complex structure, within which actors are situated. Instead, the elements of *calculation* and *culture* are used dialectically in order to create a span that highlights the level of interrelation. With Wejs et. al (2017) and Rybirk (2015) arguing that municipalities as bureaucratic organisations contain a clear division of labour, it is likely to expect processes of action to be deeply entrenched within the organization. This is arguably the case for some municipal processes. However, due to the novelty of climate action planning, empirical data shows that action has not yet been subjected to a high degree of routinification. Thus, it requires explicit awareness on activities that are based on calculations on the mitigation and adaptation potentials. Such empirical patterns comprise the rationality behind selecting governability as a theoretical frame, within which potentials from transitioning to a more network-based approach to climate planning will be systemised and analysed.

As a theoretical position within the tradition of governance, *governability* emerges from the acknowledgement that societies have become so complex and dynamic, that a traditional hierarchical governmental approach is incapable of managing such ever-changing reality. Too a great extent, this perspective relates to the interplay of different interests in semi-autonomous organisations, which hampers the ability to coordinate action across interests. As a response to this, Sørensen & Torfing (2013) suggest that structural changes that redefine the relation between vertical and horizontal interdependencies are needed. Being based on the view that actors act rationally with the purpose of promoting interests, the tradition of governability theory argues that the process of coordinating activities in relation to collective organisational targets is hampered, as the combination of simultaneous and multi-sited activities as well as the absence of a guiding coalition in vertical structures alters the premises of action. Thus, governance networks are presented as both a strategic and operational means for organisations to improve collective coordination across a complex interplay of rational actors.

The focus on relating rationality-based action to organisational structures reveals that governability theory builds upon elements from the traditions of rational choice-institutionalism and game theory in terms of the ability of institutions to highlight relations between individual and collective behaviour. Thereby, institutions possess the ability to encourage or limit coordination across rational actors. In addition to the focus on actors-based institutionalism, governability theory is inspired by system theory by acknowledging that actors find themselves being shaped by an increasing functional differentiation of systems and sub-systems. By coupling the two traditions governability acts as a frame for coordinating interdependencies across actors and ensuring that the rules of the game are subjected the ongoing negotiation processes (Sørensen & Torfing, 2013).

The concept of interdependency is essential to the formation and success of governance networks, as it prevents autonomous actors and groups of actors from solely pursuing their own interests. By recognising that individual actors do not possess enough power to push forward own ideas, the realisation of mutual dependency between organisational actors becomes a corner stone for maintaining a network structure, in which horizontal negotiations take place (Sørensen & Torfing, 2013). Thereby, governance networks are enabled by continuous interaction and thus *"[…] resist government steering, develop their own policies and mould their environment"* (Rhodes, 2000:14). However, Sørensen & Torfing (2013) argue that processes of negotiation and interaction must be shaped by institutional structures that allows interdependency to be recognised by actors as being vital for managing increasing complexity within organisations, which harmonises with the view that challenges can not be solved within a single system. Adding to such interplay of relations, Scharpf (1994) introduces the concept of a *relational contract*, on the basis of which actors outline the path towards a collective target instead of projecting individual interests onto organisational strategies. The formation of a relational contract requires a degree on trust in the organisational project in order for actors to engage in collective matters.

In spite of the transition from vertically to horizontally structured organisations, governability theory does promote the idea of, what Rhodes (2000) refers to as a "hollow crown", meaning that hierarchies are deprived of power and become obsolete for organisational management. Instead, the function of hierarchies is a matter of regulating horizontal negotiation processes, and thus outlines the rules of the game and enable a coordinative effort to take place.

## 4.2 Institutions and institutionalisation

Adding to the emphasis on institutional arrangements in governance networks, this section serves the purpose of qualifying the various types of institutions, as presented by Scott (2001), which establishes a foundation, on the basis of which it can be as examined, as to what degree institutional arrangements on municipal climate planning allow for horizontal networks to promote collective targets. In spite of climate action requiring explicit awareness from municipal planners and the focus from governability theory on the calculating actor, institutional elements remain essential to the organisational structure, in which changes occur through the formation of governance networks. Without the presence of such, interdependency becomes obsolete, as each individual actor is likely to pursue own interests (Sørensen & Torfing, 2013).

*"Institutions are social structures that have attained a high degree of resilience."* (Scott, 2001:48). Scott introduces such broad definition of institutional arrangements as a starting point for examining the dynamics of the social structures and the elements that comprise structural resilience. Thus, institutions are capable of resisting change, as they are deeply rooted into the social structures. Being multifaceted, they are shaped by a wide range of elements and behavioural patterns, and Scott (2001) uses the concept of *carriers* to describe the reproduction of institutional arrangements. He argues, that institutions can be *"[…] transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artifacts."* (Scott, 2001:48). In spite of resilience and the purpose of creating order, Scott emphasises the importance of perceiving institutions as constantly evolving due to such transmission processes throughout dynamic social structures. However, three main pillars are identified, as presented by Scott (2001), each of which affects human behaviour:

- First, a **regulative pillar** refers to the formation of formal or informal rules and the possibility of being sanctioned from disobeying a certain authority. By using such coercive measures, compliance with organisational or societal interests is maintained, and human activities are aligned.
- Second, a **normative pillar** builds upon social obligation and perceives action as being determined by normative expectations. Scott argues that such expectations *"[…] specify how things should be done; they define legitimate means to pursue valued ends."* (Scott, 2001:55). However, opposed to the authoritative power in the regulative pillar, compliance with normative expectations are assessed by a complex interplay of actors in relation to a set of values, which introduces a moral dimension to institutional arrangements. This also means that not all actors are subjected to the same set of normative expectations, as they might be situated in a role, where different expectations apply.
- Third, a **cultural-cognitive pillar** revolves around the degree to which human responses to the external environment are shaped by routines. Thus, behavioural patterns are often taken for granted, which causes what Polanyi (1958) refers to as *tacit knowledge* to emerge. Such conception of institutional arrangements builds upon a process of habitualization. Thereby, the cultural-cognitive pillar embodies the epochal dimension in the sense that scripts for social behaviour requires less explicit awareness over time.

Even though the concept of an institutional "pillar" might indicate clear demarcations between each dimension, they remain closely interrelated. Nevertheless, regulative frameworks, normative

expectations and cultural-cognitive scripts all legitimise action in various ways, and thus increase legitimacy of the organisational entity (Scott, 2001). By coupling perspectives on governance networks in the shape of governability theory with a more elaborate conception of actors-based institutionalism, an analytical scope is directed at the ability for present institutional arrangements within municipal climate planning to undergo structural changes. With the purpose of qualifying such processual aspect of institutions, perspectives from Tolbert & Zucker (1996) on *institutionalization* shape the empirical object.

