Department of Media and Social Sciences

Master Thesis Spring 2020

Supervisor: Carlo Aall

Municipal climate and energy planning in the county of Rogaland, Norway

Mariia Bartakhanova

Master in Energy, Environment and Society

UNIVERSITY OF STAVANGER

MASTER DEGREE IN
Energy, Environment and Society

MASTER THESIS

CANDIDATE NUMBER: 5623

SEMESTER:

Spring 2020

AUTHOR:

Mariia Bartakhanova

SUPERVISOR:

Carlo Aall

MASTER THESIS TITLE:

Municipal climate and energy planning in the county of Rogaland, Norway

SUBJECT WORDS/KEY WORDS:

Climate planning; Emissions reduction; Municipal planning; Climate targets

PAGE NUMBERS: 64

STAVANGER 31 August 2020

…….
DATE/YEAR

Abstract

The aim of this master thesis is to provide an overview of climate and energy planning in all municipalities of Rogaland, Norway. Along with that it maps out barriers in work with emissions reduction that municipalities themselves report on. The research question is posed the following way: *What are the outcomes of local climate policy planning in regard to greenhouse gas emissions reduction?*

In order to answer this question and describe the situation with municipal work on emissions reduction we look at four main themes. First the thesis reviews municipal climate and energy plans by describing what status they have and what climate targets they commit to. Municipal plans that address emissions reduction issue also need to be followed by plans of action. Therefore, the next theme the thesis covers is municipal action plans. Here we provide information on whether municipalities have such plans at all, whether the plans get timely updated and what they contain. But in order to reduce emissions municipalities have to implement relevant climate measures and instruments. Third, the thesis provides an overview of municipal budget processes, which implies how climate measures are getting included into budgets and financial plans. Fourth, we look at how municipalities report on work with emissions reduction and implementation of such measures.

The research showed that municipalities apply a variety of approaches to work with emissions reduction. Climate plans differ in levels of detail and ambitiousness. Almost forty percent of Rogaland's municipalities apply 1st generation climate plans that were politically adopted eight to ten years ago. Three municipalities do not have relevant action plans, and the majority of existing planes are not getting revised as often as they must. Contents of action plans also vary, as some of the state's requirements appear to be difficult to fulfill. Municipalities in general, include climate measures and instruments into their financial plans, but almost half of the municipalities did not establish any reporting routines regarding work with emissions reduction. Altogether this research's findings point at lack of institutionalization of emissions reduction work on a municipal level.

Table of Contents

1. Introduction

1.1. Background

The purpose of this master thesis is to explore the current situation with work on greenhouse gas (GHG) emissions reduction in all municipalities in the county of Rogaland, Norway. In addition, I will explore how municipalities address energy issue as an integral part of the work on emissions reduction. Energy issue in this context implies improved energy efficiency and reduction of energy consumption. Here I will also map out barriers in work with emissions reduction that municipalities themselves point out in their annual reports and in my survey.

In the context of climate change governments of several nations established the need to take common action. International agreements were established, and nations committed to keeping the temperature rise below 1,5 degrees above pre-industrial levels through transforming their development paths. Under Paris Agreement of 2015, countries expressed their intended efforts by setting up Nationally Determined Contributions (NDCs), which are broadly known as climate goals (United Nations, 2015). Climate agreements, together with actors on a local level, led to the formation of national climate politics and policies in Norway (Aall, 2012; Westskog, Selvig, Aall, Amundsen, & Jensen, 2018). The country set ambitious targets to cut its GHG emissions by means of action on both national and local level over the years.

Norway is a part of European quote system (EU ETS) that implies limitations on how much of GHG emissions can be released into the atmosphere over the years (European Comission, 2020). The system is important for cost-effective emissions reduction from industry, energy supply, and aviation in Europe. Countries have a yearly emission budget for the period from 2021 to 2030. ETS assumes that the amount of GHG emissions to be released goes down over time, while the price of each ton CO_2 emitted goes up. In Norway about half of GHG emissions are covered by the quota system, whereas the other half of emissions is regulated by diverse climate change mitigation measures and instruments (Miljødirektoratet, 2020b).

In order to reduce GHG emissions in non-quota-regulated sectors, the State facilitates action on the level of local governments. Counties and municipalities are considered as the main actors in climate change mitigation (Vevatne, Westskog, & Hauge, 2005; Wang, Westskog, Selvig, Mygland, & Amundsen, 2016). They have a big potential to influence reduction of emissions and clean energy transitions. For the purpose of advancing such changes, the State established the

necessity of having local climate and energy plans. Such planning among other things is assumed to push the nation forward in reaching its climate goals and to becoming a low-emission society. The State released Guidelines for climate and energy planning, which specify the required contents of relevant plans (Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning, 2018). The up to 2018 prevailing guideline was released in 2009 and did not include climate change adaptation, which in turn was added to the recently updated guideline in 2018. The purpose of the Guidelines is as follows:

"Municipalities, counties and the State will through planning and other governmental and business activities stimulate and contribute to reduction of greenhouse gas emissions, as well as increased environmentally friendly energy transition. The planning will also help the society prepare for and adapt to climate change" (Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning, 2018, p. 2).

The point of interest though is how municipalities integrate these guidelines and what local climate policy planning delivers.

In order to answer this, we will look into the following themes:

1. Do municipalities have climate and energy plans?
2. How is work with emissions reduction organized in municipalities?
3. What are the barriers in municipal work with emissions reduction?

1.2. Background for choice of theme

During the 3rd semester of my master program, I had practical training at the office of County Governor of Rogaland. There I worked on a project the purpose of which was to gather data and provide an overview of climate and energy plans in Rogaland.

The results of this project can be looked at from different sides. First of all, I found out that there are many municipalities that either do not have or do not update their climate plans, as if they were non mandatory. They differ significantly in many ways, for example, in their contents or ambition levels. There is no common approach to forming such plans, work with them is poorly structured and organized in many municipalities. Another insight was that there are no well-

established routines in municipalities to follow up their climate and energy plans. It was difficult to assess whether real action stands behind announced climate targets. One of the County Governor's tasks is to ensure that all decisions, objectives and guidelines of the Parliament and the government are followed up. At the same time, the County Governor is responsible for guiding municipalities and providing them assistance with the societal functions imposed on them. But in order to measure municipal performance within climate change mitigation field, one needs to know what is actually happening there. The State Guidelines for climate and energy planning do not imply however any reporting obligations or monitoring of municipal climate activities (Kasa, Westskog, & Rose, 2018). This altogether makes it extremely hard to stay updated on the status of municipal climate change mitigation efforts, whether municipalities implement any measures or what difficulties they experience.

The results of my practical training report turned out to be useful for local governments in Rogaland, but more details were still needed. This is why I decided to investigate this topic further, as it is extremely relevant today. Deeper understanding of processes within municipalities and detection of barriers influencing climate change mitigation will have a positive impact. It will improve the quality of aid and guidance the municipalities have the right to and, in some cases, might motivate them to speed up low-carbon transitions.

1.3. Problem statement

The purpose of this thesis is to explore and describe current situation with work on GHG emissions reduction in all municipalities in the county of Rogaland, Norway, to get a clear understanding of how municipalities integrate government's emissions reduction requirements and what barriers they experience in doing so. By identifying these we will get an overview of municipal activities related to climate change mitigation, have a chance to make a positive impact into climate planning and its further improvement. Thereby the problem statement is the following:

What are the outcomes of local climate policy planning in regard to greenhouse gas emissions reduction?

In order to attain the objective of this master thesis we will answer the following research questions:

1. *What is the status of climate plan, by municipality?*
2. *What do municipalities report on regarding work with emissions reduction?*
3. *What are the main barriers in work with emissions reduction, according to municipalities?*

1.4. Research limitations and thesis structure

In this thesis I used publicly available data that is published on municipalities' official websites, and the number of documents published varies significantly from municipality to municipality. The results will be represented by the structured information that municipalities themselves provided in various documents and my survey.

In order to provide a general overview of climate planning in Rogaland, the survey was sent out to all municipalities. In the middle of thesis work period the Covid-19 pandemic started affecting overall working capacity and the amount of people at a workplace. This could have affected the response rate to my e-mails and survey, together with general insecurity about the future course of development within climate change mitigation field. Out of twenty three municipalities there were only three that participated in the survey. Another limitation to point out is related to the nature of work on emissions reduction. This type of work needs cooperation across different departments of municipal administration. Which often does not imply one responsible entity or employee within the organization. Different people from different departments are usually responsible for partial work with emissions reduction, and do not possess the full knowledge of the issue. Therefore, when analyzing the survey answers, we need to keep in mind that the answers reflect opinion of a single person, which do not necessarily coincide with the whole municipality.

The thesis will be structured the following way: first, presentation of context of local climate and energy planning. This implies what position Norway takes on the issue of climate change and emissions reduction and what part municipalities play in that.

Then, in the theory part, there will be presented development of local climate policy. This will give us an understanding in what historical context the subject of this study exists. There will

also be presented the State Guidelines on climate and energy planning that will give us an idea of what municipalities are expected to do in their work with emissions reduction.

The findings chapter consists of data collected as a result of the analysis of municipal budgets, financial plans, annual reports, and climate plans. Findings also cover the survey filled out by three municipalities. The chapter will be structured in accordance with the conceptual framework applied. Accordingly, there are four subsections:

1. Overview of municipal climate and energy plans.
2. Overview of municipal action plans that cover emissions reduction.
3. Emissions reduction measures and instruments in municipal budgets and finance plans.
4. Municipal reporting on work with emissions reduction.

These will be followed by case studies of two municipalities and an overview of barriers municipalities report on regarding their work with emissions reduction. Case studies include findings from the survey.

In the discussions part the same structure will be applied again, where findings will be discussed in relation to the theory. Further on, there will be made a conclusion to this thesis with the description of main findings and suggestions for future research.

2. Context

2.1. Norway and climate commitments

Human-made climate change is the biggest challenge today for all countries across the world. It is well known that the underlying cause is excessive emissions of GHG mainly due to the combustion of fossil fuels (IPCC, 2014). The threat of climate change must be responded by the common effort of all nations. This need led to the emergence of international agreements on climate action and influenced the development of national politics globally. Norway in particular acknowledges the importance of GHG emissions reduction, which would as well imply increased energy efficiency and general decrease in energy use. Under the Kyoto protocol, Norway set the target of keeping its emissions level at 1% higher than in 1990 in the period of 2008/2012 (UNFCC, 1997). Norway also commits to the Paris Agreement on Climate Change, the purpose of which is

to keep a global temperature rise below 2 degrees Celsius above pre-industrial levels. Under this agreement Norway defines its Nationally Determined Contributions (NDC), among which is the target of at least 40% GHG emissions reduction by 2030 compared to the level of 1990 and the target of becoming a low-emission society by 2050 (implies 80-95% reduction of GHG emissions compared to 1990). Norway's national climate policy is rooted in the Parliament through two Climate Accords, from 2008 and 2012. The Climate Accords contain both climate policy goals and instruments to achieve these goals (Miljøverndepartementet, 2012). On the 1st of January 2018, the Climate law was commenced in Norway. Its aim is to promote the implementation of Norway's climate targets as part of the country's transition to a low-emission society, in line with the Paris Agreement (Klimaloven, 2017).

2.2. Scope of action, role, and functions of municipalities

Climate change mitigation as a policy issue in Norway combines a top-town and bottom-up approach (Aall, 2012). Municipalities are assigned a significant role. They can act as a planning authority under the Planning and Building Act, as well they must contribute actively and facilitate the involvement of the authorities involved in their planning processes. Municipalities have a big potential to influence emissions and energy reduction through use of instruments stimulating local actors. Municipalities play an important role as actors themselves by implementing relevant measures in their own enterprise. In addition, they have a variety of instruments that can contribute to change of attitudes and behavior. The state however was sending mixed signals in this relation. As Aall (2012) notes, the government specifically excluded emissions from private consumption from the strategies of local policy-making. Instead the strategic focus in the national climate policy was set on the areas outside of local authorities' domain.

As a social actor municipality can act as a catalysator for change and as a participant in the collaboration-driven innovation (Wang et al., 2016). In this regard Vevatne (2005) distinguishes between climate policy instruments (klimapolitiske virkemidler) and climate measures (klimatiltak). Climate policy instrument is everything a regulator does to influence other actors' behavior that causes GHG emissions, while climate measure is a measure municipality implements in its own operations or as owner of buildings in order to reduce energy consumption or GHG

emissions (Vevatne et al., 2005). Wang et al. (2016) also note that municipalities are considered as a main actor within work with reduction of emissions. They also note that, even though there is a big potential for reductions, there is still a significant discrepancy between climate goals and local and regional practice and implementation capability. Local governments get assigned an important role in climate change mitigation, however, in practice their scope of action is still limited by several factors. For instance Westskog et al. (2018) note financial constraints, climate policy on the state level and state instruments for reduction of emissions, existing laws and regulations that give different administration actors rights, responsibilities and obligations in different sectors, and also the scope of action will depend on municipal emission profile, i.e. parts of activity in municipality that generate emissions (Westskog et al., 2018).

According to Amundsen, Hovelsrud, Aall, Karlsson, and Westskog (2018), role of non-national actors is significant in reaching global climate goals. Local governments are free to take own policy initiatives which in turn become political signals sent to higher levels of governance. Municipalities can act as "policy actors, policy front-runners, and societal developers within their geographic areas" (2018, p. 23). Municipal sector can challenge the State through own local policies by being ahead of it. Thereby municipal action can lead to reinforcement of the State climate policies (Westskog et al., 2018).

Vevatne et al. (2005) distinguishes between four areas of local climate change mitigation measures. The first one is stationary energy. Municipalities have different roles withing the energy field, such as being a local policy actor. They can be a driving force for industries, private companies, and the public. Municipalities can have an influence through information campaigns for inhabitants, creation of networks and etc. Municipalities also have planning responsibility in accordance with the Planning and Building Act, and they are themselves one of the major builders. There is a big potential for energy savings, therefore implementation of relevant measures is an important task for municipal actors. The next category of local climate measures the authors mention is transport. These imply long-term measures such as area planning, a variety of technical interventions such as bus lanes, traffic light prioritization, and parking regulations. Third category of measures is related to waste management. Here municipalities can, for example, try to prevent methane emissions resulting from decomposition of organic material and utilize gas from old landfills. The last category of municipal climate change mitigation measures mentioned by Vevatne et al. (2005) is agriculture. Within this area there is a need for own evaluation of available

measures. These can be related to handling of livestock manure, new rules for driving on wetlands to prevent release of nitrous oxide, and also common projects between municipality and farmers.

There is a row of climate policy instruments available for municipalities. These imply legal and economic instruments, voluntary agreements, and attitude-creating work. But as Westskog et al. (2018) noted, there is no sharp distinction between what fall within municipal scope of opportunity and what is not: "There are smooth transitions between the various levels of government, county and municipality, and there is a smooth transition in several areas between private and public responsibility" (Westskog et al., 2018, p. 40).

2.3. Level of municipal commitment

The research suggests that characteristics of municipalities are crucial for their level of commitment. The state requires municipalities to set ambitious reduction targets, which in turn will vary from municipality to municipality. Rose and Aakre (2015) suggest two possible factors that influence emissions reduction target-setting in municipalities: financial situation in municipality and the size of the population. Reduction of emissions requires implementation of costly measures. Therefore, municipalities might set less ambitious targets considering their limited ability to finance such measures. Population size however can influence target-setting in both directions. Normally bigger municipalities have more varied economic activity structure; hence the burden of emissions reduction can be easier distributed between various actors. But on the other hand, in municipalities with fewer inhabitants it might be easier to get understanding of the need for emissions reduction and gain public support. However, the research did not reveal clear support for the first suggested factor of influence – financial situation in municipality. Another factor of influence – population size – did receive support. The research revealed that municipalities with bigger population had more ambitious climate targets, although the authors do not provide explanation to this fact.

One should not underestimate the importance of target-setting. There is a row of articles on climate targets: why they matter (Haarstad, 2020), what they imply (Kramers et al., 2013), different processes of target-setting (Stevens & Senbel, 2017). Ambitious targets with specific deliverables, creative funding mechanisms to support them, and appropriate timing – one of the

factors enabling sustainable transitions. By normalizing target-setting, one can legitimize practices required to push forward sustainable energy transitions (Burch, Shaw, Dale, & Robinson, 2014; Haarstad, 2020).

In the context of vast central government efforts, the effectiveness of municipal climate action will rather depend on local implementation structures. By that the authors imply the way groups of committed actors (such as municipal administration, local politicians, NGOs, research, and business sector) cooperate to implement programs. Authority relationship within implementation structure and how developed and stable the structure is influence the ability to draw on national support programs. Top-down initiatives tend to be helpful for already committed municipalities, but do not have the same long-term effect on the less committed ones. This leads to the assumption that climate mitigation action on the local level is dependent on both the design of national policy instruments and the motivations of the local community (Haarstad, 2020; Kasa, Leiren, & Khan, 2012).

2.4. Climate policy integration

Climate mitigation policy is a cross-sectoral activity. In this regard the term "mainstreaming" or climate policy integration is used which implies that climate mitigation needs to be integrated into related government policies in several sectors. It also needs to be complemented by an attempt to lessen contradictions between climate policies and other policies (Mickwitz et al., 2009). This issue has been predominantly addressed through environmental and energy policies. Climate change goals have been included into a variety of sectors, such as infrastructure, transport, and as well innovation and technology policies (Mickwitz et al., 2009). But Ahmad (2009) defines the key factors driving climate change as economic, social and development patterns. According to the IPCC report (III, 2014), sector-specific policies is a more common approach, rather than economy-wide policies. A variety of administrative and political barriers hinder economy-wide policies from successful implementation, and they are more difficult to design. Although such policies would be more cost-effective.

Successful implementation of policy is dependent on the way relevant actors interpret them and respond to policies, rather than on policy documents per se (Grin, Rotmans, & Schot, 2010).

Although, Kyrre Groven and Carlo Aall (2002) argue that level of detail in climate plans might influence implementation of climate measures. Quicker implementation might be facilitated by providing more details in plans. Before implementation can actually happen, little detailed plans still need to be followed by more detailed ones.

3. Theoretical perspective

3.1. Local climate policy

Several events in Norwegian politics were central for the formation of local climate policy. Scholars highlight the "Environment in the Municipalities Program" program (Miljøvern i Kommunene – MIK-program, 1987-1991) as a starting point for local climate policy (Aall, 2012; Groven, 2017; Wang et al., 2016). The program implied emergence of Environmental Protection department in municipalities. Under this program ninety-one municipalities got funded position of environmental manager. In 1992 the Climate convention was adopted at the Earth Summit in Rio. This resulted in Agenda 21 – action plan regarding sustainable development of the United Nations, which in turn resulted in the emergence of Local Agenda 21 (LA21) in Norway. Under MIK-program and LA21 all local societies were encouraged to develop own action plans. In this connection, there have been offered national and regional support. In 1995 Norway's first Government White Paper was published, that introduced climate and energy planning as part of municipal environmental politics (Energi- og miljøkomiteen, 1996; Groven, 2017). In 2000 there were allocated funds from the national budget to support the development of climate and energy plans. In 2007 a project called Green energy municipalities was launched. Its purpose was to get the municipalities to invest in energy efficiency, renewable energy, and to reduce GHG emissions in their municipalities. Twenty-two municipalities have been selected to cooperate in networks and lift climate and energy to a strategic level in the municipalities. Another national program for local societal development was Viable municipalities - municipal network for environmental and social development, that took place in 2006-2010. Participation in the programs has significantly contributed to the development of climate and energy plans and to the formulation of specific targets for emissions reduction among participating municipalities (Aall, Halvorsen, Heiberg, & Tønnesen, 2009). Yet, they were not required to develop such plans before the State introduced

Guidelines for climate and energy planning in 2009. In this connection, municipalities could receive financial support from ENOVA for development of relevant plans. This program was terminated on the 1st of July 2010, but municipalities could also apply for support for mapping potential for energy optimization and energy infrastructure until 2014. Also, from 2008-2014 The Cities of the Future program took place. It was a collaborative program between the state and the thirteen largest cities in Norway aimed at reducing GHG emissions, thereby making the cities better to live in. The program helped urban municipalities share ideas for climate-friendly urban development with each other - and to collaborate with businesses, region, and state. Later in 2016 Klimasats support scheme was introduced. Municipalities, counties, and single enterprises can apply for grants for projects facilitating transition to low-carbon society. Nevertheless, the state's approach has been criticized. According to Aall, Groven, and Lindseth (2007) there was no well-developed national policy in Norway on involving local governments into work on achieving climate targets. In regard to obstacles to achieving climate and energy goals, Rose and Aakre (2015) point out the significance of vague and deficient national guidelines and requirements. Norwegian climate politics was neither clear nor continuous thereby failing to engage municipalities to initiate climate action. The way the state has provided guidance and developed instruments that would encourage innovative approach to development of good climate measures and implementation strategies could be characterized as limited (Aall, 2012; Wang et al., 2016). This reinforces the discrepancy between municipalities' climate goals and implementation capability.

3.2. State Guidelines for Climate and Energy Planning

As mentioned in my introduction, in 2009 the State introduced Guidelines for climate and energy planning, that later in 2018 were updated with the section about climate change adaptation. They apply to the entire country, and must lay at the basis of municipal, regional, and state planning, and in individual decisions made by municipal, regional, and state authorities. Counties have a task to systematize and facilitate the knowledge that is to be used in planning, whereas municipalities play an important role as planning authority themself. Municipalities and counties are as well obliged to incorporate measures and instruments for reduction of emissions in their

overall planning and take into account efficient use of resources for society. There are certain requirements to the contents of plans covering climate and energy issues. But these requirements are rather advisory in nature: plans *should* be strategically oriented and they *should* include such elements as ambitious climate and energy targets (Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning, 2018). This means it is up to local governments to decide the ambition level and what their plans will actually comprise. The Environmental Protection Agency states the results of the measures and how the municipality is able to achieve its goals should be reviewed regularly (Miljødirektoratet, 2019a). But in fact, municipalities are not obliged to report to the government on their progress within climate work, and there are no other mandatory mechanisms for monitoring their activity. In addition, there are no sanctions for failing to implement State Guidelines into municipal climate and energy planning (Kasa et al., 2018).

The part of planning that is established as necessary is action program. Plans that address climate and energy issue *must* be followed up by action plan and more detailed planning. While plans *must* be reviewed at least every four years, in accordance with the provisions on the revision of municipal and regional planning strategies, action programs *must* be rolled or revised annually. It is also not less important to have a good coordination with financial planning.

4. Methods and research design

I have chosen to use inductive logic of inquiry to answer the "what" question posed in the problem statement. According to Blaikie and Priest (2019), inductive logic works well for exploratory and descriptive studies, as its aim is "to establish descriptions of characteristics and regularities" (2019, p. 93). The purpose of this thesis is to find out what the outcomes are of local climate policy planning. In order to describe the outcomes, I will use the structure provided by intervention theory, described below.

4.1. Intervention theory and program evaluation

In this thesis I will use intervention theory as a conceptual framework. According to Adom, Hussein, and Agyem (2018), conceptual framework is the structure used by researcher to best

explain her way to explore a research problem. Conceptual frameworks reflect the way of thinking behind the entire research process (Ravitch & Carl, 2019). Employed intervention theory "describes how policies or measures are supposed to be implemented and function" (Linnér, Mickwitz, & Román, 2012, p. 177). According to Vedung (1997, p. 3), "Evaluation = df. Careful retrospective assessment of the merit, worth, and value of administration, output, and outcome of governmental interventions, which is intended to play a role in future, practical action situations". The system model adapted to government intervention evaluation consists of:

- Input
- Conversion (Administration)
- Results – "Phenomena that come out of government bodies"
- Outcome 1 – Immediate
- Outcome 2 – Intermediate
- Outcome 3 – Ultimate.

The thesis will use State Guidelines for climate and energy planning as evaluation criteria. Guidelines will give us the idea of what the desired results of intervention are and what requirements are set to municipalities, while intervention theory will provide stages of problem exploration. Along with that I will use the guide by Environmental Protection Agency (2019a) that explains explicitly every element of the Guidelines, why it is essential and how climate and energy planning is done, step-by-step.

The thesis will be narrowed down to one of the forms of evaluation called monitoring, which implies "empirical checks of the actual linkages in the chain of implementation, but particularly of the point where intervention providers encounter the clients, where the government meets society, as it were" (Vedung, 1997, p. 137). Vedung (1997) describes monitoring as a five-step activity. The first step of monitoring is reconstruction of the intervention theory. On this stage the researcher is aimed at defining intentions of intervention framer. In this case I am looking into State Guidelines for climate and energy planning as a public intervention. The purpose of the Guidelines covers three points: 1. Ensure that municipalities and counties prioritize work with reduction of GHG emissions, and it is taken into account in planning in accordance with the Planning and Building Act; 2. Ensure more efficient energy consumption and environmentally friendly energy transition in municipalities; 3. Ensure that municipalities use a wide range of their

roles and instruments in the work on reducing GHG emissions and climate adaptation, and contribute to balancing and coordination when emissions reduction and climate adaptation affect or conflict with other considerations or interests (Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning, 2018). In this research I will not investigate whether all purposes of guidelines are fulfilled. Here I will assume that the final purpose of intervention is to reduce the amount of GHG emissions. Using intervention theory, I reconstructed implementation chain the following way:

The State Guidelines' envisioned implementation chain

Regulation (statue, framework law): Planning and Building Act

Administrative agency: Ministry of Municipalities and Modernization

Regulation (rule, guideline): State Guidelines for Climate and Energy Planning

Intermediaries: Municipalities

Output: Climate and Energy plans (either own, or integrated into municipal master plans)

Outcome 1: Action plan

Outcome 2: Measures and instruments for emissions reduction included in municipal budgets and financial plans

Outcome 3: Implementation of measures by responsible entities

Outcome 4: Lower emissions and energy consumption.

