The Strategic Direction of Swedish Regional Energy Companies

A study on how external and internal factors affects the strategy and decisions of six regional energy companies

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Den Strategiska Inriktningen För Svenska Regionala Energibolag

En studie om hur externa och interna faktorer påverkar strategin och beslutsfattningen för sex regionala energibolag

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Abstract

The Swedish energy market consists of several different energy companies that possess different ownership structures. The strategical directions of the different energy companies are highly dependent on these ownership structures, due to the fact that the different owners decide the overall aim of the ownership which then is considered when creating a strategy. There are three dominant ownership structures for the energy companies within the Swedish energy market today which are; privately owned, governmentally owned and lastly energy companies owned by a municipality, often called regional energy companies. The strategical direction for the privately and governmentally owned energy companies are somewhat similar, where high profitability often is prioritized combined with a sufficient sustainability. However, the strategical direction of the different regional energy companies differs greatly, depending on several different factors. The aim of this study is therefore to identify the strategical direction for 6 investigated regional energy companies, by examining different internal and external factors affecting this strategical direction.

The study was based on 6 interviews with company representatives from each of the studied companies, where 5 of these representatives possessed the role as CEO and one possessed the role as senior advisor. These interviews was conducted in order to get a good understanding of the strategical direction of each company, and to identify the different internal and external factors affecting these.

The results of this study identified several different external factors affecting the regional energy companies, which was then divided into 6 different categories; Political, Economic, Social, Technological, Environmental and lastly Legal. Different internal factors were also identified and categorized into five different areas, which were Politicians as owners, Aim of ownership, State of municipality, Risk management and Interpretation of municipal law. These factors was then used in order to identify the strategical directions of the studied regional energy companies, which differed substantially. However, there were areas within the different strategical directions that was similar to all investigated
companies. For example, all 6 investigated companies expressed the importance of aligning the energy companies and their offering with the changing customer demand that is highly connected to the increasing digitalization of the Swedish energy market.

**Key words:** The Swedish energy market, Regional energy companies, Strategy, Ownership directives, External factors, Internal factors
Sammanfattning

Studien baserades på 6 olika intervjuer med företagsrepresentanter från varje företag där 5 av dessa intervjuer gjordes med VD:ar och en intervju genomfördes med en Senior advisor. Dessa intervjuer genomfördes för att erhålla en bättre förståelse angående den strategiska inriktningen för varje företag, samt för att identifiera de olika interna och externa faktorerna som påverkar denna inriktning.

Resultaten från studien visade att det finns ett flertal olika externa faktorer som påverkar de regionala energibolagen, och dessa blev indelade i 6 olika kategorier; Politiska, Ekonomiska, Socia, Teknologiska, Miljö och slutligen Juridiska. Olika interna faktorer kunde också identifieras och kategoriseras i fem olika områden, vilka var Politiker som ägare, Mål med ägandet, Kommunens skick, Riskhantering samt Tolkandet av kommunallagen. Dessa faktorer användes sedan för att identifiera den strategiska inriktningen för dem undersökta regionala energibolagen, som skiljde sig avsevärt. Dock fanns det områden inom dessa strategiska inriktningar som var samma för alla undersökta energibolag. Till exempel så uttryckte alla dem 6 undersökta energibolagen
att det är mycket viktigt att möta det nya kundbehovet som är kopplat till den ökande digitaliseringen av den svenska energimarknaden.

**Nyckelord:** Svenska energimarknaden, Regionala energibolag, Strategi, Ågadirektiv, Externa faktorer, Interna faktorer
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1. Introduction

The following section acts as an introduction to the study by briefly presenting the background and problematization, as well as the purpose of the study. Furthermore, the section provides the reader with the formulated research questions, a short description of the commissioner, limitations and delimitations and finally the expected contribution of the study.

1.1 Background

Since the deregulation of the Swedish electricity market in 1996, the market consists of several different energy companies with different strategies and different geographical locations. These companies are mainly present within the areas of electricity production, retailing and distribution, as well as the production and distribution of district heating and cooling and other areas connected to infrastructure, such as broadband and sewages. Depending on the type of owner, the energy companies will possess different ownership directives that is connected to the values and vision of the owners, and these directives directly affects how the companies are managed (Sandoff, 2008). Examples of ownership directives are measures connected to return on equity (ROE) and solidity, where the owner decides a set number for these measures that the company should achieve each year. These financial measures then sets the bar for how the company operates, where higher limits for the different measurements leads to a bigger incentive to take actions that fulfils the requirements, such as increased profits that improves the yield to the owners, or investments in material assets that helps to conduct an expansion. However, the ownership directives does not have to be measures of any kind, but can instead be guidelines that decides the strategic direction of the company, based on the vision of the company from the owners. Examples of these guidelines can be that more renewable energy should be provided to the customer, or that the company should create as many jobs as possible (Sandoff, 2008).

One of the ownership structures present in the Swedish market is governmentally owned energy companies, which is the case with one of the biggest actors in the Swedish energy market, called Vattenfall. This means that the Swedish government decides the direction that the company should take, and that it is up to the executive team to fulfill these directives. A second option is that the energy company is privately owned. This means that the energy company has similar ownership structure and ownership directives as privately owned companies in other sectors. The owners are individuals that holds shares in the company, and the main goal is to work on a commercial basis, where increased profit is prioritized, and examples of such companies in the Swedish energy market are Fortum and E.ON (Lewin, 2006). The third type of ownership structure is when the energy company is owned by one or more municipalities, here called regional energy companies. This means that the ownership directives are provided by the municipality in question, and these directives can differ extensively depending on several different factors, where the directives then affects the strategical direction of the company. For example, the goal to make profit is not as straightforward as it is for the privately owned energy companies. Other factors that can be equally, or even more important, is to operate in a way that benefits the residents of the municipality with regards to social and environmental sustainability. If the energy prices can be decreased for these residents, this is sometimes prioritized by the municipalities, even though this may entail a lower profit margin, due to the fact that it benefits the population within the municipality. The strategy therefore varies greatly between
different regional energy companies, based on internal factors such as the wants from the municipalities. (Lundgren, Stage, & Tangerås, 2013). At the same time, there are several external factors that affect how the regional energy companies are managed. For example, the Swedish energy market as a whole is undergoing a great transformation, where new technology enables an increased digitalization and where a majority of the energy companies in one way or another are adapting their strategies to this development. This makes it interesting to investigate the strategical direction for a number of the regional energy companies in order to identify the underlying internal and external factors behind the strategies, and which trends that are present amongst these companies.

1.2 Problematization
The Swedish energy market consists of a wide variety of different energy companies where the companies possess different ownership directives. These directives are fundamental when it comes to how the energy company are managed and which strategy is used, due to the fact that the directives set the standard for the economic, environmental and social benefit measures. The regional energy companies, owned by different municipalities, are important actors within the market as they possess a substantial amount of the total market shares and are well distributed geographically throughout Sweden. However, their ownership directives, provided by the different municipalities, are not always as straightforward and profit-oriented as the ones provided from the owners of privately and governmentally owned energy companies. The different municipalities have different opinions regarding the use and approach of their energy companies which leads to a vast variety of ownership directives and strategies (Sandoff, 2008).

At the same time, the Swedish energy market is experiencing a great transformation pressure, due to new technology enabling an increased digitalization, as well as a changing customer demand. Thus, there is a great need for energy companies, regardless of their ownership structure to reevaluate and adapt their strategical direction in order to align it with this changing energy market.

This entails that the strategical direction for the regional energy companies are affected partly by internal factors connected to the ownership directives and partly by external factors such as the transformation pressure experienced from the increased digitalization in the energy market and changed customer demand. This results in widely separated strategical directions for the regional energy companies and therefore limited knowledge regarding the different directions. This then becomes problematic for the different regional energy companies. If there is insufficient knowledge regarding the different external factors affecting these companies, it will be difficult for the executive team, as well as for the owners to create a strategy that enables the company to be competitive on the market. Furthermore, if there is insufficient knowledge regarding the internal factors of these companies, it will be difficult for the executive team to understand what the ownership directives provided by the owners are based on, which then can create conflicts.

1.3 Purpose
The purpose of this study is to analyze the different ownership directives and strategies of 6 regionally owned energy companies in Sweden, based on internal and external
factors affecting these companies. In order to facilitate the investigation of this, one main research question and two sub-research questions were formulated, which are the following:

1.4 Research questions

Main RQ: What strategic direction are the regional energy companies in Sweden working towards?

- **RQ 1:** How does internal factors, such as the ownership directives provided by the owners affect how the regional energy companies are managed and what direction they work towards?

- **RQ 2:** How does external factors affecting the Swedish energy market impact the strategic direction of regional energy companies in Sweden?

1.5 Commissioner

The topic of this investigation was suggested by the IT consulting firm Tieto, which is also the employer of this study. Tieto is a provider of IT products and services for a broad variety of industries and have a strong presence on the Nordic market. The company possesses a matrix organization that can be seen in figure 1 below. It is the department called Smart Utility that has commissioned this study, due to the fact that this department specializes within IT solutions towards the energy market. This department is positioned within the category called “Telecom, Media and Energy” seen in the figure below.

![Figure 1: The matrix organization structure of Tieto](image)

As mentioned in the section above, the Smart Utility department specializes in providing energy companies with different IT products and services connected to their area of operations. Smart Utility is the collective name for these solutions that is mainly focused on facilitating an increased digitalization of the energy companies in order to align them with the ongoing transformation the energy market is currently facing. For example, the products and services helps the energy companies to increase the automatization and standardization in order to decrease the costs and thereby increase the margins in areas
where this is necessary, such as within electricity retail. The automatization also
decreases the risks of manual faults within the processes, which is important in areas
were security of supply is essential, such as within electricity distribution.

1.6 Limitations and delimitations
This study aims to focus on 6 regional energy companies on the Swedish energy market
when investigating and analyzing the ownership directives and strategies of these. A
regional energy company was defined as an energy company owned by a municipality,
where the areas of operations where set on a regional geographical area, and not limited
to a single city. The number of regional energy companies investigated had to be
delimitated due to a number of different reasons. The initial approach was to investigate
the 10 largest regional energy companies in Sweden, where the size was determined by
their revenue. To use this approach and investigate the largest regional energy
companies according to their revenue was done due to the fact that these companies have
a substantial impact on the energy market as a whole, making them relevant for
this study. However, this number of companies had to be delimited, where the main
reason for this was that the limited time frame of the project and the purpose of the
study suggested that the investigation of 10 companies would be too extensive. A
comprehensive literature study regarding the different companies investigated was
needed in order to gain vital information and a better understanding of these, and also
to formulate relevant interview questions used to collect empirical material. In depth
interviews with the companies CEO or other employees in the organization with good
insight in the ownership directives was needed to be conducted in order to gain
information about the implementation of these directives that could not be found on
their website or annual reports. These time consuming practices would not be possible
to do in a satisfying way if the number of companies investigated was too vast, and this
was one of the reasons why this became a delimitation.