Tolbert & Zucker (1996) argue that much literature on institutional theory focuses on the essence of institutional elements and lacks attention to the process, within which the regulative, normative and cultural-cognitive pillars become institutionalised. On the basis of this, they present a sequential process that organisations must undergo for securing different degrees of embeddedness of institutional arrangements. Organisational change on a structural level often departs from a challenge that requires action to be rethought and shaped by alternative arrangements. Such challenges occur in a *pre-institutionalization stage* that acts as starting point for processes of change. Tolbert & Zucker refer to the responsive approach of this stage as *habitualization*, in which innovative ideas that are pushed by market pressure, legislation or technological development become adopted by decision-makers, partly by imitating other organisations. However, as such adoption process is subjected to limited theorisation on achieving consensus across actors within the organisation, structural changes remain weakly institutionalised. In order to reach the *semi-institutional stage*, changes must be diffused throughout the organisational structure in an *objectification* process. Herein, the level of adoption increases, as changes pervade organisational sub-systems, and consensus is reached on the added value from the adoption of new structures as innovative ideas (Tolbert & Zucker, 1996). *"By identifying the set of organisations that face a defined problem and providing a positive evaluation of a structure as an appropriate solution, theorizing invests the structure with both general cognitive and normative legitimacy."* (Tolbert & Zucker, 1996:183). Thereby, the transition from the imitative nature of the pre-institutionalization stage to the normative characteristics of the semi-institutionalization stage is addressed. In order to achieve a *full institutionalization*, structural changes must be subjected to a *sedimentation* process, in which new arrangements become stabilised and fully entrenched within the organisation. This is a timely process, as level of resilience depends on the depth and width of the organisational adoption. Thus, the agency of actors across divisions of labour remains essential to the embeddedness of structural changes, particularly by their power to mobilise support or resistance.

## 4.3 Synthesis

With the analytical scope of this research being directed at the potential for climate planning processes in municipalities to benefit from structural changes on strategic and operational matters, the theoretical framework is comprised by a set of interrelated perspectives that have been selected in an iterative process. Governmental theory aids to the process of examining present structures, whereas the tradition of governability and formation of horizontal networks represent an alternative structure, that is widely regarded beneficial within scientific literature for responding to complex changes. However, it remains questionable as to what degree municipalities are capable of undergoing such structural changes due to the presence of resilient institutional arrangements. Thus, perspectives on institutions and institutional change are used to

examine the embeddedness of climate planning processes and assess the ability for changes to occur.

# 5. Analysis

Municipal plans on climate action reveal a strategic ambition to mobilise a holistic climate effort. However, the operationality of strategies is incoherent with such ambitions, which indicates that a series of structural barriers within the organisation hinder the formation of an integrated climate effort. First, this chapter seeks to analyse such organisational and institutional structures and their impact on sector coupling from a broad perspective, and subsequently, it is analysed as to what degree a transition towards governance networks could increase coordination and reduce distance between sectorial activities.

## 5.1 Situating climate action within municipal structures

Municipalities differ in regards to political ambitions, policy-making incentives and geographical conditions. Nevertheless, they share the same set of functions in terms of authorising local development in the span between interests between public interests and nationally determined policy objectives. Due to such differences, municipal climate action has proven difficult to unify, which causes the overall green house gas mitigation and climate adaptation effort to be perceived in various ways. Therefore, the structural embeddedness of climate action differs across the five selected municipalities, which will be examined in the following sections.

### 5.1.1 Organisational and institutional embeddedness of municipal climate efforts

Even though municipalities are to a great extent built upon a shared foundation of authoritative pillars, that spans from departments of health, education and culture to departments of finances and environmental matters, the organisational structures differ in terms of numbers of departments and their coverage of activities. Seeing that the Municipality of Aalborg is comprised by seven departments, whereas the Municipality of Rebild consists of four, the structural core of municipal activities is highly affected by the ability of such organisations to be partially autonomous. Due to such degree of autonomy, the process of implementing climate action as a key activity differs in terms of level of ambition, holism and pace.

Actually, the word of “implementation” is deliberately used, as it very well characterises municipal approach to climate action. Referring to the process of embedding a stabilised concept within existing organisational and institutional structures, implementation processes create a dialectic span, within which actors strive to synthesise organisational value. This is to a great extent applicable to municipal processes of scoping a climate effort. Adding to the argument from Rybirk (2015) that the bureaucratic organisations of municipalities are pervaded by an institutional solidity in terms of clear divisions of labour, organisational charts reveal that the core structures of municipalities remain equally resilient in spite of increased awareness on climate change. Even though climate action has been a subject matter across Danish policy-makers for a while, a major impetus was given to the area by the adoption of the Paris Agreement, activities from youth movements and the Sustainable Development Goals, which increased the demand for climate initiatives. The Mayor of the Municipality of Hjørring emphasises that municipal climate efforts are not a new phenomenon: *“We have been active for a long time in a slow and steady pace. […] From my experience in municipal politics, it matters with a long, tough pull”* (Appendix B:6). Thereby, he refers to the establishment of a solid foundation of political will and readiness from the public as well as employees, on the basis of which decisions on climate action can be made. However, the rapidly growing public awareness and the increasing level of ambition from national targets

challenge such approach, as the slow and steady pull is no longer a possibility with time being a scarce resource. Instead, municipalities experience increased pressure on raising the level of ambition and target mitigation and adaptation potentials throughout the organisation as well as the geographical jurisdiction. In relation to this, he acknowledges that "*[…] something happened in relation to the election, we might as well agree upon that. […] It caused a turn of events, a turn towards much more action in collaboration with other municipalities"* (Appendix B:6). The Mayor of the Municipality of Frederikshavn experiences a similar tendency in the sense that *"[…] there is a momentum, and there is a great platform for engaging in a dialogue between authorities and citizens about this."* (Appendix B:1)

As itemised and presented in section 1.5.1, climate initiatives have colonised the awareness across municipal sectors. Spanning from greenhouse gas mitigation measures on renewable energy and transportation to adaptation efforts, municipal climate action plans indicate a recognition of the importance of forming a holistic effort and using the question of climate impacts as a compass for assessing municipal activities within certain areas. A key consideration for municipalities with regards to establishing a scope relates to the extent, to which the climate effort must go beyond what is required by law. For instance, it is mandatory for municipalities to formulate a waste management plan. However, the task of determining goals for waste preventions or increased circularity is assigned to each individual municipality. On a similar note, many sector-specific targets, including shares of renewable energy and low-emission cars, derive from broad and long-term national strategies, in which the role of municipalities is unclear and outside the scope of legal obligation.

From reviewing municipal strategies and interviewing mayors as well as climate planning practitioners, a pattern begins to take shape with regards to the organisational embeddedness. Seeing that the climate efforts in all municipalities are comprised by several focus points, including but not limited to waste management, energy planning, transport and mobility, land-use, technological development and adaptation initiatives, current climate action is predominantly organised within the department of environmental and technical matters. Even though exact numbers of departments and sub-departments differ across municipalities, notice must be given to the fact that the Municipality of Aalborg being a magistrate is structured radically different. Nevertheless, in this regard climate action poses an even greater coordinative challenge, as essential points of climate action are located in different departments. To exemplify, public transport is organised within the Department of Health, buildings within the Department of City and Landscape, and environmental matters within the Department of Environment and Technique. However, even within these sub-departments, the multiple areas of climate action cause a series of organisational sub-systems to emerge in the sense that groups of employees mobilise a structure of institutional arrangements that enables them to carry out a specific task. These systems can be characterised by what Rybirk (2015) refers to as the *professional bureaucracy*, in which in-depth knowledge on task-specific matters separates each individual system.

The formation of multiple systems is beneficial for climate planning purposes in the sense that it indicates a holistic effort. However, it requires a certain level of flexibility for the municipal organisation to govern and coordinate, what appears to be a largely multi-sited climate effort. In

addition to this, seeing that the array of demarcated departments, sub-departments and organisational systems is pervaded by a clear division of labour, it remains questionable as to what degree the present structure of municipalities supports the ambition of coordination a climate effort that transcends sectorial demarcations.