State planning guidelines are used to specify national expectations for planning and to highlight national policies in important areas of planning, such as climate change mitigation in our case. This follows from the Planning and Building Act. The State Guidelines for climate and energy planning promulgate certain requirements to municipalities. In their overall planning, the municipalities and counties must incorporate measures and instruments to reduce GHG emissions, which also takes into account efficient use of resources. In line with these Guidelines, municipalities should ensure more efficient energy use and environmentally friendly energy transition. Therefore, output of these Guidelines would be municipal climate and energy plans. As

it was mentioned, local governments can choose whether to have separate plans or include climate topic into municipal master plans.

Plans that address climate and energy issues must be followed up through the action plan and more detailed planning and be a basis for the municipalities' other government and business activities. From here follows the first outcome – Action Plan. The action section must specify the measures in the plan within the municipality's financial framework. Good coordination with financial planning plays a significant role. According to the Local Government Act, plans that include limited parts of the municipality's activities must be integrated into the financial planning and the use of funds must be incorporated into the plan (Kommuneloven, 1992). It is important that the preparation of the action program is seen in the context of the municipality's work on financial plans and annual budgets, as well as management systems with annual accounts, quarterly or tertiary reporting and annual reports. From here follows the second outcome – climate mitigation measures being included into municipal budgets and financial plans.

Once the funds are allocated to the implementation of climate measures, one can expect these measures to be implemented. This is the third outcome in the State Guidelines' envisioned implementation chain. If we assume that measures deliver the intended results, we finally move on to outcome five. The final outcome represents the purpose of policy intervention which is reduction of GHG emissions.

The second step of monitoring involves "selection for empirical checks of some stage in the intervention theory" (Vedung, 1997, p. 138). This stage implies the need for certain prerequisites to be fulfilled in order for intervention to be effective. The general goal of State Guidelines is to reduce GHG emissions and energy use. In order to reach it, local governments have to implement relevant measures and instruments. The final delivery point of this intervention is the society, or population of municipality. Thereby, the main prerequisite for State Guidelines to be effective is the situation when companies and inhabitants react to climate measures the way it was meant, i.e. they would reduce the amount of energy and emission intensive activities on a permanent basis.

According to the defined outcomes, we can break down prerequisites into following:

Prerequisite 1: municipal climate and energy plan must be politically adopted

Prerequisite 2: action plan with measures and instruments should be formed, specifying the course of climate work

Prerequisite 3: to be legitimized, the measures should be included in municipal budgets and finance plans

Prerequisite 4: in order for measures to be able to act, they need to reach the responsible entities and be implemented

Prerequisite 5: measures act as intended.

The scope of this thesis will cover the first four prerequisites, as the aim of it does not cover discovering what effect on emissions climate measures have had.

The third step of monitoring is collection and analysis of data.

Step four of monitoring is applying criteria of merit and standards of performance to the empirical findings. Vedung in his approach uses criteria that lie at the basis of intervention's prerequisites. Therefore, the criteria dimensions will look as following, by prerequisite respectively:

1 – share of municipalities with politically adopted climate and energy plans

2 – share of municipalities with action plan covering climate measures and instruments

3 – climate measures included into municipal budgets and finance plans

4 – municipal self-reporting on implementation of climate measures

Since intervention theory in this thesis is used as a conceptual framework that only guides the research, I will not conduct evaluation of intervention's results. I will apply these criteria of merit as a structure to describe the situation with work on emissions reduction in municipalities.

The last fifth step in monitoring involves the analysis of the evaluand, i.e. municipalities. Here Vedung (1997) suggests to provide general thoughts on the governance system. He proposes to make an analysis of intended implementation of intervention and final delivery from a general governance perspective. In this thesis I provide case studies of two municipalities. These will give more detailed overview of existing practices in municipalities related to work on GHG emissions reduction. Onwards there will be mapped out barriers that municipalities encounter in this field of work.

4.2. Categories of barriers in work with emissions reduction

Barriers that municipalities meet in their climate work will be conceptualized in accordance with Westskog et al. (2018). Summarization of barriers will be based on the information municipal administrations themself provide in their reporting documents and in the survey sent out as part of this thesis. Westskog et al. (2018) define three types of barriers for municipal work with reduction of emissions: practical, political, and value-related barriers. Practical barriers are related to technical and material aspects, such as financial resources, time, or competence of employees. Political barriers are related to system, structure, and organization, i.e. they define and regulate the practical area. Value-related barriers influence how systems and structures are evaluated and designed, for example, how climate policies are perceived by the public (Westskog et al., 2018).

4.3. Data collection and analysis

This thesis applies qualitative methods. These are more time-consuming, but also provide deeper understanding of the issue. For the purpose of providing overview of existing municipal climate and energy plans, analysis of documents was conducted. Climate plans are supposed to contain measures and instruments for emissions reduction and transition to more environment friendly energy use. To find out whether these where implemented there was conducted text analysis of municipal budgets and annual reports. Financial documents reveal municipalities' reporting routines, i.e. whether they follow up their climate plans. Part of documents was retrieved from the official web pages of municipalities. Another part of documents was requested from municipalities' official emails.

In this thesis I also use case study as it provides a better understanding of the phenomenon and its context. The matter of interest is to gain deeper knowledge of existing routines in municipalities regarding organization of work with emissions reduction. The research includes case studies of two municipalities – Klepp and Utsira. This is not a representative sample. But case studies will rather demonstrate differences in approach to integration of the state requirements to local climate policy planning. Surveys were sent out to municipal employees that work with emissions reductions. There has been sent an email with a request and the link to the survey, which

was hosted on the Google Forms platform. Respondents from three municipalities participated in the survey: Klepp, Utsira, and Stavanger.

The survey consists of forty-eight questions divided into following sections:

- Information about the respondent
- Organization of work on climate mitigation and relevant expertise in municipality
- Cooperation of municipality with other relevant actors
- Information about existing climate and energy plan
- Action plan that covers climate mitigation measures and instruments and their implementation
- Financial side of climate and energy planning
- Goal conflicts
- Barriers in municipality's work on climate mitigation.

All primary data was in Norwegian, and any quotes are own translations. Existing literature on climate policy planning serve as a secondary data. The data analysis will follow the steps provided by intervention theory (described above) and will be structured accordingly.

5. Empirical data

5.1. Overview of municipal climate plans and measures

This section will be structured according to intervention theory's prerequisites described above. Accordingly, there are four subsections. First are findings related to politically adopted climate and energy plans. Second subsection provides an overview of municipal action plans covering emissions reduction. Subsection three is about climate mitigation measures and instruments being included into municipal budgets and finance plans. The fourth subsection covers implementation of climate measures and instruments.

5.1.1. Politically adopted climate and energy plans

This research implied analysis of documents. Under this subsection there are gathered municipal plans that cover climate and energy issue.

The list consists of plans that are relevant nowadays or outdated with no adopted replacement. It does not include earlier climate plans if these were replaced. Municipalities marked with letter "K" have climate plans in a status of municipal sector plan, and with a letter "T" have a status of theme plan.

Table 1. Climate and energy plans, by municipality

Municipality	Plan covering climate and energy issue	Year when plan was adopted
Bjerkreim T	Climate and energy plan for Dalane 2011-2014 (Bjerkreim kommune, 2011b) Municipal plan 2014-2026, Bjerkreim municipality (Bjerkreim kommune, 2015b)	Adopted in 2011 Adopted in 2015
Bokn T	Energy and Climate Plan for Bokn municipality 2011-2016 (Bokn kommune, 2011) The municipal plan's societal section 2019-2031, Bokn municipality (Climate, environment, and energy section) (Bokn kommune, 2019a) Energy and Climate Plan for Bokn municipality 2020-2024 (Bokn kommune, 2020)	Adopted in 2011 Hearing draft Draft
Eigersund T	Energy and Climate Plan for Eigersund municipality 2012-2020, based on the plan for Dalane (Eigersund kommune, 2011b)	Adopted in 2011
Gjesdal T	Energy and Climate Plan for Gjesdal municipality 2013-2023 (Gjesdal kommune, 2011b)	Adopted in 2012
Haugesund K	Municipal sector plan for energy and climate, Haugesund municipality 2012-2020 (Haugesund kommune, 2012b) Municipal sector plan for energy and climate, Haugesund municipality 2018-2030 (Haugesund kommune, 2017c)	Adopted in 2012 Plan program
Hjelmeland	-	-
Hå T	Climate and energy plan for Hå municipality 2010-2020 (Hå kommune, 2010) Municipal plan 2014-2028, Hå municipality, Climate and energy section (Hå kommune, 2014c)	Adopted in 2011 Adopted in 2014

	Climate and energy plan for Hå municipality 2017 (Hå kommune, 2017b)	Plan program
Karmøy K	Municipal sector plan for energy and climate, Karmøy municipality 2017-2020 (Karmøy kommune, 2017)	Adopted in 2017
Klepp T	Energy and climate plan for Klepp municipality (Klepp kommune, 2009b) Climate and environmental plan 2019-2034, Klepp municipality (Klepp kommune, 2019c)	Adopted in 2009 Adopted in 2019
Kvitsøy T	Municipal theme plan: Energy and climate 2012-2020, Kvitsøy municipality (Kvitsøy kommune, 2012c)	Adopted in 2012
Lund T	Climate and energy plan for Dalane 2011-2014 (Lund kommune, 2011b)	Adopted in 2011
Randaberg K	Plan for climate and energy, Randaberg municipality (Randaberg kommune, 2012c) Climate and environmental plan 2018-2030, Randaberg municipality (Randaberg kommune, 2018c)	Adopted in 2012 Hearing document
Sandnes K	Environmental plan for Sandnes 2015 – 2030 (Sandnes kommune, 2015b) Climate and Environmental plan for Sandnes, 2020-2025 (Sandnes kommune, 2020b)	Adopted in 2015 Hearing draft
Sauda T	Climate and energy plan for Sauda municipality, 2010 (Sauda kommune, 2010a)	Adopted in 2010
Sokndal T	Climate and energy plan for Dalane 2011-2014 (Sokndal kommune, 2011)	Adopted in 2011
Sola K	Municipal sector plan for energy and climate, Sola municipality (Sola kommune, 2010b) Municipal sector plan for climate and environment 2021-2035, Sola municipality (Sola kommune, 2019c)	Adopted in 2010 Suggestion for plan program
Stavanger K	Climate and Environmental Plan 2018-2030, Stavanger municipality (Stavanger kommune, 2018c)	Adopted in 2018
Strand K	The municipal plan's societal section 2019-2035, Strand municipality (Strand kommune, 2017b)	Adopted in 2019
Suldal K	Municipal sector plan for climate and energy 2012-2017, Suldal municipality (still used as a basis for municipal politics within this area) (Suldal kommune, 2010) Municipal plan for Suldal municipality 2015-2024, Climate, energy, and environment section (Suldal kommune, 2015b)	Adopted in 2012 Adopted in 2015
Time K	Municipal sector plan for energy and climate 2011-2022, Time municipality (Time kommune, 2011)	Adopted in 2011

Tysvær K	Energy and climate plan 2012-2017, Tysvær municipality (Tysvær kommune, 2011)	Adopted in 2011
Utsira K	Energy and climate plan 2015-2019, Utsira municipality (Utsira kommune, 2015b)	Adopted in 2015
Vindafjord K	Energy and climate plan 2010-2015, Vindafjord municipality (Vindafjord kommune, 2010) Municipal plan for Vindafjord municipality 2017-2029 - Sustainable land management section (Vindafjord kommune, 2017b)	Adopted in 2010 Adopted in 2017

End of table 1

From January 2020 Rogaland county consists of twenty-three municipalities, which are represented by five big municipalities, nine medium and nine small municipalities – categorized by population size according to Statistics Norway (Statistics Norway, 2013). Overview of plans was based on documents covering climate and energy topic that municipalities published on their official websites. Municipalities were not required to draw up climate and energy plans before the State Guidelines were adopted in 2009. Eight municipalities (Eigersund, Gjesdal, Kvitsøy, Lund, Sauda, Sokndal, Time, Tysvær) still apply 1st generation plans that were financed by Enova's support program launched in connection with release of the State Guidelines. Another five (Bokn, Haugesund, Hå, Randaberg, Sola) use the very first climate plans but already started work on developing new. Three (Bjerkreim, Strand, Vindafjord) of the municipalities so far have not decided to develop new separate climate and energy plans but incorporated this topic into municipal master plans. Suldal municipality still applies its 1st generation climate plan and also incorporated the topic into municipal master plan.

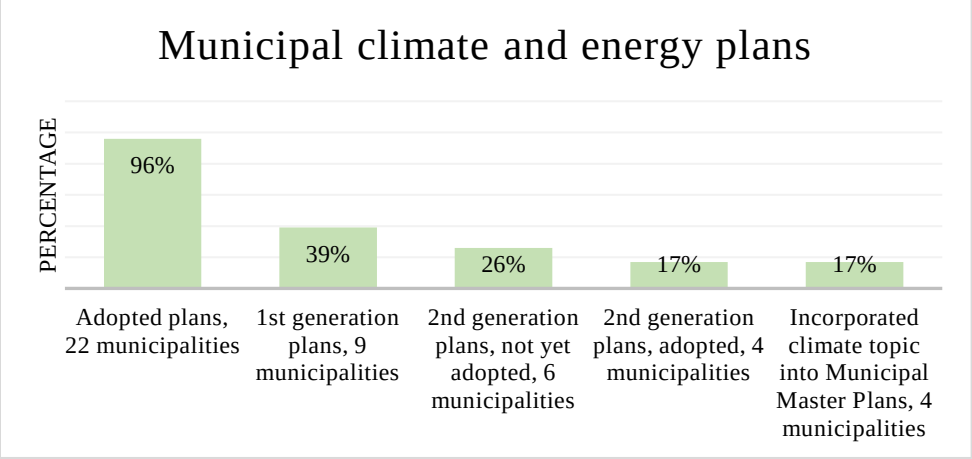

Figure 1. Municipal climate and energy plans

There are 22 out of 23 municipalities (or 96% share) that adopted climate and energy plans in one form or another. It is up for the discussion though whether the plans adopted ten years ago, with no revision carried out or planned, can still be relevant today.

5.1.2. Presence of action plan

Central part of climate and energy planning is action plan. In order to reach the targets, one must know how to proceed. Municipal sector plans for themes or business areas must have an action section that specifies how the plan should be followed up for the following four years or more (Plan- og bygningsloven, 2008). According to the State Guidelines for climate and energy planning (2018), action plan should contain the following elements: measures and instruments to achieve climate objectives, timeline of their implementation, responsibilities for the implementation should be divided, there should be done assessment of costs and effects, and all of that should be linked to the existing budget. Measures and instruments aimed at reduction of emissions have to be carefully evaluated. They should have moderate costs in relation to other measures with the same purpose, should be feasible in practice and their effects should be identified. Based on that overall assessment of measures is conducted. This is supposed to lay the best possible ground for prioritizing between measures. As a result, it should become clear which measures and instruments will make it to the action plan, and which will be downgraded or postponed (Miljødirektoratet, 2019a).

According to the Planning and Building Act (2008), plans should be considered for revision regularly and at least every fourth year, while action plans must be rolled out or revised annually. In the planning process, formal decision on plan revision might increase the chances of a plan to be followed by concrete actions (Aall et al., 2007). In this regard I was gathering data on both presence of action plans and municipality's decision about revision of their climate plans.

Table 2. Municipal action plans

Municipality	Action plan	Decision about revision
Bjerkreim	Climate and energy plan for Dalane 2011-2014 includes description of measures for	No mentioning

	each focus area with corresponding distribution of responsibilities, required partnerships for implementation, activities and expected effect (Bjerkreim kommune, 2011b). Action part for period 2014-2018 of Social section for Municipal plan 2014-2026 includes climate as one of the long-term goals, with intermediate objectives and relevant strategies (Bjerkreim kommune, 2015b).	
Bokn	Energy and Climate Plan includes description of measures, evaluation of their costs and effects, responsible entities, and timeframe (Bokn kommune, 2011). Action program for societal sector plan covers section "Climate, Environment, Energy", and the only relevant measure it implies is revision of Energy and Climate Plan in the first quarter of 2020, including action plan. The head of administration is responsible (Bokn kommune, 2019a).	The municipal plan's societal section 2019-2031, Bokn municipality states that the energy and climate plan and the action plan linked to it must be updated in terms of goals and measures. Revision of energy and climate plan, including revision of action plan, is scheduled as a measure in the 1st quarter of 2020 (Bokn kommune, 2019a).
Eigersund	Climate plan includes action plan for 2012-2015 with description of measures, their consequences, responsible entities, and timeframe (Eigersund kommune, 2011b).	In the climate plan it is stated that to the greatest extent possible, the work on rolling and reporting shall be incorporated into the systems and routines that are available for other planning work in the municipality. Part I of the plan is to be rolled every 4 years as part of the roll-out of the municipal plan. Part II of the specific measures is to be worked out each year and included in the work on the municipal action program and financial plan every fall (Eigersund kommune, 2011b).
Gjesdal	There is no action plan as such but there are proposed measures within each strategic area with expected effects (Gjesdal kommune, 2011b). Annual budgets and financial plans include action parts regarding Climate and Energy plan. Such action programs suggest relevant measures and connect them with the existing budget (Gjesdal kommune, 2015b, 2016b, 2017b, 2018b, 2019b).	In the climate plan it is stated that the plan will be revised every four years, and the aim is to improve it through input from residents and local actors. An annual roll-out of the action plan shall be carried out, and a completed action plan should be implemented in the budget and financial plan (Gjesdal kommune, 2011b). Municipal budget 2016 mentions the will to revise the Climate Plan (Gjesdal

		kommune, 2016b). Budget 2019 mentions revision of existing Climate Plan as one of priorities in the planning period (Gjesdal kommune, 2019b).
Haugesund	There is no action plan as such but there is a list of prioritized measures. Measures are sorted out according to instruments available to municipal administration. Measures are proposed with corresponding deadlines and responsible entities (Haugesund kommune, 2012b).	According to the Budget 2014, Climate Plan shall be followed up annually as part of the municipality's budget and annual report (Haugesund kommune, 2014b). In the municipal budget 2020 it is stated that new climate plan is under development (Haugesund kommune, 2020).
Hjelmeland	Municipality has no climate plan.	In the budget 2020 it is stated that municipality wants to have climate plan (Hjelmeland kommune, 2020).
Hå	Climate and Energy Plan 2010 includes Action Plan with measures municipality itself has an influence on. Measures are divided into sections according to the sub-targets and municipality's different roles. Action plan provides information about measures' target group, what is needed for the measures to be implemented, estimated costs and timeframe of implementation (Hå kommune, 2010).	Climate plan states that the councilor in the municipality is responsible for drawing up an annual action plan based on adopted objectives and measures. It may be appropriate to see the annual evaluation of the action plan with results in connection with the preparation of the budget for the coming year. In addition to the annual review of the status of the various measures with results, the climate and energy plan will be revised every four years as part of the work on the municipal plan (Hå kommune, 2010). In January 2013, therefore, a status review was made to look at what has been implemented. In 2017 there was adopted a planning program for the new climate plan, and budget 2020 states that the new plan is under development (Hå kommune, 2020).
Karmøy	Climate Plan provides an overview of current and prioritized measures and instruments within the planning period 2017-2020. Action part is divided into theme areas and gives explanation of measures and instruments, their estimated costs, potential climate effects and side effects, expected timeframe, and responsibilities for implementation are divided (Karmøy kommune, 2017).	In the Climate Plan it is stated that the actual planning period is set for 2017-2020. This means that the plan document is primarily prepared to apply during the current municipal government period. In the next municipal government period, the municipal sector plan should be revised. The action section of the plan is valid until 2020. In connection with a new plan strategy 2020-2023, a roll-out of this plan will be proposed. The action

		section must be reviewed annually (Karmøy kommune, 2017).
Klepp	Climate and Environmental Plan is followed by Action Plan. It includes measures and instruments, timeframe, responsible entities, costs, and sources of financing (Klepp kommune, 2019c).	It is assumed that annual rolling of the Action Plan will take place. Action Plan is set to be revised in conjunction with annual revision of financial plan (Klepp kommune, 2019c).
Kvitsøy	Energy and Climate Plan for Kvitsøy is defined as a concrete action plan for the municipality's work on reduction of GHG emissions and good energy solutions. For each intermediate goal there are proposed measures with a corresponding division of responsibilities, timeframe, estimated costs, and effects of some measures (Kvitsøy kommune, 2012c).	No mentioning
Lund	Climate and energy plan for Dalane 2011-2014 includes description of measures for each focus area with corresponding distribution of responsibilities, required partnerships for implementation, activities and expected effect (Lund kommune, 2011b).	Municipal Annual report 2015 stated that Energy, climate and environmental plan was postponed until 2019 (Lund kommune, 2015a). In turn, annual report 2019 states that Climate plan will be carried out in 2021 (Lund kommune, 2019a).
Randaberg	Plan for climate and energy from 2012 contains "measures and action plan". Intermediate objectives are set for each focus area with the corresponding measures and responsible entities (Randaberg kommune, 2012c). New plan from 2018, not yet adopted, contains action plan with measures for each focus area, responsible entities and external actors that might be involved, sources of financing and timeframe (Randaberg kommune, 2018c).	No mentioning
Sandnes	Current Environmental plan for Sandnes 2015 – 2030 is based on Action plan for Energy and Climate 2010. This plan contains measures, timeframe of their implementation, and responsibilities are divided (Sandnes kommune, 2010, 2015b).	The City Council has decided that the environmental plan should have a limited revision. The revision work has been carried out in accordance with the adopted plan strategy and plan program during the period 2013 – 2015 (Sandnes kommune, 2015b). New Climate, Environmental and Energy plan 2019-2035 was supposed to be adopted in 2019, according to the municipal budgets 2016 and 2018

		(Sandnes kommune, 2016b, 2018b). New Climate and environment plan for Sandnes 2020-2024 is under preparation (Sandnes kommune, 2020a).
Sauda	Climate and energy plan for Sauda provides a summary of necessary measures to reduce GHG emissions. There are defined economic and administrative consequences of measures, effects are estimated, and responsibilities for their implementation are divided (Sauda kommune, 2010a).	No mentioning
Sokndal	Climate and energy plan for Dalane 2011-2014 includes description of measures for each focus area with corresponding distribution of responsibilities, required partnerships for implementation, activities and expected effect (Sokndal kommune, 2011).	No mentioning
Sola	There is no action plan as such. A row of measures and instruments are proposed for each focus area (Sola kommune, 2010b).	Municipal council presupposed annual result reporting and rolling of Climate Plan every 4th year (Sola kommune, 2010b). In the municipal annual report 2019 it is mentioned current work with the new Climate and Environmental Plan (Sola kommune, 2019a).
Stavanger	There is a separate Action Plan as a supplement to Climate and Environmental Plan for Stavanger. It covers the period 2018/19-2022. Measures are given for each focus area including responsibilities within municipal administration, external stakeholders, sources of funding and timeframe of implementation (Stavanger kommune, 2018d).	Action Plan will be revised more frequently than the Climate and Environmental Plan (Stavanger kommune, 2018d).
Strand	Municipality has no action plan.	-
Suldal	Municipal sector plan for climate and energy 2012-2017 for Suldal municipality is still used as a basis for municipal politics within this area. It includes Action Plan with measures for each focus area, timeframe, estimated costs, and division of responsibilities (Suldal kommune, 2010). Also, budget 2020 and action plan for Suldal municipality 2020-2023 contains	Municipal budget 2019 mentions revision of the Climate Plan as one of the measures for the planning period (Suldal kommune, 2019).

	section "Climate, energy and environment", specifying main strategies within this area, relevant measures, timeframe of implementation and estimated costs (Suldal kommune, 2020).	
Time	Municipal sector plan for energy and climate 2011-2022 for Time municipality is followed by the Action Plan (Tiltaksplan) - Proposed concrete measures for assessment in the financial plan. It is connected to Financial plan 2012 and includes measures, responsibilities, costs, and timeframe. It also proposes a row of measures connected to the Financial Plan 2013-2015 (Time kommune, 2011).	The Climate Plan states that Action plan must be updated and rolled out annually, linked to the work on the financial plan (Time kommune, 2011). Revision of the Climate Plan was delayed, and planned start was scheduled for 2019, according to the annual report 2018 (Time kommune, 2018a).
Tysvær	Energy and climate plan 2012-2017 for Tysvær municipality includes Action Plan. The plan covers prioritized measures for each focus area with timeline, estimated investments, effects of measures, and division of responsibilities (Tysvær kommune, 2011).	According to the Climate Plan, the action plan will be revised annually. This will be presented annually to the main committee and the municipal council (Tysvær kommune, 2011). Budget 2020 states that one of the important tasks during the budget year and through the financial plan is the preparation of a new climate, energy and environmental plan (Tysvær kommune, 2020).
Utsira	Utsira's climate plan has two plans of action. Action plan A – with prioritized measures that should be implemented during the planning period, and action plan B – with the rest of the measures that should be implemented in 2020 and beyond. Action plans include measures, their effects and costs, responsible entities, and timeframe of implementation (Utsira kommune, 2015b).	According to the Climate Plan, the status, objectives, and measures must be reviewed every four years, and that the achievement of the goals in relation to the plan must be reported annually to Enova and referred to in the annual report. The plan shall be rolled out with its own action program every 4 years, in line with other sub-plans for the Municipal Plan (Utsira kommune, 2015b).
Vindafjord	Action Plan contains a list of measures prioritized according to timeline of their implementation. Responsible entities for measure implementation are defined, but responsibilities are not divided (Vindafjord kommune, 2010). Municipal plan for Vindafjord municipality 2017-2029 has a section "Sustainable land	According to the Climate Plan, the status, goals, and measures shall be reviewed every four years and the goal achievement, in accordance with the plan, shall be reported to Enova and referred to in the annual report (Vindafjord kommune, 2010).

	management section". One of the goals within this section is to "Develop safe communities and take care of the climate", and it is followed by strategies to achieve the goal (Vindafjord kommune, 2017b). Budget 2019 contains "Climate, energy and environment" section with relevant measures, responsibilities, and sources of financing (Vindafjord kommune, 2019).	