Another reason for this was that not all the sought after interview subjects wanted to
participate in the study. One reason for this was that it was mainly the CEO of the
company that was contacted and were an interview was requested, due to the fact that it
can be assumed the CEO has thorough knowledge regarding the ownership directives and
how these directives are implemented. The CEO also has constant communication with
the owners of the regional energy company that provides the ownership directives which
in addition makes them an interesting and reliable source to gain information from.
However, due to their busy schedule, it can therefore be hard to obtain an interview with
the CEO’s. If that was the case, an interview with an employee with
similar knowledge as the CEO was requested, where an appropriate time slot for the
interview was simpler to find, and at the same time, the knowledge that the interviewee
possessed was not decreased significantly. If no such employee was found, the company
was discarded from the study, due to the significant importance of obtaining relevant
empirical data from the company investigated. The number of regional energy companies
investigated in the study was therefore delimited to 6, in order to extract and analyze
information obtained from literature studies and in depth interviews in a satisfying way.
Investigating 6 of these companies still gave a good representation of the market, due the
variety of them. It should be mentioned that even though the initial approach was to
invest the largest regional energy companies with regards to revenue,
this was later discarded. It could be identified from the pre-study that only focusing on
the revenue of the company would not necessarily entail the best results, and not lead to
a high degree of generalizability. It therefore became more relevant to investigate
different regional energy companies with regards to revenue, areas of operations and
geographical position in order to obtain the best results.

The scope of this study has been delimited to the Swedish energy market and the
department within Tieto called Tieto smart utilities (TSU). This is due to the fact that the
study was requested by TSU and the Swedish energy market is of great importance to
this department.

In this study, the concept of energy refers to electricity and district heating and cooling,
due to the fact this is provided by all the energy companies investigated. Other forms of
energy and other services provided by the energy companies investigated will also be
mentioned in the report, but not referred to as “energy”. The reason for also
investigating other areas of operations is due to the fact that it has become increasingly
important for the regional energy companies to offer these types of products to their
customers, and a substantial part of the total revenue of these companies originates
from these products.

1.7 Expected contribution
The ownership directives of regionally owned energy companies in Sweden are
constant changing, and due to this, similar previous studies conducted years ago may
not be relevant anymore. Mapping and analyzing the directives and strategies for 6
regional energy companies will therefore contribute to a greater understanding of the
directives and how these are implemented within the organization. The knowledge will
entail a better understanding of the strategic aim of these companies and how this affects
the actions of these. This will help the external service providers to adapt their offerings
to each regional energy company in order to offer relevant solutions based on the vision
of the owners. There is no area in Sweden where these companies are located that is
more interesting to investigate than others. In opposite, the results of the study is
arguably increasingly relevant and representative if the variety of the different
companies are greater. A greater variance, both geographical but also strategical of the
different companies investigated contributes to less homogenous results, which in turn
leads to a better understanding of different perspectives. The strategic direction of the
different energy companies investigated can then be examined which is important for
external service providers to understand in order to offer the right products to these
companies.
2. Methodology

In this section, the methodology of the study is described in regards to different areas. Firstly, the overall research design is explained in order to get an overview of the practices used for collecting the empirical material. This is followed by an in-depth description of the data gathering with regards to the pre-study, literature review and the interviews conducted. Lastly, the quality of analysis is described with regards to validity, reliability and generalizability.

2.1 Research design

The material gathered in order to obtain viable results in this study originated from several different sources. A pre-study was first conducted where studies with a similar topic was investigated, in order to identify information currently present regarding this subject. After that, an extensive literature study was conducted in order to collect viable information that facilitated a better overview of the problem and helped formulate viable purpose and research questions. The literature obtained was mainly focused on the Swedish energy market, as well as relevant theories used in the study. It also included empirical data obtained from annual reports, in order to gain a sufficient overview of the companies investigated and also to identify possible information that was not mentioned in the annual reports. When this was completed, in depth interviews was held both with CEO’s of the regional energy companies, but also with people not connected to the regional energy companies, with expertise within the Swedish energy market. This was done in order to get more extensive information and to decrease the risk of obtaining biased information. It should however be mentioned that the literature study was revisited throughout the project in order to update the knowledge regarding new areas that presented themselves during the time of the study.

An iterative approach was used during this study, meaning that the purpose and research questions was updated throughout the work, due to new vital information that was obtained from research which gave new perspectives to the topic investigated (Blomkvist & Hallin, 2014). As the purpose of this study was to investigate the different ownership directives of regional energy companies in Sweden and how these directives affects the strategy and decision making of these companies, a case study was conducted with an exploratory research approach. As in-depth interviews was conducted in order to obtain empirical material, the study is classified as a qualitative study (Collis & Hussey, 2014). One main research question was formulated with broad focus on the strategic direction. In order to narrow this main research question down and focus on what affects these strategies, two sub-research questions was formulated.

2.2 Data gathering

2.2.1 Pre study

In order to get an initial overview of the problem and to get a better understanding of the Swedish energy market, a pre study was conducted. This was done by researching academic articles and journals regarding similar topics, but also by studying reports regarding the same subject as this study, that was written several years ago.

A in depth interview with a consultant with expertise knowledge regarding the Swedish energy market and the ownership directives of regional energy companies was
conducted in order to get a deeper understanding of these two subjects. The questions that the interviewee was asked during this interview was focused on information that was difficult to attain from the initial literature review, such as information regarding strategies and decision making within the regional energy companies investigated. In the end of the interview, the interviewee gave their opinion regarding the topic of this study, and what to focus on when conducting the in depth interviews with the CEO’s.

2.2.2 Literature review
Initially, a literature study was conducted. This was done in order to get a good overview of the problem, to see if similar research had been conducted previously and to find credible sources that could be used in the study. Initially, the literature studied was focused on the Swedish energy market in order to gain a deeper knowledge about the market as a whole. Theories and frameworks suitable for the study was also obtained at an early stage. These sources were mainly gathered from databases such as google scholar and KTHB Primo to increase the credibility of them and to find sources within the subject that possess a suitable academic level. Secondary sources used to confirm the facts obtained from the primary sources was also gathered from books, websites and different reports, and the credibility of these was examined thoroughly in order to get valid and reliable information.

Annual reports gathered from the websites of the different regional energy companies acted as important secondary sources due to several different reasons. They provided a thorough overview of each company investigated, giving valuable insights to how the companies was managed, which financial measures that was set by the owners and whether these measures was fulfilled or not. To study these annual reports in depth was therefore done, in order to gain valuable knowledge of the companies, before conducting the in depth interviews with the CEO’s. The interviews was planned well in advance, in order to enable this extensive literature review and by doing this, information, such as ownership directives and key numbers that could be found in the annual reports was not asked about in the interviews. Instead, the focus was on how these ownership directives was implemented and what impact they had on the strategy and decision making in the organization. This meant that information that could not be found in the annual reports was obtained from the interviews, and also that the short period of time with each CEO was utilized in the best possible way.

2.2.3 Interviews with CEO’s
When it comes to primary sources, several different in depth interviews was conducted. These interviews was held with the CEO or other employees with considerable insight to the company’s ownership directives in order to identify which directives that the company work towards and how these directives are actually implemented into different strategies. Of the 6 regional energy companies investigated, 5 CEO’s were interviewed. The sixth interviewee had the position as “senior advisor” and is hereinafter going to be referred to as “CEO”. This may be considered as misleading, but this simplification of the interviewee’s title is only conducted in order to minimize any misunderstandings and to simplify the referencing in the thesis. For example, it is easier to say “as stated by a majority of the interviewed CEO’s” instead of saying “as stated by a majority of the CEO’s and the senior advisor”. This change of title was also conducted in order to minimize the risk of exposure for any of the interviewees. The interviews had a semi structured nature, which is preferable to use when the direction of the topic is well
defined, but there is a desire for interviewee to talk freely regarding the subject (Blomkvist & Hallin, 2014).

The interviewee was also sent the questions beforehand to enable a more time efficient interview and more extensive answers due to an increased possibility to prepare the answers. All interviews was audio recorded if the interviewee agreed upon it beforehand. This was done in order to minimize any uncertainties and misunderstandings which then facilitated the analysis of the interview. When conducting the actual interviews, the interviewee was informed about the subject of the study and how they would contribute to the results of it. Simple initial questions was asked, such as the academic background of the interviewee which is a practice used in order to make the person being interviewed more comfortable, which then helps to answer more complex questions later on in the interview (Blomkvist & Hallin, 2014). The interviews with the CEO's were conducted over telephone due to the large number of interviewees and the geographical distance between them. When contacting the interviewee, the first request for an interview was sent by e-mail and the sought after person was given one week to answer this e-mail. If one week went by and no answer had been provided, the subject was contacted by telephone to make sure that the first request was received.

2.3 Quality of analysis
In order to obtain satisfying results from the analysis of the study, the validity, reliability and generalizability of the study needs to be taken into consideration. These three concepts will therefore be described in the sections below, and the fulfillment of them will be discussed in order to determine the quality of the analysis.

2.3.1 Validity
Validity describes how well a research actually studies what it is intended to study (Patel & Davidson, 1994). Thusly, if there is a match between what should be researched, stated in the purpose, and what is actually researched during the time of the project, the validity is considered high. However, there are several different parameters that can affect the validity of a study in a negative way, and research errors is one of those. For example, if insufficient practices are used, or if the sample investigated is not a good representation of the reality, the validity of the study is lowered considerable (Collis & Hussey, 2014).

As this study aims to investigate and analyze the ownership directives of 6 different regional energy companies in Sweden, the focus on the literature studied and the interviews conducted was focused within this area. In order to ensure that the interviewee had sufficient knowledge regarding the directives and how these directives was implemented into the organization, a majority of the interviewees positioned at the regional energy companies was the CEO of the company. As the focus of this study was on the 6 regional energy companies described previously, and interviews with employees at all these companies was conducted and analyzed, the validity of the study is considered high. There is however a risk when interviewing the CEO, or other employees at a company, that the answers provided to the questions might be biased. The interviewee positioned at the company might want to mediate only the positive sides of the company, and not highlight the areas of improvement, which then lowers the
validity of the study. It is possible that this risk increases when interviewing the CEO and other employees which is positioned high up in a company, due to the fact that these have the utter most responsibility for the strategies and results of the company and therefore wants to mediate the positive results of their work, and not focus on decisions that have yielded less positive results. In order to prevent this, and thereby increase the validity of the study, extensive literature studies on the companies investigated was conducted before the interviews were performed. This entailed that the interview questions were formulated in a way that sought to result in answers that was relevant to the study and helped answer the research questions, and at the same time, question the answers during the interviews if there was a possibility that they were answered in a biased way. This worked as a sort of triangulation that was also used after the interview, were statements relevant to the results of the study was controlled and confirmed from secondary sources, such as the company's annual report, and this triangulation therefore led to a higher validity (Gibbert, Ruigrok, & Wicki, 2008).

2.3.2 Reliability
The reliability of a study is connected to the results of it and focus on if these results would be the same if the study was repeated. It is also a measure on how well the results and conclusions of the study would stand up if they were scrutinized. Thusly, if the study would be repeated and the results would be the same, and if these results would be perceived as relevant if investigated more in detail, the reliability would be considered high. The reliability is also connected to the validity where a high reliability is necessary in order to have a high validity (Alasuutari, Bickman, & Brannen, 2008).

As mentioned before, the interviews conducted at the companies was with employees with a position high up in the company, such as the CEO or other employees working closely with the CEO. Naturally, these employees are the ones that possess the greatest knowledge about the ownership directives and how these are implemented within the company. If the study would have been repeated, but interviews with other employees working close to the initial interviewee had been conducted, it can therefore be presumed that the answers provided would have been similar to this study, increasing the reliability of it. However, it should also be mentioned that if the study is replicated, it is of utter most important that the same regional energy companies are studied. Due to the nature of the topic investigated, the ownership directives of the different regional energy companies varies greatly. It can therefore not be assumed that similar answers will be provided if different regional energy companies are studied regarding their ownership directives.