### 5.1.2 Structural implications for coordinating cross-sectorial climate activities

The process of coordinating climate action across layers of the organisational structure does to a great extent take place in a span between determining overall or sector-specific targets, communicating strategies to all involved actors and continuously evaluating climate activities in order to assess compliance with desired pathways. Although such attempts are not remarkably different from other municipal areas of action, the series of simultaneous and multi-sited climate activities appears to be conducted independently from each other, resulting in an inability to coordinate the overall climate effort in relation to policy objectives. Processes of coordinating the climate effort are caught in an institutional void, and distance between hierarchical levels causes the coordinating role to be misaligned for a few municipalities. The Mayor of the Municipality of Hjørring mentions:

*"There is no doubt about, who has the overall responsibility. That is me. A mayor always has that. But I do not have the overview. The technical director does so in combination with a series of planners."* (Appendix B:7) However, a planner from the same municipality states: *"The short answer is that no one has it* [an overview, ed.] *one hundred percent, because a lot is going on in many places and on all sorts of levels."* (Appendix B:8)

In the Municipality of Rebild a similar tendency is experienced: *"It is not a task that is assigned to one employee in the Municipality of Rebild. It is spread out on a lot of different ones, which is fairly fine. However, we might need a person, who collects and coordinates the activities"* (Appendix B:11). When asked about the coordinative role, a planning practitioner from the Municipality of Jammerbugt mentions: "*That would primarily be me, but the question remains as to what degree I know it all. For instance, we are trying to direct focus towards circular economy, and then I hear that we throughout a series of years have had focus on IT. But I did not know that, because we have not been good a branding our activities on the area of IT in terms of recycling computers."* (Appendix B:13)

There is a tendency for the coordination challenge to emerge from the combination of a multi-sited climate effort and a missing groups of actors, to whom the responsibility of coordinating climate initiatives is explicitly assigned. However, a few municipalities are increasingly becoming aware of the need to revisit internal structures as a way to generate an overview. A planner from the Municipality of Hjørring mentions: *"Waste management has always been a part of our team, but now we are forming a new team, in which public transport is also included. This way, we begin to get a better overview.* […] *We are gathering our resources in order to create internal synergies, as we can benefit from each others knowledge."* (Appendix B:8). Thus, physical proximity is introduced as an influential factor for the ability to achieve cross-sectorial synergies.

Based on this, the shortage of coordination is closely related to the structural embeddedness of climate action. Seeing from section 6.1.1 that the climate action has caused a series of

organisational sub-systems to emerge on a planning level, all of which are pervaded by professional in-depth knowledge on task-specific matters, only little effort is made on engaging in horizontal interactions with other systems. Instead, interaction flows are predominantly vertical in the sense that information must go through executive levels in order to pervade other departments and sub-systems. Such flows are visualised in figure 3.

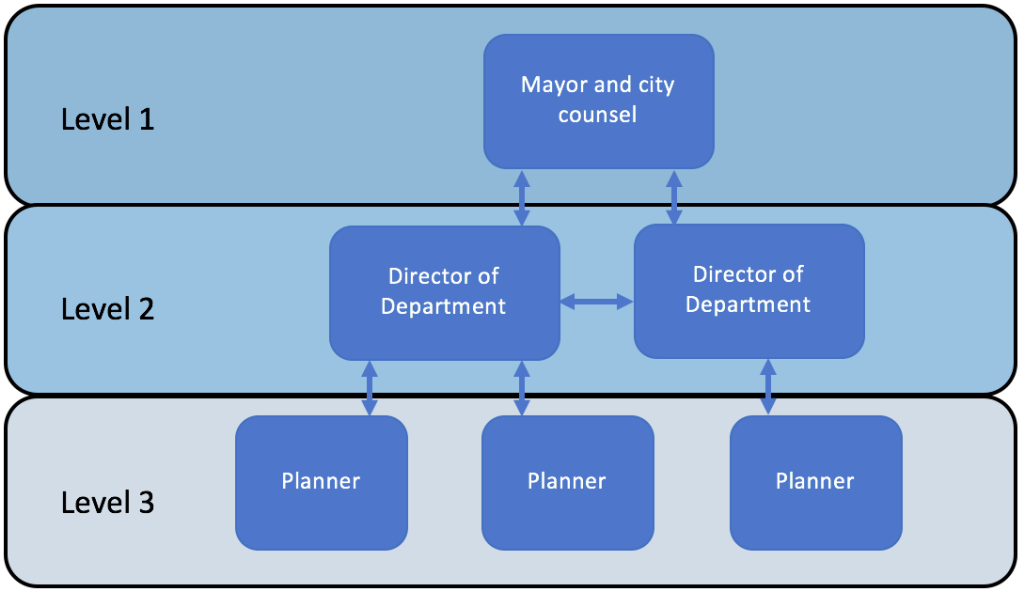



*Figure 3: Current structures are dominated by vertical interaction flows.*

The vertical interaction flows indicate are clear hierarchical structure of municipalities, in which the process of governing the organisation and deciding on an agenda is reserved to the mayor, the executive director and directors of departments. Such centralised exertion of power reveals an extensive governmental approach to organisational management and the presence of what Kenis & Schneider (1991) refer to as a dominant central intelligence. For the purpose of forming an integrated climate effort that builds upon a cross-sectorial coordination of climate activities, it is crucial for actors on executive levels as well as planning levels to be equipped with knowledge on activities across sectors in order to identify potentials for synergetic effects and to establish a coherent climate effort. However, hindrances for such knowledge creation are not necessarily caused by an inability to "speak the language" of other departments and situate their activities within organisational ambitions. Instead, time is being mentioned as a scarce resource. Thus, climate planners are restricted in their ability to engage in cross-departmental inquiries, as they are timely bounded to fulfil a specific task. In the wake of this, the question arises as to what degree the lack of coordination can be reduced to a matter of finances?

The financial aspect is essential to processes of municipal climate action planning. From the perspectives of mayors as well as planners, economy does to a certain extent determine the degree to which climate action can be prioritised. A climate planner from the Municipality of Rebild argues: *"This is an area that we work with, if we get permission, and if we have resources. It is not a requirement."* (Appendix B:11). However, in spite of financial matters being closely related to the amount of time that is devoted to climate action planning, it is recognised by aforementioned climate planner that a financial injection might not solve the challenges that

municipalities experience with regards to climate planning processes. *"What I think is the primary right now, is the structural and organisational. […] It* [a big financial injection, ed.] *would probably help to a certain extent. I just think that it should be relatively easy to put it into system with few resources."* (Appendix B:11). Building upon this, attempts to strengthen the ability to coordinate cross-sectorial activities remain a matter of establishing alternative paths of interaction and cooperation in a system that operates within existing financial frames.