End of table 2

Information presented in the table above once again points out variability of approaches to creating action plans. Three municipalities do not have any action plans related to climate mitigation. The rest differ significantly between each other and do not follow any common template. Another point to mention is that the majority of action plans are not getting revised as often as they must.

5.1.3. Climate measures and instruments in municipal budgets and finance plans

Public institutions plan and implement climate policies, integrate climate goals into sectoral policies and provide relevant information. Annual budgets can be utilized as climate policy instrument by providing resources for such institutions (Mickwitz et al., 2009). In order for the measures to be legitimized, one can assume that they need to be included into municipal budgets. However, reality tends to deviate from the planned process. As a result, one might deal with various situations. For the purpose of summarizing and providing an overview of the situation with measure inclusion, municipalities are assigned with option indicators. Option (1) is when measures get included into the budget, but there is no information reported on their implementation in the annual report. Another variant is when there is no mentioning of climate measures in budget and financial plans, but municipality informs about implementation of certain measures in its annual report (2). Third (3) option is when municipality mentions climate measures in both budget and annual report. Option (4) is municipality having a separate reporting document dedicated to climate field, such as new climate plan with the description of the activities carried out in municipality during the previous planning period or a review of climate plan conducted by the side organization. Option number (5) is when focus on climate mitigation measures is weak and

inconsistent, poorly concretized, or there is no mentioning of climate measures in any of the analyzed documents at all. Option indicators are not to be used for comparison across municipalities.

For this part of study an analysis of available municipal budgets and financial plans, and their annual reports has been conducted. It is worth noting that the extent to which municipalities provide access to financial documents varies significantly. Whereas some municipalities publish reporting documents for each of the previous 10-15 years, some municipalities only publish their budgets and annual reports for the ongoing planning period.
The code words I was looking for in the documents were “klima” (climate), “energi” (energy), “ENØK” (energy efficiency), “sykkel” (bicycle), and “el-bil” (electric car).

Table 3. Inclusion of climate measures and instruments into municipal budgets and finance plans

Municipality	Climate planning period	Budget years analyzed	Annual report years analyzed	Option indicator
Bjerkreim	2011-2014 2014-2026	2018, 2020	2010-2018	5
Bokn	2011-2016 2019-2031	2018-2019	2015-2018	5
Eigersund	2012-2020	2011-2020	2013, 2015, 2016	5
Gjesdal	2013-2023	2010-2019	2010-2018	3
Haugesund	2012-2020 2018-2030	2013-2020	2011-2018	3
Hjelmeland	-	2019-2020	2019	Not enough data
Hå	2010-2020 2014-2028 2017	2013-2020	2011-2018	3
Karmøy	2017-2020	2018-2020	2018	2
Klepp	2010 2019-2034	2008-2020	2008-2019	3
Kvitsøy	2012-2020	2011-2020	2011-2019	4+5
Lund	2011-2014	2012-2020	2010-2019	5
Randaberg	2012 2018-2030	2012-2020	2011-2019	3+4
Sandnes	2015 - 2030	2014-2020	2013-2018	3+4
Sauda	2010	2009-2020	2011-2018	3
Sokndal	2011-2014	2018, 2020	2017-2018	5

Sola	2010 2021-2035	2011-2020	2009-2018	3+4
Stavanger	2018-2030	2014-2020	2009-2019	3+4
Strand	2019-2035	2011-2020	2016, 2019	5
Suldal	2012-2017	2016-2020	2013-2017	3+4
Time	2011-2022	2017-2020	2015-2019	3+4
Tysvær	2012-2017	2020	-	Not enough data
Utsira	2010-2014 2015-2019	2020	2010, 2015	3
Vindafjord	2010-2015 2017-2029	2019-2020	2014-2018	3

End of table 3

Thirteen municipalities (56%) include or mention climate mitigation measures in both their budgets and annual reports. Seven municipalities (30%) are marked by indicator 5 meaning that their work with emissions reduction is either inconsistent or absent at all.

In order to give more specifics on the contents, I have conducted more detailed analysis of municipal budgets and financial plans for the year 2020. I have been searching for the same code words, that would reflect municipal work with emissions reduction: "klima" (climate), "energi" (energy), "ENØK" (energy efficiency), "el—bil" (electric car), "sykkel" (bicycle). Measures and instruments mentioned in the budgets were categorized in accordance with Vevatne et al. (2005). In addition, if municipality dedicates a separate chapter of the budget to work related to climate change mitigation, these were marked by category "Section" in the table. Furthermore, if municipality is part of an environmental certification program Miljøfyrtårn (2020), it was also reflected in the table by category "Environmental certification".

Table 4. Climate measures and instruments in municipal budgets for 2020

Municipality	Contents of municipal budget for 2020	Categories of measures
Bjerkreim	Only mentioning of Climate Forest Plan (Klimaskogsplan)	Environmental certification Carbon capture
Bokn	General strategy of having bigger focus on climate and environment	-
Eigersund	General strategy to assess climate related consequences in line with economic consequences in municipal case processing. Municipal	Environmental certification

	new buildings must be considered as low-energy, zero-emission or plus buildings. Investments into energy efficiency/saving measures.	Energy saving
Gjesdal	There is Smart Gjesdal concept which implies facilitation of future energy solutions in the city center with a renewable energy share of over 80%. Investments into electric cars and charging points.	Environmental certification Renewable energy Transport
Haugesund	Financial plan contains Climate Budget section describing municipal climate statistics, climate target and climate measures. Climate measures address energy use, transport, public procurements, and food waste. Municipality is also participating in two networks: Klimapartnere Rogaland and Klimanettverket på Haugalandet.	Section Environmental certification Public procurement Dialogue Energy saving Transport Waste
Hjelmeland	There is made a verbal point about emergency of developing a climate plan for the municipality. In this connection there has been created Climate Fund that will be used for preparation and realization of climate plan. Municipal goal of "Job and attractiveness" is planned to be achieved, among other things, by working within the framework of climate transition/green shift.	Environmental certification Climate fund
Hå	The budget contains "Climate, environment, and energy" subsection that addresses emission-free transport, energy saving measures, and food waste. The issue of food waste is planned to be addressed through dialogue with agricultural organizations and food industry, attitude-creating work, and reduction of food waste internally. Budget also includes extensive work on walking and cycling paths.	Section Environmental certification Area planning Dialogue Attitude creation Energy saving Transport Waste Agriculture
Karmøy	Financial plan contains "Environment and climate" section with description of climate measures and instruments. These include climate-friendly municipal procurements, energy saving measures, waste reduction, environmental measures in renovation, emission-free transport. Municipality considers relevant training and attitude-creating work as the most realistic way to reduce energy use.	Section Environmental certification Public procurements Attitude creation Energy saving Transport Waste
Klepp	In the planning strategy, an Energy and Climate Plan was set up. It is pointed out that finances have been utilized in accordance with the climate plan. Along with Klepp has a goal of high share of	Environmental certification *Climate plan:*

	population traveling by bike, public transport, or walking, and as well reduced energy consumption.	Public procurements Area planning Attitude creation Agriculture *Budget (additionally):* Energy saving Transport
Kvitsøy	In the financial plan there is addressed energy use in buildings and climate measures related to waste.	Energy saving Waste
Lund	It is emphasized that Lund in the financial planning period will focus on the use of climate-friendly solutions. Lund municipality will take part in the "green transition" through local climate measures, such as the use of solar cells as an energy source for municipal buildings.	Environmental certification Renewable energy
Randaberg	Among operational measures there is mentioning of municipality's membership in Klimapartnere network and development of environmental accounting. Randaberg has a goal of facilitation environment friendly traveling. The budget also contains energy saving measures and focus on bicycling.	Environmental certification Dialogue Transport
Sandnes	Sandnes commits to working purposefully to fulfill the Climate Accord. The budget contains "Environment and climate" section which addresses emissions reduction measures in agriculture, area planning, waste management, public procurements, energy savings. Furthermore, municipality commits to choosing solutions with the lowest possible CO_2 footprint within their areas of responsibility and activities. Sandnes municipality aims for an environmentally and climate-friendly municipal operation, which implies alternative mobility solutions. Municipality also facilitates use of bicycles and electric cars.	Section Environmental certification Public procurements Area planning Renewable energy Energy saving Waste Agriculture
Sauda	Sauda has a focus on biking and smart mobility solutions. In the budget there is also mentioned district heating system as part of energy transition. Municipality includes energy saving measures into its budget.	Environmental certification Renewable energy Energy saving Transport
Sokndal	Municipal budget only covers building of walking and biking paths.	Environmental certification Area planning
Sola	Budget mentions energy saving measures, work on bicycle facilities and establishment of new charging points for electric vehicles.	Environmental certification Energy saving Transport

Stavanger	Stavanger commits to becoming a leader in the work for a climate and environment friendly society. Strategic use of procurement will be one of several important tools for achieving the climate and environmental goals. Financial plan contains "Climate budget" section that covers emissions status, climate goal, and climate measures. These cover transport solutions (walking and biking paths, use of electric cars), energy and material use, waste reduction. There is established climate and environmental fund which is used for financing emissions reduction measures. There is work going on with several projects for reduction of emissions, such as production of biochar (pyrolysis) and the phasing out of peat use. Municipality also works closely with the neighboring municipalities on a number of information measures, including waste reduction and recycling.	Section Environmental certification Climate fund Public procurements Area planning Dialogue Attitude creation Renewable energy Energy saving Transport Waste Agriculture
Strand	Strand has a goal of being a low-emission community. The budget contains energy saving measures. Municipality also owns a several vehicles in different companies, and there has been proposed to establish a carpool. Its purpose is to substitute old leasing cars with newer emission-free vehicles. Budget also shows work on walking and biking paths.	Area planning Energy saving Transport
Suldal	The budget contains "Climate and environment" subsection. The budget includes finances for investments related to climate measures and for operational measures. It is not stated in detail how the funds will be used, but relevant measures stated are charging stations at municipal buildings, facilities for bicycles, home composting, information measures, etc. Emissions from agriculture are suggested to be addressed through use of agricultural support for climate measures and information campaigns. The budget also contains "Climate, energy, and environment" section with more detailed information about measures. These cover use of electric cars, establishment of charging stations, facilitation of bicycling, energy saving measures, environmental certification, increased use of renewable energy, and reduction of food waste.	Section Environmental certification Renewable energy Energy saving Transport Waste Agriculture
Time	The budget states that climate and environment must be seen and prioritized during the planning period. There are allocated financial resources to work on climate plan revision. Municipality commits to facilitating use of public transport, traveling by bicycle and on foot. Time continues its work on development of Jæren Teknologiforum. Sustainable and innovative energy solutions are central to this work. In Bryne electric cars have a reduced parking fee on municipal parking spaces.	Environmental certification Economic instruments Renewable energy Transport

Tysvær	Municipal strategy covers the aim to reduce GHG emissions, ambitions to implement environmentally friendly energy and transport solutions throughout the municipality, and transition to circular economy through proper waste management. Measures related to climate change mitigation include procurement of electric cars and energy saving measures.	Environmental certification Public procurements Renewable energy Energy saving Transport Waste
Utsira	No mentioning of any code words.	-
Vindafjord	Budget contains priority strategies and measures during the planning period, which include reduced travel costs and climate emissions as a result of increased use of digital aids, establishment of climate, energy and environmental award, and ethical and climate-neutral procurements.	Environmental certification Public procurements Attitude creation

End of table 4

5.1.4. Implementation of climate measures and instruments

In order for measures to be able to act, they need to reach the responsible entities and be implemented. The results of the measures and how far municipality is from achieving its goals should be reviewed regularly. Such an evaluation should, as a minimum, be included in the annual review of the action program. Therefore, relevance of this prerequisite will be assessed basing on municipal reporting.

Table 5. Municipal reporting on climate change mitigation work

Municipality	Type of reporting
Bjerkreim	No reporting on work with emissions reduction
Bokn	No reporting on work with emissions reduction
Eigersund	No reporting on work with emissions reduction
Gjesdal	There is no reporting on climate mitigation as such, but Gjesdal annually reports on its development within Smart City concept. It partly implies climate mitigation related activities.
Haugesund	"Environmental report" section in annual reports – with a follow-up of climate plan
Hjelmeland	No reporting on work with emissions reduction
Hå	"Climate, environment, and energy" section in annual reports and municipal plan, starting from 2015

Karmøy	"Climate, environment, and energy" section on municipality's website provides useful links within the topic. However, there is no reporting on climate mitigation as such.
Klepp	2010-2012: result reporting on climate as one of the goals within "Society/environment" section in annual reports. In 2015 in annual reports appears section "Clear environmental profile". In 2019 in addition to that, climate-related goals are reported on within several sections of municipal activity. There is also a separate table with indicators for climate plan.
Kvitsøy	Follow-up of objectives adopted in climate plan starts in 2014, and it is only mentioned once – in the budget for 2015. Starting from 2016 there is no reporting of any kind on work with climate mitigation. In 2016 Rogaland Revisjon IKS (2016c) published overall analysis of the entire municipality's organization and service areas. One of the interest areas in this analysis is municipality's work with climate and environment, and climate plan.
Lund	No reporting on work with emissions reduction
Randaberg	Randaberg consistently reports on its work with climate plan in its annual reports in the section "Environmental status". In 2016 Rogaland Revisjon IKS (2016d) published overall analysis of the entire municipality's organization and service areas, and climate plan.
Sandnes	There is no reporting on climate mitigation work. However, starting from 2019, Sandnes's financial plans include separate section for "Climate and environment". In 2016 Rogaland Revisjon IKS (2016a) published management audit of energy optimization in construction projects.
Sauda	In 2013 and 2014 Sauda includes "Climate" and "A pioneer municipality on climate measures" respectively into scorecard related to municipal provision of services. Climate is included as one of main goals within «Society/life quality» section. Scorecard covers factors of success within the focus area, goals for the planning period, performance parameters, and last measurement result. In other years there is no reporting.
Sokndal	No reporting on work with emissions reduction
Sola	Annual reports 2010-2012 include "Energy and climate, sustainable development» section. In 2018 Rogaland Revisjon IKS (2018a) published a performance audit. The purpose of this project was to investigate to what extent municipal plans and theme plans for the municipality of Sola are good to manage and how the plans are followed up. One of the plans analyzed was Sola's climate plan.
Stavanger	Stavanger municipality consistently reports on its work with climate mitigation in its annual reports. There is established a reporting system specifying municipal goal within the area and indicators of goal-achievement. In addition, Stavanger develops separately annual status report for climate. Extensive work has been carried out with the follow-up of the plan both internally and externally. In 2015 and 2016 Rogaland Revisjon IKS (2015, 2016b) published a report that focused on the municipality's work with GHG emissions reduction. Also, in 2015 they released a report that focused on Stavanger's follow-up of parts of the climate and environmental plan for 2010 - 2025.
Strand	No reporting on work with emissions reduction

Suldal	Suldal consistently follows-up its climate plan in annual reports. Reporting is done within a separate section including main strategy within the focus area, measures, and comments regarding implementation of measures. Suldal also provides "Environmental status" website with the follow up on climate, environment, and energy in municipality. In 2019 Rogaland Revisjon IKS (2019)published a performance audit, the purpose of which is to assess the municipality's follow-up of the climate and energy plan.
Time	Through its annual reporting Time carries out follow-up of climate plan. There it specifies relevant for the planning period measures, their costs, and leaves comments on work progress. In 2018 Rogaland Revisjon IKS (2018b) published a performance audit, the purpose of which is to assess the municipality's follow-up of the climate and energy plan.
Tysvær	No data
Utsira	Utsira reports on its climate work results through annual reports under own section "Environment and climate". There in text form it reports on what has and has not been done, tasks for the next planning period, and future challenges. Municipality also starts its 2nd generation climate plan with an update on what have been achieved since the first plan was adopted.
Vindafjord	Through annual reports Vindafjord provides management system with performance goals for central focus areas of municipal activity. Within "Society and environment" section Vindafjord reports on results of its work with energy consumption.

End of table 5

It is a good practice for a municipality to establish follow-up routines of the climate plan within the normal annual reporting. But there is no mandatory way to do so, and each municipality makes its own decisions, depending on the ability to establish data gathering and reporting routines. Some municipalities order external evaluation of their work with climate and environment, and climate plan.

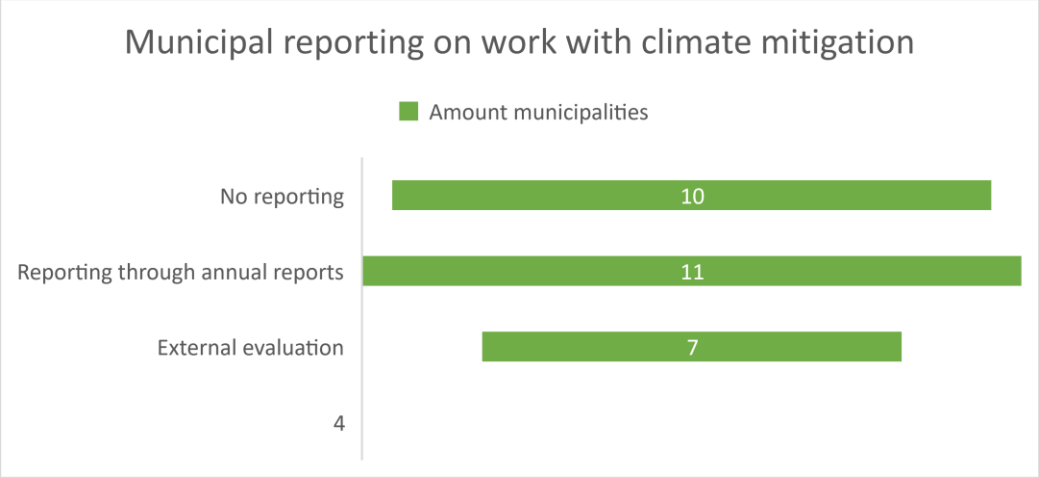

Figure 2. Municipal reporting on work with climate mitigation

As the graph shows, almost half of municipalities (43%) did not establish any reporting routines related to work with climate mitigation. For some of municipalities from this category there are no sufficient number of documents for analysis. However, this type of situation still is considered as absent reporting on climate action. Eleven municipalities (48%), consistently or inconsistently, report on their work with emissions reduction through their annual reports. Two of municipalities do not provide reporting, but there can be found external evaluations of their work with climate plans. In addition to these two, there are external evaluations for five more municipalities, that also have own reporting routines.

5.2. Case studies

5.2.1 Climate policy planning in Utsira

Utsira is a small size municipality with only hundred-ninety-two inhabitants (Statistics Norway, 2020b). The main source of GHG emissions in Utsira is shipping activity which significantly surpasses all the other emission sources combined. With its first climate and energy plan in 2010 Utsira adopted a vision about being zero-emission municipality, which means being carbon neutral by 2020 (Utsira kommune, 2010b). The statistics in fact shows that they have the shortest way to reaching this target.

According to the informant, the Chairmanship (Planning committee) has main political responsibility for work with emissions reduction, while staff from all departments of municipal administration are working together towards the same climate goal. It is stated, their use of resources corresponds with the actual need. In 2009 Utsira municipality participated in the State's support program and received 100,000 NOK funding for developing climate and energy plan from Enova (Enova SF, 2009). The plan was adopted the same year with a slogan "Utsira gives energy", highlighting its focus on renewable energy production. Utsira is a remote municipality and it is located on an island. Therefore, the issue of energy supply and self-sufficiency is highly relevant for them. There are three main targets in the plan: 1. Utsira actively contributes to reduction of global GHG emissions; 2. Utsira is a pioneer municipality for wind power investments/efforts, i.e. facilitator of renewable energy production in municipality; 3. Utsira will be a showcase for alternative energy production. Emissions reduction target specifically implied 10% lower emissions by 2015 compared to the level of 1991, which would comply with the national 20% by 2020 reduction target (Utsira kommune, 2010b).

According to the climate plan, the status, objectives, and measures must have been reviewed every four years. Goal achievement in relation to the plan must have been reported annually to Enova and referred to in the annual report (Utsira kommune, 2010b). Follow-up of goals was in fact carried out in municipal reports; however, these were not released annually. Municipality's official website provides only two annual reports – from 2010 and 2015. Revision of climate plan was carried out after four years. Utsira developed its 2nd generation plan which covered the period 2015- 2019. The mandate from the municipal council decided this time to significantly shorten the measures and content of the original plan. The 2nd climate plan contains updated status section and shows changes since the last approved plan. It was also pointed out that new measures should be better linked to the financial plan. In new climate and energy plan Utsira commits to the same main goals as in the previous (Utsira kommune, 2015b). According to the respondent, the target also stays the same for 2030 – the target of being zero-emission municipality.

According to the informant, Head of Administration has the most influence on contents of the plan, while NGO's, business community, and other municipalities have the least influence.

One feature that differs Utsira's climate planning from most of Rogaland's municipalities is its action plan. Municipality's both 1st and 2nd generation plans were followed by the action section. There were presented plans A and B – in accordance with prioritizing between measures.

Action plan A includes measures planned to implement in the short term, and action plan B covered other measures relevant for the period beyond that. Prioritized measures that went into action plan A were those considered the most important and realistic to implement. For each part of action program there are proposed five measures. As it is required, Utsira defines climate measure costs, effects, timeline, and responsibilities for implementation. It is noted that effect evaluation of some measures can be challenging since the issues are so complex.

It was assumed that the energy and climate plan would be rolled out during each election period, which means the action plan was initially planned to be applied until autumn 2017. Thereafter, the plan for new election periods 2017-2021, 2021-2025 etc. would be revised. This way measures in the action plan could at any time be in accordance with the composition of the municipal council. As the informant states, next revision of climate plan is in progress, and it will be incorporated in the upcoming municipal master plan.

Despite the fact that Utsira municipality had both of their climate plans separately from the municipal master plan, they did not end up in the desk. All political decisions since 2013 have been weighed against zero-emission targets. Plans were actively followed and reported on through annual reports. These reports included a separate section dedicated to environment and climate. There they provide follow-up of achieved goals and full overview of the situation within the area. Utsira reports on climate mitigation activities that have been carried out, achieved results, tasks, and challenges ahead (Utsira kommune, 2010a, 2015a). However, what is interesting to point out is that Utsira's financial plan for 2020 does not mention any emissions reduction measures.

On municipality' official website it is stated that "The municipality has Norway's smallest emissions of only 1,000 tons of CO2" (Utsira kommune, 2020a). I assume this does not cover emissions from the shipping activity, as according to Environmental Protection Agency's statistics, total GHG emissions in 2018 constituted a little over 15,000 tons CO2 (Miljødirektoratet, 2020e). As the respondent states, the municipality in general has low emissions with the exception of the Rutebåten. If the ferry becomes electric, then Utsira is almost zero emission. Through the ferry company, a persistent attempt has been made to electrify the ferry. Further development however required participation of the county administration. Utsira cooperates with Haugaland Kraft on R&D project aimed at developing smart green solutions. Municipality points out that they continue this work, even though they do not have much money to invest.

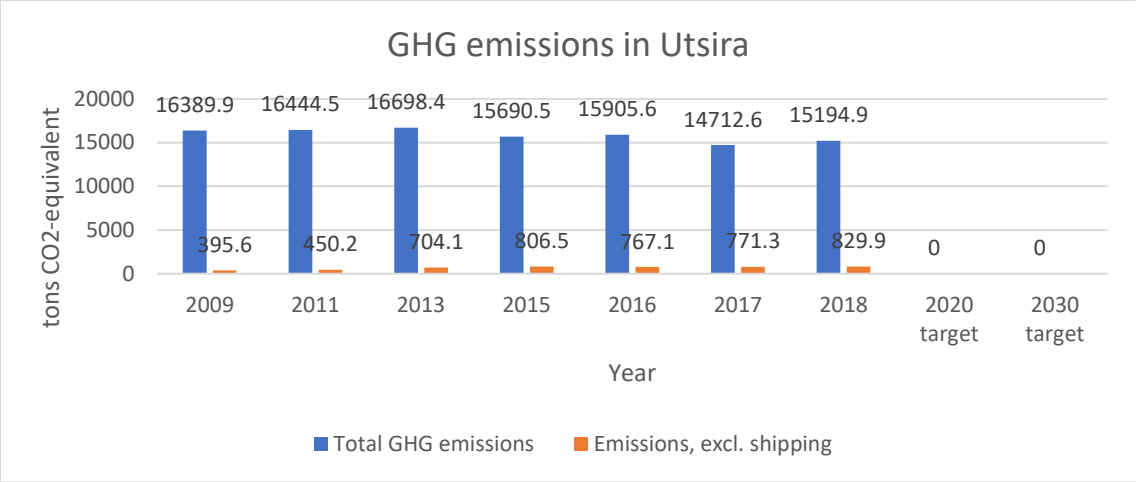

Figure 3. GHG emissions in Utsira. Based on data from Environmental Protection Agency (2020)

In the period 2012-2019 there were two projects in Utsira that received financial support from Enova (2019) the purpose of which was increased energy efficiency. Regarding Klimasats scheme, Utsira municipality received financial support for only one project since the establishment of this support scheme (Miljødirektoratet, 2020c).

Utsira does not collaborate with neighboring municipalities on common challenges related to climate change mitigation beyond common emissions reduction network and ferry connection. According to the informant, there is less synergy effect for them due to their distant location. But the informant states that exchanges of experience could be useful.

5.2.2. Climate policy planning in Klepp

Klepp is a medium size municipality with 19 680 inhabitants as of first quarter of 2020 (Statistics Norway, 2020a). According to the informant, there are several employees across different departments responsible for work with emissions reduction. The respondent notes however, that municipality's use of resources does not correspond with the actual need. The work is distributed among many and is often included in other related work. Klepp has small administration, and not much of employment resources are being used for direct climate work. Medium-size administration also implies that there are many employees having general knowledge about climate change mitigation issue, and very few of specialists. According to the informant,

Municipal Council (Kommunestyret) and other administration (øvrig administrasjon) have the most influence on contents of the climate plan.