The reliability is also affected by the semi-structured interview approach used for collecting empirical data. When semi-structured interviews are conducted, there will always be room for the interviewee to make their own interpretations of the question asked. The answers provided may therefore vary when conducting interviews with different employees with similar positions at the same company, which then leads to a lowered reliability. There is also no guarantee that the interviewee provides completely honest answers to the questions asked (Saunders, Lewis, & Thornhill, 2009). As mentioned previously, this is somewhat prevented by conducting an extensive literature study regarding the regional energy company, both before and after the interview, in
order to substantiate the answers with the help of triangulation which then increases the reliability (Collis & Hussey, 2014).

2.3.3 Generalizability
As mentioned previously, the nature of this study entails that the generalizability of the ownership directives for different regional energy companies, and how these are implemented is low. One of the major problems that external consulting firms providing solutions to the Swedish energy market faces is that these directives, and thereby strategies varies greatly, making it difficult to provide the right solutions. Therefore, it cannot be stated that the ownership directives and their effects on the 6 regional energy companies studied will be the same as on 6 other similar energy companies. However, some of the results of this study is possible to generalize. For example, general trends for the Swedish energy market as a whole can be obtained, with the focus on regional energy companies. However, the generalizability would increase if a greater number of regional energy companies were part of the investigation, and also if energy companies with different ownership structures were included.

The results can also be generalized in the sense that they are viable to different external consulting firms providing solutions to the energy sector, not just Tieto. The literature study, as well as the questions asked during the interviews had a general nature, where there were no focus on only Tieto, making the results relevant to any stakeholders of the Swedish regional energy companies.
3. The Swedish energy market

This section provides the reader with an overview of the Swedish energy market as a whole. Firstly, the Swedish electricity market is described with regards to the different production methods, as well as pricing of electricity, regulatory aspects and authorities affecting this market. This is followed by a description of the district heating market, where the structure of this market is explained with regards to production, competitiveness and pricing. Lastly, the ownership structure of privately/governmentally owned energy companies and regional energy companies is explained in detail.

3.1 The Swedish electricity market

3.1.1 Deregulation of the electricity market

The Swedish electricity market is today a competitive market that consists of several different actors, with different ownership structures that provides different types of energy to the end consumer. However, this has not always been the case, and it was not until the deregulation of the Swedish electricity market in 1996 that different actors gained the possibility to compete at equal terms within electricity production and retailing. The main purpose of the deregulation was to increase the number of different actors in the market, and thereby increase the possible choices for the end consumers, and at the same time strengthen the end consumer’s position in the Swedish electricity market. Furthermore, the deregulation ensured that the production resources was used in an effective way and that the actors present in the market overall worked towards increased efficiency (Brodin, o.a., 2016). The distribution part of electricity still consists of different regulated monopolies, where the main Swedish national grid is owned by the Swedish government, and operated by a company called Svenska kraftnät. Besides the main grid, there are 6 regional grids which are owned by large power generators, and 175 local grids with three different ownership structures, which are private owned, state owned, or owned by the municipality in which the grid is positioned (Wilkens, Johansson, & Åkesson, 2011).

3.1.2 The market today

As mentioned previously, the Swedish electricity market currently consists of several different energy companies with different ownership structures, which mainly operates within the areas of electricity production, retail and distribution. These three areas are needed in order for the energy companies to provide electricity to the end consumers. It should also be mentioned that the term “Swedish electricity market” can be problematic to use due to the complexity of this market. Though the production and distribution is present within Sweden, the retailing of the electricity is done on the Nordic market thru the Nordic market place for electricity retailing called NordPool, meaning that electricity produced in Sweden is not necessary only used in Sweden.

Production of electricity is the first step in the chain, and is essentially when electricity is produced by setting a generator in motion with different technologies. Historically, the Swedish electricity production has been dominated by the use of hydropower, and looking as far back as 1970, almost all of Sweden’s electricity was produced using this method. However, this has changed over time, and even though the majority of the
electricity produced in Sweden today comes from hydropower combined with nuclear power, there are now several other sources from which electricity is obtained from.

![Image](image_url)

*Figure 2: The development of the Swedish electricity production (Byman, 2016)*

As mentioned previously, one dominant source of electricity currently used in Sweden is nuclear power, and combined with hydropower, it stands for 80% of the total Swedish electricity production. The implementation of nuclear plants was mainly conducted in the mid 70’s and thereby entailed an increased use of this electricity source, which since have worked as an important source when other methods for producing electricity have been limited, mainly due to factors related to poor weather conditions. It should also be mentioned that similar to nuclear power, hydropower is also an important “backup” source of electricity when weather conditions does not favor other electricity production methods, such as wind power due to the fact that hydropower is not as weather dependent as other electricity production sources (Byman, 2016). It should however be mentioned that hydro power using large water to generate electricity somewhat is weather dependent due to the need for precipitation in order to fill up the water reserves.

The remaining 20% of the Swedish electricity production that is currently not produced by hydro- and nuclear power are instead produced by a number of different production methods. The method with the most substantial increase of electricity produced during the last couple of years has been within wind power, which currently covers approximately 10% of Sweden’s electricity demand. The electricity produced from wind power has increased with more than 1000% during the last 10 years (Byman, 2016) and from 2014 to 2015, the electricity produced from wind power increased with approximately 43% in Sweden (Brodin, o.a., 2016). The other 10% of electricity produced is mainly obtained from combined heat and power (CHP) (Byman, 2016).

There is still a small amount of electricity produced in Sweden that does not come from these 4 electricity sources previously mentioned, and one worth mentioning is solar power. Due to a decreased price for the solar modules, due to increased knowledge regarding the technology as well as subsidies provided by the government, and the increased interest from end consumers to produce their own electricity, the usage of
solar cells have increased substantially during the last couple of years. There are however difficulties with using solar power as an electricity production method, especially when it is implemented in a country with a similar geographical position as Sweden. In the summers, it can be argued as a viable option to use, but during the winters when the sunlight is substantially limited and where snow is frequently present, blocking the solar panels, the solar panels generate an extremely limited amount of electricity not substantial enough to make it a viable option (Byman, 2016).

It should also be mentioned that approximately 60% of the electricity produced in Sweden originates from renewable resources, such as hydro, wind- and solar power. It can be identified that a majority of the investments within electricity production capabilities are invested within renewable electricity. At the same time, the investments within electricity production from fossil fuels are decreasing, which can be identified in the table below:

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>9,363</td>
<td>9,363</td>
<td>9,531</td>
<td>9,528</td>
<td>9,714</td>
</tr>
<tr>
<td>Fossil</td>
<td>4,793</td>
<td>4,636</td>
<td>4,635</td>
<td>4,866</td>
<td>4,501</td>
</tr>
<tr>
<td>Renewables</td>
<td>22,307</td>
<td>23,354</td>
<td>24,107</td>
<td>25,155</td>
<td>25,786</td>
</tr>
<tr>
<td>- Hydro</td>
<td>16,197</td>
<td>16,203</td>
<td>16,150</td>
<td>16,155</td>
<td>16,184</td>
</tr>
<tr>
<td>- Biofuel</td>
<td>2,870</td>
<td>3,036</td>
<td>3,080</td>
<td>3,082</td>
<td>2,978</td>
</tr>
<tr>
<td>- Wind</td>
<td>2,899</td>
<td>3,745</td>
<td>4,470</td>
<td>5,420</td>
<td>6,029</td>
</tr>
<tr>
<td>- Waste</td>
<td>325</td>
<td>346</td>
<td>364</td>
<td>419</td>
<td>441</td>
</tr>
<tr>
<td>- Solar</td>
<td></td>
<td>16</td>
<td>24</td>
<td>43</td>
<td>79</td>
</tr>
<tr>
<td>Total</td>
<td>36,463</td>
<td>37,353</td>
<td>38,273</td>
<td>39,549</td>
<td>39,951</td>
</tr>
</tbody>
</table>

*Table 1: The development of the production in GWh for renewable- and fossil electricity sources (Brodin, o.a., 2016)*

After the electricity has been produced from the variety of resources used in Sweden, it gets distributed to the consumers. This is done through the extensive electricity grid that stretches across the country, a grid that is positioned both over and under the ground. In total, the length of the entire electricity grid is 559,000 km, and is divided into three different levels, which are; national network, regional network and local network.

The national network is also called “the core grid” and is used to transport electricity throughout the country, over long distances. This is enabled through the usage of high voltage levels and a grid that spreads across vast geographical areas. This network is owned by Svenska kraftnät (SvK) which is a governmentally owned company that is responsible for the maintenance as well as the balance between production and consumption connected to this grid. The electricity from the national network is then distributed to the smaller regional network, where the electricity either gets directly distributed to major electricity consumers, or passed on to the even smaller local networks (Brodin, o.a., 2016). The regional grid is owned and operated by the three
biggest energy companies in Sweden, namely E.ON, Vattenfall and Fortum (Andréasson, Gynnerstedt, & Håkansson, 2014). The local network then transports the electricity from the regional grid to the end consumers within the region that this local grid is present on, such as a municipality. The owners of this grid is the municipalities themselves, and these municipalities are therefore in charge of the operations and maintenance of these grids (Andréasson, Gynnerstedt, & Håkansson, 2014). There is currently 162 different electricity distribution companies present on the Swedish electricity market if the national, regional and local distribution companies are combined (Brodin, o.a., 2016).

There is however one step that is required after the electricity is produced, and prior to it being distributed to the end consumers, which is the retailing of the electricity. Ever since the deregulation of the Swedish energy market in 1996, the trading of electricity has been conducted on a free competitive market, where a marketplace for this electricity trading was implemented, called Nord Pool (Wilkens, Johansson, & Åkesson, 2011). Nord Pool is located in Oslo, but the marketplace, and thus the wholesale market is open for the Nordic and Baltic countries. The physical trading of electricity contract is conducted on the marketplace called Nord Pool spot, which is jointly owned by the Nordic and Baltic countries. More specifically, the trading of electricity is conducted on a sub department to Nord Pool spot, called Elspot where the electricity is priced and traded using an auction based system. The pricing of the electricity is decided using a “day ahead” market system, where the buyers and sellers of electricity suggests the prices that they seek to sell and buy the electricity for, as well as the quantity of electricity they wish to sell/buy, and this is done on an hour to hour basis. These bids must be placed before 12 a.m the day before the electricity is priced, and these different prices are then collected by Nord Pool and compared against each other. When the different prices are aggregated, two different curves are created where one represents the demand and the other one represents the supply, and the hour to hour prices are determined by the intersection between the two curves. The actors that participated in the trading the gets informed regarding the amount of electricity that these actors have bought or sold, as well as the price that this electricity was traded for (Andréasson, Gynnerstedt, & Håkansson, 2014).