An influential barrier for establishing paths of horizontal interactions and sector coupling initiatives through structural changes relates to the resilience of the series of institutional arrangements that affect climate planning practices as well as the potential for such arrangements to take new shapes. From a regulatory perspective, a legal framework that forces municipalities to integrate sectors for climate planning purposes is absent. Instead, regulation is provided on sector-specific matters, including waste management and climate adaption. As such regulative frames are rarely interwoven, neither are the municipal groups of employees that work within them. Thus, the regulatory pillar in the context of municipal climate planning clearly mirrors the separateness of legal requirements, which has caused distinguished systems of waste managers, environmental managers, energy planners, climate adaptation employees etc. to be organised without a regulatory incentive to consider the potentials of horizontal collaborations. Such structure gives shape to the normative pillar, as the absence of a regulatory framework on sector coupling highly affects the expectations towards a cross-sectorial focus. Instead of engaging in collaborations across departments, planning practitioners find themselves in a position, where they are expected respond to the notion of "climate" within the frames of their respective areas of responsibility in order to comply with sector-specific regulation and fulfil their planning purpose in coherence with the demarcated focus areas. In spite of such processes being conducted simultaneously at multiple sites of action, municipal actors are not strangers to networking activities. In the case of the selected group of five municipalities, all are members of the Business Region North, and additionally the Municipality of Frederikshavn and the Municipality of Jammerbugt are members of the DK2020-network. Thus, the potential of engaging in networks is recognised, but there is a tendency for municipalities to prioritise inter-organisational ahead of intra-organisational networks. Nevertheless, the use of networks on a broader scale has proven to pervade the mind-sets of planners, as their practices increasingly become affected by practices in other municipalities. With reference to this, climate planning practices are subjected to normative expectations of having a national outlook and being able to translate initiatives into sensible points of action within the context of a specific municipality. Even though such networking tendencies are increasing, little focus is directed at the potential for removing sectoral demarcations though intra-organisational networks, which is to a great extent caused by a resilient cultural-cognitive institution. For a long time, the vertical structure and the bureaucratic division of labour have characterised Danish municipalities and shaped the understanding of such authoritative body. Adding to the solidity of these institutional structures, a director of a department in the Municipality of Aalborg argues:

*"The biggest challenge is human beings. The challenge that revolves around the fact that everyone is born into a sector, and we are raised within a sectorial way of thinking from the time we start in kindergarten and onwards. This means that understanding that something is important across has taken many years, and we are all getting there."* (Appendix B:5).

Thereby, he refers to the demarcations of sectors as essential to the very human nature. However, due the increasing level of ambition as well as holism of municipal planning practices on climate action, cultural-cognitive institutions arguably remains less embedded as a tacit script on fulfilling climate-related tasks. To a great extent, planning practitioners still find themselves in a process of conceptualising ways of integrating the notion of climate action into existing practices, and thus they remain open towards new perspectives. Combined with the aforementioned recognition of the importance of having a cross-sectorial understanding, the conditions of undertaking changes of structural matters are now optimal. Adding to the previous statement, the director of a department from the Municipality of Aalborg argues that:

*"[…] a change roughly requires three things. The first thing is that you are allowed to do it, regulations. The second is about knowing how to do it, and the third thing is that you are able to change the organisation that has to implement it. The last thing is the unequivocally the hardest, because it is where you meet human beings."* (Appendix B:5-6). Subsequent to this, it is mentioned that *"[…] the next five years will very much be about rethinking the organisations […]"* (Appendix B:6).

Based on this, the question arises as to which measures can be used to rethink the municipal organisations in order to increase the ability to coordinate cross-sectorial activities on climate action? This will be analysed in section 5.2.

### 5.1.3 Partial conclusion

Municipal climate action is characterised by a structural embeddedness that extends beyond sectorial demarcations. Even though municipalities differ in terms of organisational structure, they share the challenge on coordinating multi-sited points of climate action. Having several departmental sub-systems working simultaneously, processes of coordination are essential for the ability to assess deviances from targets and pathways. However, the ability for municipalities to secure such coordination is hampered by the pervasiveness of hierarchies and clearly demarcated divisions of labour. As a result, flows of interaction are vertically oriented, which constitutes and solidifies the gap between departments and sub-systems. The vertical orientation is to a great extent determined by structures of institutional arrangements, by which practices of climate planning are shaped. However, due to the increasing expectations from the national government and the general public on raising the level of ambition, municipalities are currently in a process of conceptualising new ways of responding to climate change, which destabilises the interplay of institutions and gives rise to the formation of new arrangements.

## 5.2 Increasing coordination through governance networks

In the previous section, it has been argued that institutional arrangements and the embeddedness of climate planning scripts among municipal actors are currently in a process of becoming deinstitutionalised by the emergence of new nationally determined targets and normative expectations. As a result, a window of opportunity has appeared, in which perspectives of change can affect the solidification of new institutional arrangements. Building upon the aforementioned analytical point of municipalities being unable to coordinate cross-sectorial climate activities, this section examines the degree to which a new structural approach to the process of organising

climate action could increase coordination by reducing the distance between municipal departments and sub-systems. Seeing that the inability to secure internal and external coordination of climate action is extensively challenged by the hierarchical structure and vertical interaction flows, this section proposes increased use of network governance and horizontal collaborations as an alternative way of organising processes of climate action planning in municipalities.

### 5.2.1 Using existing networking routines as starting point

A vital element in enabling the transition towards structural changes that favour network perspectives relates to the recognition that engaging in collaborative efforts and partnerships with other climate actors increase their ability to respond to the complexity of climate change. As argued in section 5.1.2, municipalities are increasingly exploring the potentials of engaging in network activities, and thus the recognition starts to manifest itself in the strategic mind set of policy makers. The Mayor of the Municipality of Frederikshavn mentions:

*"There is a need for us to meet, but there is also a need for someone to take responsibility for a coordinative effort for Denmark. I am a member of the board of KL* [The Danish Association of Municipalities, ed.]. *That is what KL can engage in, I think that we already do, and then discuss with the government, which roles are municipal, and which ones are national. Once again, climate changes know no municipal boundaries."* (Appendix B:2).

Municipalities currently recognise the importance of accumulating resources and knowledge through network activities. However, there is a tendency for policy makers to direct focus on networking potentials towards other authorities in order to establish inter-organisational partnerships. In spite of cross-municipal partnerships being an essential strategic tool for achieving locally as well as nationally determined reduction targets, it remains interesting as to why limited focus is devoted to the process of internalising the principles and potentials of cross-municipal collaborations. With reference to the coordinative challenge, municipal departments and sub-systems could to a great extent benefit from higher degrees of horizontal thinking. Being the only municipality that explicitly explores the potential of applying network perspectives to both internal and external climate activities, The Municipality of Aalborg experiences improved conditions for creating cross-sectorial initiatives:

*"Therefore, we have a strong focus on identifying synergies, which means that it is to a great extent a network management, because several parties in our collaboration are represented, and because they feel that they benefit from it. […] We are forced to explore processes that are about creating will, systemic change and will to systemic change."* (Appendix B:4).

More implicit, characteristics of intra-organisational network activities also emerge from the strategic shift that the Municipality of Hjørring Municipal currently experience. The mayor mentions:

*"In the beginning I had a major role, as I brought it home."* (Appendix B:6). However, he subsequently adds: *"I can feel a change of roles in the sense that it is more a 'we'-thing between*

*the technical director, the employees, the financial department and procurement. Now it is spread out, but in the beginning it was very much my interest that was a driver."* (Appendix B:6).

Policy makers all share an interest in organising network activities. However, municipalities differ in terms of accompanying inter-organisational network relations with intra-organisational ones. In order to enable internalisation of networking practices and increase cross-sectorial coordination, while maintaining organisational feasibility, suggested paths for transitioning towards network governance build upon present networking routines.