The main contributors of GHG emissions within municipal borders are agriculture and road traffic, while greenhouse gases from agriculture constitute approximately half of all emissions in Klepp (Miljødirektoratet, 2020d). This is an important feature, as reduction of emissions from agriculture has its own challenges. According to the informant, municipality's overall strategy for climate policy is "to take measures where the municipality has instruments, without this necessarily leading to large emission reduction in the statistics".

Klepp was among the first municipalities in Rogaland to start working with climate planning. In 2008 Klepp municipality received 100,000 NOK from Enova for developing energy and climate plan (Enova SF, 2008b). In 2009 developed plan was sent on hearing and was politically adopted in 2010. Initial reduction targets were to cut GHG emissions by 5% by 2012 and by 14,3% by 2020, both in relation to the year of 2007. Such ambition level was based on Climate Accord: the municipality defined its target as achievable and at the same time ambitious (Klepp kommune, 2009b).

Klepp's climate plan from 2009 specified two energy targets: 1. reduce energy consumption by 5% by 2014 compared to the level of 2007; 2. reduce energy consumption and convert to renewable energy sources corresponding to a total of 25% of energy consumption in municipal buildings by 2018. Eventually, climate mitigation measures that made it to the municipal budget covered reduction of energy use in big municipal buildings. In municipal documents it was noted, however, that they experienced the need for more training on energy management and indoor climate. Lack of expertise became a hindering factor for reaching municipal energy objectives (Klepp kommune, 2010a).

In 2011 there was adopted separate action part of the climate plan. Reduced GHG emissions were seen as an indicator of Klepp's performance within societal and environmental development. There was set a specific amount of emissions the municipality was aiming for, but the progress could not be evaluated because of lack of data on emissions from Statistics Norway (Klepp kommune, 2011a). Eventually from 2014 this target-setting was removed from municipal budgets.

In 2012 it has been proposed to aggregate 1 million NOK per year for energy efficiency measures/follow-up of the climate plan. It was expected that this could result in lower energy costs

in the long run, but the approbation would allow for contributions to prioritized climate measures that do not provide direct savings in operations (Klepp kommune, 2012b). These approbations were continued until 2014. Budgets and annual reports after 2014 do not mention approbations, but it is pointed out that remedies were utilized in correspondence with the adopted climate plan year by year. They were systematically allocated to implementation of energy efficiency measures. In 2017 Klepp municipality starts working on revision of the existing climate plan (Klepp kommune, 2017a). In the course of this work the municipality decides to go beyond energy efficiency measures. This results in allocated funds to installing solar panels at Bore school and to mobility measures at Klepp railway station. New climate and environmental plan for the municipality of Klepp is finally getting adopted in 2019, with a planning period of 15 years, i.e. until 2034. The municipality commits to the ambitious target of 40% GHG emission reduction by 2030 in relation to 1991, which corresponds with the national target setting (Klepp kommune, 2019c). Data from Statistics Norway was used as a basis, and according to these data there was released 124 800 tCO2-eq. in 1991 in Klepp (Statistics Norway, 2012). Important to note that provided data excludes emissions from shipping (neither from aviation, but there are no emissions from aviation in Klepp anyway). It is mentioned in the plan that the municipality has no control over emissions from shipping, therefore their target does not cover this sector of activity. On that account the target for 2030 is 124 800 tCO2-eq. minus 40% which equals 74 880 tCO2-eq., shipping excluded.

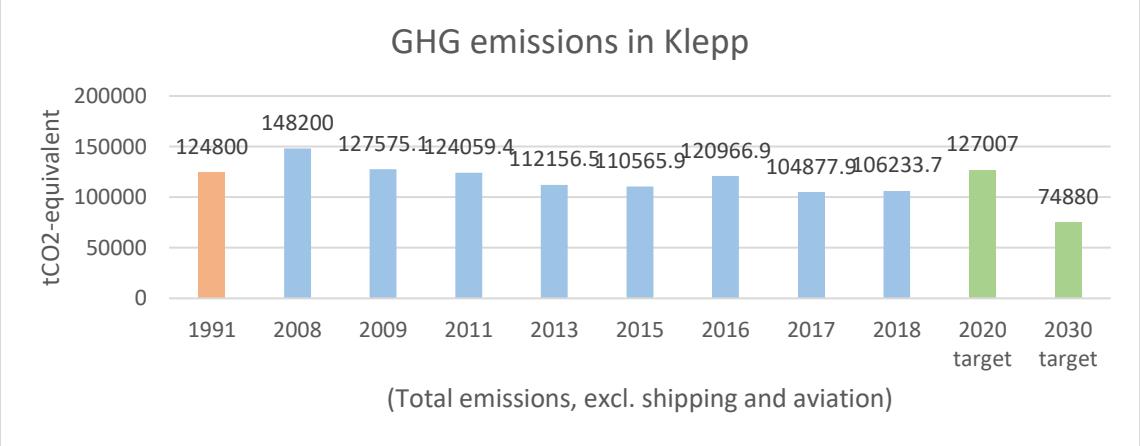

Figure 4. GHG emissions in Klepp. Based on data from Environmental Protection Agency (2020)

The municipal council has decided that the climate and environmental plan will be taken up once a year in the coming municipal government period. The plan includes a set of indicators that will be reported on in conjunction with the annual report. These indicators relate to different fields of activity: energy, transport and urban development, building operations, agriculture, attitudes leading to climate-friendly choices and municipal procurements. Measures presented in the plan are those that municipality itself can take. But it is highlighted that for the emissions reduction target to be achieved there is a need for significant contributions from other public and private actors. Regarding energy use Klepp's climate plan from 2019 does not imply specific energy reduction targets. The focus is on development of alternative energy sources, such as biogas, which makes sense in light of big agricultural industry. Production of biogas from manure is highly relevant here, and the measure has a large emissions reduction potential (Miljødirektoratet, 2020a). The informant states, there is a need for new solutions related to the municipality's work with emissions reduction, especially within agriculture (such as solutions related to biogas and alternative animal feeds).

Klepp's climate and environmental plan is followed by action plan. First thing to notice here is municipality's approach to defining budget consequences. As it was mentioned before, this is the part of planning most municipalities struggle with. Municipality of Klepp divides climate measures into three groups: measures without financial consequences, current measures financed by municipal climate and environmental funds, measures financed by other municipal funds or external funding (Klepp kommune, 2019c). The action plan in general can serve as a good example, as it satisfies all the requirements to climate and energy planning established by the State Guidelines, except evaluation of effects of proposed measures.

Klepp's financial plan for 2020 showed that municipality is using a variety of climate measures and instruments (Klepp kommune, 2020). Budget itself covers energy saving measures and highlights the aim to increase the share of population traveling by public transport, bike and on foot. The budget also refers to the climate plan stating that finances have been utilized in accordance with it. This would imply that municipality is working on emissions reduction with the help of green public procurements, creation of attitude and mitigation measures in agriculture.

Klepp took on the role as an initiator of Climate Network Jæren for intermunicipal competence raising and sharing of experience. Network received financing from the State through Klimasats program in 2016, 2018 and 2019. In addition to that, a row of projects received financial

support within different areas, such as traveling habits, charging of electric vehicles and climate measures in buildings (Miljødirektoratet, 2020c).

In the period 2012-2019 Enova provided financial support to forty projects in Klepp. The recipients were transport, industry and construction companies, and also public sector, including Klepp municipality and Rogaland county administration (Enova SF, 2019).

Informant states, that it would be useful with better competence within such fields as climate-friendly procurement, biogas, and biochar. The network is a useful form of collaboration for the municipality, especially for the knowledge enhancement, but Klepp does not yet consider collaborating more across municipal borders. The informant notes however that an inter-municipal climate plan would probably make the work more useful and comprehensive.

5.3. Barriers in work with emissions reduction

Work with climate change mitigation currently implies a row of obstacles of different nature. Municipalities in their financial plans and reports often specify why some of the planned measures were not implemented or why performance targets were not achieved. These hindrances municipalities notify about are gathered in the following section.

Practical barriers are mentioned the most by municipalities. The most spread among these are lack of resources – both financial and personnel resources. Municipalities lack the capacity to review and follow-up climate plans, and one municipality even noted that they were not able to apply for new projects due to lack of capacity. Another practical barrier that was mentioned often is lack of expertise and relevant training among municipal employees. Which, in turn, must be acquired through reprioritization of resources in the municipal administration. Climate issue is often downgraded for one or another reason. Difficult economic situation was also mentioned as one of the factors preventing implementation of climate mitigation measures. There is a need to establish better linkage between measures and financial plans. Westskog et al. (2018) also name lack of instruments to measure goal achievement as one of practical barriers. This is relevant for municipalities in Rogaland too as almost none of them measure it. In particular, one of the municipalities had an intention to develop quantitative performance targets for use of renewable energy but concluded that it was too difficult for them. According to one of the informants, while some of the knowledge fields are well developed, others need more knowledge gaining. For

example, it is better known how to reduce emissions from road traffic, but it is way harder to address emissions from agriculture.

Two of the informants characterized barriers within climate mitigation work as mainly political and value-related, such as old prejudices. Informant from Klepp municipality, as agricultural municipality, pointed out that it is not politically realistic to try and implement restrictive measures within this area of activity. According to one of the municipalities, there is a poor framework in general for realization of climate measures within agriculture. In addition, there is a conflict of interests between the goal of increased food production and emissions reduction target. One of the municipalities highlights one goal conflict particularly difficult to handle: "…[being] a large developer with many jobs...becomes difficult to say no to, from a political point of view. But we reckon that those who want to establish themselves in such marginal conditions are most concerned with the synergy effect of clean energy and clean air/sea that [municipality] as a society provides". Another municipality makes a point that their climate and energy plan was not updated in accordance with legislation, national climate policy, changes in the municipality's organization or developments in the local community along the way. This weakened the systematic nature of the municipality's climate and energy work, in addition to the plan document being poorly anchored in the municipal organization, both administratively and politically. One of the municipalities noted that the status of climate plan has its influence on target reporting routines. They state that if climate and energy plan was part of municipal master plan, it would be reported on the climate target through the fixed reports, interim reports, and annual reports.

Value-related barriers were the least reported on. In documents there is only one mentioning of low interest in climate forestry from inhabitants. It has not been as enthusiastic as expected, even though all expenses were covered by the state. One of the informants as well noted though that they do not really experience any barriers in their work with emissions reduction except old prejudices.

6. Discussion

In order to answer the problem statement, the discussion part will be divided into the same subsections as the empirical data. These subsections are formed according to the theory applied and look as following:

1. Status of climate and energy plan
2. Action plan
3. Climate measures in budgets and finance plans
4. Implementation of climate measures and instruments
5. Barriers in work with emissions reduction

6.1. Overview of municipal climate plans and measures

6.1.1. Status of climate and energy plan

Generally, there are two approaches to organizing municipal work with climate change mitigation: to have either own separate climate plan or to integrate this topic into municipal master plans. When municipality decides to have independent climate plan, it has two options in regard to the plan's status. Climate and energy plan can have a status of municipal sector plan (kommunedelplan). Such plans belong to municipal master plans and are applied for a limited part of municipality. These plans are legally binding and give directions for more detailed planning (Regjeringen.no, 2011). In Rogaland there are ten municipalities (43,5%) that adopted independent climate plans with a status of municipal sector plan. Another option is to have a climate plan with a status of a theme plan (temaplan), which are plans for a limited topic area. Such plans are not subject to the requirements of the Planning and Building Act such as municipal sector plans are. The purpose of theme plans is to clarify direction of development, show strategies and necessary priorities in the long term, within a thematic area. The 39% share municipalities of Rogaland, or nine municipalities, have adopted climate and energy plans in the status of theme plans.

The second approach to organize climate and energy planning in municipality is to incorporate this theme into municipal master plan. In Rogaland there are currently three

municipalities that integrate climate mitigation into their municipal master plans. The way it is organized varies a lot across municipalities, and it might be a good idea to look at each of these municipalities individually. For example, Bjerkreim municipality's separate climate and energy plan went out of date in 2014. But their municipal master plan 2014-2026 mentions climate mitigation in its societal part. Production of renewable energy as part of climate work is included into the list of focus areas within the planning period, and further the issue of clean energy is addressed in a separate chapter. Moving on, we see that Bjerkreim brings out "Climate" as one of long-term goals in the action part of the plan, highlighting two aspects of it: renewable energy and planting of forest. These are followed with the corresponding intermediate objectives. Planting of forest is also addressed more detailed in the chapter devoted to "Forestry".

Strand municipality represents a curious case. There are records in other documents of this plan being adopted, and it can be found through the County Governor's internal case management and filing system ePhorte. However, the plan itself cannot be found on municipality's website. In municipal budget for 2011 there is a record of allocated funds, but later in 2012, according to the budget, "climate plan is taken out". Nowadays Strand municipality addresses climate issue through societal section of its municipal master plan 2019-2035. It takes into consideration national regulations and places climate issue within such topics as "Sustainable area- and societal development" and "Attractive and climate friendly urban and local areas". There is, however, no detailed information regarding climate measures, but rather general description of the desired development direction.

Vindafjord municipality also did not revise its 1st generation climate plan that ran out of date in 2015. In its municipal master plan 2017-2029 Vindafjord names climate and environment as one of the focus areas and puts them under section "Sustainable land management". Among others, there can be found a goal to "take climate into consideration" and respective strategies to reach it. Here, again, no details are given on measures and instruments aimed at climate change mitigation.

All in all, based on the analysis of the three municipalities that do not have valid up-to-date climate plans and that decided to incorporate climate issue into municipal master plans, I can make one general conclusion. None of the three municipalities provide detailed climate and energy planning. Their coverage of climate issue is limited to providing general goals and strategies.

On one hand, it can be argued, whether incorporated plans can be considered as proper climate mitigation plans. What we see in practice is that when plans are separate, they tend to be more detailed and contain more information. While those that go as part of municipal master plans only represent a single chapter if not paragraph. As Kyrre Groven and Carlo Aall (2002) mentioned, one can expect that less detailed plans provide poorer conditions for quick implementation of climate measures than more detailed plans. On the other hand, municipal master plan is a document that is actively used by many and a separate climate and energy plan is often used by fewer (Miljødirektoratet, 2019a). Therefore, by incorporating climate plan into master plan, one increases its chances to be followed up. Another point to make is when municipalities mention "climate plan" they oftentimes mean only one part of it – either mitigation, or adaptation.

Within this section I would like to take a closer look at municipal climate targets. Reduction goals represent a particular interest as they are the most visible indicators of municipal commitment and ambitiousness. Climate and energy plans normally have to cover three blocks: reduction of emissions, transition to more efficient energy use and action plan. Municipalities have to understand where emissions come from and in what volume. The State Guidelines require municipalities to set ambitious targets. The State, however, does not provide guidance on how the targets should be designed, as municipalities need to consider their unique conditions. Environmental Protection Agency (2019a) recommends setting targets for reduction of direct emissions and energy consumption separately. The term "ambitious" implies that municipalities and counties should strive to be important players in the transition to a low-emission society. Which again can be interpreted differently. Many use national targets as benchmark and consider them as indicator of ambitiousness. Here I am talking about national reduction target of 20% by 2020. But at the same time Enova SF (2008a), organization owned by the Ministry of Climate and Environment, in their guide to planning set the requirement of a minimum 10% emissions reduction target in order for the climate and energy plan to get a financial support from the state. Such mixed-up signals and unclear demands on municipal climate action can become a source of obstacles for transition to low-emission society. Target-setting plays a certain role in climate politics. Haarstad (2020) argues that quantifiable emissions reduction targets made climate change more open to politicization. Metrics allows policies to be assessed and decision-makers to be held accountable. Aall et al. (2007) in turn argue that ambitious goals can be a sign of symbolic climate policy. Producing such symbols as impressive climate targets and planning documents by local

governments can serve different purposes. On one hand, they can be used as a distraction from doing anything specific. On the other hand, these symbols can serve as an "entry point into "real" politics" (Aall et al., 2007, p. 21). Mickwitz et al. (2009, p. 33) also argue that commitments to ambitious climate goals can indicate readiness to take public's concerns seriously, "but without any real intention of implementing specific measures that would have concrete impacts on target sectors".

Nevertheless, target-setting can play a role in legitimizing interventions that may advance transitions to low-emission society (Haarstad, 2020). Clear understanding of common goals and expectations from the State are important for the choice of measures and instruments on a local level. In addition, the targets are required to be realistic and measurable.

Table 6. Municipal emissions reduction targets

Plan	Reference year	Target year	GHG emissions reduction target
Dalane 2011-2014	1990	2020	Reduce by 10%
Bokn 2011-2016 2020-2024	- -	- -	- Lower GHG emissions
Eigersund 2012-2020	2005	2020	Reduce by at least 25%
Gjesdal 2013-2023	2007-2020	2020	Reduce by 15% (emissions will be a maximum of 59,800 tCO2-eq.)
Haugesund 2012-2020	1990 2008	2020 2020	Reduce by 20% OR Reduce by 32% (emissions by 2020 will be down to 58,868 tonnes/year)
Hjelmeland			-
Hå 2010-2020	-	-	In the short term, will stabilize the total GHG emissions at today's level. In the longer term, emissions will be reduced in accordance with national targets.
Karmøy 2017-2020	-	2020	Reduce GHG emissions
Klepp 2019-2034	1990 (1991)	2030	Reduce by 40% (excl. shipping)
Kvitsøy 2012-2020	-	2020 2040	Reduce GHG emissions Less than 2000 kg tCO2-eq. per inhabitant
Randaberg 2012	1991	2020 2020	Reduce emissions from road traffic by 20% Reduce emissions from agriculture by 15%

Sandnes 2015-2030	1991	2020	Reduce by 20%
Sauda 2010	2009	2020	Reduce by 6600-7700 tCO2 (or 23,5% - 27,4%, excl. industry)
Sola 2010	1991	2020	Reduce by 20% (excl. refinery) or reduce to 148 ktonnes CO2-eq.
Stavanger 2018-2030	2015	2030	Reduce by 80%
Strand			-
Suldal 2012-2017	2009 2009 2019	2017 2022 2030	Stabilize GHG-emissions Reduce by 10% Reduce by 30% (from Finance plan 2020)
Time 2011-2022	1991	2020	Reduce by 10%, i.e. reduce to ca. 92 500 tCO2-eq.
Tysvær 2012-2017	1991 2009	2020 2020	20% lower emissions (excl. industry), i.e. emissions will be less than 51 000 tCO2-eq Cut 27 000 tCO2-eq (amounts to approximately 3000 new tons of CO2-eq. a year)
Utsira 2015-2019	2015	2020	Zero-emission
Vindafjord 2010-2015	1990	2015 2020 2030	Reduce by 10% Reduce by additional 10% Carbon neutral

End of table 6

Statistics published by Statistics Norway before 2018 did not include emissions from shipping activity. Therefore, I assume that municipal targets announced before 2018 do not cover this source of emissions, if otherwise is not specified.

The most common practice for designing climate mitigation goals is to establish a reference year and define the share of emissions reductions. One needs to provide data on the amount of emissions used as a basis for the target, so that we could calculate the final total amount of emissions municipality is aiming for in the target year. The task seems not so challenging, but in practice it was slightly more complicated. When we start looking at emissions reduction targets, the first thing we can notice is that there are many different approaches. Climate targets announced in four (17%) of the plans are aligned with the national goals. Municipalities aim to contribute to meeting the objectives of the Kyoto Protocol, the Climate Accord and the Renewables Directive (20:20:20) by reducing their emissions by 20% in relation to 1991 (as there is no data on emissions

by municipality for the year 1990). Among the rest of the plans we can observe both less and more ambitious targets than that. Five municipalities committed to climate targets lower than 20% emissions reduction, seven plans set higher targets, and four municipalities did not set any specific climate targets, limiting their goal setting to general "will reduce GHG emissions". Yet, it is important to mention that the higher percentage of emissions reductions behind the targets does not necessarily reflect the actual ambition level, as the basis for targets differs between municipalities. There are many of them that exclude certain sectors of activity from emissions used as a reference. Also, emissions calculation methods have been updated along the way: new models for calculation have appeared and new sources of emissions were added to the statistics (Miljødirektoratet, 2019b). Due to these updates, emissions statistics used as a basis for original plans differs from the one that is relevant today. Furthermore, there is a variety of reference years used by municipalities. As it was mentioned, many municipalities use 1991 as a basis year, which is the time period when emissions were lower than in 2009, for example. This would mean that the same percentage targets will not indicate equal ambition level in case of different reference years. One municipality uses projected future emissions as a basis for their reduction target. Some municipalities do not specify the reference year at all. All together these factors make it complicated to track municipalities' level of commitment and progress on climate action. In order to be useful for comparison, the current state of emissions must be calculated in the same way for both the reference and the target year (Kramers et al., 2013). In practice one gets to deal with a row of disparate municipal commitments. In addition, if we want to find out whether they all combined correspond with regional climate target, careful contemplation is required.

Municipal energy planning implies also transition to more efficient energy use. This section seems clearer and more understandable for municipal administrations. This area of influence is rather concrete. Municipalities in general do not have troubles with setting concrete targets regarding reduced energy consumption. Reduction of energy consumption, specifically electricity, however, is not always associated with reduction of GHG emissions. One of the reasons for that is the perception that almost 100% of electricity in Norway is emission-free, which might be true for the production side, but not for the consumption side of it. Abundant and cheap hydropower is a great benefit for climate mitigation in Norway, but at the same time it discourages development of other renewable energy sources and hinders reduction of energy consumption.

Table 7. Municipal energy targets

Plan	Energy targets
Dalane 2011-2014	• Dalane will be a net exporter of renewable energy by 2020. • By 2020, the production of renewable energy in Dalane will be tenfold compared to 2008. • Contribute and facilitate the initiated construction and operation of all hydropower and wind power plants by 2020.
Bokn 2011-2016	• Energy use in municipal buildings and municipal facilities will be reduced by at least 10% during the planning period (11-16). • To reduce energy consumption in municipal buildings and real estate by 10% by 2025.
Eigersund 2012-2020	• Electricity consumption must be stabilized at the level of 2009. • By 2020, there must be at least a 10% reduction in energy consumption in municipal building stock. • By 2020, Dalane will be a net exporter of renewable energy.
Gjesdal 2013-2023	• Total stationary energy consumption in 2020 will be a maximum of 186 GWh (corresponding to approximately 10% reduction). • Consumption in municipal building stock will be reduced by a minimum of 10% in relation to consumption in 2009. • Energy consumption for heating will, to the biggest extent possible, be transferred to other renewable energy sources than electricity. In total in the municipality, there will be 1.5 GWh more waterborne heat in 2020 (according to 2009).
Haugesund 2012-2020	• Energy consumption per inhabitant in Haugesund will be 20% lower than in 2005 by 2020. This means that it will be reduced to 20,080 kWh/inhabitant in 2020. • 20% of energy consumption in Haugesund will be based on renewable energy sources by 2020.
Hjelmeland	-
Hå 2010-2020	• The municipality will eventually establish itself as a net exporter of renewable energy based on local resources. • The municipality will be a driving force to increase the production of electricity and heat from local renewable energy resources by 500 GWh, considering other interests. • Increase energy efficiency in municipal buildings and facilities by 10% by 2015.
Karmøy 2017-2020	Karmøy will annually reduce energy consumption in its own organization and stimulate that similar development takes place in the municipal community.
Klepp 2019-2034	• As much as possible of the energy used in the municipality is renewable. • Local energy resources are developed and used.

Kvitsøy 2012-2020	• Kvitsøy will facilitate new renewable energy production with 30 GWh by 2020 where the consideration for the unique coastal and cultural landscape is taken into account. • Reduce energy consumption by 10% in in own buildings by 2015.
Randaberg 2012	• By 2020, energy consumption will be reduced by 20% in existing building stock. • Increase power production from renewable sources. • The energy demand in municipal buildings will be reduced by 20 % by 2020.
Sandnes 2015-2030	• By 2020 specific energy consumption will be reduced by 20% (127 kWh m2), new renewable energy share will be 20%. • Sandnes Municipality will contribute to reducing specific stationary energy use in general and to facilitating the conversion to new renewable energy.
Sauda 2010	• Energy consumption in buildings and facilities in Sauda will be reduced by at least 20% by 2020. • Sauda will reduce its electricity consumption through the use of bioenergy by at least 3,550 MWh/178 tons of CO2-eq. • Sauda will contribute with a minimum of 130,000 MWh/6,500 tons of CO2 of new renewable energy by 2020.
Sola 2010	• Reduce energy consumption by 35% from the 2012 level until 2020. • Be 20% more energy efficient in 2020 compared to the current level. • Ensure that new renewable energy accounts for 20% of energy supply in the municipality by 2020.
Stavanger 2018-2030	Increase the proportion of the energy consumption that uses local renewable energy sources.
Strand 2011	-
Suldal 2012-2017	• Reduce energy consumption and increase the share of alternative renewable energy. In municipal buildings, energy consumption must be reduced by a minimum of 10% by 2017, and by 20% by 2022. Use of alternative renewable energy will increase here to 5% by 2017, and 10% by 2022. • Suldal will continue to be a major producer of hydropower and will increase production in a sustainable way.
Time 2011-2022	• In 2020, the municipality will be 20% more energy efficient than today (2008). • Local production of new renewable energy will in 2020 correspond to at least 40% of stationary energy consumption in the municipality at that time. • Will reduce specific energy consumption (kWh/m2/year) in its own buildings by 15% by 2016 and 20% in 2020 compared to 2010.

	• Will increase the share of new renewable energy in its own buildings to at least 10% in 2016 and 20% in 2020.
Tysvær 2012-2017	• Energy consumption per capita will be reduced by 20% compared to 2005 level before 2020 (without industry). • The local production of renewable energy, mainly hydropower and wind power, will increase so that by 2020 it will be produced 100 GWh of renewable energy per year.
Utsira 2015-2019	• Utsira municipality is a pioneer municipality for wind power investment. • Utsira municipality will be a showcase for alternative energy production.
Vindafjord 2010-2015	• Reduce municipal energy consumption. • Reduce total energy consumption (KWh) per. inhabitant. • Increase the share of energy consumption that comes from the use of biofuels, and which can replace fossil fuels. • Increase utilization of renewable energy sources from wind and water.