There can however be a difference in price depending on where in Sweden the actors that are present on Nord Pool spot are located. This is due to the fact that Sweden is divided into four different bidding areas, which can be seen in figure 3, and this practice is called market splitting. This structure was implemented in 2011 in order to minimize the congestion within the Swedish transmission network. The need to transmit electricity between different regions is needed when production in one area is high, and the demand for a different area is high as well. If large amounts of electricity is needed to be transferred, bottlenecks might be created, which is also called congestion.
The bidding areas are present in the Nordic and Baltic countries, and the transmission lines connecting them (Brodin, o.a., 2016)

The pricing for each bidding area is determined from the demand and production of electricity within this area. If the demand and production is similar between different areas, the price for electricity will be the same, and these two areas are then called a price area. It is not uncommon that the whole of Sweden is a price area, meaning that the price for electricity is the same, no matter where the electricity is bought or sold, and in 2015 there were one joint price for the entire country 86% of the time (Brodin, o.a., 2016). The electricity prices for the four different bidding areas in Sweden in 2015, as well as the average prices in 2014 and 2015 can be seen below in figure 4.

Figure 4: The spot prices for different bidding areas in 2015, as well as the average spot price in Sweden for 2014 and 2015 (Brodin, o.a., 2016)
3.1.5 The energy market inspectorate

As mentioned previously, the Swedish electricity retail market is a free competitive market, meaning that all actors within this market is free to enter and compete against each other on equal terms when trading electricity. This structure entails that no external regulator have to supervise the pricing and competiveness in order to prevent unfair competition against different actors, or that the electricity traded within this market is priced to high, or to low. The free competitive market structure is also present in the electricity production market, meaning that the entry barriers are low and new producers are free to join the market and compete against existing actors. However, this free competitive market structure is not present in the markets that affects the distribution of electricity in Sweden, and instead of being a free competitive market, the distribution market has a natural but regulated monopoly structure which means that it is not viable for several different actors to operate within the same geographical area from an economic standpoint. This entails that all actors that are present on the electricity distribution market operates within a certain geographical area, where there is no other actors present and this sole right to operate in these areas are called a concession (Brodin, o.a., 2016).

The goal of having a free competitive market structure for the production and retailing of electricity is to ensure that production resources are utilized in an effective way and to increase the options for the consumers when choosing which company that should produce and sell the electricity they produce, hence strengthening their position on the market. Due to the fact that the distribution market consists of actors that possess monopoly advantages, there is a need for an external regulator to regulate this market, in order to prevent unfair competition, and unfair pricing (Brodin, o.a., 2016). In 2008, a regulator called the energy market inspectorate (Emi) was created by the Swedish government with the main purpose to monitor and regulate the Swedish energy market in order to prevent an unfair market and to make sure that the laws and rules were followed by the actors operating within this market (Energimarknadsinspektionen, 2017) (Brodin, o.a., 2016).

Emi is still operating on the Swedish energy market with the same aim as when it was started in 2008, and is monitoring and regulating several different areas when it comes to the energy market as a whole, including the electricity distribution companies. Firstly, electricity distribution companies cannot be owned and operated by companies that also owns and operates electricity production and retailing. This is due to the fact that this type of co-ownership may result in cross-subsidization between the different parts of the company that leads to unfair competition. The financial results of the network activities for distribution companies must also be presented separately from other practices in order to facilitate the monitoring of these activities. Swedish law also states that all companies engaged in network practices must create and present a monitoring plan that then can be examined by Emi. The overall purpose of this plan is to ensure that the distribution companies does not favor any particular actors on the Swedish energy market, leading to unfair competition (Energimarknadsinspektionen, 2017) (Brodin, o.a., 2016).
Another area in which Emi acts as a regulator and supervisor is within the maintenance and operation of the Swedish national electricity grid. As mentioned previously, the Swedish national electricity grid is owned by the Swedish government, and the company that is responsible for the operations and administration connected of this grid is called Svenska kraftnät (SvK). The purpose for SvK is to manage the Swedish national grid in a way that enables it to be cost effective, environmentally friendly and operationally safe, and Emi is the regulator that scrutinizes SvK in order to ensure that these operational goals are achieved (Brodin, o.a., 2016).

The financial results of both SvK and other network companies are regulated by SvK as well, with the help of an implementation of a revenue cap for these companies. This revenue cap states how much each of the distribution companies may possess in revenue during a set supervisory timeline, which is often set to four years. This revenue cap is used in order to prevent the network companies to utilize the advantages connected to a natural monopoly structure of the market, such as unfair pricing for the distribution of electricity (Energimarknadsinspektionen, 2017) (Brodin, o.a., 2016).

Emi also possess the responsibility to monitor the national grid in regards to the functioning level of it, and to ensure that the grid have a secure supply capacity. This is analyzed by investigating data regarding the amount and time span of power cuts in Sweden each year and the network companies have an obligation to provide Emi with this data. The assessment of the quality of electricity distribution also works as a foundation for Emi when deciding the revenue cap for the distribution company in the beginning of a new supervisory timeline (Brodin, o.a., 2016).

Overall, the purpose of Emi is to monitor and regulate the Swedish energy market where this is needed, and due to the natural monopoly market structure of the Swedish electricity distribution market, this is the main area that is regulated. However, Emi also operates in the electricity production and retailing market in order to facilitate the free competitive market structure that is currently present. For example, one of the products that Emi provides to the electricity consumers is Sweden’s only independent price comparison website that helps the consumers to choose the most suitable electricity provider depending on the type of household they possess. This enables the customers to gain a stronger position in the market, by increasing the available choices of electricity provider which entails that the market itself becomes more competitive. Furthermore, Emi aims to monitor the Swedish energy market in order to identify the future direction of it and how this will affect the energy consumers, as well as increasing the consumer’s awareness and participation on the energy market, in order to prepare them for the increasing digitalization of it (Energimarknadsinspektionen, 2017).

3.2 The Swedish district heating market
3.2.1 Introduction
The heating market in Sweden is together with the electricity market considered as the dominant market for energy in Sweden, where 48,8 TWh of energy were produced in 2015. This market can be divided into four different sub-markets based on the technology used as the energy source for the heating, which are; heat pumps, biofuel boilers, electricity heating and district heating. The market shares for each of these
markets varies greatly, were the district heating technology is the dominant one, with over 50% of the heating demand covered by this technology. Looking at the history of district heating in Sweden, it can be seen that this method for acquiring energy is substantially younger than the use of electricity and it was not until the 60’s that district heating became increasingly popular to use for heating private and industrial properties. Before district heating was developed, there were several other methods used in order to heat different facilities, and in the beginning of the 20th century, open fireplaces were the main source of heating. As technical knowledge regarding heating methods increased, combined with an increasing energy demand in Sweden, new heating methods were developed. District heating was one of these methods, and the first district heating systems used the incineration of coal in order to heat water, that then was used in order to heat different facilities. The next step in the development of district heating was the use of oil fired burners, where large burners was installed, and each one of these burners could provide several households and industries with energy. The usage of oil as a fuel was later reconsidered in the 70’s due to the worldwide oil crisis, and the main goal became to decrease the oil dependency in society, including the district heating market. Alternative fuels were used, and the usage of biofuels for the district heating market that started in the 90’s became the standard fuel to use, and is still today the main fuel used in order to generate energy in the Swedish district heating market (Sköldberg & Rydén, 2014).

One important aspect of the Swedish heating market in general is its contribution to a more sustainable society. Sweden is known as a country with ambitious vision and goals for increased sustainability in present day as well as in the future, and due to the benefits connected to environmental impact and cost efficiency of energy from heating, this energy source is of great importance in order to fulfill these goals. This development in sustainability can also be identified for district heating, where an increased amount of energy from this source is currently produced from biofuels, instead of using fossil fuels, and this has led to an decrease of carbon emissions, and thereby an increased environmental sustainability (Sköldberg & Rydén, 2014). The different resources used in order to produce energy within the district heating process in 2015 is illustrated below in figure 5.
3.2.2 Natural monopoly structure

District heating in Sweden is provided by several different energy companies that possess different ownership structures, and there is a strong linkage between the electricity and district heating market, meaning that factors affecting the electricity market also affects the district heating market in Sweden. Before the deregulation of the Swedish electricity market, it was mainly energy companies owned by municipalities that provided district heating. When the deregulation was implemented, this changed rapidly and mergers and acquisitions entailed that privately owned companies joined the market. The companies present on this market possess a natural monopoly on district heating due to the grid based structure of the system. Unlike the electricity grid, the district heating grid is at most regional, but most often local due to the difficulties in transporting hot water over long distances (Aronsson & Hellmer, 2009). Even though the district heating market is considered to be an open market, the grid based system is connected to high sunk costs and low profit margins which does not make it economically viable for companies that are not currently present on the market to connect to the grid in an area where there already is an actor present within the district heating market (Magnusson, 2012). This natural monopoly structure means that there is a need for supervision by external parties, and similar to the Swedish electricity market, it is Emi’s role to make sure that the pricing of energy from district heating is priced fairly and that the position of the consumers are strengthened. It should however be mentioned that there is no regulation or law that regulates the pricing of district heating, which entails that energy companies can price this energy however they want.

The natural monopoly structure also means that the main competitors for the energy companies providing district heating within an specific area is the companies providing different heating methods for the end customers, such as heat pumps or geothermal heating devices. If there are several different options available for the end customers, the energy companies providing district heating must take this into consideration and provide competitive prices. However, if other options are limited for the end customers
within an area, the energy company providing district heating might use the advantages connected to their monopoly position and increase the prices for district heating. There is also somewhat of a “lock-in” effect connected to the chosen method of heating that the customers uses in the sense that there is a cost for switching to a different heating method. If for example a customer is being provided with energy from an energy company using district heating, and this customer seek to change heating method to a different energy source, there is a transition cost that the customer will have to pay in order to perform this transition. The natural monopoly structure and transition costs is therefore some of the reasons to why it is important for an external party, such as Ei, to scrutinize the Swedish district heating market, and the actors within it in order to strengthen the consumers position on the market (Aronsson & Hållmer, 2009).

Furthermore, the natural monopoly structure of the Swedish district heating market does not only affects the pricing of the energy, it also affects the offerings of the different companies present on the market. Due to the fact that there is no competition present between the different actors in the market since they are active within different geographical areas, the offerings of these companies does not affect each other. This entails that innovation might be lacking within this market since innovation from a district heating company in one area does not put any market pressure on the district heating companies in other areas. The only factor that puts market pressure on an energy company providing district heating is the alternative heating methods previously mentioned. This results in that the natural monopoly structure of this market and the results of it varies greatly within Sweden, depending on alternative heating methods present in the consumer’s geographical area (Aronsson & Hållmer, 2009).

3.2.3 Prisdialogen
There have been further initiatives that have been implemented in the district heating market in order to strengthen the consumer’s position, besides Ei’s investigation of the market. One of these initiatives is called Prisdialogen, jointly created by Riksbyggen, Svensk Fjärrvärme and SABO with the main goal to increase the transparency of the district heating market when it comes to the pricing of the heat. This is done in order to obtain a more stable and predictable pricing, which then increases the customer’s strength in the market, and at the same time increase the trust between the consumers and the district heating companies (Prisdialogen, 2017).

Before Prisdialogen was started, there were low transparency in the heat market regarding the pricing of district heating and why the price varied between different energy companies. This weakened the consumer’s strength on the market due to the lack of transparency and knowledge, which then led to that the natural monopoly structure of the market then could be utilized by the energy companies. By arranging meetings between the energy companies and their customers, a dialog can be kept between the two parties. This dialog enables the energy company to argue for the current price of district heating, and the customers can at the same time communicate to the energy company their opinions regarding the price. Prisdialogen also increases the predictability of the district heating market, and the consumers will at an early stage be informed if any changes are made regarding the pricing. This makes it possible for the customers to plan ahead with this new price in mind and then decide if they want to
continue being provided with district heating, or if the new price is not economically viable and other energy sources should be used instead (Prisdialogen, 2017).