### 5.2.2 Responding to climate change in horizontal networks

The wickedness of climate change lies within the incomprehensible range of consequences as well as uncertainty in regards to the development of strategic responses that aims to control such complexity. It thus becomes an example of the dynamics that pervades natural and social phenomena. Based on this, strategic attempts to reduce complexity through coordination and control must be equally dynamic (Kooiman, 1993), and such flexibility is what a transition towards horizontal governance networks aims to provide. As visualised in figure 3, current structures of vertically oriented interaction flows limit the ability for planning practitioners to explore horizontal collaborations in order to achieve synergetic effects from cross-sectorial activities. Instead, actors develop individual strategies within each sub-system in response to the climate agenda that has been defined by politicians and directors. As these strategies are operationalised simultaneously, they alter the conditions, upon which each strategy is formed. Processes of coordinating such dispersion of agency require new structural approaches, and a strategic model for shaping such alternative arrangement on a foundation of governability perspectives is presented in figure 4.

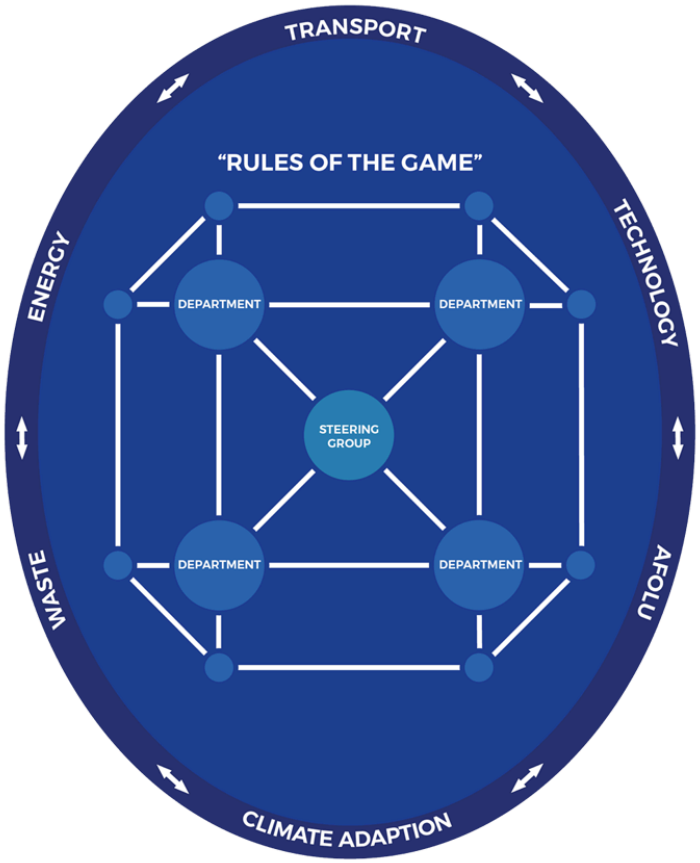



*Figure 4: Visualisation of the interrelatedness between the three fundamental pillars of network governance arrangements.*

Opposed to the traditional hierarchal division of labour, perspectives of governability introduce a more network-based structure that encourages departmental sub-systems to engage in cross-sectorial collaborations with internal and external stakeholders. Being loosely coupled, the network relations enable such collaborations between groups of employees to build up capacity in order to respond to challenges that would otherwise exceed individual capacities in terms of knowledge and financial resources. The model is shaped in the span between empirical data and theoretical perspectives. As a result, it builds upon three elements, all of which are closely interrelated: 1) *Rethinking the role of hierarchies,* 2) *forming a steering group*, and 3) *using plans as relational contracts*. These pillars will be elaborated in the following sections.

### *Rethinking the role of hierarchies*

Sørensen (2014:163) argues: *"At a general level of explanation, one can say that actors who expect a reform to result in a loss of power will stick to tradition, while those who expect to gain power will be more inclined to welcome change."* From applying such perspective to the transition from hierarchical structures towards horizontal networks, the implications of alternative power structures might cause scenarios to emerge, in which politicians and directors are reluctant to change, whereas planning practitioners are more open towards new interaction flows. A chief consultant from The Municipality of Frederikshavn mentions:

*"The hierarchical system has not yet taken a stand with regards to climate. […] If you are genuinely committed, you are obliged to involve employees and explore other structures. Executive levels can be present, but in my opinion, it must be cross-sectorial. We need a team-spirit."* (Appendix B:4)

However, the process of transitioning towards network governance and horizontal collaborations does not entail that politicians and directors are deprived of power. Instead, it provides a governance structure, in which the role of hierarchies is rethought in line with the request made by the chief consultant. When undergoing such structural changes, a vital element relates to the establishment of frames, within which the institutionalisation of horizontal collaborations is regulated. In other words, hierarchical structures are used to define the "rules of the game", and thus, the exertion of hierarchical power takes shape as meta-governance. Without predefined rules and norms, processes of negotiation across organisational sub-systems are likely to promote individual interests instead of collective ones. At a directorial level in the Municipality of Aalborg, this is recognised: "*It is important that you create arenas, where people realise that they can do more together than individually*." (Appendix B:5).

### *Forming a steering group*

Seeing that hierarchically structured municipalities experience a coordinative challenge in relation to climate action planning, it can be argued that a dispersion of agency and higher degrees of cross-sectorial collaborations in complex network-based structures would cause such challenge to deteriorate. Therefore, an essential element to the governance network relates to the formation of a steering group. Serving the purpose of formulating long-term visions, identifying potential areas of cross-sectorial collaborations and securing internal as well as external coordination, the steering group ensures that negotiation processes throughout the organisation promote collective targets. This way, what the aforementioned chief consultant refers to as 'team-spirit' is like to accumulate and pervade the municipal organisation. As the formation of such cross-departmental steering groups is not entirely new to municipalities, it may very well be a starting point for transitioning from vertical interaction flows to horizontal collaborative networks.

*"There has been different ways to organise it* [climate action, ed]*. What has been a shared characteristic for the ways to cope with it is that we manage to create cross-departmental steering groups on level two. This means that directors represent level one, and chiefs of departments are right below them. Thus, it is a collaboration between chiefs of departments that carries the implementation of different initiatives in relation to climate and sustainability. […] Notice should be given to the fact that the sustainability strategy is not a sector plan. It is a common plan for all sectors in the municipality in the sense that we have established what we call a sustainability counsel, in which all sectors are represented. They contribute to the formulation of goals and action plans within the field of sustainability"* (Appendix B:4-5).

Being practiced without a core, network activities could potentially increase the degree of holism, but at the cost of the ability to coordinate climate activities. Therefore, the primary task for the steering group lies within the attempt to balance the elements of *holism* and *coordination*. This means that the steering group is both responsible for defining an agenda and ensuring coherence with desired pathways. Such twofold responsibility requires participation from directors as well as planners in order to reduce the distance between strategic ambitions and practical experiences.

Thus, it is important to form a steering group that is as diverse as the challenges that they seek to respond to. As the Mayor of the Municipality of Hjørring states: *"Development happens in the interplay between mayor, directors and planners."* (Appendix B:7).

#### *Using plans as relational contracts*

The willingness to explore cross-sectorial collaborative potentials depends on the recognition that departments and sub-systems are interdependent and must collaborate in order to achieve overall climate targets. For the purpose of stimulating such recognition, climate action plans and sustainability strategies are important elements, as these local documents establish frames for climate planning practices. However, seeing that current plans express an interest in cross-sectorial activities on a strategic level, but leave out pathways for operationalising this, practices of sector coupling end up in an institutional void, and thus, the role of such plans and strategies must be rethought.