End of table 7

The findings indicate municipal focus on use of renewable energy sources. Eighteen municipal energy targets cover increased use and/or production of renewable energy. Whilst twelve municipalities are aimed at reducing energy consumption in municipality in general, and only nine targets cover energy consumption in own municipal buildings specifically.

In order for the targets to be effective, they need to have certain characteristics. A set of conditions they need to fulfill is often referred to as SMART, which is an acronym for Specific, Measurable, Achievable, Realistic and Time-bound (Karin & Sven Ove, 2005). Well-designed targets play important role in energy transitions, as they stimulate their implementation and provide required level of motivation (IRENA, 2015). Yet, what one can observe in the table above, is that there is no mandatory system on how to form and set energy targets in municipalities. There is no common view of what part of municipal activity targets should relate to, whether it is necessary to address both energy consumption and energy production, and there is no common level of target specificity. In addition, 26% of municipalities do not specify the time horizon of target achievement.

6.1.2. Action plan

When analyzing municipal action plans related to climate mitigation, I was looking at what elements they covered. The State Guidelines point out the need to include five elements in particular: 1. Costs of measures; 2. Effects of measures; 3. Funding of measures; 4. Division of responsibilities for measure implementation; 5. Timeline of implementation of measures.

Table 8. Contents of municipal action plans

	Costs of measures	Effects of measures	Funding of measures	Responsibilities for implementation of measures	Timeline of implementation of measures
Amount municipalities	11	12	6	17	15
Share of municipalities	48%	52%	26%	74%	65%

As the analysis showed, this part of planning is the most challenging for Rogaland's municipalities. Only one municipality fulfills all five Guidelines' requirements. According to the existing action plans, municipalities struggle the most with linking them to the budget and defining sources for their financing. Bigger investment needs have to be addressed in connection with municipal budget. This fact together with the failure to revise action plans annually are the main reasons why action plans lack information about funding of climate measures. In addition, as all of the informants from municipalities noted, it is impossible to finance climate measures using only own resources. Governmental support is crucial here.

Another challenge municipalities have to deal with is evaluation of effects that climate measures have. There is a gap in knowledge within this area. Cost and effect evaluation of measures have to become a basis for prioritization between measures, whereas, as informants noted, such evaluation often is not conducted. Prioritization is usually based on feasibility of measures, rather than on the effects they would have.

6.1.3. Climate measures in municipal budgets and finance plans

This point is partly connected to the previous chapter of discussion. I have already established that municipalities struggle with connecting climate measures with the existing budget. Analysis of financial documents proves it too, showing that climate measures and instruments are often not included.

General results show that more than half of municipalities include climate mitigation measures into their budgets and subsequently report on their implementation through annual reports. However, the analysis also showed, that inclusion of measures into municipal budget does not guarantee their implementation. Often, implementation of measures gets postponed for many years.

Findings from more detailed analysis of municipal budgets for 2020 show that the majority of Rogaland's municipalities include climate change mitigation measures into their budgets 2020, except for the two municipalities. General overview of measures suggests that municipalities implement all categories of available to them measures and instruments, but to a different extent. The most commonly included in budgets are environmental certification (nineteen municipalities or 83%), measures related to transport (thirteen municipalities or 57%) and energy saving (also thirteen municipalities or 57%).

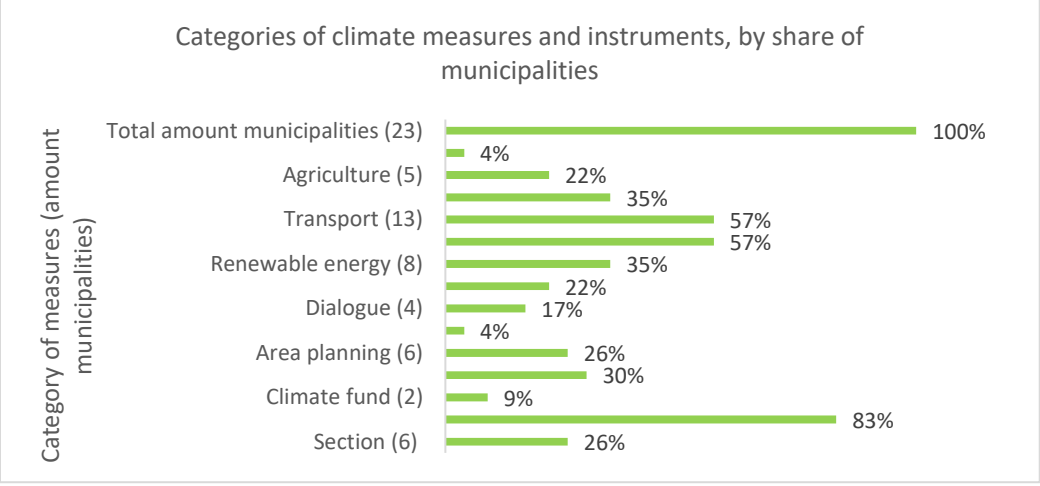

Figure 5. Categories of climate measures and instruments, by share of municipalities

Once again, I want to point out that there are no standard routines regarding work with emissions reduction. While some budgets contain separate sections devoted to climate work, others do not highlight it in any way. One of the reasons behind it could be the nature of climate mitigation work, as it involves work within different departments of administration and sectors of municipal activity. At the same time, it might be an indicator of lacking attention to the issue.

6.1.4. Implementation of climate measures and instruments.

State Guidelines on climate and energy planning as a policy measure does not imply any monitoring of municipal activity. Therefore, reporting on measure implementation is voluntary. Niedertscheider, Haas, and Görg (2018) suggest that reporting is a precondition for tracking the progress of climate policies being integrated and for evaluating effects the measures have had. Mickwitz et al. (2009) also state that it can improve accountability. Reporting information is an important basis for learning over time and evaluation of policy measures.

Municipalities most commonly report on implementation of climate measures through their annual reports. Climate topic is rarely allocated in a separate section and usually is presented as part of environmental report. Addressing climate change mitigation within wider area of municipal activity might be defocusing. It limits the amount of attention to climate mitigation. In addition, considering that it is normally referred to as general "work on climate", the attention is often getting drawn to only one part of it - either mitigation, or adaptation, while in fact both of them must be addressed.

It is a good practice to establish performance indicators when forming climate targets, that would reflect the progress and direction of change. However, the majority of municipalities do not do that, and, as a result, they have no information on whether their measures had any effect and how the effects could be measured. Very few municipalities report on goal achievement within climate change mitigation, thereby complicating understanding of common effort level in the county.

Part of the problem with plan follow-ups is the fact that responsibilities for reporting are not divided between departments or employees. As Westskog et al. (2018) pointed out in their research, it is unclear who is supposed to be responsible for following climate plans up. Climate

and energy plans are intersectoral and require monitoring within different parts of municipality and local society. A good example of how reporting can be organized is provided by Stavanger municipality. According to the informant, many different departments and individuals are responsible for the follow-up. Stavanger's action plan divides responsibilities between departments for the follow-up of each individual climate measure. It is made sure that everyone knows what to follow up. There is also a number of people in different departments who report data every year to the employee responsible for collecting it in a report to the politicians. The report shows the status of both GHG emissions and other environmental issues. Worth mentioning that performance indicators established in climate plan are a starting point for this.

6.2. Barriers in work with emissions reduction

Barriers for municipalities in Rogaland in their work with GHG emissions reduction are mainly practical, according to their own reporting. Lack of capacity is mentioned the most, implying lack of personnel and financial resources. In particular, several budgets mentioned lack of resources to finance energy efficiency measures in municipal buildings. These are often not prioritized as they appear to be too costly. Even though investments into energy efficiency measures prove themselves to be profitable in the long-term. But such measures are not only a question of technical solutions and investments, but also about people's attitude and actions, as Vevatne et al. (2005) claim. It is important to create a culture for energy saving. This is an example of how practical and value-related barriers intertwine and hinder low-carbon transitions. Practical barriers, in turn, are defined and regulated by political area. Political sphere is represented by systems, structures, and organization. These define limitations and possibilities under which transformations within practical sphere take place (O'Brien & Sygna, 2013). The data gathered suggests that the main political barrier municipalities have to deal with is lack of institutionalization. Wang et al. (2016, p. 64) state:

"By institutionalization is meant how different conditions are "put into a system". This means, for example how responsibilities and roles are distributed (organization), budget processes are organized, which funding schemes exist, and which competence development programs exist and

how these are organized. Without systematic institutionalization, change processes can easily be limited to engagement and debate, without this resulting in concrete results".

Research's material indicates several signs of lacking institutionalization. Regarding organization of work within the field, the findings present difficulties with dividing responsibilities. It is reasonable to assume that a plan with assigned responsibilities for the implementation of proposed measures is more binding and action-oriented than a plan where this has not been done (Kyrre Groven & Carlo Aall, 2002). There is a part of municipalities (26%) that did not divide responsibilities for implementation of climate mitigation measures. Another indicator here is unclear understanding of who has to be responsible for plan follow-up and monitoring. Municipalities have sector-divided structure, whereas climate work is both interdisciplinary and at the same time organized a little for itself (Westskog et al., 2018). Consequently, it becomes challenging to place responsibility for follow-up of such comprehensive type of work. As one of the informants noted, there are many employees with general knowledge, but few specialists.

In regard to organization of budget processes, there are as well certain challenges. First of all, the analysis of municipal financial documents has clearly shown that there is no mandatory way to work with emissions reduction measures. Variability between municipal budgets, financial plans and annual reports complicates comparison between them, as there is no common ground to use. Limited access to budget documents and annual reports in some of municipalities makes it harder to hold them accountable for fulfillment of their goals and obligations announced in financial plans. Furthermore, normally municipalities do not have own resources to finance climate measures, therefore, they are dependent on external financing programmes. But all programmes cover only part of the expenses, requiring own contributions from municipalities. Some establish separate climate funds. For example, Stavanger municipality based its climate and environmental fund on fees for driving with studded tires. According to the informant, the politicians decided that the funds will be used for climate and environmental measures, and prioritization is made following a proposal from the administration.

Agriculture in Rogaland is important in a national context as it is the largest agricultural county in the country. Yet, from the point of emissions reduction, agricultural sector is complicated. Vevatne et al. (2005) note that there are very few economic incentives to implement emissions reduction measures. Available measures are complex and often not cost-effective for

agricultural enterprises. For instance, measure with the biggest carbon reduction potential is transition from red meat to plant-based diet and fish (Miljødirektoratet, 2020a). Consumer preferences though cannot be influenced directly and depend on municipal administration's effort to a small extent. Municipality itself can stimulate more climate-friendly agriculture. Almost half of measures related to improvement of production and resource utilization in agriculture cannot even be quantified, which makes it difficult to observe the results of such measures. Another point to make here is that the greenhouse gas statistics for agriculture shows only three sources of emissions: digestive processes in livestock, manure management and agricultural land. The data used are quantitative and linked to the scope of activity. Thus, qualitative change within agricultural practices is not reflected in statistics for municipalities. Emissions will be "reduced" only if volume of activities goes down (Miljødirektoratet, 2019b). The fact that one cannot assess the results of his (costly) emissions reduction efforts might be a discouraging factor. At the same time there is a conflict with the national target about increased food production. Food produced and consumed locally contributes to overall reduction of emissions, but at the same time increases emissions in the statistics for the municipality where producer is located. Besides, according to one of the informants, agricultural sector is mainly regulated by the State, which implies that municipality has few instruments to influence the industry.

Another sector of activity that might influence municipal ambition level within emissions reduction is shipping activity. As one of the informants noted, municipality itself has no relation to this type of activity and cannot influence it in any way. Yet, greenhouse gases from shipping are counted as part of emissions within municipality's geographical borders.

Conclusion

In this master thesis I tried to find out what is currently happening with work on emissions reduction in municipalities of Rogaland. Generally speaking, I was trying to find out how municipalities integrate climate change mitigation concerns into their daily routines, what types of activities stand behind their climate plans and climate targets. Municipalities are assigned a great

responsibility to help the country reaching its climate objectives. Therefore, it was exciting to investigate how municipalities contribute to that.

Local governments have a variety of legal instruments to reduce GHG emissions. One of the ways to contribute is through municipal planning, and in this regard, there exist the State Guidelines on Climate and Energy Planning. So, I explored municipal climate and energy plans. The problem of this research was stated the following way:

What are the outcomes of local climate policy planning in regard to GHG emissions reduction?

In order to attain the objective of this master thesis I posed the following research questions:

1. *What is the status of climate plan, by municipality?*
2. *What do municipalities report on regarding work with emissions reduction?*
3. *What are the main barriers in work with emissions reduction, according to municipalities?*

Following the State Guidelines on climate and energy planning municipalities are obliged to have climate plans specifying their strategy regarding GHG emissions reduction and environmentally friendly energy use. The research showed that the majority of municipalities (twenty-two out of twenty-three) do in fact have relevant plans. All of them were politically adopted at some point. However, out of all climate and energy plans only four are both updated and politically adopted. These are so-called 2nd generation plans. Six more municipalities are in the process of working on new plans, which were not yet adopted. Nine municipalities or approximately 39% still apply their 1st generation plans. All of these climate plans were adopted from eight to ten years ago.

Municipal plans that address climate change issue have to be followed by plans of action and more detailed planning. They are to be used as a basis and provide guidelines for the municipalities' other exercise of authority and activity. Plans that deal with climate and energy issues shall be considered revised at least every four years (Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning, 2018). Yet, three of Rogaland's municipalities do not have any action plans related to climate change mitigation. In addition, the majority of action plans are not getting revised as often as they must. Guidelines on climate and energy planning also specify the content requirements to the action plans. Only one of the municipalities fulfills these requirements by 100%, while the rest are excluding at least one of the required elements. The

biggest challenge municipalities meet is related to the cost of climate change mitigation measures. They experience difficulties with both defining costs of measures and finding sources of their financing. It also appeared challenging to define effects of proposed climate measures. These factors combined provide poor basis for prioritization between measures and their consequent implementation.

Municipal climate and energy plans specify municipal strategy within the area and course of societal development. Emissions reduction target-setting reflects municipal ambition level. The Government states that climate targets have to be ambitious, but there are little specifics given on what it actually means. The guidelines specify their purpose as ensuring that work with emissions reduction is prioritized, but municipalities' own context needs to be considered. Therefore, this "ambitiousness" requirement becomes a matter of interpretation. But the idea itself of reducing emissions within geographical borders is not always motivating, as one gets partly assigned responsibility for emissions, they have no control over. And what we can observe is a wide variability of emissions reduction targets. Moreover, municipalities use different approaches to forming their climate targets which makes them difficult to compare. Four municipal targets (or 17%) are aligned with the national target – they commit to reducing emissions by 20% by 2020 in relation to 1991. Another five municipalities set emissions targets lower than 20%, while seven municipalities (or 30%) have targets higher than national. Four municipalities do not set specific percentage reductions but generalize their target to "lower GHG emissions". One municipality expresses its target in tons of CO_2, and one municipality has no climate plan and consequently no climate target. However, it might not be a good idea to evaluate municipal ambition level by the percentage of emissions they aim to reduce. The reason for that is significant divergence between applied bases, such as reference year or sectors of activity covered by the target. Regarding energy targets, one can as well say that municipalities do not follow any common template on how to form their targets. Research's findings point out prevailing focus on utilization of renewable energy sources, rather than on reduced energy consumption and energy efficiency.

Municipalities are not obliged to report on their climate change mitigation activities, i.e. this type of reporting is voluntary. In Rogaland almost half of municipalities (ten municipalities or 43%) did not establish any relevant routines and do not report on implementation of climate measures. Eleven municipalities report on their work with emissions reductions through their annual reports. Some of them are consistent in their reporting, and some are not, meaning that not

each of their annual reports contains information about activities related to climate change mitigation. Another two municipalities do not report on their work with emissions reduction, but there can be found one-time external evaluation of their work with climate and energy plans. Reporting information, however, is an important basis for tracking the progress and learning over time. Lack of this information is one of the factors preventing municipalities from knowing what effects climate measures have had. But it is unclear who should be responsible for monitoring and reporting. Furthermore, the majority of municipalities in Rogaland do not establish performance indicators related to their work with reduction of GHG emissions. Performance indicators are in turn important for measuring the progress and direction of change.

In this thesis I was also summarizing barriers in work with GHG emissions reductions that municipalities themselves report on in their financial plans and annual reports, and also the ones they mentioned in the survey. Barriers that were mentioned the most is lack of capacity. Municipalities highlight lack of personnel resources and finances needed to work with climate change mitigation. Along the way they also experienced lack of knowledge and emphasized the need for competence development. Generally speaking, municipalities themselves report mainly on practical barriers that hinder their work with emissions reduction. Practical sphere of barriers in turn is regulated by political sphere, and analysis of documents indicate lack of institutionalization of climate mitigation work. There is a need for better understanding of how to divide responsibilities for implementation of measures and follow-up of climate plans. Organization of budget processes also needs improvement. Many municipalities struggle with defining costs of climate mitigation measures and finding sources of their financing. In addition, poor knowledge on how to assess effects of climate measures might hinder municipalities from investing into measures with effects visible in the long-term. Therefore, they end up with implementing measures based on their feasibility, rather than effectiveness.

This master thesis describes current situation with climate and energy planning on a local level in Rogaland county, Norway. In future research it would be useful to investigate whether current use of climate measures and instruments by municipalities corresponds with announced climate targets. Here I also mapped out existing barriers in municipal work with emissions reduction. It would be important to conduct deeper analysis of barriers and find the ways to overcome these. And there is as well the need to establish factors that facilitate municipal transition to low-carbon society. Another point of interest is municipal reporting on climate work. What is

the best way to integrate climate reporting into municipal routines? And what should such reports cover? Future research should lay basis for accelerated transition to low-emission society.

Reference list

Aall, C. (2012). The early experiences of local climate change adaptation in Norwegian compared with that of local environmental policy, Local Agenda 21 and local climate change mitigation. *Local Environment, 17*(6-7), 579-595.

Aall, C., Groven, K., & Lindseth, G. (2007). The scope of action for local climate policy: the case of Norway. *Global environmental politics, 7*(2), 83-101.

Aall, C., Halvorsen, L. J., Heiberg, E., & Tønnesen, A. (2009). Følgeevaluering av Livskraftige kommuner og Grønne energikommuner. *Sluttrapport. Oppdrag fra KS forskning. VF-rapport, 7*(09).

Adom, D., Hussein, E. K., & Agyem, J. A. (2018). Theoretical and conceptual framework: Mandatory ingredients of a quality research. *International journal of scientific research, 7*(1), 438-441.

Ahmad, I. H. (2009). *Climate policy integration: towards operationalization*: United Nations United Nations. Department of Economic and Social Affairs.

Amundsen, H., Hovelsrud, G. K., Aall, C., Karlsson, M., & Westskog, H. (2018). Local governments as drivers for societal transformation: towards the 1.5 C ambition. *Current Opinion in Environmental Sustainability, 31*, 23-29.

Bjerkreim kommune. (2010). *Årsmelding Bjerkreim kommune 2010*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i92890c92-3e01-4056-9be3-b8ea17162d72/aarsmelding_2010.pdf.

Bjerkreim kommune. (2011a). *Årsmelding Bjerkreim kommune 2011*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/id3374a35-edc7-4658-b9af-0a7b972e0c24/aarsmelding_2011.pdf.

Bjerkreim kommune. (2011b). *Energi- og klimaplan for Bjerkreim 2011- 2014*.

Bjerkreim kommune. (2012). *Årsmelding Bjerkreim kommune 2012*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/ie14961e3-2a38-4791-a327-6f28d79cf2c7/aarsmelding_2012.pdf.

Bjerkreim kommune. (2013). *Årsmelding Bjerkreim kommune 2013*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i56b123b1-94ad-4e53-8121-fd6181fe7396/aarsmelding_2013.pdf.

Bjerkreim kommune. (2014). *Årsrapport for Bjerkreim kommune 2014*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i90177700-4d3b-4ce4-872d-a6e6e3c1115e/arsrapport-2014.pdf.

Bjerkreim kommune. (2015a). *Årsrapport for Bjerkreim kommune - 2015*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i99ae3768-b694-49e9-9c69-45eb97ee98e2/arsrapport-2015.pdf.

Bjerkreim kommune. (2015b). Kommuneplan 2014-2026. Samfunnsdel med handlingsprogram.

Bjerkreim kommune. (2016). *Årsrapport for Bjerkreim kommune - 2016*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i8281d239-1477-43d2-bcfa-01005065a65e/arsrapport-2016.pdf.

Bjerkreim kommune. (2017). *Årsrapport for Bjerkreim kommune 2017*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i73bb4419-8404-43d3-bf34-fa6db7b58330/arsrapport-2017-l268280.pdf.

Bjerkreim kommune. (2018a). *Årsrapport for Bjerkreim kommune - 2018*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i7e301ff9-6895-4f1a-a029-7a90563e0300/arsmelding-2018-samlet-dokument-l394079.pdf.

Bjerkreim kommune. (2018b). *Forslag til økonomiplan 2018 - 2021. Budsjett 2018*. Retrieved from https://www.bjerkreim.kommune.no/_f/p1/ifb51fc11-3a46-493f-88be-ff7d4e981f6f/budsjett_2018_oekonomiplan_2018_raadmannen_sitt_forslag.pdf.

Bjerkreim kommune. (2020). *Forslag til økonomiplan 2020 - 2023. Budsjett 2020.* Retrieved from https://www.bjerkreim.kommune.no/_f/p1/i781f7c2a-4853-4571-ad00-f458205cd04c/budsjett-2020-okonomiplan-2020-hoveddokument.pdf.

Blaikie, N., & Priest, J. (2019). *Designing social research: The logic of anticipation*: John Wiley & Sons.

Bokn kommune. (2011). Energi- og klimaplan Bokn kommune.

Bokn kommune. (2015). *Årsmelding 2015 for Bokn kommune*. Retrieved from https://www.bokn.kommune.no/_f/p1/i856afd4b-7abf-474f-b908-9e8b6d3726dc/arsmelding-2015.pdf.

Bokn kommune. (2016). *Årsmelding 2016 for Bokn kommune*. Retrieved from https://www.bokn.kommune.no/_f/p1/i37317cec-070e-4635-b15f-4d43819525fa/aarsmelding_2016_nr_2.pdf.

Bokn kommune. (2017). *Årsmelding 2017 for Bokn kommune*. Retrieved from https://www.bokn.kommune.no/_f/p1/i3d1baf67-101b-4d2f-9043-3f6c9c4e57d8/total-arsmelding.pdf.

Bokn kommune. (2018a). *Årsmelding 2018 for Bokn kommune*. Retrieved from https://www.bokn.kommune.no/_f/p1/i07bce4da-940a-465f-9061-41ebf4cc8a1f/total-arsmelding-201889246.pdf.

Bokn kommune. (2018b). *Rådmannen sitt forslag til drift— og investeringsbudsjett 2018 og Økonomiplan 2019 - 2021*. Retrieved from https://www.bokn.kommune.no/_f/p1/i76fe22a2-ae3f-401b-9919-d50a4d62c409/budsjettet-for-2018.pdf.

Bokn kommune. (2019a). Kommuneplan Bokn kommune 2019-2031. Samfunnsdel.

Bokn kommune. (2019b). *Rådmannen sitt forslag til drift— og investeringsbudsjett 2019 og Økonomiplan 2020 - 2022.* . Retrieved from https://www.bokn.kommune.no/_f/p1/i3f440b4e-0b66-469b-bb37-58022e262ac5/forslag-til-budsjett-2019-2022.pdf.

Bokn kommune. (2020). Energi og klimaplan Bokn kommune 2020 – 2024.

Burch, S., Shaw, A., Dale, A., & Robinson, J. (2014). Triggering transformative change: a development path approach to climate change response in communities. *Climate Policy, 14*(4), 467-487.

Eigersund kommune. (2011a). *Budsjett og økonomiplan 2011 – 2014* Retrieved from https://www.eigersund.kommune.no/budsjett-2011.4838622-159080.html.

Eigersund kommune. (2011b). Energi- og klimaplan for Eigersund kommune 2012-2020.

Eigersund kommune. (2012). *Budsjett og økonomiplan 2012 – 2015* Retrieved from https://www.eigersund.kommune.no/dokumenter-til-budsjett-2012-og-oekonomiplan.4980037-159080.html.

Eigersund kommune. (2013a). *Budsjett 2013 og Økonomiplan 2013 - 2016*. Retrieved from https://www.eigersund.kommune.no/raadmannens-budsjettforslag-2012.5122068-159080.html.

Eigersund kommune. (2013b). *Regnskap 2013*. Retrieved from https://www.eigersund.kommune.no/regnskap-2013.5476191-159080.html.

Eigersund kommune. (2014). *Budsjett 2014 og Økonomiplan 2014 - 2017*. Retrieved from https://www.eigersund.kommune.no/raadmannens-budsjettforslag-2013.5336423-159080.html.