It is not compulsory for a district heating company to be a part of Prisdialogen. If a company that is not a member wants to join, the main customers of the energy company is invited to an initial meeting where the concept is explained. If the customers agree on joining this initiative, then the process of creating a dialog by conducting several meetings during the year can be initiated, which may or may not result in a change in price of district heating (Prisdialogen, 2017).

3.3 The three largest energy companies
Fortum is a privately owned limited company, and one of Sweden’s largest energy companies that are mainly operating within the production and retailing of electricity and the production of district heating. Fortum were previously active in the distribution of electricity as well, but this part of the company was later sold, and transformed into a company called Ellevio. Their offerings and services are primarily targeted towards households, different industries as well as local electricity companies. The electricity is mainly produced using hydro and nuclear power and Fortum are co-owners of two nuclear facilities in Sweden, called Oskarshamn and Forsmark. The production of district heating is managed by Fortum Värme, which Fortum Sverige are co-owners of together with the city of Stockholm (Fortum, 2017). The main direction that Fortum work towards is “engage our customers and society to drive the change towards a cleaner world” and several different strategies and practices are implemented in order to facilitate this goal. The strategies are divided into four different main areas which are; drive productivity and industry transformation, create solutions for sustainable cities, grow in solar and wind and lastly to build new energy ventures and these combined are used by Fortum in order to become a cleaner energy company that is prepared for the future energy market (Fortum, 2017).

Equal to Fortum, E.ON is also a privately owned limited company and E.ON produce and distribute energy in the form of electricity and district heating as well as providing their customers with products and services connected to the digitalization of the energy market. Their main goal is to be the energy company with the highest customer satisfaction that offers these types of products, connected to digitalization and sustainability (E.ON, 2017). In 2014, it was decided that the company should be divided into two different companies in order to meet the challenges of the constantly changing environment of the Swedish energy market, with the focus on new technologies and the ongoing digitalization in order to come closer to achieving their goals. The division of the company into the two different parts was implemented in the shift between 2015/2016 where the original company E.ON focused on the change in the Swedish energy market mentioned previously as well as the distribution of electricity thru smart grids, whereas the new company, called Uniper, focused on the more traditional practices that was managed by E.ON previous to the separation into two companies, which mainly is within energy production and retailing (E.ON annual report, 2015).

Unlike, E.ON and Fortum, Vattenfall is an energy company solely owned by the Swedish government. However, even though the owner is the Swedish government and the
company is not privately owned, the direction of the company is similar to the ones of Fortum and E.ON. Vattenfall and the privately owned energy companies are similar in the sense that they are all active in electricity production and retailing, as well as the production of district heating. One operational area that differs between the privately owned energy companies and Vattenfall is the distribution of electricity which Vattenfall is present within, but both Fortum and E.ON has deviated from their core business.

The main goal for Vattenfall is to provide their customers with products and services that are aligned with the future change of the Swedish energy market, with the focus on sustainability. At the same time, the company aims to be financially profitable and stable, and generate a merchantable yield to their owners (Vattenfall, 2017).

3.4 Three different ownership structures
3.4.1 The three largest energy companies
The deregulation of the Swedish electricity market opened up the opportunity for several new actors to enter this market. This led to a rapid increase of energy companies in Sweden, which focused within the areas of energy production, retailing and distribution. The large number of different actors within the market is still present today, and a number of different similarities between these can be identified, such as the areas in which they operate. There is however one important difference between the actors in the Swedish energy market, which is their ownership structure, which in turn affects the direction of the company. There is essentially three different ownership structures amongst the different actors, and the first type of ownership structure present in the Swedish energy companies is the privately owned ones. There are two privately owned energy companies that is currently dominating the energy market in Sweden, which are Fortum and E.ON, where Fortum had a total revenue of 33 billion SEK in 2015, and E.ON had a total revenue of 34 billion SEK the same year. The ownership structure and overall structure of these two companies varies greatly, even though there are some similarities between them that can be identified. Both Fortum and E.ON are parent companies present on the European market, and the companies active in Sweden are subsidiaries to the parent company.

Since 1998, Fortum is listed on Nasdaq Helsinki, making the shareholders one important aspect of the ownership structure, and the majority of the shares (50,8 %) are currently owned by the Finish government. There are several different governing bodies in Fortum that is responsible for the decision making and operations of the company, which are; Fortum executive management, president and CEO, board of directives and general meeting of shareholders (Fortum annual report, 2015).

As mentioned previously, E.ON was divided into two different companies in the shift between 2015/2016. Due to the difference in vision and operations of E.ON and Uniper, the two companies has two different corporate governance bodies that are responsible for the decision makings and operations for the respective companies. E.ON is also a limited company, where E.ON Nordic is the sole owner of the stocks in E.ON Sweden (E.ON annual report, 2015).

The second type of ownership structure on the Swedish energy market are the energy companies owned by the Swedish government, and the dominating company within this
category is Vattenfall, that had a total revenue of 164 billion SEK in 2015. Vattenfall is a limited company where the Swedish government owns 100% of the shares in the company and are therefore the sole owners. The government are also the ones that provides Vattenfall with the direction that the company should work towards, and which financial measures that should be achieved. The main corporate governance bodies that are responsible for the decision making and operations for Vattenfall are; general meeting of the shareholders, the board of directors and CEO and executive management (Vattenfall annual report, 2015).

Due to their high revenues and large market shares within the Swedish energy market, Fortum, E.ON and Vattenfall are often referred to as “The three largest energy companies”.

3.4.2 The regional energy companies

The third type of ownership structures, that are the focus of this study, are energy companies owned by different municipalities in Sweden. These are either called regional energy companies or local energy companies, and the classification of them generally depends on their geographical area of operation, where the regional energy companies operates on a larger geographical area compared to the local ones. However, the classification of these companies can also be based on their total revenue. This means that energy companies operating on a vast geographical area, classified as a regional energy company, might instead be classified as a local energy company if the revenue is taken into consideration, and if this revenue is low. The same applies the other way around, where energy companies operating on a small geographical area, classified as a local energy company, can be classified as a regional energy company if the revenue is taken into consideration and this revenue is high (Lagergren, 2017).

As mentioned previously, these energy companies are owned by the municipalities, and the directions of these companies are therefore decided by the politicians within the municipality. The board of directors for each regional energy company consists of a number of these local politicians, and the political affiliation of the board of directors are decided based on the result of the election. The directives provided by the owners are generally known as “ownership directives”, and are provided annually to the CEO of the regional energy companies, that then forms a strategy in order to meet these directives. The ownership directives are often a combination of financial measures, such as solidity and required return, and other directives that are focused on the overall direction of the company, such as pricing policies and how the company should benefit the municipality. This means that the politicians of the municipality is responsible for the direction of the energy company, and the CEO is responsible for creating a strategy and take decisions that will result in that this direction is followed (Lagergren, 2017).

The different types of ownership directives provided to the CEO’s of the different regional energy companies varies greatly, and is dependent on several different factors that varies for each municipality, and factors connected to the financial situation of the municipality are one of them. For example, if the municipal taxes are high in a certain municipal, there will be an incentive for the politicians to provide ownership directives that entails a lower price on energy for the population within the municipality in order to balance it against the taxes, and vice versa. Another example of factors that affects the
ownership directives are the costs for the energy company. For example, if substantial investments have to be carried through, such as extensive renovation of facilities or investments in new machinery, the ownership directives will be affected. The directives will then reflect the increased cost, which for example can be seen in the pricing policies were a higher energy price can be argued for in order to cover for this cost. The directives provided to the CEO will be affected in the same way if the overall cost of the energy company is low during a long period of time. If this is the case, the politicians within the municipality will most likely argue for lower energy prices to the end consumers, or for higher required return for the energy company (Sandoff, 2008).

The ownership directives provided by the politicians of the municipality must then be interpreted by the CEO. This interpretation will then have to be approved by the board of directives, in order to eliminate the risk that the CEO has misinterpreted the ownership directives. When this is completed, a strategy will have to be formulated by the CEO together with the executive managers, which will help the company to move in the same direction as the ownership directives states. This strategy will then result in a certain decision making process, that should be aligned with the sought after direction of the energy company. Depending on the decisions implemented within the company, different results will be yielded, and these results will then be communicated back to the owners, and act as feedback when creating the ownership directives for the upcoming year (Lagergren, 2017). The ownership structure and the results of the ownership directives is illustrated in the figure 6 below.

![Figure 6: The implementation of ownership directives in a regional energy company](image-url)
4. Theory

This chapter presents the theoretical frameworks used in order to analyze the empirical material and thusly answer the research questions previously stated. The PESTEL framework is used in order to identify which external factors that affects the strategical decision of regional energy companies. The conflict & conflict management framework helps to identify the internal factors that affects the regional energy companies and the direction these are working towards. Furthermore, relevant theories are described in order to facilitate the readers understanding of the analysis.

4.1 Theoretical framework

4.1.1 PESTEL

There are several different factors that affects the strategical decisions and directions of a company, where different external factors influencing the market in which the company is present, as well as the company itself are important to identify and analyze in order to understand these decisions and directions. This can be achieved by using the PESTEL framework that divides the external factors into 6 different sub-categories which represents each letter in the name of the framework and the categories focused on is; Political, Economic, Social, Technical, Environmental and Legal. The framework is sometimes named differently depending on in which order the external factors in the sub-categories are investigated, and the name of the framework might also differ depending on how many of the categories that are relevant to investigate within a study. This is however the only difference between the different configurations of the framework, the underlying purpose is always to identify external factors that affects the company investigated and the environment in which it is present. One common alternative to the PESTEL framework is the PEST framework, meaning that the environmental and legal aspect has been regarded as redundant for a specific study (Maylor, 2010). In this study, the legal and environmental factors has been included in the study due to the fact that the pre-study and the literature review regarding the study has shown that these external factors affects the Swedish regional energy companies, and thus their chosen strategical direction making them relevant to include in the framework. In the sections below, each one of the 6 sub-categories are presented and explained thoroughly.

Political

This category covers the different political factors that in one way or another affects the company studied. This can for example be the amount of corruption present in the country/countries that the company is present within, or which political party that is currently elected. It also covers the political stability and which political structure that is present in the country/countries. In order to identify and analyze these political factors, the company must ask themselves “What are the key political factors that influence us” (del Marmol & Feyes, 2015). In this study, examples of such political factors are how the political structure in Sweden affects energy companies owned by municipalities, where the board of directors consists of politicians. It will also cover possible differences in ownership directives provided to the regional energy companies depending on the ruling political party at a given time.
Economic
The economic category helps to identify the economic forces affecting the company investigated. Examples of such external factors is the buying power of the consumers on the market, and the economic stability of the country in which the company is present and operates in. Furthermore, this category includes the economic state of competitors on the market and how this affects the company investigated. In order to identify and analyze the external economic factors, questions such as “What are the key economic factors which influence us” should be answered (Allen, 2001). In this study, examples of such economic factors are the prices of energy in general as well as the importance of pricing for the consumers.