In order to evoke a recognition of interdependency, climate action plans and sustainability strategies must act as *relational contracts*, on the basis of which organisational sub-systems align expectations on climate action in order to promote collective interests. Building upon the current use of such documents as a boundary objects, where actors are able to embed and extract knowledge, there is an untapped potential residing within the use of plans and strategies to stimulate, facilitate and maintain horizontal relations across departments and sub-systems on a practical level. Additionally, the formation of mutual relationships requires high degree of trust, and by delineating cross-sectorial areas of climate action in formal documents, groups of employees are likely to invest in collaborative efforts. Thereby, the likelihood of arriving at what Scharpf (1994) refers to as *the dilemma of the negotiator*, meaning that collaborations are hampered by the lack of interest in being the first to invest time and resources, is reduced.

### 5.2.3 Removing sectorial demarcations through governance networks

By organising a climate effort that is centred around the formation of a steering group and builds upon the use of climate action plans as relational contracts within the frames of predefined rules for networking activities, climate action is embedded within an organisational structure that is shaped by a complex interplay of loosely coupled departments and sub-systems. With the recognition of interdependency between actors being the force, upon which networking activities emerge and cross-departmental relations are maintained, the structural flexibility creates improved conditions for exploring horizontal collaborations. Thus, such alteration harmonises with the potential of applying a broader notion of sector coupling to municipal climate action, as argued in section 1.4.3. Groups of actors must accumulate knowledge and resources in order to achieve overall climate ambitions and ensure that climate action pervade the entire organisation. Therefore, no groups of actors can pursue mono-sectorial strategies in isolation from collective ambitions. The Mayor of the Municipality of Jammerbugt explains: *"If we are to succeed with the internal tasks, then it is necessary with a network in The Municipality of Jammerbugt, so that kindergartens will contribute with LED-lights, schools will contribute and so on"*. (Appendix B:12)

In line with the ambition of coordinating a holistic climate effort, it is essential to explore the traditional "trenches" between departments and sectors in order to identify potential areas of collaboration. The increasing effort on coupling energy and transport as well as electricity and

heat must continue. However, only by expanding the scope of sector coupling to include the areas of health and education among others, sectorial demarcations will become blurred to an extent that allows horizontal collaborations to become institutionalised as a normalised response to climate change. As a result, cross-sectorial collaborations fosters greater insight into the frames, within which each individual department interprets and prioritises activities, and based on the ability to relate to this, negotiation processes on climate initiatives are likely to become more synergetic. Thus, the structural and institutional conditions for engaging in cross-sectorial collaborations are improved, and by assigning the coordinative role to a steering group, network activities can be organised in coherence with overall climate targets.

### 5.2.4 Partial conclusion

Society becomes increasingly fragmented and dynamic. Therefore, the tools that municipalities use to manage such tendencies must be equally complex. In response to the challenge of coordinating cross-sectorial climate activities, a transition towards higher degrees of governance networks are introduced as an alternative structure, within which climate action can be reorganised in favour of horizontal collaborations. The transition builds upon three pillars. First, the role of hierarchies must be rethought. By defining the “rules of the game” politicians and directors establish the institutional frames, within which network activities are negotiated. Second, a steering group must be formed, in which directors of departments as well as planners are represented. Being assigned a coordinative role, the steering group ensures that the multi-sited climate activities cohere with policy objectives. Third, climate action plans must act as relational contracts for exploring collaborative potentials. By facilitating a recognition of interdependency, climate actors are encouraged to engage in network relations, and as horizontal collaborations become institutionalised, the sectorial gaps gradually become reduced.

# 6. Discussion

Throughout the analysis it has been argued that a transition towards higher degrees of network governance would increase the ability for municipalities to coordinate cross-sectorial climate activities. However, little focus has been directed towards the democratic dimension of such transition. Building upon the list of aforementioned suggestions, this chapter seeks to discuss the democratic implications of dispersing climate agency throughout the municipal organisation. First, two conflicting perspectives on democracy are introduced. This delineation serves the purpose of establishing a foundation, on the basis of which the democratic implications of transitioning towards network governance, as presented in chapter 5, are discussed.

Adding to the acknowledgement that societal fragmentation requires equally fragmented steering mechanisms, proponents of network governance argue that the question of democracy must be redefined as well in order for municipalities to maintain public interests and preserve the democratic foundation, upon which they are built and their activities are legitimised. But is it desirable or even possible to subject the notion of democracy to such fragmentation? The answer to this question depends on the perspective from which the concept is understood.

## 6.1 Liberal democracy and post-liberal democracy

Since the 18$^{th}$ century, the notion of democracy has been shaped by the increasing liberalism of societies. Thus, the primary tasks for liberal democracies relates to the responsibility of serving public interests, while maintain freedom for individuals to be self-regulating (Sørensen & Torfing, 2013). Citizens exert their power through returning elections, on the basis of which democratic entities are given sovereignty to decide on societal matters. From such perspective, a transition from governmental control towards network governance would alter power structures to a degree that is undesirable for the relationship between citizens and authorities. By dispersing agency to a complex interplay of actors, the democratically elected central power is deprived of the ability to manage societal decision-making processes. Thus, decisions become democratically illegitimate.

This end is based on a notion of democracy that is detached from the increasing fragmentation of society. At least, this is the argument from proponents of the emerging post-liberal notion of democracy. Instead of defining democratic legitimacy of societal decision-making processes by the presence of a centralised entity, it is argued that the increasing fragmentation gives rise to a plurality of interwoven political entities, on the basis of which the notion of democratic legitimacy must be reconceptualised. Within the post-liberal notion, Sørensen & Torfing (2013) introduce result-oriented democracy as a theoretical tradition that builds upon the same elements as governability theory in terms of rethinking democracy in the intersection between coordination and calculation (see table 11). In line with this, Fung & Wright (2003) add flexibility to the understanding of democracy by stating that legitimacy must be determined by the ability for political structures to secure quality and effectiveness in societal decision-making processes. Additionally, Fung (2005) argues that public agencies *"[…] can become more responsive, fair, innovative and effective by incorporating empowered participation and deliberation into their governance structures"* (Fung, 2015:6). Fung & Wright (2003) identify three prerequisites for political organisations to achieve such potential. First, these institutions must be flexible enough to respond to the increasing complexity of societal decision-making. Second, a vital element relates to the democratization of decisions, and thus, stakeholder involvement must be highly

prioritised. Third, actors must be able to rationalise upon shared political ambitions and the interdependency between actors in order for individual strategies to serve collective interests.

There appears to be conflicting perspectives on the notion of democracy and the implications of transitioning towards higher degrees of network governance. In spite of the shared characteristics between governability theory and the post-liberal notion of democracy, it remains interesting as to what degree the three pillars of municipal network governance, as visualised in figure 4, add democratic legitimacy to societal decision-making processes, as well as the extent to which the municipal notion of democracy promotes or challenges the adoption of such structural changes. This will be discussed in the following section.

## 6.2 Democratic implications of municipal network governance

As the essence of municipal network governance as a proposed strategic measure alters current structures of power and agency, the degree to which such alteration is democratically legitimate depends on the perspective, from which the notion of democracy is understood. Being concretised through three pillars, i.e. *rethinking the role of hierarchies*, *forming a steering group* and *using plans as relational contracts*, the transition towards network governance largely intervenes in the core elements of the foundation, upon which municipalities are shaped and function as authorities.