Eigersund kommune. (2015). *Budsjett 2015. Økonomiplan 2015-2018*. Retrieved from https://www.eigersund.kommune.no/raadmannens-budsjettforslag-2015.5617675-159080.html.
Eigersund kommune. (2016a). *Administrasjonens årsberetning for 2016*. Retrieved from https://www.eigersund.kommune.no/aarsberetning-2016.6029129-159080.html.
Eigersund kommune. (2016b). *Budsjett og økonomiplan 2016 (2016-2019)*. Retrieved from https://www.eigersund.kommune.no/raadmannens-budsjettforslag-2016.5811815-159080.html.
Eigersund kommune. (2017). *Budsjett og økonomiplan 2017 (2017-2020)* Retrieved from https://www.eigersund.kommune.no/raadmannens-presentasjon-av-budsjettet.5923491-159080.html.
Eigersund kommune. (2018). *Budsjett 2018. Økonomiplan 2018- 2021* Retrieved from https://www.eigersund.kommune.no/budsjett-2018.6062898-159080.html.
Eigersund kommune. (2019). *Budsjett 2019. Økonomiplan 2019-2022* Retrieved from https://www.eigersund.kommune.no/vedtatt-budsjett-2019-og-oekonomiplan.6179087-159080.html.
Eigersund kommune. (2020). *Budsjett 2020. Økonomiplan 2020-2023*. Retrieved from https://www.eigersund.kommune.no/vedtatt-budsjett-2020-og-oekonomiplan.6275586-159080.html.
Energi- og miljøkomiteen. (1996). *Innstilling fra energi- og miljøkomiteen om norsk politikk mot klimaendringer og utslipp av nitrogenkoksider (NOx).* (St.meld. nr. 41 (1994-95)). Retrieved from https://www.stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Innstillinger/Stortinget/1995-1996/inns-199596-114/?lvl=0.
Enova SF. (2008a). Alle kommuner bør ha en energi- og klimaplan Retrieved from https://www.enova.no/upload_images/6F4A0A3EE001488089C299E05EACB849.pdf
Enova SF. (2008b). Enova resultat- og aktivitetsrapport. Retrieved from https://www.enova.no/om-enova/om-organisasjonen/publikasjoner/
Enova SF. (2009). Enova Prosjektliste 2009. Retrieved from https://www.enova.no/om-enova/om-organisasjonen/publikasjoner/?bransje=25
Enova SF. (2019). Prosjektliste 2012- 2019. Retrieved from https://www.enova.no/om-enova/om-organisasjonen/prosjektliste-2012--2019/?Fylke=Rogaland&search=klepp
European Comission. (2020). EU Emissions Trading System (EU ETS). Retrieved from https://ec.europa.eu/clima/policies/ets_en
Gjesdal kommune. (2010). *Årsmelding og regnskap 2010*.
Gjesdal kommune. (2011a). *Årsmelding og regnskap 2011*.
Gjesdal kommune. (2011b). *Energi- og klimaplan Gjesdal kommune*. Retrieved from https://intranett.gjesdal.kommune.no/_f/p21/i2c4240d7-226d-484d-b87d-35bc9cad6f18/energi_og_klimaplan.pdf.
Gjesdal kommune. (2012). *Årsmelding og regnskap 2012*.
Gjesdal kommune. (2013). *Årsmelding og regnskap 2013*.
Gjesdal kommune. (2014). *Årsmelding og regnskap 2014*.
Gjesdal kommune. (2015a). *Årsmelding 2015*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2015b). *Budsjett og økonomiplan 2015-2018*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2016a). *Årsmelding 2016*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.

Gjesdal kommune. (2016b). *Budsjett og økonomiplan 2016-2019*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2017a). *Årsmelding 2017*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2017b). *Budsjett og økonomiplan 2017-2020.* . Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2018a). *Årsmelding 2018*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2018b). *Budsjett og økonomiplan 2018-2021.* . Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2019a). *Årsmelding 2019*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Gjesdal kommune. (2019b). *Budsjett og økonomiplan 2019-2022*. Retrieved from https://www.gjesdal.kommune.no/tjenester/politikk-og-administrasjon/oversikt-over-planer/.
Grin, J., Rotmans, J., & Schot, J. (2010). *Transitions to sustainable development: new directions in the study of long term transformative change*: Routledge.
Groven, K. (2017). Kommunane og klimautfordringa: Ein studie av lokal klimagovernance i Norge.
Hå kommune. (2010). *Klima- og energiplan del 2 - Klimagassutslipp og handlingsplan for Hå kommune 2010-2020.* Retrieved from https://www.ha.no/planar/klima-og-energiplan/.
Hå kommune. (2011). *Årsrapport Hå kommune 2011*. Retrieved from https://www.ha.no/innsyn_drum/wfdocument.ashx?journalpostid=2012006914&dokid=136982&versjon=1&variant=A&.
Hå kommune. (2012). *Årsrapport Hå kommune 2012*. Retrieved from https://www.ha.no/innsyn_drum/wfdocument.ashx?journalpostid=2013007437&dokid=196208&versjon=1&variant=A&.
Hå kommune. (2013a). *Årsrapport Hå kommune 2013*. Retrieved from https://www.ha.no/innsyn_drum/wfdocument.ashx?journalpostid=2014010569&dokid=251737&versjon=1&variant=A&.
Hå kommune. (2013b). *Forslag økonomiplan 2013-2016 og budsjett og forskotsvedtak 2013*. Retrieved from https://www.ha.no/innsyn.aspx?response=journalpost_detaljer&journalpostid=2012033285&scripturi=/innsyn.aspx&Mid1=1954&.
Hå kommune. (2014a). *Årsmelding 2014*. Retrieved from https://www.ha.no/innsyn_drum/wfdocument.ashx?journalpostid=2015008696&dokid=306122&versjon=1&variant=A&.
Hå kommune. (2014b). *Forslag økonomiplan 2014-2017 og budsjett og forskotsvedtak 2014*. Retrieved from https://www.ha.no/innsyn_drum/wfdocument.ashx?journalpostid=2013029856&dokid=228570&versjon=1&variant=A&.
Hå kommune. (2014c). *Kommuneplan for Hå kommune 2014-2028*. Retrieved from https://www.ha.no/planar/kommuneplan/.
Hå kommune. (2015a). *Årsmelding 2015*. Retrieved from https://www.ha.no/innsyn_drum/wfdocument.ashx?journalpostid=2016009858&dokid=368731&versjon=1&variant=A&.
Hå kommune. (2015b). *Økonomiplan 2015-2018 og budsjett 2015*. Retrieved from https://www.ha.no/innsyn.aspx?response=journalpost_detaljer&journalpostid=2014031032&scripturi=/innsyn.aspx&Mid1=60&.

Hå kommune. (2016a). *Årsmelding 2016*. Retrieved from https://www.ha.no/_f/p1/i24b27b27-6a24-4022-8b92-b7e6712e9e31/430198_1_a.pdf.
Hå kommune. (2016b). *Økonomiplan 2016-2019 og budsjett for 2016*. Retrieved from https://www.ha.no/innsyn.aspx?response=journalpost_detaljer&journalpostid=2015030990&scripturi=/innsyn.aspx&Mid1=60&.
Hå kommune. (2017a). *Årsmelding 2017*. Retrieved from https://www.ha.no/_f/p1/ibb2a74c5-0df4-4476-b346-d1f7bf939ed6/2017-arsmelding-ha-kommune.pdf.
Hå kommune. (2017b). *Klima- og energi plan for Hå kommune 2017*.
Hå kommune. (2017c). *Økonomiplan 2017 - 2020*. Retrieved from https://www.ha.no/_f/p1/ieb2c61d2-7cc6-4fb3-a912-5d32167502de/godkjent_budsjett_2017_og_oekonomiplan_2017-20201.pdf.
Hå kommune. (2018a). *Årsmelding 2018*. Retrieved from https://www.ha.no/_f/p1/i5c6ac57e-7cfc-469d-896d-83fe76d2e941/2018-arsmelding-ha-kommune.pdf.
Hå kommune. (2018b). *Økonomiplan 2018-2021* Retrieved from https://www.ha.no/_f/p1/ibdcf1a3a-5bd9-4555-a143-fc986cf8f0ba/godkjent-budsjettdokument.pdf.
Hå kommune. (2019). *Økonomiplan 2019-2022*. Retrieved from https://www.ha.no/_f/p1/ia01a2828-b834-4bae-8c80-4bd4fab5554e/godkjent-budsjett-2019-og-okonomiplan-2019-2022.pdf.
Hå kommune. (2020). *Økonomiplan 2020-2023*. Retrieved from https://www.ha.no/_f/p1/i5a22e037-aa67-4cb1-bc28-51990a042fc0/okonomiplan-2020-2023-vedtatt-kst-12-des-2019.pdf.
Haarstad, H. (2020). Do Climate Targets Matter? The Accountability of Target-setting in Urban Climate and Energy Policy. In *Enabling Sustainable Energy Transitions* (pp. 63-72): Springer.
Haugesund kommune. (2011). *Årsmelding 2011*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/beredskap/beredskapsplan/internett/servicesenter-grafisk-profil-og-kommunikasjon/-1/1193-arsmelding-2011.
Haugesund kommune. (2012a). *Årsmelding 2012*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/beredskap/beredskapsplan/internett/servicesenter-grafisk-profil-og-kommunikasjon/-1/1221-arsmelding-2012.
Haugesund kommune. (2012b). *Kommunedelplan for energi- og klima Haugesund kommune 2012 – 2020*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/beredskap/beredskapsplan/lokaldemokrati/kommuneplan/kommunedelplaner/1441-energi-og-klimaplan-2012-2020-haugesund-kommune.
Haugesund kommune. (2013a). *Årsmelding 2013*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/beredskap/beredskapsplan/internett/servicesenter-grafisk-profil-og-kommunikasjon/-1/1278-arsmelding-2013.
Haugesund kommune. (2013b). *Budsjett 2013 og økonomiplan 2013-2016*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/budsjett-og-okonomiplan/435-budsjett-og-okonomiplan#2013.
Haugesund kommune. (2014a). *Årsmelding 2014*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/beredskap/beredskapsplan/internett/servicesenter-grafisk-profil-og-kommunikasjon/-1/1332-arsmelding-2014.
Haugesund kommune. (2014b). *Budsjett 2014 økonomiplan 2014 til 2017*. Retrieved from https://www.haugesund.kommune.no/images/artikkelbilder/Aktuelt%20forsiden/Haugesund%20kommune/Filer/Budsjettdokument_2014.pdf.

Haugesund kommune. (2015a). *Årsmelding 2015*. Retrieved from https://www.haugesund.kommune.no/images/artikkelbilder/Organisasjons/Raadmannen/Filer/Arsmeldinger/%C3%85rsmelding_2015.pdf.
Haugesund kommune. (2015b). *Budsjett 2015 økonomiplan 2015 til 2018*. Retrieved from https://www.haugesund.kommune.no/images/artikkelbilder/Organisasjons/Raadmannen/Filer/Budsjett_2015_-R%C3%A5dmannens_forslag.pdf.
Haugesund kommune. (2016a). *Årsmelding 2016*. Retrieved from https://www.haugesund.kommune.no/om-kommunen/beredskap/beredskapsplan/internett/servicesenter-grafisk-profil-og-kommunikasjon/-1/1429-arsmelding-2016.
Haugesund kommune. (2016b). *Budsjett 2016 økonomiplan 2016 til 2019*. Retrieved from https://www.haugesund.kommune.no/images/artikkelbilder/Lokaldemokrati/Budsjett/Budsjett_2016/Budsjett_og_%C3%B8konomiplan_2016-2019.pdf.
Haugesund kommune. (2017a). *Årsmelding 2017*. Retrieved from http://rapport.framsikt.net/Haugesund/mr-201712-aarsmelding2017/#/.
Haugesund kommune. (2017b). Budsjett 2017 økonomiplan 2017 til 2020.
Haugesund kommune. (2017c). *Klima- og energiplan. Kommunedelplan for klima og energi 2018-2030*.
Haugesund kommune. (2018a). *Årsmelding 2018*. Retrieved from https://pub.framsikt.net/2018/haugesund/mr-201812-hk_%C3%A5rsmelding_2018_/#/home.
Haugesund kommune. (2018b). *Budsjett 2018 økonomiplan 2018 til 2021*. Retrieved from http://publisering.framsikt.net/Haugesund/Handlingsplan_2018-2021/#/home.
Haugesund kommune. (2019). *Budsjett 2019 og økonomiplan 2019-2022*. Retrieved from https://pub.framsikt.net/2019/haugesund/bm-2019-%C3%B8konomiplan/#/.
Haugesund kommune. (2020). *Kommunedirektørens budsjettforslag 2020 og økonomiplan 2020 - 2023*. Retrieved from https://pub.framsikt.net/2020/haugesund/bm-2020-hk%C3%B8kplan20-23/#/.
Hjelmeland kommune. (2019a). *Årsmelding 2019*. Retrieved from https://innsyn.onacos.no/hjelmeland/wfdocument.ashx?journalpostid=2020006599&dokid=357145&versjon=1&variant=A&.
Hjelmeland kommune. (2019b). *Budsjett 2019. Økonomiplan 2019– 2022*. Retrieved from https://www.hjelmeland.kommune.no/tenester/planar-og-kunngjeringar/planar-og-styringsdokument/budsjett-og-okonomiplan/vedtatt-budsjett-og-okonomiplan-2019-2022/.
Hjelmeland kommune. (2020). *Budsjett og økonomiplan 2020-2023*. Retrieved from https://www.hjelmeland.kommune.no/tenester/planar-og-kunngjeringar/planar-og-styringsdokument/budsjett-og-okonomiplan/vedtatt-budsjett-og-okonomiplan-2020-2023/.
III, I. W. G. (2014). *Climate Change 2014-Mitigation of Climate Change: Summary for Policymakers*: Intergovernmental Panel on Climate Change.
IRENA. (2015). *Renewable Energy Target Setting*. Retrieved from https://www.irena.org/publications/2015/Jun/Renewable-Energy-Target-Setting
Karin, E., & Sven Ove, H. (2005). When is a goal rational? *Social Choice and Welfare, 24*(2), 343-361. doi:10.1007/s00355-003-0309-8
Karmøy kommune. (2017). *Kommunedelplan for klima og energi 2017-2020*. Retrieved from https://www.karmoy.kommune.no/content/uploads/2018/09/Kommunedelplan-for-klima-og-energi-2017-2020.pdf.
Karmøy kommune. (2018a). *Regnskap 2018*. Retrieved from https://www.karmoy.kommune.no/content/uploads/2019/10/NY-%C3%85rsregnskap-med-%C3%A5rsberetning-og-rev-beretning-31.05.2019-PDF.pdf.
Karmøy kommune. (2018b). *Vedtatt budsjett og økonomiplan 2018-2021*. Retrieved from http://publisering.framsikt.net/Karm%C3%B8y/bm-vedtattbudsjett2018-2021/#/home.

Karmøy kommune. (2019). *Budsjett for 2019 og økonomiplan for 2019-2022*. Retrieved from https://www.karmoy.kommune.no/politikk-og-administrasjon/styringsdokumenter/okonomiplan-regnskap-budsjett/budsjett-fro-2019-og-okonomiplan-for-2019-2022/.

Karmøy kommune. (2020). *Budsjett for 2020 og økonomiplan for 2020-2023*. Retrieved from https://www.karmoy.kommune.no/politikk-og-administrasjon/styringsdokumenter/okonomiplan-regnskap-budsjett/budsjett-for-2020-og-okonomiplan-for-2020-2023/.

Kasa, S., Leiren, M. D., & Khan, J. (2012). Central government ambitions and local commitment: climate mitigation initiatives in four municipalities in Norway and Sweden. *Journal of Environmental Planning and Management, 55*(2), 211-228.

Kasa, S., Westskog, H., & Rose, L. E. (2018). Municipalities as Frontrunners in Mitigation of Climate Change: Does soft regulation make a difference? *Environmental Policy and Governance, 28*(2), 98-113.

Klepp kommune. (2008a). *Årsrapport og rekneskap 2008*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/arsrapport-og-rekneskap-2008.pdf.

Klepp kommune. (2008b). *Handlingsplan 2008-2011/Budsjett 2008*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/handlingsplan-2008---2011-budsjett-2008-vedteke-i-kommunestyret-10.12.07-sak-9407.pdf.

Klepp kommune. (2009a). *Årsrapport 2009*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/arsrapport-2009.pdf.

Klepp kommune. (2009b). *Energi- og klimaplan for Klepp kommune*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/planar-og-rapportar/energi-og-klima/energiogklima.pdf.

Klepp kommune. (2009c). *Handlingsplan 2009-2012/Budsjett 2009*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/handlingsplan-2009---2012-budsjett-2009-vedteke-i-kommunestyret-15.12.08-sak.pdf.

Klepp kommune. (2010a). *Årsrapport og rekneskap 2010*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/arsrapport-og-rekneskap-2010.pdf.

Klepp kommune. (2010b). *Handlingsplan 2010-2013/Budsjett 2010*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/handlingsplan-2010---2013-budsjett-2010-vedteke-i-kommunestyret-14.12.09-sak.pdf.

Klepp kommune. (2011a). *Årsrapport og rekneskap 2011*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/arsrapport-og-rekneskap-2011.pdf.

Klepp kommune. (2011b). *Handlingsplan 2011-2014/Budsjett 2011*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/handlingsplan-2011--2014-budsjett-2010-vedteke-i-kommunestyret-13.12.10-sak.pdf.

Klepp kommune. (2012a). *Årsrapport og rekneskap 2012*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/arsrapport-og-rekneskap-2012.pdf.

Klepp kommune. (2012b). *Budsjett 2012/Handlingsplan 2012-2015*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/budsjett-2012-handlingsplan-2012-2015.pdf.
Klepp kommune. (2013a). *Årsrapport og rekneskap 2013*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/arsrapport-og-rekneskap-2013.pdf.
Klepp kommune. (2013b). *Budsjett 2013/Handlingsplan 2013-2016*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/budsjett-2013-handlingsplan-2013-2016.pdf.
Klepp kommune. (2014a). *Årsrapport og rekneskap 2014*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/arsmelding-2014/.
Klepp kommune. (2014b). *Budsjett 2014/Handlingsplan 2014-2017*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/budsjett-2014-handlingsplan-2014-2017.pdf.
Klepp kommune. (2015a). *Årsrapport og rekneskap 2015*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/arsrapport-og-rekneskap-2015/.
Klepp kommune. (2015b). *Budsjett 2015/Handlingsplan 2015-2018*. Retrieved from https://www.klepp.kommune.no/globalassets/politikk-og-innsyn/budsjett-og-okonomiplanar/budsjett-2015-handlingsplan-2015---2018.pdf.
Klepp kommune. (2016a). *Årsrapport og rekneskap 2016*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/arsrapport-og-rekneskap-2016/.
Klepp kommune. (2016b). *Budsjett 2016 og økonomiplan 2016-19*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/budsjett-og-handlingsplan-2016-19/.
Klepp kommune. (2017a). *Årsrapport og rekneskap 2017*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/arsrapport-og-rekneskap-2017/.
Klepp kommune. (2017b). *Budsjett og økonomiplan 2017-2020*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/utkast-okonomiplan-2017-2010/.
Klepp kommune. (2018a). *Årsrapport og rekneskap 2018*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/arsrapport-og-rekneskap-2018/.
Klepp kommune. (2018b). *Budsjett og økonomiplan 2018-2021*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/utkast-budsjett-og-okonomiplan-2018-2021/.
Klepp kommune. (2019a). *Årsrapport og rekneskap 2019*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/arsrapport-og-rekneskap-2019/.
Klepp kommune. (2019b). *Budsjett og økonomiplan 2019-2022*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/budsjett-og-okonomiplan-2019-2022/.
Klepp kommune. (2019c). *Klima- og miljøplan 2019 – 2034*. Retrieved from https://www.klepp.kommune.no/globalassets/planar/klimaplan/endelig-versjon.pdf.
Klepp kommune. (2020). *Budsjett 2020 og økonomiplan 2020-2023*. Retrieved from https://www.klepp.kommune.no/planer-og-rapporter/budsjett-og-okonomiplan-2020-2023/.
Klimaloven. (2017). *Lov om klimamål*. (LOV-2017-06-16-60). Retrieved from https://lovdata.no/dokument/NL/lov/2017-06-16-60.
Kommuneloven. (1992). *Lov om kommuner og fylkeskommuner LOV-1992-09-25-107*. (§44). Retrieved from https://lovdata.no/dokument/NLO/lov/1992-09-25-107#KAPITTEL_11.
Kramers, A., Wangel, J., Johansson, S., Höjer, M., Finnveden, G., & Brandt, N. (2013). Towards a comprehensive system of methodological considerations for cities' climate targets. *Energy Policy, 62*, 1276-1287.

Kvitsøy kommune. (2011a). *Årsmelding 2011*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding-2011.pdf.
Kvitsøy kommune. (2011b). *Budsjett 2011 og økonomiplan 2011 - 2014*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2011.pdf.
Kvitsøy kommune. (2012a). *Årsmelding 2012*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding-2012.pdf.
Kvitsøy kommune. (2012b). *Budsjett 2012. Økonomiplan 2012 - 2015* Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2012.pdf.
Kvitsøy kommune. (2012c). *Kommunal temaplan: Energi og klima*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/planer-og-veiledere/temaplaner/klima-og-energiplan.pdf.
Kvitsøy kommune. (2013a). *Årsmelding 2013*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding-2013.pdf.
Kvitsøy kommune. (2013b). *Budsjett 2013. Økonomiplan 2013-2016*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2013.pdf.
Kvitsøy kommune. (2014a). *Årsmelding 2014*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding_2014.pdf.
Kvitsøy kommune. (2014b). *Budsjett 2014. Økonomiplan 2014-2017*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2014.pdf.
Kvitsøy kommune. (2015a). *Årsmelding 2015*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding_2015.pdf.
Kvitsøy kommune. (2015b). *Budsjett 2015. Økonomiplan 2015 – 2018* Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2015.pdf.
Kvitsøy kommune. (2016a). *Årsmelding 2016*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding_2016.pdf.
Kvitsøy kommune. (2016b). *Budsjett 2016. Økonomiplan 2016 – 2019*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2016.pdf.
Kvitsøy kommune. (2017a). *Årsmelding 2017*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding_2017.pdf.
Kvitsøy kommune. (2017b). *Budsjett 2017. Handlings- og økonomiplan 2017-2020*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2017.pdf.
Kvitsøy kommune. (2018a). *Årsmelding 2018*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding_2018.pdf.

Kvitsøy kommune. (2018b). *Budsjett 2018. Handlings- og økonomiplan 2018-2021*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2018.pdf.

Kvitsøy kommune. (2019a). *Årsmelding 2019*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/arsmelding/arsmelding_2019.pdf.

Kvitsøy kommune. (2019b). *Budsjett 2019. Handlings- og økonomiplan 2019-2022*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2019.pdf.

Kvitsøy kommune. (2020). *Budsjett 2020. Handlings- og økonomiplan 2020-2023*. Retrieved from http://www.kvitsoy.kommune.no/globalassets/arsmelding-og-budsjett/budsjett/budsjett-2020.pdf.

Kyrre Groven, & Carlo Aall. (2002). *Lokal klima- og energiplanlegging. Norske kommunar som aktørar i klimapolitikken?* . Retrieved from https://www.vestforsk.no/sites/default/files/migrate_files/rapport-12-02.pdf

Linnér, B.-O., Mickwitz, P., & Román, M. (2012). Reducing greenhouse gas emissions through development policies: a framework for analysing policy interventions. *Climate and Development, 4*(3), 175-186.

Lund kommune. (2010). *Årsmelding 2010*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2011a). *Årsmelding 2011*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2011b). *Energi- og klimaplan for Lund 2011-2014*.

Lund kommune. (2012a). *Årsmelding 2012*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2012b). *Budsjett 2012*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.

Lund kommune. (2013a). *Årsmelding 2013*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2013b). *Budsjett 2013*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.

Lund kommune. (2014a). *Årsmelding 2014*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2014b). *Budsjett 2014*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.

Lund kommune. (2015a). *Årsmelding 2015*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2015b). *Budsjett 2015*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.

Lund kommune. (2016a). *Årsmelding 2016*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2016b). *Budsjett 2016*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.

Lund kommune. (2017a). *Årsmelding 2017*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2017b). *Budsjett 2017*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.

Lund kommune. (2018a). *Årsmelding 2018*. Retrieved from https://www.lund.kommune.no/regnskap-og-aarsmelding.532799.no.html.

Lund kommune. (2018b). *Budsjett 2018*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.
Lund kommune. (2019a). *Årsmelding Lund kommune 2019*. Retrieved from https://www.lund.kommune.no/getfile.php/4709837.2704.jaba7ztubq7zks/%C3%85rsmelding%2B2019%2BLund%2Bkommune%28324376%29.pdf.
Lund kommune. (2019b). *Budsjett 2019*. Retrieved from https://www.lund.kommune.no/styringsdokumenter.535223.no.html.
Lund kommune. (2020). *Budsjett 2020. Økonomiplan 2020 – 2023*. Retrieved from https://www.lund.kommune.no/getfile.php/4709836.2704.niznptlwijtkpj/Kommunestyrets+vedtatte+budsjett+for+2020+Lund+kommune.pdf.
Mickwitz, P., Aix, F., Beck, S., Carss, D., Ferrand, N., Görg, C., . . . Kuindersma, W. (2009). *Climate policy integration, coherence and governance*: irstea.
Miljødirektoratet. (2019a). Klima- og energiplanlegging. Retrieved from http://www.miljokommune.no/Temaoversikt/Klima/Klima--og-energiplanlegging/
Miljødirektoratet. (2019b). *Klimagasstatistikk for kommuner og fylker* (M-989/2019). Retrieved from https://www.miljodirektoratet.no/contentassets/684ed944b61948e8adbef6f3f5b699f7/metodenotat_klimagasstatistikk-for-kommuner.pdf#page=14
Miljødirektoratet. (2020a). *Klimakur 2030*. Retrieved from https://www.miljodirektoratet.no/globalassets/publikasjoner/m1625/m1625.pdf#page=207.
Miljødirektoratet. (2020b). Klimakvoter. Retrieved from https://www.miljodirektoratet.no/ansvarsomrader/klima/klimakvoter/
Miljødirektoratet. (2020c). Klimasats-prosjekter. Retrieved from https://www.miljodirektoratet.no/myndigheter/klimaarbeid/kutte-utslipp-av-klimagasser/klimasats/klimasatsprosjekter/?so=asc&sc=title&county=Rogaland%20(N)&apl=Klepp%20kommune
Miljødirektoratet. (2020d). Utslipp av klimagasser i kommuner. Klepp. Retrieved from https://www.miljodirektoratet.no/tjenester/klimagassutslipp-kommuner?area=435&sector=-2
Miljødirektoratet. (2020e). Utslipp av klimagasser i kommuner. Utsira. Retrieved from https://www.miljodirektoratet.no/tjenester/klimagassutslipp-kommuner?area=448&sector=-2
Miljøfyrtårn. (2020). Kommuner i nettverket. Retrieved from https://www.miljofyrtarn.no/kommune/kommuner-i-nettverket/
Miljøverndepartementet. (2012). *Norsk klimapolitikk*. (Meld. St. 21 (2011–2012)). Retrieved from https://www.regjeringen.no/no/dokumenter/meld-st-21-2011-2012/id679374/sec1.
Niedertscheider, M., Haas, W., & Görg, C. (2018). Austrian climate policies and GHG-emissions since 1990: What is the role of climate policy integration? *Environmental science & policy, 81*, 10-17. doi:10.1016/j.envsci.2017.12.007
O'Brien, K., & Sygna, L. (2013). Responding to climate change: the three spheres of transformation. *Proceedings of transformation in a changing climate*, 19-21.
Plan- og bygningsloven. (2008). Lov om planlegging og byggesaksbehandling (LOV-2008-06-27-71).
Randaberg kommune. (2011). *Årsmelding og årsregnskap 2011*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/for-2017/arsmelding-og-arsregnskap-2011.pdf.
Randaberg kommune. (2012a). *Årsmelding og årsregnskap 2012*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/for-2017/arsmelding-og-arsregnskap-2012.pdf.
Randaberg kommune. (2012b). *Budsjett 2012/Økonomiplan 2012-2015*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/for-2018/budsjett_2012_tekstdel_lagversjon.pdf.