Social
The social category covers a broad spectrum, and includes aspects such as cultural factors of the country in which the company is present, as well as social drivers of the population. Examples of such external social factors are different cultural movements present in the country, and the public opinions of the population, as well as the trends that can be identified in education and careers, and the level of employment. In order to identify and analyze the social factors affecting a company, questions such as “What are the key cultural factors which influence us?” must be answered (del Marmol & Feyes, 2015). In this study, examples of such social factors are the trends connected to the consumers demand, focusing on what different products and services that are sought after now, and how the consumer demand will develop in the future with focus on sustainability.

Technological
The technological category covers different technological factors affecting the company. For instance, such factors can be different technological trends on the market, as well as the technology available to the consumers in this market. If these factors are identified correctly, it may enable a company to improve their offerings to the end consumers by providing sought after technology. In this study, the technological factors will be identified for the Swedish energy market, with the focus on the increasing desire and trends when looking at the digitalization of this market. In order to identify and analyze the technological factors affecting a company, questions such as “What are the key technological factors which influence us” should be asked (del Marmol & Feyes, 2015). In this study, examples of such technological factors are how technology facilitates the increasing digitalization of the energy market and how the customer demand will be affected by this transformation.

Environmental
The environmental category identifies the environmental external factors that affects a company. Example of such factors are the overall weather conditions of the country in which the company is present and operates within and affecting the company, such as high winds, heavy rain or extreme heat. It also includes the occurrence of natural disasters, such as the probability of earthquakes, storms, flooding etc. As mentioned previously, this is one of the factors that are sometimes left out of a study due to the irrelevance of it. This is however not the case in this study, due to the fact that energy companies are highly dependent of the environmental factors present within the
geographical area of operations. In order to identify and analyze the environmental factors affecting a company, questions such as "What are the key environmental factors which influence us?" should be asked (Allen, 2001). In this study, examples of such environmental factors are how the present weather conditions affects the energy companies, as well as how the increasing concern for global warming are affecting the operation of these companies.

Legal
The Legal category identifies different external legal factors affecting the company investigated. Examples of this is both current and future laws and regulations that either have a positive or negative impact on the subject investigated. This category is considered to be interesting to include in this study due to the fact that the laws and regulations affecting privately and governmentally owned energy companies differs greatly compared to the laws and regulations affecting the regional energy companies in Sweden. In order to identify and analyze the legal factors having an impact on a company, questions such as "What are key legal factors which influence us?" should be asked (Allen, 2001). In this study, examples of such legal factors are how laws and regulations affects the competition between energy companies owned by a municipality and private/governmentally owned energy companies that are not regulated in the same way.

4.1.2 Conflicts and conflict management
Conflicts
Conflicts in general is a phenomenon that can be identified throughout the society on a daily basis, and occurs due to several different factors. When looking in general on conflicts, examples of such factors are scarce resources, power relations, poor communication and differentiation in roles. A more specific definition is a situation in which two or more parties have different opinions regarding the objective of a project which entails different practices and behaviors when working towards completing this project.

Due to the broad nature of conflicts, it is a phenomenon that is commonly identified within different organizations, such as companies. This is mainly due to the fact that organizations themselves possess a living structure where interactions between different departments, and people within these departments are a vital practice in order to perform effectively. Conflicts within organizations might also be the result of the scarce resources that often is present when the departments within the organization work towards a mutual goal, and how these resources should be utilized in the best possible way. As mentioned previously, the reasons for conflicts within an organization are many, and the root of these conflicts can be categorized into three different areas; intrapersonal conflicts, interpersonal conflicts and lastly interdepartmental conflicts. Essentially, intrapersonal conflicts is when one person is having a conflict with themselves, interpersonal conflicts are when two or more persons are experiencing a conflict and interdepartmental conflicts are when different departments within the organization are experiencing conflicts. This study will mainly focus on the interdepartmental conflict category due to the nature of the topic investigated. Interdepartmental conflicts mainly occurs when one of the departments in an
organization gains benefits at the expense of another department. These types of
countlicts are also a result of different vision and goals for the different departments
which is regularly occurring when the organization is undergoing a transformation of
some sort, and these two types of interdepartmental conflicts can be identified in several
Swedish regional energy companies. If these interdepartmental conflicts are not managed
in the proper way, it may result in poor performance of the entire organization due to
poor collaboration between the departments in conflict (Berkovitch, 1983). In this study,
possible conflicts between the owners and the executives at regional energy companies
will be examined. The reason for the conflicts will also be investigated as well as the
results of such conflicts that are not managed properly.

Conflict management
As counts are more or less impossible to avoid, it is important to understand how to
manage these conflicts in the best possible way. There is also a common understanding
that conflicts does not always only have negative impacts on the organization (Tjosvold,
Wong, & Chen Yi-Feng, 2014). On the contrary, conflicts can be necessary in order for the
organization to develop and adapt to challenges that it is facing and to achieve successful
results (Li & Li, 2009). The practice of conflict management, which seeks to eliminate the
destructive components of a conflict and extract positive benefits of it, is therefore an
important method to use in all organizations that experience conflicts in different ways.

One crucial step in the practice of conflict management is to first identify the source of the
conflict, as well as understanding where the source originates from. These sources of
conflicts can be placed under different categories, which were mentioned in the previous
section; intrapersonal conflicts, interpersonal conflicts and interdepartmental conflicts.
Furthermore, it goes without saying that it is crucial to have good knowledge regarding
the different conflict management methods and how these should be implemented in
order to resolve the conflict in an effective way and to gain benefits from it (Berkovitch,
1983).

How organizations resolve interdepartmental conflicts are highly individual, and
depends on the type of conflict that is present, and it is therefore difficult to identify one
particular method that enables conflict solving for all organizations. It can however be
identified that good communication between the different departments has a crucial role
in managing these conflicts in an efficient way and that it is important to find ways to
jointly work towards solving the conflict instead of working against each other
(Berkovitch, 1983). In this study, the conflict management between the owners and the
executives at regional energy companies will be examined where crucial practices for an
efficient management of conflicts will be focused on.
5. Companies of the empirical study

Compared to the three largest energy companies previously mentioned, the regional energy companies in Sweden are much smaller, both when it comes to the size of the revenue as well as the size of the geographical area where they are present. XX number of regional energy companies were focused on and investigated in this study, and these are; Mälarenergi, Göteborgs energi, Tekniska verken, Öresundskraft, Jönköping Energi and Umeå energi, where the revenue in 2015 for these companies can be identified in figure 7.

![Revenue in 2015 (BSEK)]

*Figure 7: The revenue of the investigated regional energy companies in 2015*

A description of each regional energy company investigated in this study including their current strategy and direction as well as their field of activity will be presented in the section below.

5.1 Mälarenergi

5.1.1 Area of operations connected to ownership directives

Mälarenergi is owned by the municipality of Västerås, more specifically by Västerås airport AB and is the parent company of a corporate group active in several different areas. The company has recently undergone an extensive transformation, were the aim of this transformation was to transform Mälarenergi from being a “traditional” energy company into being an infra service company, providing products and services to several different parts of the society. The corporate group is commissioned by the municipality of Västerås to offer and provide these products and services within infra service, both to private and corporate customers. The categories in which the products and services are offered connected to infra service is primarily within electricity, heating, water, IT and overall energy services and the ownership directives states that Mälarenergi should consciously and actively work towards strengthening the development of the municipality of Västerås, as well as the entire region in which the company is active within. This is done by providing products and services to competitive
and attractive prices combined with a good delivery reliability and with environmental and climate aspects in mind (Mälarenergi, 2015).

Mälarenergi is primarily present within the region called Mälardalen, with essentially is the surrounding area around the third largest lake in Sweden, called Mälaren. The company is currently producing energy, both in the form of electricity as well as district heating in several different combined heating and power (CHP) facilities present in the area and the production of electricity is also conducted using 42 different hydro power facilities located in Västmanland and Värmland. Mälarenergi is also a distributor of both district heating and electricity, where the distribution of electricity is primarily focused to the western part of Mälardalen and the retailing of electricity is focused on Mälardalen as a whole. The aim of the company to become a provider of several different products and services within infra service entails that the field of activity is not limited to the areas of electricity and district heating. Mälarenergins also provides services within the areas water and sewages, as well as within broadband thru one of the corporate group’s affiliated companies, called Fibra AB. The production and distribution of district cooling is also part of Mälarenergi’s business area, although this contributes to a very small part of the total revenue for the company (Mälarenergi, 2015).

Figure 8 bellow illustrates the business areas and the revenue connected to these areas for 2015. Water and sewages are not present in the pie chart for 2015 due to the fact that it is not measured using the same unit of measurement as the other areas, but it can be identified from the annual report that 11 million m$^3$ of water was sold in 2015.

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Figure 8: The operating areas of Mälarenergi and the volumes sold in GWh of these (Mälarenergi, 2015).

5.1.2 Financial aspects

When looking at the financial aspects of the corporate group, it is stated in the ownership directives provided by the municipality of Västerås that Mälarenergi should
possess a solidity\(^1\) of 35 \%, and that the return on equity\(^2\) should be 5 \% or more. The solidity goal was achieved in 2015, where the solidity amounted to 37,6 \%, which was not the case with the goal set for the return on equity which amounted to 3,7 \% in 2015. Furthermore, it is stated in the ownership directives that Mälarenergi should provide the municipality of Västerås with a dividend of 53,7 million SEK, which was achieved in 2015 and the total revenue for the regional energy company in 2015 amounted to 2,7 billion SEK (Mälarenergi, 2015). The municipality of Västerås has during several years possessed a strong economic position, which has been reflected in the ownership directives, were the expected dividend to the owners has been relatively low compared to the profit of the company. Even though the company should provide their products and services to attractive prices, the overall aim of the company is to operate on a commercial basis in order to generate the expected dividend to the owners as well as maintaining the economic strength needed in order to reinvest in existing assets, and have the financial power to invest in new products and assets. The profitability of the products/services provided to the customers is therefore prioritized. The ownership directives regarding the pricing of different products and services where the competition is low have therefore been changed. Earlier, the directives stated that the pricing of such products should be positioned below the regional average, where it now instead is stated that the pricing should be in parity with similar energy companies. The profitability of the company is also a measurement that is prioritized due to the fact that a sustainable profitability is crucial in order to develop and work with sustainability on an ecological and social level (Hemmingsson, 2017).

<table>
<thead>
<tr>
<th>Mälarenergi</th>
<th>Goal for 2015</th>
<th>Achieved in 2015</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solidity</td>
<td>35 %</td>
<td>37,6 %</td>
<td>2,6 %</td>
</tr>
<tr>
<td>Return on equity</td>
<td>5 %</td>
<td>3,7 %</td>
<td>-1,3 %</td>
</tr>
<tr>
<td>Dividend to owners</td>
<td>53,7 MSEK</td>
<td>53,7 MSEK</td>
<td>0</td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td>2,7 BSEK</td>
<td></td>
</tr>
</tbody>
</table>

*Table 2: The financial measures for Mälarenergi 2015 in and the fulfillment of these (Mälarenergi, 2015).*

5.1.3 Risk management

Due to the fact that apart of the company’s funds comes from taxes, it is important for the company to have clear risk assessments before conducting any major investments. This entails that Mälarenergi should not speculate regarding if an investments could be advantageous for the company or not. Instead, the possible risks for the investments should be investigated carefully and extensive analysis connected to risk and plausible outcomes for the investment should be conducted in order to decrease the risk related

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\(^1\) Solidity is defined as the amount of equity in a company compared to the total assets of the same company. It gives an indication of the company’s ability to pay debts.