Thus, from a liberal notion of democracy, the strategic propositions of transitioning towards network governance are likely to be deemed undesirable, as they undermine fundamental aspects of society. By dispersing agency throughout the municipal organisation, on the basis of which a complex interplay of network relations is formed, it would be argued that the sovereign position of democratically elected politicians is weakened by attempts to rethink the role of hierarchies, and that their ability to maintain public interests is restricted, which would alienate citizens from societal decision-making processes. However, this argument resides on a misunderstanding of the structural alterations that this project proposes. Even though the role of the sovereign core must be rethought, such ambition does not hollow the crown. Instead, power structures are reshaped, as the indirect power of establishing institutional arrangements and defining the rules of the game replaces direct exertion of power. Therefore, democratically elected politicians are still vital components of societal decision-making as well as the process of ensuring that municipal activities serve public interests.

From a post-liberal notion of democracy, it could be argued that network governance would create a structure, in which citizens become the exact opposite of alienated from decision-making processes. As the formation of loosely-coupled network relations improves the conditions for including internal and external stakeholders, citizens receive a sense of ownership by becoming an actual constituent of the interplay of network relations. Sørensen & Torfing (2013) refer to this as the formation of a *functional democracy* that acts as a supplement the *representative democracy* through greater emphasis on outcome legitimacy. In the case of municipal climate action, citizen involvement is pivotal to the success of the climate initiatives. A planner from the Municipality of Hjørring mentions: *"We need to engage the citizens and make them take ownership, because we can not do this without support from the citizens."* (Appendix B:8). Adding to this, inclusion of

citizens in network relations and societal decision-making processes on climate action is likely to evoke such engagement.

Being closely related to the dynamics between citizens and authorities, the element of transparency must be further scrutinised. Citizen engagement rests on a foundation of transparency in order for climate initiatives to resonate within citizens and evoke a will to engage. By using climate action plans as relational contracts across network actors, transparency of network formation is increased in the sense that areas of sector coupling potentials as well as procedural paths become explicit to both internal and external stakeholders. Without such frames, loosely-coupled systems risk countering the ambition of increasing transparency of societal decision-making, as the interrelatedness of simultaneous negotiation processes on climate action would alienate actors who are not directly affiliated with the subject matter.

In outline, the democratic implications of transitioning towards network governance depend on the perspective, from which the notion of democracy is interpreted. Thus, the degree to which such structural transition threatens or strengthens the democratic foundation of municipalities is far from unambiguous. However, as society becomes increasingly fragmented, and municipalities must respond to ever more wicked challenges on climate action, it is no longer sufficient to limit the scope of legitimacy to the democratic dimension of societal decision-making processes. Instead, this scope must be broadened out. By supplementing democratic legitimacy with a focus on outcome legitimacy, awareness is raised on the importance of connecting strategic ambitions with operational capabilities. This way, municipal organisations are strengthened in their ability to adapt and respond to changes. However, it requires a willingness to invest time and resources in the process of establishing an institutional arena, within the frames of which climate action can be negotiated across departments and sectors.

# 7. Conclusion

Societal challenges are becoming increasingly wicked. Municipalities widely recognise the pervasiveness and interrelatedness of climate change. However, their ability to organise and coordinate a holistic climate effort that transcends sectorial demarcations is challenged by the resilience of institutional structures, into which climate action is embedded. Being extensively shaped by a hierarchical order and a clear division of labour, the municipal organisation is characterised by governmental control through vertical interaction flows. As neither local plans or national regulation create incentive for climate actors to engage in horizontal collaborations, little flexibility is left to explore synergetic potentials. Based on such structural and institutional challenges, this thesis proposes a transition towards higher degrees of network governance as a means to improve the conditions for engaging in cross-sectorial collaborations and enable municipalities to coordinate multi-sited climate initiatives.

The transitional process of rethinking municipal organisations builds upon the recognition that societal fragmentation requires equally fragmented tools of societal steering. Although municipalities are far from strangers to networking activities on an inter-organisational level, they struggle to apply network perspectives to intra-organisational matters. Thus, the formation of loosely-coupled governance networks serves the purpose of creating an arena, within which climate action can be negotiated by mutually dependent actors. The transition revolves around three closely interrelated pillars. First, a pivotal element relates to the process of *rethinking the role of hierarchies*. By establishing the institutional frames for governance networks, politicians and directors are not deprived of power. Instead, they define the rules of the game and ensure that networking activities serve collective interests. Second, the *formation of a steering group* is essential for the ability to coordinate climate action in an even more fragmented organisational structure. Being comprised by both directors and planners across departments, it is ensured that climate ambitions pervade the entire municipal organisation. Third, an important element lies within the ability to ensure that a dispersion of agency promotes collective interests. Thus, it is suggested to *use climate action plans as relational contracts* for engaging in cross-sectorial collaborations. By recognising that actors depend on each other, incentive is created to explore horizontal collaborative potentials.

Undergoing a structural transition requires time, resources and will in order for new institutional arrangements to build up resilience. As municipal climate efforts largely differ, this thesis has outlined a generic path for reducing the distance between departments and sectors through horizontal network collaborations, and thus increase the ability for municipalities to coordinate a holistic and cross-sectorial climate effort.

# 8. Bibliography

Anguelovski, Isabelle and Carmin, JoAnn (2011): *Something Borrowed, everything new: innovation and institutionalization in urban climate governance*, Elsevier: Current Opinion in Environmental Sustainability, Vol. 3, pp. 1-7

Bäckstrand, Karin; Kuyper, Johan W.; Linnér, Björn-Ola and Lövbrand, Eva: *Non-state actors in global climate governance from Copenhagen to Paris and beyond*, Environmental Politics, Vol. 26, No. 4, pp. 561-579

Bundesverband der Energie- und Wasserwirtschaft (2017): *Positionspapier—10 Thesen zur Sektorkopplung. 2017*. Available at: https://www.bdew.de/internet.nsf/id/3cc78be7f576bf4ec1258110004b1212/$file/bdew%20positionspapier_10%20thesen%20zur%20sektorkopplung_o%20a.pdf Last accessed: June 3rd 2020. Tranlated in: Robinius, Martin; Otto, Alexander; Heuser, Philipp; Welder, Lara; Syranidis, Konstantinos; Ryberg, David S.; Grube, Thomas; Markewitz, Peter; Peters, Ralf and Stolten, Detlef (2017): *Linking the Power and Transport Sectors – Part 1: The Principle of Sector Coupling*, Energies 2017

Biesbroeck, R. G; Swart, R. J and Van der Knaap, Wim G. M. (2009): *The mitigation-adaptation dichotomy and the role of spatial planning*, Habitat International. Vol. 33, pp. 230-237

Böttger, Diana; Götz, Mario; Lehr; Nelly; Kondziella, Hendrik and Bruckner, Thomas (2014): *Potential of the Power-To-Heat Technology in District Heating Grids in Germany*, Energy Procedia 46, pp. 246-253

CONCITO (2020): *Klimaplanlægning i kommunerne*. Available at: https://concito.dk/sites/concito.dk/files/media/document/Klimaplanlægning%20i%20kommunerne_final.pdf Last accessed: June 2nd 2020