Randaberg kommune. (2012c). *Plan for klima og energi*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/planer/plan_klima_energi_feb2012_lagversjon.pdf.
Randaberg kommune. (2013a). *Årsmelding og årsregnskap 2013*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/for-2017/arsmelding-og-arsregnskap-2013.pdf.
Randaberg kommune. (2013b). *Budsjett 2013. Økonomiplan 2013-2016*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/for-2018/bud2013_fleirpartias-forslag.pdf.
Randaberg kommune. (2014a). *Årsmelding og årsregnskap 2014*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/for-2017/arsmelding-og-arsregnskap-2014.pdf.
Randaberg kommune. (2014b). *Budsjett 2014. Økonomiplan 2014-2017*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/for-2018/saksprotokoll_kst_bud2014_19des2013.pdf.
Randaberg kommune. (2015a). *Årsmelding og årsregnskap 2015*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/for-2017/arsmelding-og-arsregnskap-2015.pdf.
Randaberg kommune. (2015b). *Budsjett 2015/Økonomiplan 2015-2018*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/for-2018/bud2015_tekst_kst18122014_lag.pdf.
Randaberg kommune. (2016a). *Årsmelding og årsregnskap 2016*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/for-2017/arsmelding-og-arsregnskap-2016.pdf.
Randaberg kommune. (2016b). *Budsjett 2016/Økonomiplan 2016-2019*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/for-2018/bud2016_tekst_lagversjon.pdf.
Randaberg kommune. (2017a). *Årsmelding og årsregnskap 2017* Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/2017/arsmelding-og-arsregnskap-2017.pdf.
Randaberg kommune. (2017b). *Budsjett 2017. Økonomiplan 2017-2020*. Retrieved from https://spark.adobe.com/page/SB6jwMZScYosK/?ref=https%3A%2F%2Fspark.adobe.com%2Fpage%2FSB6jwMZScYosK%2Fembed.html&embed_type=overlay&context=expand.
Randaberg kommune. (2018a). *Årsmelding og årsregnskap 2018* Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/2018/arsmelding2018_hovuddokument_april2019.pdf.
Randaberg kommune. (2018b). *Budsjett 2018. Økonomiplan 2018-2021*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/2018/bud-2018_tekstdel_vedtatt-kst-14-12-2017_lagversjon.pdf.
Randaberg kommune. (2018c). Klima- og miljøplan 2018-2030.
Randaberg kommune. (2019a). *Årsmelding og årsregnskap 2019*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/arsmelding/2019/randaberg-kommune---arsregnskap-og-arsmelding-2019.pdf.
Randaberg kommune. (2019b). *Budsjett 2019. Økonomiplan 2019-2022*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/2019/hoveddokument/bud2019_tekst.pdf.

Randaberg kommune. (2020). *Budsjett 2020. Økonomiplan 2020-2023*. Retrieved from https://www.randaberg.kommune.no/globalassets/dokument/budsjett/2020/radmannens-forslag/bud2020_tekst_radmannen-sitt-forslag_lag_13112019.pdf.

Ravitch, S. M., & Carl, N. M. (2019). *Qualitative research: Bridging the conceptual, theoretical, and methodological*: SAGE Publications, Incorporated.

Regjeringen.no. (2011). *Reguleringsplanveileder*. Retrieved from https://www.regjeringen.no/no/dokumenter/reguleringsplanveileder/id2609532/?ch=4.

Rogaland Revisjon IKS. (2015). *Forvaltningsrevisjon av klima- og miljøplan i Stavanger kommune*. Retrieved from https://www.rogaland-revisjon.no/userfiles/upload/files/import/rr%20stavanger%202015%20klima-%20og%20milj%c3%b8plan%20(2).pdf

Rogaland Revisjon IKS. (2016a). *Forvaltningsrevisjon av energiøkonomisering i byggeprosjekter i Sandnes kommune*. Retrieved from https://www.rogaland-revisjon.no/userfiles/upload/files/import/rr%20sandnes%202016%20-%20energi%c3%b8konomisering%20i%20byggeprosjekter.pdf

Rogaland Revisjon IKS. (2016b). *Forvaltningsrevisjon av klimagassutslipp i Stavanger kommune*. Retrieved from https://www.rogaland-revisjon.no/userfiles/upload/files/import/rr%20stavanger%202016%20klimagasser.pdf

Rogaland Revisjon IKS. (2016c). *Overordnet analyse 2016–2019. Kvitsøy kommune*. Retrieved from http://www.kontrollutv.no/wp-content/uploads/2020/01/RR-Overordnet-analyse-Kvits%C3%B8y-2016.pdf

Rogaland Revisjon IKS. (2016d). *Overordnet analyse 2016 - 2019. Randaberg kommune*. Retrieved from http://www.kontrollutv.no/wp-content/uploads/2020/01/Overordnet-analyse-Randaberg-2016.pdf

Rogaland Revisjon IKS. (2018a). *Forvaltningsrevisjon av arbeid med plansaker i Sola kommune*. Retrieved from https://www.rogaland-revisjon.no/userfiles/upload/files/import/rr%20sola%20kommune%202018%20arbeid%20med%20plansaker.pdf

Rogaland Revisjon IKS. (2018b). *Forvaltningsrevisjon av oppfølging av planar i Time kommune*. Retrieved from https://www.rogaland-revisjon.no/userfiles/upload/files/import/rr%20time%202018%20%20oppf%c3%b8lging%20av%20planar.pdf

Rogaland Revisjon IKS. (2019). *Forvaltningsrevisjon av klima- og energiplan. Suldal kommune*. Retrieved from https://www.rogaland-revisjon.no/Userfiles/Upload/files/RR%20Suldal%202019%20Klima%20og%20energiplan%20200819%20-%20pdf.pdf

Rose, L. E., & Aakre, S. (2015). Kommunal klima-og energiplanlegging: Et innblikk fra sidelinjene. *CICERO Report*.

Sandnes kommune. (2010). *Energi og klima. Handlingsplan for Sandnes*.

Sandnes kommune. (2013). *Årsrapport 2013*. Retrieved from https://styringsdokumenter.z16.web.core.windows.net/web/index-10.html.

Sandnes kommune. (2014a). *Årsrapport 2014*. Retrieved from https://styringsdokumenter.z16.web.core.windows.net/web/index-8.html.

Sandnes kommune. (2014b). *Økonomiplan 2014-2017*. Retrieved from https://styringsdokumenter.z16.web.core.windows.net/web/index-7.html.

Sandnes kommune. (2015a). *Årsrapport 2015*. Retrieved from https://styringsdokumenter.z16.web.core.windows.net/web/index-2.html.

Sandnes kommune. (2015b). *Miljøplan for Sandnes 2015-2030*. Retrieved from https://www.sandnes.kommune.no/teknisk-og-eiendom/kommuneplanlegging/miljoplan-gjeldende/.
Sandnes kommune. (2015c). *Økonomiplan 2015-2018*. Retrieved from https://styringsdokumenter.z16.web.core.windows.net/web/index-6.html.
Sandnes kommune. (2016a). *Årsrapport 2016*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/eldre-arsrapporter-og-okonomiplaner/arsrapport-2016/.
Sandnes kommune. (2016b). *Økonomiplan 2016-2019*. Retrieved from https://styringsdokumenter.z16.web.core.windows.net/web/index-5.html.
Sandnes kommune. (2017a). *Årsrapport 2017*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/eldre-arsrapporter-og-okonomiplaner/arsrapport-2017/.
Sandnes kommune. (2017b). *Økonomiplan 2017-2020*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/eldre-arsrapporter-og-okonomiplaner/okonomiplan-2017-20202/.
Sandnes kommune. (2018a). *Årsrapport 2018*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/eldre-arsrapporter-og-okonomiplaner/arsrapport-2018/okonomisk-resultat/.
Sandnes kommune. (2018b). *Økonomiplan 2018-2021*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/eldre-arsrapporter-og-okonomiplaner/okonomiplan-2018-2021/.
Sandnes kommune. (2019a). *Årsrapport 2019*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/arsrapport-2019/.
Sandnes kommune. (2019b). *Økonomiplan 2019-2022*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/eldre-arsrapporter-og-okonomiplaner/okplan2019/.
Sandnes kommune. (2020a). *Handlings- og økonomiplan 2020-2023*. Retrieved from https://www.sandnes.kommune.no/politikk-og-administrasjon/styringsdokumenter-og-planer/overordnede-styringsdokumenter/okonomiplan-2020-2023/.
Sandnes kommune. (2020b). *Klima- og miljøplan for Sandnes 2020-2025*. Retrieved from https://www.sandnes.kommune.no/teknisk-og-eiendom/kommuneplanlegging/klima-og-miljoplan/.
Sauda kommune. (2009). *Økonomiplan 2009-2012 for Sauda kommune* Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2008009667&dokid=94834&versjon=1&variant=A&.
Sauda kommune. (2010a). *Klima- og energiplan for Sauda kommune* Retrieved from https://www.sauda.kommune.no/_f/id2949687-f590-4c35-89d3-ceaf3a950d02/vedtatt_klimaplan_01092010.pdf.
Sauda kommune. (2010b). *Økonomiplan 2010-2013 for Sauda kommune*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2009008930&dokid=106403&versjon=1&variant=A&.

Sauda kommune. (2011a). *Årsmelding 2011*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2012004019&dokid=141525&versjon=1&variant=A&.

Sauda kommune. (2011b). *Økonomiplan 2011-2014 for Sauda kommune*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2010008991&dokid=119686&versjon=1&variant=A&.

Sauda kommune. (2012a). *Årsmelding 2012*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2013003900&dokid=159598&versjon=1&variant=A&.

Sauda kommune. (2012b). *Økonomiplan 2012 - 2015* Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2011008469&dokid=132884&versjon=8&variant=A&.

Sauda kommune. (2013a). *Årsmelding 2013*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2014004487&dokid=179178&versjon=5&variant=A&.

Sauda kommune. (2013b). *Økonomiplan 2013 -2016*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2012010041&dokid=150944&versjon=9&variant=A&.

Sauda kommune. (2014a). *Årsmelding 2014*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2015004033&dokid=198937&versjon=2&variant=A&.

Sauda kommune. (2014b). *Økonomiplan 2014 - 2017*. Retrieved from https://innsyn.onacos.no/sauda/wfinnsyn.ashx?response=journalpost_detaljer&journalpostid=2013010986&.

Sauda kommune. (2015a). *Årsmelding 2015*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2016005010&dokid=220113&versjon=1&variant=A&.

Sauda kommune. (2015b). *Økonomiplan 2015 – 2018*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2014010707&dokid=190580&versjon=2&variant=A&.

Sauda kommune. (2016a). *Årsmelding 2016*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2017005370&dokid=243798&versjon=1&variant=A&.

Sauda kommune. (2016b). *Økonomiplan 2016 –2019*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2015011131&dokid=209668&versjon=1&variant=A&.

Sauda kommune. (2017a). *Årsmelding 2017*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2018006418&dokid=268429&versjon=2&variant=A&.

Sauda kommune. (2017b). *Økonomiplan 2017-2020*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2016012138&dokid=231588&versjon=1&variant=A&.

Sauda kommune. (2018a). *Årsmelding 2018*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2019005349&dokid=293117&versjon=1&variant=A&.

Sauda kommune. (2018b). *Budsjett 2018. Økonomiplan 2018 – 2021*. Retrieved from https://www.sauda.kommune.no/_f/p14/i3c945479-7cbc-43f3-b0f9-44d0930dfa39/okonomiplan-2018-2021_vedtatt-dokument-10092018.pdf.

Sauda kommune. (2019). *Budsjett 2019. Økonomiplan 2019 – 2022*. Retrieved from https://innsyn.onacos.no/sauda/wfdocument.ashx?journalpostid=2018013418&dokid=279249&versjon=1&variant=A&.

Sauda kommune. (2020). *Budsjett 2020. Økonomiplan 2020 – 2023*. Retrieved from https://www.sauda.kommune.no/_f/p14/i6745c537-727e-4c9c-9600-b7ab3bca24ac/budsjett-2020-og-okonomiplan-sauda-kommune-2020-2023-vedtatt-111219.pdf.

Sokndal kommune. (2011). *Energi- og klimaplan for Dalane 2011-2014*.

Sokndal kommune. (2017). *Årsmelding 2017*. Retrieved from https://www.sokndal.kommune.no/_f/p1/i2257307b-549b-4c92-8a5e-c1bbaac82bca/arsmelding-2017-285402.pdf.

Sokndal kommune. (2018a). *Årsmelding 2018*. Retrieved from https://www.sokndal.kommune.no/_f/p1/ia03f80a9-201a-486d-9aba-d0f8f2f7873d/arsberetning-2018-for-sokndal-kommune-oppdatert-425561.pdf.

Sokndal kommune. (2018b). *Budsjett 2018. Økonomiplan 2018-2021* Retrieved from https://www.sokndal.kommune.no/_f/p1/i36a857a8-da5f-4769-b2d8-45ec378feedd/budsjett-2018-okonomiplan-2018-2021-vedtatt-1112-17-sak-9217-259055.pdf.

Sokndal kommune. (2020). *Budsjett og økonomiplan 2020-2023* Retrieved from https://www.sokndal.kommune.no/_f/p1/i781414db-8f3b-4ed9-8fb7-18a11e384006/budsjett-og-okonomiplan-2020-2023-formannskapets-forslag.pdf.

Sola kommune. (2009). *Årsrapport 2009*. Retrieved from https://www.sola.kommune.no/_f/p1/if1c4c8df-005d-4d43-8856-0b9660183bdb/rsrapport-sola-kommune-2009.pdf.

Sola kommune. (2010a). *Årsrapport og -regnskap 2010*. Retrieved from https://www.sola.kommune.no/_f/p1/ie7a3f7f2-fde7-44af-bdc3-c16d5e98d700/arsrapport-og-arsregnskap-2010-sola-kommune.pdf.

Sola kommune. (2010b). *Kommunedelplan energi og klima*. Retrieved from https://www.sola.kommune.no/_f/i4b89fe75-0838-499b-bf95-502528594181/Kommunedelplan%20for%20energi%20og%20milj%C3%B8.pdf.

Sola kommune. (2011a). *Årsrapport og -regnskap 2011*. Retrieved from https://www.sola.kommune.no/_f/p1/i95f6c4b8-26cb-4e3e-962c-8b509423f46f/arsrapport-og-regnskap-2011-sola-kommune.pdf.

Sola kommune. (2011b). *Økonomiplan 2011-2014. Budsjett 2011*. Retrieved from https://www.sola.kommune.no/_f/p1/i5c8adaa6-cdd1-4f0c-9623-e8e14ef45543/konomiplan-2011-2014-vedtatt-i-ksak-107_10.pdf.

Sola kommune. (2012a). *Årsrapport og -regnskap 2012*. Retrieved from https://www.sola.kommune.no/_f/p1/i782e5bac-df61-4e82-adc6-47504b18e6e5/aarsrapport_og-regnskap_2012_sola_kommune.pdf.

Sola kommune. (2012b). *Økonomiplan 2012-2015. Budsjett 2012* Retrieved from https://www.sola.kommune.no/_f/p1/i29154d95-dea2-4946-a161-c263abcd12f5/konomiplan-2012-2015-vedtatt-i-ksak-103_11.pdf.

Sola kommune. (2013a). *Årsrapport og årsregnskap 2013*. Retrieved from https://www.sola.kommune.no/_f/p1/i332b25bb-dac1-4521-b436-5b367264edab/arsrapport-2013-sola-kommune1.pdf.

Sola kommune. (2013b). *Handlings- og økonomiplan 2013-2016*. Retrieved from https://www.sola.kommune.no/_f/p1/i9d5581b1-adc2-436a-af63-1a6ca333f267/handlings_og_oekonomiplan_2013-2016_raadmannens_forslag_hoveddokument.pdf.

Sola kommune. (2014a). *Årsrapport og årsregnskap 2014*. Retrieved from https://www.sola.kommune.no/_f/p1/i9e1bd5d2-09e1-48ad-9264-b6bbf060b609/arsrapport-2014.pdf.
Sola kommune. (2014b). *Handlings- og økonomiplan 2014-2017*. Retrieved from https://www.sola.kommune.no/_f/p1/i9c0f446c-3bd2-4521-b7bf-980a5f4ded5d/vedtatt_handlings_og_oekonomiplan_2014-2017_samlet_dokument.pdf.
Sola kommune. (2015a). *Årsrapport og årsregnskap 2015*. Retrieved from https://www.sola.kommune.no/_f/p1/id3c0faf0-8702-4205-b841-4b901f753669/arsrapport-2015.pdf.
Sola kommune. (2015b). *Handlings- og økonomiplan 2015-2018*. Retrieved from https://www.sola.kommune.no/_f/p1/i8eeb972d-1787-412c-92e7-e2f012ff38a5/vedtatt_hoep_2015-2018.pdf.
Sola kommune. (2016a). *Årsrapport og årsregnskap 2016*. Retrieved from https://www.sola.kommune.no/_f/p1/i66136c37-51bc-4d77-84d8-a20d746e761c/samledokument-arsraport-2016.pdf.
Sola kommune. (2016b). *Handlings- og økonomiplan 2016-2019*. Retrieved from https://www.sola.kommune.no/_f/p1/if0a7c773-b8e9-42de-ba40-9ab7f6933c8c/vedtatt_hoep_2016-2019.pdf.
Sola kommune. (2017a). *Årsrapport og årsregnskap 2017* Retrieved from https://www.sola.kommune.no/_f/p1/i0d354f8b-a762-4dda-95ef-5dad5572287c/arsrapport-og-arsregnskap-2017.pdf.
Sola kommune. (2017b). *Handlings- og økonomiplan 2017-2020*. Retrieved from https://www.sola.kommune.no/_f/p1/if221688b-a9a6-45b2-83d6-5808d58d2f85/vedtatt-handlings-og-okonomiplan-2017-2020-sola-kommune-med-kommunalt-foretak.pdf.
Sola kommune. (2018a). *Årsrapport 2018*. Retrieved from https://www.sola.kommune.no/dokumenter/arsrapport-2018/.
sola kommune. (2018b). *Handlings- og økonomiplan 2018-2021*. Retrieved from https://www.sola.kommune.no/_f/p1/i78c94a91-4449-4eec-bd3f-648f0251dffc/vedtatt-handlings-og-okonomiplan-2018-2021.pdf.
Sola kommune. (2019a). *Årsrapport 2019*. Retrieved from https://pub.framsikt.net/2019/sola/mr-201912-%C3%A5rsrapport_og_%C3%A5rsregnskap,_2019/#/.
Sola kommune. (2019b). *Handlings- og økonomiplan 2019-2022*. Retrieved from https://www.sola.kommune.no/_f/p1/i8f7f51b4-942f-4edf-90ac-0ee2b20968b5/vedtatt-handlings-og-okonomiplan-2019-2022.pdf.
Sola kommune. (2019c). *Kommunedeplan for klima og miljø 2021-2035*. Retrieved from https://www.sola.kommune.no/planer-og-rapporter/kommuneplan/kommunedelplan/.
Sola kommune. (2020). *Handlings- og økonomiplan 2020-2023*. Retrieved from https://www.sola.kommune.no/_f/p1/i55132ff5-9697-4f0c-8b00-1dca96ba1d14/vedtatt-handlings-og-okonomiplan-2020-2023.pdf.
Statistics Norway. (2012). Utslipp til luft, kommunetall. Retrieved from https://www.ssb.no/statbank/table/08615/tableViewLayout1/
Statistics Norway. (2013). Gruppering av kommuner etter folkemengde og økonomiske rammebetingelser 2013. In: Hentet fra http://www. ssb. no/offentlig-sektor/artikler-ogpublikasjoner ….
Statistics Norway. (2020a). Kommunefakta Klepp. Retrieved from https://www.ssb.no/kommunefakta/klepp
Statistics Norway. (2020b). Kommunefakta Utsira. Retrieved from https://www.ssb.no/kommunefakta/utsira

Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning. (2018). *Lov om planlegging og byggesaksbehandling (LOV-2008-06-27-71)*. (FOR-2018-09-28-1469). Retrieved from https://lovdata.no/dokument/SF/forskrift/2018-09-28-1469#KAPITTEL_4.

Stavanger kommune. (2009). *Årsberetning 2009*. Retrieved from https://www.stavanger.kommune.no/siteassets/skjema-a-a/samfunnsutvikling/arsberetning-2009-stavanger-kommune.pdf.

Stavanger kommune. (2010). *Årsberetning 2010*. Retrieved from https://www.stavanger.kommune.no/siteassets/skjema-a-a/samfunnsutvikling/arsberetning-2010-stavanger-kommune.pdf.

Stavanger kommune. (2011). *Årsberetning 2011*. Retrieved from https://issuu.com/stavanger.kommune/docs/aarsberetning2011.

Stavanger kommune. (2012). *Årsrapport 2012*. Retrieved from https://issuu.com/stavanger.kommune/docs/svg-kommune-aarsrapport2012.

Stavanger kommune. (2013). *Årsrapport 2013*. Retrieved from https://arsrapport.stavanger.kommune.no/?epslanguage=no.

Stavanger kommune. (2014a). *Årsrapport 2014*. Retrieved from https://arsrapport2014.stavanger.kommune.no/?epslanguage=no.

Stavanger kommune. (2014b). *Handlings- og økonomiplan 2014-2017* Retrieved from https://issuu.com/stavanger.kommune/docs/h__p_2014-2017_uten_bookmarks.

Stavanger kommune. (2015a). *Årsrapport 2015*. Retrieved from https://arsrapport2015.stavanger.kommune.no/?epslanguage=no.

Stavanger kommune. (2015b). *Handlings- og økonomiplan 2015-2018*. Retrieved from https://hop.stavanger.kommune.no/.

Stavanger kommune. (2016a). *Årsrapport 2016*. Retrieved from https://arsrapport2016.stavanger.kommune.no/?epslanguage=no.

Stavanger kommune. (2016b). *Handlings- og økonomiplan 2016–2019*. Retrieved from https://hop2016.stavanger.kommune.no/.

Stavanger kommune. (2017a). *Årsrapport 2017*. Retrieved from https://arsrapport2017.stavanger.kommune.no/?epslanguage=no.

Stavanger kommune. (2017b). *Handlings-og økonomiplan 2017-2020*. Retrieved from https://hop2017.stavanger.kommune.no/.

Stavanger kommune. (2018a). *Årsrapport 2018*. Retrieved from https://arsrapport2018.stavanger.kommune.no/.

Stavanger kommune. (2018b). *Handlings- og økonomiplan 2018-2021*. Retrieved from https://hop2018.stavanger.kommune.no/.

Stavanger kommune. (2018c). *Klima- og miljøplan 2018-2030*. Retrieved from https://www.stavanger.kommune.no/renovasjon-og-miljo/miljo-og-klima/klima--og-miljoplan-2018-2030/.

Stavanger kommune. (2018d). *Klima- og miljøplan 2018-2030. Handlingsplan 2018-2022*. Retrieved from https://www.stavanger.kommune.no/siteassets/renovasjon-klima-og-miljo/miljo-og-klima/klima--og-miljo-handlingsplan--2018-2022---vedtatt-26.11.2018.pdf.

Stavanger kommune. (2019a). *Årsrapport 2019*. Retrieved from https://arsrapport2019.stavanger.kommune.no/.

Stavanger kommune. (2019b). *Handlings- og økonomiplan 2019-2022*. Retrieved from https://hop2019.stavanger.kommune.no/.

Stavanger kommune. (2020). *Handlings- og økonomiplan 2020-2023*. Retrieved from https://hop2020.stavanger.kommune.no/.

Stevens, M., & Senbel, M. (2017). What Happens When Municipalities Set Targets to Reduce Their Greenhouse Gas Emissions? *Journal of Planning Education and Research*, 0739456X17741716.

Strand kommune. (2011). *Økonomiplan 2011-2014 med budsjett for 2011* Retrieved from https://www.strand.kommune.no/_f/p11/ie541ffe2-469d-4a63-88ef-e9c1579a442d/budsjettnotat_2011_2014_del_1.pdf.

Strand kommune. (2012). *Økonomiplan 2012-2015 med budsjett for 2012*. Retrieved from https://www.strand.kommune.no/_f/p11/i528b770b-b6d2-4210-8104-d77b0ed4b20c/budsjettnotat_2012_del_1_endelig_versjon.pdf.

Strand kommune. (2013). *Økonomiplan og handlingsplan 2013-2016 med budsjett for 2013*. Retrieved from https://www.strand.kommune.no/_f/p11/i69c76d43-e97e-4582-8b1d-a3e0a6b1ec4b/budsjettnotat_2013_original_v31_10_2012.pdf.