\(^2\) Return on equity is a measure of a company’s profitability, where it can be identified how much profit that is generated from the money invested by the shareholders.
to it. Another aspect of the risk management for Mälarenergi is the possibility for the company to set a long payment plan. The owners of the company are keen on investing in projects that provides a long-term sustainable development for the company, as well as the region. This entails that the yield requirements for the company is not as though as they would have been if the owners would expect instant results, and this leads to that Mälarenergi can spread the risks of the possible investment over several years, and thereby decrease the risk (Hemmingsson, 2017).

5.1.4 Future vision
One of the main future goals for Mälarenergi is to take great consideration to the environmental sustainability of the company by decreasing the dependency on fossil fuels for energy production. This has primarily been done by investing in facilities such as production plants for district heating that uses biofuels to produce the heat instead of oil or other types of fossil fuels. The district heating facility called block 6 is one example of this, as well as the future district heating facility called block 7 that will be completed and used in 2020. As mentioned briefly previously, Mälarenergi is also working towards providing their customers with a broader offering by transforming from being a traditional energy company to being a company focused on infraservice and products connected to this category. This was decided in 2015 in the form of a strategic plan that was approved by the board, where this strategic plan entailed that the company should be more involved in the development of the region and the society by providing products connected to infraservice (Hemmingsson, 2017).

Another important part when looking at the future of Mälarenergi is the implementation of automated and digital solutions, both internally within the company but also using digital solutions to improve the connectivity to the customers. This will mean that the processes within the company should become faster and more efficient, as well as an increased simplicity for the customers were these to a greater extent will have the possibility to affect the content of the delivered products and services. The automatization will also entail lower costs for the company, and increased cost efficiency is highly prioritized by Mälarenergi due to lower profit margins on products such as electricity retail. Another reason for the importance of increased cost efficiency is due to one of the main goals for the company connected to the transformation into an infraservice company, where this goal is to decrease the costs by 300 million SEK in order to enable this transformation. Mälarenergi also believes that increased digitalization will enable more efficient energy systems and thus increase the energy efficiency for the customers. One important step on the way to become more digitalized has been the implementation of what the company calls “the control room of the city”. There are hundreds of different smaller control rooms throughout the region that monitors different areas of operations and collects data from these. The control room of the city connects all these smaller control rooms and enables an overview of all the data present from the different areas of operation, and is an important function in order to increase the resilience of the company. Increased resilience enables a better understanding and prediction of different risks, but also increases the knowledge regarding how these risks should be handled if they occur and how the company then should recover in the fastest way. Overall, Mälarenergi states that the company wants to be one of the leading actors when it comes to providing digitalized products to the
customers, as well as increasing the digitalization of the internal processes. However, in order conduct this transformation, Mälarenergi states that it is crucial that the company finds suitable collaborations and partnership with different actors specializing within this area (Hemmingsson, 2017).

5.2 Tekniska Verken

5.2.1 Area of operations connected to ownership directives
Tekniska verken is a regional energy company that is solely owned by the municipality of Linköping, where it is positioned as well. The company is the parent company in a corporate group, providing products and services within several different areas connected to energy and infra service within the municipality. Tekniska verken is currently active within the production, distribution and retailing of electricity, the production and distribution of district heating and cooling, as well as other areas such as water and sewage, broadband and waste management. The corporate group is commissioned by the municipality of Linköping to provide these products and services to both individuals and corporations at attractive prices, with good delivery reliability as well as taking climate and environmental aspects in mind, which is stated from the ownership directives (Tekniska verken, 2015).

The structure of the corporate group is divided into the parent company, as well as 11 subsidiary companies, where the different companies are active within different field of operations. The parent company itself is divided into different divisions, where the energy division is mainly active within the production and distribution of electricity, district heating and district cooling, and the water division is mostly active within the infrastructure of water and sewages, as well as the production of biogas. The retailing of electricity is managed by one of the subsidiary companies, called Bixia AB, and Tekniska verken increased their ownership in Bixia AB from 54,3 % to 73,2 % in 2015 by redemption of a large quantity of stocks within the company from other actors. The main sources for the production of electricity is through 38 hydropower plants, as well as CHP plants such as Lejonpannan (Tekniska verken, 2015).

Figure 9 bellows illustrates the business areas and the revenue connected to the area of operations for 2015. Water and sewages are not present in the pie chart for 2015 due to the fact that it is not measured using the same unit of measurement as the other areas, but it can be identified from the annual report that 12,9 million m$^3$ of water was sold in 2015.
5.2.2 Financial aspects

When looking at the financial measures for the company stated in the ownership directives, it can be seen that the solidity should exceed 30%, and that the return of the on equity should be more than 6%. It can be seen from the annual report that Tekniska verken exceeded the solidity goal with 16%, meaning that the solidity for 2015 was 46%.

However, the goal of having a return of the total capital that was larger than 6% was not fulfilled, and just as in 2014, the return of total capital was 5% in 2015. The dividend to the owners (the municipality of Linköping) was set to 187 million SEK, and this goal was fulfilled in 2015 (Tekniska verken, 2015). The expected dividend is calculated based on the profit for each year, and it is stated from the owners that this expected dividend should be 30% of the total profit the company makes during one year. This measure is decided after discussions between the executives of Tekniska verken and the board of directors (politicians), and the figure that was decided was based on the fact that the company should have enough funds left to carry through with the strategical aim of the company (Jonsson, 2017).

The revenue for Tekniska verken decreased by 4% compared to 2014, which meant that the revenue for 2015 was 4, 69 billion SEK, and this decrease was due to several different reasons. One of the main factors affecting this was the mild climate during 2015 that led to low prices for electricity, decreasing the marginal for both electricity production and retailing. This decrease in revenues was however somewhat limited by increasing the electricity produced compared to 2014. Other measures that limited the decrease of revenue was new pricing of energy distribution, water and sewages and district heating, where the prices of these were increased between 1,3-4,5% (Tekniska verken, 2015). This increase of price on the products that can be considered as monopoly products did however not affect the overall pricing strategy provided from the ownership directives, which states that products regarded as monopoly products should be priced in a way so that the price is below the market average. The possibility to price these products below the market average is strongly correlated to the fact that the municipality of Linköping during several years have possessed a strong economic position, where there has been
no need to increase the income from these products in order to increase the dividend to the municipality. The low pricing of products such as district heating is also strongly connected to the desire to stay competitive on the market. Tekniska verken acknowledges the alternatives to district heating that are currently present on the market, such as heat pumps, and therefore seeks to provide their customers with efficient deliveries and low prices of heat in order to stay competitive. Even though several of the company’s products are priced below the market average, the profitability of the company is still high which also is considered of great importance for Tekniska verken. Their vision to become the most resource efficient region in the world requires substantial investments within research and development, which means that a strong economic position is crucial for the company in order to accomplish their vision (Jonsson, 2017).

<table>
<thead>
<tr>
<th>Tekniska verken</th>
<th>Goal for 2015</th>
<th>Achieved in 2015</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solidity</td>
<td>&gt; 30%</td>
<td>46%</td>
<td>16%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>&gt; 6%</td>
<td>5%</td>
<td>-1%</td>
</tr>
<tr>
<td>Dividend to owners</td>
<td>187 MSEK</td>
<td>187 MSEK</td>
<td>0</td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td>4,69 BSEK</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: The financial measures for Tekniska verken in 2015 and the fulfillment of these (Tekniska verken, 2015).

5.2.3 Risk management
When looking at risk management connected to investments, the three pillars of sustainability (economic, social and ecological) connected to the investment is considered. It is of great importance for Tekniska verken that the investments generates the result that has been promised and calculated for. This is important both because the owners that approved the investment then will have an incentive to approve future investments, as well as ensuring the taxpayers that their money is invested in sound projects. At the same time, the social benefits of an investment is important, which is measured in regards to how the product might benefit the development of the region, due to the fact that one of the goals for Tekniska verken is to drive the development of the society. Lastly, the ecological benefits of a product is considered, both on a local and global scale. A possible investment does not have to fulfill all three of these aspects. However, if it does not fulfill any of the aspects, the product is discarded. An example of a current project conducted by Tekniska verken that is not fulfilling all three pillars previously mentioned is the cleaning of the regions sewage water from pharmaceuticals. This project is both benefitting the ecological and social pillars of sustainability. However, this project does not entail any clear economic benefit for the company, but due to the fact that the project leads to clear benefits of the other two pillars, it is conducted anyway (Jonsson, 2017).
5.2.4 Future vision

Tekniska verken is also a company that possess clear visions and goals for the future and it is stated in the annual report that their ambition is to become the most resource efficient region in the whole world. The company states that this is a realistic and achievable goal due to the fact that external and non-biased parties have investigated the resource efficiency of Tekniska verken and concluded that it is one of the most efficient regions in Sweden, and at the same time, Sweden is considered to be one of the most resource efficient countries in the world. The company states that this vision should be seen as the practice and strategy used for fulfilling the targets provided by the owners thru the ownership directives. In order to achieve this vision, several major investments has been made and 2015 was one of the most investment heavy phase the company have ever experienced, were one of the more crucial investments conducted in 2015 was the building of a high efficient CHP facility called Lejonpannan. Lejonpannan will facilitate the production of renewable energy and will decrease Tekniska verken’s use of oil by 80 %, and the use of coal by 73 % (Tekniska verken, 2015).

As mention earlier, Tekniska verken provides different products and services within several different areas connected to infra service. It is important for the company that they are a comprehensive supplier of different products connected to different areas throughout the society, and to only focus on one area such as electricity production is not sought after by the company. This is reflected in the major future investments that the company seeks to realize during the upcoming 5-10 years. One of these investments is the relocation of a district heating facility located in the center of Linköping. The population of city is growing rapidly meaning that there is a great need for new residential areas. The municipality, including the owners of Tekniska verken has therefore decided that the district heating facility should be moved outside of the city center in favor for the new residential areas. This investment, combined with the construction of a new fast track railway thru the city center entails investment costs for Tekniska verken of approximately 5 BSEK during this period of 5-10 years (Jonsson, 2017).

Lastly, the digitalization of the energy market, and thusly an increasing digitalization of Tekniska verken is of great importance for the company. Tekniska verken has therefore implemented an extensive project connected to the digitalization, where the goal is to help the company to meet the challenges connected to lower profit margins for their products, such as electricity. The idea is that an increased digitalization of the processes within the company will help to increase the automatization, which in turn will help to lower the costs connected to the operations of the company, and become more profitable despite the lower profit margins that partly is a result of the low prices for electricity. However, the company has not currently achieved a sufficient transformation to becoming more digitalized and the company believes that partnership with different actors with focus on product development are the key to this transformation, due to the fact that Tekniska verken is not big enough to develop these products by themselves. Another aim for the company is to increase the digital flows between the customers and the company. The digitalization should enable the customers to conduct changes regarding their products and services from their home/office, as well as enable an improved communication between the company and the customers. If this increased
digital flow is achieved leading to more automated processes within the company, it will most certainly lead to an increased customer value, with a decreased need for personnel within the company (Jonsson, 2017).