Corfee-Morlot, Jan; Kamal-Chaoui, Lamia; Donovan, Michael, G.; Robert, Alexis; Teasdale, Pierre-Jonathan (2009): *Cities, Climate Change and Multilevel Governance*, OECD Environmental Working Papers No. 14, OECD Publishing

Danish Ministry of Climate, Energy and Utilities (2019A): *Aftale om klimalov*. Available at: https://kefm.dk/media/12965/aftale-om-klimalov-af-6-december-2019.pdf Last accessed: June 3rd 2020

Danish Ministry of Climate, Energy and Utilities (2019B): *Denmark's Integrated National Energy and Climate Plan*. Available at: https://ens.dk/sites/ens.dk/files/EnergiKlimapolitik/denmarks_national_energy_and_climate_plan.pdf Last accessed: June 3rd 2020

Fung, Archon (2004): *Empowered Participation: Reinventing Urban Democracy*, Princeton University Press

Fung, Archon and Wright, E.O (2003): *Deepening Democracy: Institutional Innovations in Empowered Participatory Governance*, Real Utopias Project Series, Vol. 4

Hooghe, Liesbet & Marks, Gary (2003): *Unraveling the Central State, but how? Types of Multi-Level Governance*, The American Political Science Review, Vol. 97, No. 2, pp. 233-243

Jambagi, Akhila; Kramer, Michael and Cheng, Vicky (2015): *Electricity and Heat Sector Coupling for Domestic Energy Systems*, SCITEPRESS. In SMARTGREENS (2015): *Proceedings of the 4th International Conference on Smart Cities and Green ICT Systems*, pp. 66-71

Kenis, Patrick and Schneider, Volker (1991): *Policy Networks and Policy Analysis: Scrutinizing a New Analytical Toolbox*. In: Marin, B. and Mayntz, R. (1991): *Policy Networks: Empirical Evidence and Theoretical Considerations,* Campus Verlag, Frankfurt am Main, pp. 25-59.

Kooiman, Jan (1993): *Governance and Governability: Using Complexity, Dynamics and Diversity*. In: Kooiman, Jan (1993): *Modern Governance – New Government-Society Interactions*, Sage Publications.

Kristensen, Søren (2005): *Kvalitativ dataanalyse og software – Introduktion til Nvivo*, Hans Reitzels Forlag

Lynggard, Kennet (2015): *Dokumentanalyse*. In: Tangaard, Lene and Brinkmann, Svend (2015): *Kvalitative metoder*, Hans Reitzels Forlag, Ed. 2, Vol. 2, pp. 154-168

Maarten, Hajer (2003): *Policy without Polity? Policy analysis and the institutional void*, Policy Sciences, pp. 175-195

Maruf, Nasimul Islam (2019): *Sector coupling in the North Sea Region – A Review on the Energy System Modelling Perspective*, Energies 2019

Olczak, Maria and Piebalgs, Andris (2018): *Sector Coupling: the New EU Climate and Energy Paradigm?*, Robert Schuman Centre – Policy Brief

Polanyi, Michael (1958): *Personal Knowledge: Towards a Post-Critical Philosophy*, Routledge and Kegan Paul Ltd.

Rhodes, R.A.W (2000): *Governance and Public Administration*. In: Pierre, J. (2000): *Debating Governance – Authority, Steering, and Democracy*, Oxford University Press, pp. 54-90

Robinius, Martin; Otto, Alexander; Heuser, Philipp; Welder, Lara; Syranidis, Konstantinos; Ryberg, David S.; Grube, Thomas; Markewitz, Peter; Peters, Ralf and Stolten, Detlef (2017): *Linking the Power and Transport Sectors – Part 1: The Principle of Sector Coupling*, Energies 2017

Rybirk, Jørgen (2017): *Projektledelse i politisk styrede organisationer*, Samfundslitteratur, Ed. 1, Vol. 2

Sanders, Elizabeth (2002): *From User-Centered to Participatory Design Approaches*. In: Frascara, J. (2002): *Design and the Social Sciences*, Taylor & Francis Books Limited

Schaber, Katrin; Steinke, Florian and Hamacher, Thomas (2013): *Managing Temporary Oversupply from Renewables Efficiently: Electricity Storage Versus Energy Sector Coupling in Germany*, International Energy Workshop

Scharpf, F.W. (1994): *Games real actors could play: positive and negative coordination in embedded negotiations*, Journal of Theoretical Politics, Vol. 6, No. 1, pp. 27-53

Scott, W. Richard (2001): *Institutions and Organizations*, Sage Publications, pp. 47-70

Sørensen, Eva (2002): *Democratic Theory and Network Governance*, Administrative Theory and Praxis, Vol. 24, No. 4, pp. 693-720

Sørensen, Eva (2014): *Conflict as a driver of pluricentric coordination*, SAGE Publications, Vol. 13, No. 2, pp. 152-169

Sørensen, Eva and Torfing, Jacob (2013): *Netværksstyring – fra government til governance*, Roskilde Universitetsforlag, Ed. 1, Vol. 4

Tanggard, Lene and Brinkmann, Svend (2015): *Interviewet: Samtalen som forskningsmetode*. In: Tangaard, Lene and Brinkmann, Svend (2015): *Kvalitative metoder*, Hans Reitzels Forlag, Ed. 2, Vol. 2, pp. 21-54

Tannenbaum, S. Arnold; Kavcic, Bogdan; Rosner, Menachem; Vianello, Mino and Wieser, Georg (1974): *Hierarchy In Organizations*, Jossey-Bass Publishers, 1. Ed.

The Municipality of Frederikshavn (2014): *Handlingsplan for Vedvarende Energi 2030*. Available at: https://frederikshavn.dk/media/1636/handlingsplan-for-vedvarende-energi.pdf Last accessed: June 3rd 2020

The Municipality of Hjørring (2019): *Energiplan 2.0*. Available at: https://hjoerring.dk/media/35056/punkt_2_bilag_2.pdf Last accessed: June 3rd 2020

Tolbert, Pamela S. and Zucker, Lynn G. (1996): *The Institutionalization of Institutional Theory*. In: Clegg, S.; Hardy, C. and Nord, W., (1996): *Handbook of organisation studies*, London SAGE, pp. 175-190

United Nations (1992A): *United Nations Framework Convention On Climate Change*. Available at: https://unfccc.int/resource/docs/convkp/conveng.pdf Last accessed: June 2nd 2020

United Nations (1992B): *Agenda 21*. Available at: https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf Last accessed: June 3rd 2020

United Nations (2015): *Paris Agreement*. Available at: https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Last accessed: June 2nd 2020

Van Nuffel, Luc; Gorenstein Dedecca, Joáo; Smit, Tycho and Rademaekers, Koen (2018): *Sector coupling: how can it be enhanced in the EU to foster grid stability and decarbonise?*, European Union

Wejs, Anja (2013): *Climate for Change? Integrating Climate Change into Cities' Planning Practices*, Aalborg Universitetsforlag

Wejs, Anja; Sperlin, Karl and Kørnøv, Lone (2017): *Klimaplanlægning – en ny udfordring i den lokale planlægning*. In: Arler, Finn; Mosgaard, Mette Alberg and Riisgaard, Henrik (2017): *Bæredygtighed – værdier, regler og metoder*, Aarhus Universitetsforlag, Ed. 1, Vol. 2, pp. 311-336