Strand kommune. (2014). *Økonomi- og handlingsplan 2014-2017 med budsjett for 2014*. Retrieved from https://www.strand.kommune.no/_f/p11/id452a2ec-8691-4d4a-991d-3775fc17d8ac/budsjettnotat_301013_publisering.pdf.

Strand kommune. (2015). *Økonomi- og handlingsplan 2015-2018 med budsjett for 2015*. Retrieved from https://www.strand.kommune.no/_f/p11/ied615b93-827d-4118-ada0-f3259351b212/budsjett_2015_med_oekoplan_2015-2018.pdf.

Strand kommune. (2016a). *Årsberetning 2016*. Retrieved from https://www.strand.kommune.no/_f/p11/i43cc7bb8-c8bb-4a1d-809f-67c413d57584/arsberetning-2016.pdf.

Strand kommune. (2016b). *Budsjett for 2016 med økonomi- og handlingsplan 2016 – 2019* Retrieved from https://www.strand.kommune.no/_f/p11/i66626a7f-5169-4117-b2e6-f7da6334786a/budsjettforslag_2016.pdf.

Strand kommune. (2017a). *Budsjett for 2017 med økonomi- og handlingsplan 2017 – 2020* Retrieved from https://www.strand.kommune.no/_f/p11/ia5947b24-994b-4fa0-8b71-1087588f9524/raadmannens_budsjettforslag_011116.pdf.

Strand kommune. (2017b). *Kommuneplanens samfunnsdel 2019-2035*. Retrieved from https://www.strand.kommune.no/tjenester/plan-bygg-og-eiendom/kommuneplan/.

Strand kommune. (2018). *Budsjett 2018. Økonomi- og handlingsplan 2018-2021*. Retrieved from https://www.strand.kommune.no/_f/p11/i6a09dd72-3fb2-451a-8182-befbfbaea981/budsjett-2018.pdf.

Strand kommune. (2019a). *Årsberetning 2019*. Retrieved from https://www.strand.kommune.no/_f/p11/i781a138d-6f48-4c0e-b4b0-df371342515b/arsberetning-2019_300320.pdf.

Strand kommune. (2019b). *Budsjett 2019 med økonomi- og handlingsplan 2019 – 2022*. Retrieved from https://www.strand.kommune.no/_f/p11/i35c170e5-7e63-4d8c-8745-647cdda718ae/budsjett-2019.pdf.

Strand kommune. (2020). *Budsjett 2020 med økonomi- og handlingsplan 2020 – 2023*. Retrieved from https://www.strand.kommune.no/_f/p11/idbc4cd64-52e8-48ef-957e-837f560597af/budsjett-2020.pdf.

Suldal kommune. (2010). *Kommunedelplan for klima og energi Suldal kommune 2012-2017*. Retrieved from http://www.miljostatus-suldal.no/_f/p11/i3b5efc18-9d71-4317-935d-189644ff8387/klima_og_energiplan_suldal_2012-17_axvcc1.pdf.

Suldal kommune. (2013). *Årsmelding og rekneskap 2013*. Retrieved from https://www.suldal.kommune.no/_f/p13/i1941c666-03e1-433d-b233-1671b2c3fb47/arsmelding-2013-komplett.pdf.

Suldal kommune. (2014). *Årsmelding og rekneskap 2014*. Retrieved from https://www.suldal.kommune.no/_f/p13/i6c86b717-7dc5-4774-b9c5-972691b95dfe/arsmeldingrekneskap2014radmannensittframlegg.pdf.
Suldal kommune. (2015a). *Årsmelding og rekneskap 2015*. Retrieved from https://www.suldal.kommune.no/_f/p13/i979b63a9-7dda-4d2f-9fcc-16ec7717eec0/arsmeldingrekneskapframleggfraradmannen2015.pdf.
Suldal kommune. (2015b). *Kommuneplan for Suldal kommune 2015 - 2024*. Retrieved from https://www.suldal.kommune.no/tenester/planar-hoyringar-og-styringsdokument/kommuneplan-2015-2024/.
Suldal kommune. (2016a). *Årsmelding og rekneskap 2016*. Retrieved from https://www.suldal.kommune.no/_f/p13/i89877a5f-b039-4118-82c7-1b6c3c251052/arsmeldingogrekneskap2016.pdf.
Suldal kommune. (2016b). *Økonomiplan med handlingsprogram 2016-2019*. Retrieved from https://www.suldal.kommune.no/_f/p13/i061af944-a311-4408-9def-1679708cb164/okonomiplan-med-handlingsprogram-16-19-kommunestyret-sitt-vedtak-med-komnmentarar-til-arsmld-2016.pdf.
Suldal kommune. (2017a). *Årsmelding og årsrekneskap 2017*. Retrieved from https://www.suldal.kommune.no/_f/p13/i1f1a771d-3434-4238-97b9-0493ff29d823/arsmeldingogrekneskap2017.pdf.
Suldal kommune. (2017b). *Økonomiplan med handlingsprogram 2017-2020*. Retrieved from https://www.suldal.kommune.no/_f/p13/ieceb1013-4c9f-492a-816c-c82a88468c92/okonomiplan-med-handlingsprogram-17-20-vedtak-kommunestyret.pdf.
Suldal kommune. (2018). *Økonomiplan med handlingsprogram 2018-2021*. Retrieved from https://www.suldal.kommune.no/_f/p13/icf59e682-64ad-46d0-a403-05c97c403bb3/okonomiplan-med-handlingsprogram-18-21-vedtak-i-kommunestyret-12122017.pdf.
Suldal kommune. (2019). *Økonomiplan med handlingsprogram 2019-2022*. Retrieved from https://www.suldal.kommune.no/_f/p13/if1d6982e-94ae-4e1a-b57e-bd3a5bab3ed3/okonomiplan-med-handlingsprogram-19-22-kommunstyret-sitt-vedtak.pdf.
Suldal kommune. (2020). *Økonomiplan med handlingsprogram 2020-2023*. Retrieved from https://www.suldal.kommune.no/_f/p13/i3b1b2f93-fe91-437d-8d9d-68683f77a877/budsjett-2020-okonomiplan-med-handlingsprogram-2020-2023-kommunestyret-sitt-vedtak.pdf.
Time kommune. (2011). *Kommunedelplan for energi- og klima 2011-2022*. Retrieved from https://www.time.kommune.no/tenester/plan-bygg-og-kart/plan/kommunedelplanar/.
Time kommune. (2015). *Årsrapport 2015*. Retrieved from https://www.time.kommune.no/_f/p1/i6f061d35-654b-43f2-8c82-d5b56403aec9/arsrapport-2015.pdf.
Time kommune. (2016). *Årsrapport 2016*. Retrieved from https://www.time.kommune.no/_f/p1/i204ea887-3671-4468-8cfa-24d8ef56c2f1/arsrapport-2016.pdf.
Time kommune. (2017a). *Årsrapport 2017*. Retrieved from https://www.time.kommune.no/_f/p1/i6d772722-3f0d-4188-bec4-7d1126ca2869/arsrapport-2017.pdf.
Time kommune. (2017b). *Timeplan 2017 - 2020*. Retrieved from https://www.time.kommune.no/_f/p1/if2a29f98-2336-4fe0-946a-9e5ab617fc8c/timeplan-2017-2020.pdf.

Time kommune. (2018a). *Årsrapport 2018*. Retrieved from https://www.time.kommune.no/_f/p1/icbdb188b-c9dc-43b7-9c36-eab4c4775981/arsrapport-2018.pdf.
Time kommune. (2018b). *Timeplan 2018 - 2021*. Retrieved from https://www.time.kommune.no/_f/p1/i60036798-89c8-4886-8480-66c6aca9b9bd/timeplan-2018-2021.pdf.
Time kommune. (2019a). *Årsrapport 2019*. Retrieved from https://www.time.kommune.no/_f/p1/i9a04422b-5945-4326-b7e9-e5fe992051de/arsrapport-2019.pdf.
Time kommune. (2019b). *Timeplan 2019-2022*. Retrieved from https://www.time.kommune.no/_f/p1/i0eafabc8-1dc5-4101-9175-11c0c86a9a61/vedtatt-timeplan-2019-2022.pdf.
Time kommune. (2020). *Timeplan 2020-2023*. Retrieved from https://www.time.kommune.no/_f/p1/i6ef71727-044e-4949-b36c-05e44e895a50/okonomiplan-2020-2023.pdf.
Tysvær kommune. (2011). *Energi- og klimaplan Tysvær kommune 2012-2017*. Retrieved from https://www.tysver.kommune.no/images/filer/Teknisk/Div/Energi--og-klimaplan-endeleg-versjon-2011.pdf.
Tysvær kommune. (2020). *Budsjett 2020. Økonomiplan 2021 - 2023*. Retrieved from https://pub.framsikt.net/2020/tysver/bm-2020-budsjett_2020/#/.
UNFCC. (1997). *Kyoto Protocol to the United Nations Framework Convention on Climate Change adopted at COP3 in Kyoto, Japan, on 11 December 1997*. %20http://unfccc.int/resource/docs/cop3/07a01.pdf
United Nations. (2015). Paris Agreement.
Utsira kommune. (2010a). *Årsmelding 2010*. Retrieved from https://www.utsira.kommune.no/utsira-kommune/administrasjonen/arsmeldinger?searchterm=%C3%A5rsmel.
Utsira kommune. (2010b). *Energi- og klimaplan for Utsira kommune 2010-2014*. Retrieved from https://issuu.com/utsirakommune/docs/justert_energi_og_klimaplan_2010_2014.
Utsira kommune. (2015a). *Årsmelding 2015*. Retrieved from https://www.utsira.kommune.no/utsira-kommune/administrasjonen/arsmeldinger?searchterm=%C3%A5rsmel.
Utsira kommune. (2015b). *Energi- og klimaplan for Utsira kommune 2015-2019* Retrieved from https://www.utsira.kommune.no/tema/bolig-og-eiendom/kommunal-planlegging/delplaner-til-kommuneplan/energi-og-klimaplan.
Utsira kommune. (2020a). Energi- og klimaplan. Retrieved from https://www.utsira.kommune.no/tema/bolig-og-eiendom/kommunal-planlegging/delplaner-til-kommuneplan/energi-og-klimaplan
Utsira kommune. (2020b). *Kommunebudsjett 2020*. Retrieved from https://www.utsira.kommune.no/utsira-kommune/administrasjonen/budsjett/budsjett-2020.
Vedung, E. (1997). *Public policy and program evaluation*. New Brunswick, N.J: Transaction Publishers.
Vevatne, J., Westskog, H., & Hauge, K. E. (2005). Betydningen av kommunal klimapolitikk. Virkemidler, potensial og barrierer. *CICERO Report*.
Vindafjord kommune. (2010). *Energi- og klimaplan 2010 - 2015* Retrieved from https://www.vindafjord.kommune.no/_f/p11/id3c44e3d-a243-4b32-af92-97c14b9ce9f9/energi-og-klimaplan1.pdf.
Vindafjord kommune. (2014). *Årsmelding 2014* Retrieved from https://www.vindafjord.kommune.no/_f/p11/ie7f01ef8-0014-4587-96a3-0a7ebe6b2fac/aarsmelding_14_revidert_versjon_242134-komprimert.pdf.

Vindafjord kommune. (2015). *Årsmelding 2015*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/i59f438ab-bb73-430e-9459-8500c6e18df4/aarsmelding_15-vedtatt_i_kommunestyret.pdf.

Vindafjord kommune. (2016). *Årsmelding 2016*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/iffb038c4-47eb-4ac8-b316-64171b233404/aarsmelding_16-kommunestyreutgaave.pdf.

Vindafjord kommune. (2017a). *Årsmelding 2017*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/ib96d44a4-1122-494a-ab04-aa7db4d2e83e/arsmelding-2017.pdf.

Vindafjord kommune. (2017b). *Kommuneplan for Vindafjord kommune 2017-2029*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/id7e2d6fe-101d-4ede-b778-0406dc1c5cc9/kommuneplanen_2017-2029_samfunnsdelen_040417_og_arealdelen_200617_l507060.pdf.

Vindafjord kommune. (2018). *Årsmelding 2018*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/ib2949a63-ebc3-42f7-9da6-000a503f42fd/arsmelding-2018.pdf.

Vindafjord kommune. (2019). *Budsjett 2019. Økonomiplan 2019-2022*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/i3ff3905b-8784-4805-b20f-6bfb9c36c5c7/budsjett-2019-og-okonomiplan-2019-2022-vedtatt-i-ks-181219.pdf.

Vindafjord kommune. (2020). *Økonomiplan for 2020-2023*. Retrieved from https://www.vindafjord.kommune.no/_f/p11/i7b9b3cda-8201-4c05-9426-a566699c6672/budsjett-og-okonomiplan-2020-2023-til-utdeling.pdf.

Wang, L., Westskog, H., Selvig, E., Mygland, R., & Amundsen, H. (2016). Kortreist kvalitet. *Hva betyr omstilling til et lavutslippssamfunn for kommunesektoren*.

Westskog, H., Selvig, E., Aall, C., Amundsen, H., & Jensen, E. S. (2018). Potensial og barrierer for kommunale klimatiltak. *CICERO Report*.

Annex

Do you want to participate in the research project

"Climate and energy planning in Rogaland county"?

This is a question for you to participate in a research project whose purpose is to discover current situation with climate and energy planning in the county of Rogaland, Norway. In this paper, we provide you with information about the goals of the project and what participation will mean for you.

Purpose
In 2009 the State released Guidelines about climate and energy planning. The purpose of the Guidelines is: municipalities, counties and the State will through planning and other governmental and business activities stimulate and contribute to reduction of greenhouse gas emissions, as well as increased environmentally friendly energy transition. Plans that address climate and energy issue shall be followed up by action plan and more detailed planning. They must be reviewed at least every four years, in accordance with the provisions on the revision of municipal and regional planning strategies.

This is a master thesis written within the master program Energy, environment and society at the University of Stavanger. The purpose of this study is to explore current situation with action on climate mitigation at the municipal level in Rogaland county, to find out whether climate measures and instruments are being implemented and map out barriers associated with this work. If the results of this thesis appear to be valuable, they might be used in further research.

Who is responsible for the research project?
University of Stavanger is responsible for the project.

Why are you asked to participate?
You have been selected to participate as you are a municipal employee responsible for or related to the municipal work with climate and energy planning.

What does it mean for you to participate?
If you choose to participate in the project, it means that you fill out a survey. The survey contains questions about your position, how work with climate mitigation is organized in municipality, and what barriers municipality has to deal with along the way. Your responses from the survey are recorded electronically.

Participation is voluntary
Participation in the project is voluntary. If you choose to participate, you may withdraw your consent at any time without giving any reason. All your personal information will then be deleted. It will not have any negative consequences for you if you do not want to participate or later choose to withdraw.

Your privacy - how we store and use your information
We will only use the information about you for the purposes we have stated in this letter. We treat the information confidentially and in accordance with the privacy policy. Only the researcher will have access, possibly supervisor if needed. No name or personal information will be published that will allow you to be recognized.

What happens to your information when we finish the research project?

The information is anonymized when the project is completed / the assignment approved, which is scheduled 15.06.2020. Survey answers will be saved until the master thesis is approved and character set, and no one else will have access to the survey answers.

Your rights
As long as you can be identified in the data material, you are entitled to:
- insight into what personal data is registered about you, and obtaining a copy of the information,
- obtaining personal information about you,
- to delete personal information about you, and
- to send a complaint to the Data Inspectorate regarding the processing of your personal data.

What gives us the right to process personal information about you?
We process information about you based on your consent.

On behalf of University of Stavanger, NSD - Norsk senter for Forskningsdata AS has considered that the processing of personal data in this project complies with the privacy regulations.

Where can I find out more?
If you have questions about the study, or wish to exercise your rights, please contact:
- University of Stavanger, student Mariia Bartakhanova via e-mail m.bartakhanova@stud.uis.no or brthnva@gmail.com and supervisor Carlo Aall via e-mail caa@vestforsk.no .
- Our Privacy Officer: personvernombud@uis.no .

If you have any questions related to NSD's assessment of the project, please contact:
NSD – Norsk senter for forskningsdata AS via e-mail (personverntjenester@nsd.no) or phone: 55 58 21 17.

Best regards,

Carlo All	Mariia Bartakhanova
(supervisor)	(student)

Consent statement

I have received and understood information about the project "Climate and energy planning in Rogaland county" and have been given the opportunity to ask questions. I agree to:

- ☐ Participate in survey
- ☐ Participate in interview

I agree that my information will be processed until the project is completed

---

(Signed by project participant, date)

Survey

Theme: Climate and energy planning

This is a master thesis written within the master program Energy, environment and society at the University of Stavanger. The purpose of this study is to explore current situation with action on climate mitigation at the municipal level in Rogaland county, to find out whether climate measures and instruments are being implemented and map out barriers associated with this work.

NOTE: The term "climate mitigation" in this survey covers both reduction of greenhouse gas emissions and more efficient energy use. // klimakutt = utslippsreduksjon + miljøvennlig energiomlegging

About the person(s). Om personen(e).

1) What are your position and responsibilities? *Hva er din stilling og ansvarsområder?*
2) How long have you been employed by the municipality? *Hvor lenge har du vært ansatt i kommunen?*
3) What is your connection to work on climate mitigation? *Hva er din tilknytning til arbeid med klimakutt?*
4) When did you become involved in work on climate mitigation? *Når ble du involvert i kommunens arbeid med klimakutt?*

Organization and expertise. *Organisering og kompetanse.*

5) Is there one (or more) primarily responsible for municipality's work on climate mitigation? *Er det en (eller flere) hovedansvarlige for kommunens arbeid med klimakutt?*
6) Is there one or more departments responsible for carrying out work on climate mitigation? *Er en/flere avdelinger ansvarlig for å gjennomføre kommunens arbeid med klimakutt?*
7) What do you think is the municipality's scope of opportunity when it comes to action on climate mitigation? *Hva tenker dere er kommunens mulighetsrom når det gjelder arbeidet med klimakutt*?
8) What can municipalities easily achieve? What is harder? *Hva kan kommunene enkelt få til? Hva er vanskeligere å få til?*

9) What is the overall strategy for climate policy in your municipality? *Hva er den overordnede strategien for klimapolitikk i deres kommune?*
10) How much resources does municipality use on work with climate mitigation? *Hvor mye ressurser bruker kommunen på arbeid med klimakutt?*
11) Does the municipality's use of resources on climate mitigation correspond with the actual need? *Står kommunens ressursbruk på klimakutt i forhold til behovet?*
12) What subject areas does the municipality have good expertise in? *Hvilke fagtema har kommunen god kompetanse på?*
13) What subject areas does the municipality need for better expertise in*? Hvilke fagtema har kommunen behov for bedre kompetanse på?*

Cooperation. *Samarbeid.*

14) Does municipality participate in network for climate mitigation? Who are the important partners? *Deltar dere i nettverk om klimakutt? Hvem er viktige samarbeidspartnere?*
15) Is participation in network a relevant/appropriate form of cooperation? *Er deltakelse i nettverk en aktuell samarbeidsform?*
16) Does municipality collaborate with neighboring municipalities on common challenges related to climate mitigation? *Samarbeider dere med nabokommuner om felles utfordringer knyttet til klimakutt?*
17) Do you consider the need to cooperate more across the municipal boundaries? *Vurderer dere behov for å samarbeide mer over kommunegrensene knyttet til klimakutt?*
18) Have you developed information or communication material about the municipality's work on climate mitigation for own elected representatives and residents? *Har dere utviklet informasjons- eller kommunikasjonsmateriell om kommunens arbeid med klimakutt for egne folkevalgte og innbyggere?*
19) Do you consider that there is a need for new / innovative solutions related to the municipality's area of responsibility/work with climate mitigation? *Vurderer dere at det er behov for nye/innovative løsninger knyttet til kommunens ansvarsområder/arbeid med klimakutt?*

Climate and energy plan. ***Klima- og energiplan.***

20) Do you have climate and energy plan (either own or integrated in another plan)? Please, specify when the plan was last revised/revision has started/revision is planned, but hasn't started yet. *Har dere klima- og energiplan (temaplan eler integrert I andre planer)? Vennligst spesifiser når planen sist ble revidert/revisjonen har startet/revisjonen er planlagt, men har ennå ikke startet.*
21) Did you experience lack of time or any other pressing issues, that would force the working group to release the plan sooner than it should have been which might have led to its reduced quality? *Opplevde dere mangel på tid eller andre presserende problemer, som ville tvinge arbeidsgruppen til å frigjøre planen raskere enn den burde vært, noe som kan ha ført til redusert kvalitet?*
22) What actors have the most influence on the contents of climate and energy plan? Please, evaluate on the scale from 0 to 3 (0 = no influence at all, 3 = to a great extent). *Hvilke aktører har mest innvirkning på innholdet i kommunens klima og energiplan?*

    Ordfører
    Kommunestyret/formannskap
    Rådmann/ass. Rådmann
    Øvrig administrasjon
    Næringslivet
    Interesseorganisasjoner
    Innbyggerne
    Andre kommuner

    Skalaverdier 0=Ikke i det hele tatt, 3= Stor grad

23) Does municipality have information about greenhouse gas emissions within its municipal borders, by sources and sectors? *Har kommunen informasjon om egne klimagassutslipp, fordelt på kilder og sektorer?*
24) Does municipality have information about energy system, energy supply and energy consumption in the municipality, and also possible access to environmentally friendly energy

sources? *Har kommunen informasjon om energisystem, energiforsyning og forbruk av energi innen kommunens grenser, herunder tilgang på miljøvennlige energiressurser?*

25) Does the municipality have projections of the emissions if new measures are not implemented, expected energy demand and expected new energy production? *Har kommunen framskrivning av utslippene om det ikke gjennomføres nye tiltak, forventet etterspørsel etter energi og forventet ny energiproduksjon?*
26) How do you perceive the term "ambitious target" (in regard to emissions reduction and energy use)? Do you think the State should be more clear about its expectations towards municipalities? *Hvordan oppfatter dere begrepet "ambisiøst mål" (med hensyn til utslippsreduksjon og energibruk)? Synes dere staten burde være mer klar over forventningene til kommuner?*
27) How would you describe your municipality's ambition level in its work on climate mitigation? *Hvordan vil du beskrive din kommunes ambisjonsnivå i arbeidet med klimakutt?*
28) Are there any specific/unusual conditions in the municipality that make it impossible to set and achieve ambitious reduction targets? *Er det spesifikke / uvanlige forhold i kommunen som gjør det umulig å sette og oppnå ambisiøse reduksjonsmål?*
29) What are your municipality's climate targets? (emissions reduction target and targets for more efficient energy use) *Hva er klimamål i deres kommune? (utslippsreduksjonsmål og mål for mer effektiv energibruk)*
30) Are there any other municipal plans/steering documents that address climate mitigation? *Finnes det andre kommuneplaner / styringsdokumenter som tar for seg klimakutt?*

Measures and instruments; action plan. ***TIltak og virkemidler; Handlingsplan.***

31) Does municipality have an action plan/strategy that concretizes municipality's work with measures on climate mitigation? *Har kommune en handlingsplan/strategi som konkretiserer kommunens arbeid med tiltak for klimakutt?*
32) Does municipality have a god overview of own instruments/measures for reduction of emissions? *Har kommunen oversikt over egne virkemidler/tiltak for utslippsreduksjon?*
33) Do you have a god overview of own instruments/measures/methods for more efficient energy use? *Har kommunen oversikt over egne virkemidler/tiltak for energieffektivisering?*

34) Have you conducted a cost evaluation of measures? *Har dere gjennomført en kostnadsevaluering av tiltak?*
35) Have you assessed the effects of measures? *Har dere gjennomført nyttevurdering av tiltak?*
36) Have you conducted an overall assessment of measures and instruments with the following prioritizing between measures? *Har dere gjennomført samlet vurdering av tiltak med påfølgende prioritering mellom tiltak?*
37) Do (or did) you have a timeline of implementation of measures? *Har dere tidsfrister for implementering av tiltak?*
38) Have you divided responsibilities for implementation of measures? *Er det fastlagt ansvar for gjennomføring av tiltak?*
39) Have you implemented emissions reduction measures? *Har dere gjennomført tiltak for utslippsredukson?*
40) Have you implemented measures related to efficient energy use? *Har dere gjennomført tiltak for energieffektivisering?*

Costs and financing. ***Kostnader og finansiering.***

41) Have you allocated budget resources to work on climate mitigation? *Har dere satt av budsjettmidler til arbeidet med klimakutt?*
42) Is it possible to finance necessary measures by municipality's own resources? *Vil dere klare å finansiere nødvendige klimatiltak på egen hånd?*
43) Have you applied for and received support from Klimasats for your work on climate mitigation? *Har du søkt og fått støtte fra Klimasats for arbeidet med klimakutt?*
44) Have you applied for and received support from ENOVA for your work on climate mitigation? *Har du søkt og fått støtte fra ENOVA for arbeidet med klimakutt?*
45) Are there any other sources of finance that could have been used for municipal work on climate mitigation? *Finnes det andre finansieringskilder som kunne vært brukt til kommunalt arbeid med klimakutt?*

Goal conflicts. ***Målkonflikter.***

46) Have you experienced goal conflicts related to climate mitigation needs and measures*? Har dere opplevd målkonflikter knyttet til klimakuttsbehov og tiltak?*

47) Are there goal conflicts that are particularly difficult to handle for the municipality? *Er det målkonflikter som er særlig vanskelige å håndtere for kommunen?*

Barriers. *Barrierer.*

48) What do you think are the barriers for work on climate mitigation? *Hva tenker dere kan være barrierer for kommunenes arbeid med klimakutt?*

49) What have you experienced as the main barriers in your work? *Hva har dere opplevd som de viktigste barrierene i arbeidet deres?*

50) How would you most likely characterize these barriers? Are they more practical (technical or material aspects, resources and habits), political (system, structure and organization) or barriers related to values (values, worldview and beliefs)? *Hvordan vil dere mest sannsynlig karakterisere disse barrierene? Er de mer praktiske (tekniske og materielle aspekter, ressurser og vaner), politiske (system, struktur og organisasjon) eller verdimessige (verdier, verdensbilde og overbevisninger)?*