5.3 Öresundskraft

5.3.1 Area of operations connected to ownership directives

Öresundskraft is a regional energy company owned by the municipality of Helsingborg, through a parent company called Helsingborg energy holding AB. Öresundskraft provides a broad offering of energy products and services to their customers and are active within the production, retailing and distribution of electricity, district heating and district cooling, as well as the infrastructure connected to the broadband. The main goal of the company is that the products and services provided should entail an increased customer satisfaction, stable economic growth of the company and a profitable growth of customers (Öresundskraft, 2015). To focus on lowering the environmental impact of the company, and its customers is also highly prioritized (Östlund, 2017). It is stated in the ownership directives that products and services that is not present on a competitive market, such as the tariffs connected to the electricity network and district heating network should be priced below the national average, and this goal was fulfilled by Öresundskraft in 2015 (Öresundskraft, 2015). One of the main factors that allows the company to provide these low prices to their customers is that the profitability of Öresundskraft is high, where the profit in relation to the revenue is one of the highest if compared to other similar regional energy companies (Östlund, 2017). Furthermore, it is stated in the annual report that the company fulfilled the ownership directives of providing the population of the municipality of Helsingborg with the demanded amount of energy and data communication, as well as building and developing the infrastructure connected to these areas in order to prepare for the future demand. This development is also conducted in order to enable a sustainable development of the region in which Öresundskraft is present within, and to align the company with the future development of the Swedish energy market (Öresundskraft, 2015).

The operational management of the corporate group is divided into two different categories; business units and support functions. These categories are then divided into several sub-categories, where the retailing of electricity and gas, power and heating, distribution and lastly broadband is the four sub-categories present under business units. Furthermore, there are five sub-categories present under the support functions category, which are; business management, HR and business support, IT, communications and lastly customer service. The production of electricity is mainly conducted using CHP facilities, as well as renewable energy sources such as windpower, and approximately 10% of the electricity sold is produced by Öresundskraft. Furthermore, the district heating is mainly produced in the CHP facilities were electricity and energy used in district heating is co-produced, where as other facilities co-produce district heating and district cooling. The electricity sold is retailed through two subsidiary companies called Öresundskraft marknad AB and Öresundskraft Företagsmarknad AB (Öresundskraft, 2015).
5.3.2 Financial aspects

When looking at the financial measures of Öresundskraft provided from the ownership directives, it can be seen that the expected solidity of the company should exceed 20% and that the return on equity should be 10% or more. Both these measures were fulfilled in 2015, were the solidity amounted to 40.8%, meaning double the amount of the expected solidity and the return on equity amounted to 11%. The expected dividend provided to the municipality of Helsingborg was in 2015 set to 175 million SEK, which was a drastic increase compared to the previous year were this dividend were set to 56 million SEK (Öresundskraft, 2015). The expected dividend is decided by the owners and is based on the risk of having capital bound in the energy company. It is stated from the ownership directives that the owners have the right to demand 60% of the total profit before taxes in dividend. However, the actual dividend provided to the owners usually ranges from 40-60% of the total profit before taxes. The drastic increase of dividend payed to the owners in 2015 was mainly due to the fact that the municipality during several years demanded an exceptionally low dividend compared to the profit of Öresundskraft. The municipality then decided to compensate for these years by increasing the dividend to 175 million SEK (Östlund, 2017). The total revenue for Öresundskraft in 2015 was 2.48 billion SEK, which was a decrease of approximately 3% compared to the previous year and similar to other energy companies in Sweden, this decrease of revenue in 2015 was mainly due to the mild temperatures during the year that led to low prices for electricity, especially during the summer. The investments in fixed assets increased drastically in 2015, where the building of wind turbines as well as district heating infrastructure led to that the investment in fixed assets in 2015 amounted to 535 million SEK, compared to 2014 were the investment within this area was 289 million SEK. Several of these investments have been conducted in order to obtain infrastructure that is aligned with the future trends of the Swedish energy market. An example of this is the extensive investments of approximately 100 million
SEK made to ensure the modernization of the electricity grid throughout the
geographical area where Öresundskraft is present within. One of the main factors
leading up to this investments were the increasing amount of micro producers of
electricity in the municipality of Helsingborg which doubled from 2014 to 2015,
increasing the demand for smart grids (Öresundskraft, 2015).

<table>
<thead>
<tr>
<th>Öresundskraft</th>
<th>Goal for 2015</th>
<th>Achieved in 2015</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solidity</td>
<td>&gt; 20%</td>
<td>40,8%</td>
<td>20,8%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>&gt; 10%</td>
<td>11%</td>
<td>1%</td>
</tr>
<tr>
<td>Dividend to owners</td>
<td>175 MSEK</td>
<td>175 MSEK</td>
<td>0</td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td>2,48 BSEK</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: The financial measures for Öresundskraft in 2015 and the fulfillment of these (Öresundskraft, 2015).

5.3.3 Risk management
When looking at the willingness to invest in projects and risk management,
Öresundskraft states that the company is not a venture capital firm, meaning that no
unnecessary risks should be taken when investing in projects. However, the company
expresses that an important goal is to facilitate the development of increased sustainable
energy usage, and investments that drives this development is therefore of great interest
for Öresundskraft. In order to ensure that the company’s money is invested in projects
that benefits Öresundskraft, as well as the region in which the company is present
within, the owners make sure to be thorough and conduct extensive risk assessments of
all projects that Öresundskraft want to invest in. It is therefore of great importance that
the company has conducted extensive research on the sought after project before
presenting it to the board of directors in order to argue for its potential benefits, and also
to communicate the risks connected to the investment. One
example of this was when Öresundskraft sought after to invest in a company focusing on
the charging of electrical vehicles, called Clever. The potential investment entailed that
Öresundskraft would become the main owner of this company, which was not
something that was considered as an obvious beneficial investment by the owners.
However, the managing directors of the company made sure to read up on the benefits
and possible disadvantages of the investment and managed to secure this investment
with the help of sound argumentation with the owners. Öresundskraft is today the main
owner of Clever and owns it together with two other regional energy companies;
Jämtkraft and Tekniska verken. Another area were several major investments have been
conducted is within the development of the fiber infrastructure, enabling improved
internet connection to a majority of the households in the region. During the last 4 years,
approximately 400 million SEK has been invested within this area. Öresundskraft states
that taking some risks that is manageable for the company when investing in projects is
of great importance due to the fact that it is necessary in order to drive the development
of the region (Östlund, 2017).

Historically, there has been examples of when Öresundskrafts and their owners have
conducted investments in projects connected to substantial risk, where the project in
question later failed. One example of such a project was when the company invested 30 million SEK in gas stations for vehicles powered by liquid gas. It could later be seen that the company and its owners had wrongly predicted the need for such facilities in the near future, and the projected was therefore shut down. Both the owners and the executives of Öresundskraft knew before investing in these facilities that it could either be an success, or that the market was not ready for this and that the project would fail. The investment was conducted anyway and the 30 million SEK was lost. However, due to the high profitability of the company and the risk assessment beforehand, the company could handle this loss (Östlund, 2017).

5.3.4 Future vision

One of the main areas that are prioritized by Öresundskraft is the customer satisfaction, and the company is constantly working towards increasing the customer satisfaction, both compared to previous years both also compared to the average customer satisfaction of the whole Swedish energy market. A scale ranging from 1-100 have been developed by an independent rating group called Svenskt kvalitetsindex, called the SKI rating, where 1 is the lowest and 100 is the highest rating for customer satisfaction. According to the scale, an index ranging from 60-75 indicates customer satisfaction, and an index over 75 indicates great customer satisfaction. In 2015, Öresundskraft scored 71,3 on the scale, which was more or less the same as the previous year where Öresundskraft had a SKI index of 71,4. The average index of the whole energy market was 67,2 in 2015, compared to 2014 where the same index was 68, meaning that Öresundskraft increased the gap slightly between themselves and the rest of the market. According to the annual report, the goal provided from the ownership directives states that the company should increase their SKI index to 76, meaning that the company aims to move up one level on the scale, and that the customer satisfaction should be labeled as “great” instead of being labeled as “sufficient” (Öresundskraft, 2015).

Furthermore, an area Öresundskraft focus on and prioritize is the environmental sustainability of the products and services provided to the consumers. In order to increase the sustainability of energy usage, a strategy has been implemented within the company that is composed of four different sub-categories. The first category connected to increased sustainability is one of the most important categories, and states that “decreased energy usage will entail a more environmentally sustainable future”. This means that a decreased energy usage from the customers is the first strategical step for Öresundskraft in order to improve the environmental sustainability of the company (Öresundskraft, 2015). This means that the company will start to pivot their offering, from seeing energy and energy usage only as a commodity to focus more on services around the customer's energy usage and working towards increasing the efficiency of the customer's energy usage. This is part of the company’s new strategy, which entails an increased focus on the future demand of the customers and using digital solutions in order to increase the customer value (Östlund, 2017). The following three sub-categories are both directed to Öresundskraft as well as their customers and state that “the overall losses in all stages should be decreased, “take advantage of the waste products and increase the recovery of energy” and lastly to “supply an increasing amount of renewable energy”. In order to fulfill this strategy, several different practices are used, and one example is that Öresundskraft provides different energy solutions that
enable the customer to decrease their usage of energy, which can be achieved by mapping the energy usage for different facilities and presenting this to the customers connected to the facility. Furthermore, all private electricity retail customers are provided with 100% renewable energy, and efforts are conducted in order to produce electricity and district heating from waste products generated in the society, meaning that the usage of fossil fuels for this production decreases drastically (Öresundskraft, 2015).

Services connected to communication and distribution of data will also be prioritized in the future, and act as an essential part of Öresundskrafts core business. This entails that the transportation of data will become more efficient and the company is currently using a datahub to gather readings from different sensors throughout the society. This data, which for example can be temperature readings or readings regarding network connection is then accessible to the clients. This means that the data hub works as an enabler for information sharing, as well as tool for connecting different parts of the society and enabling the internet of things. These types of services connected to the utilization of data and connection/communication for different parts of the society are examples of what Öresundskraft think will become an important part of the company’s business in the future (Östlund, 2017).

To summarize it, Öresundskraft seeks to utilize the digitalization of the energy market by increasing the consumer’s energy efficiency and thereby reduce the ecological footprint of both the consumers and the company, reduce the costs for the company by increasing the automatization of the processes within the company and lastly to enable less need for the customers to make an effort and get involved regarding energy efficiency, this is instead something that Öresundskraft want to help the customers with (Östlund, 2017).

5.4 Göteborg Energi

5.4.1 Area of operations connected to ownership directives

Göteborg energi is a regional energy company and a corporate group owned by the municipality of Gothenburg, which is also the area in which the company is mainly present within. Göteborg energi is active within the production, retailing and distribution of electricity, as well as the production and distribution of district heating and cooling. The company also offers different energy solutions and services and provides broadband to the population of the municipality through one of the subsidiary companies and the corporate group consists of several different subsidiary companies that are active within the different areas of operations. The vision that the company is working towards is to create a sustainable society for the population of the municipality with regards to the three pillars of sustainability; financial, social and ecological by participating in the development and implementation of projects connected to an improved infrastructure for different areas of the municipality. It is stated in the ownership directives provided by the owners that the overall goal with the investments connected to the infrastructure of the municipality is to increase the reliability of supply,
increase the customer satisfaction and to provide affordable energy and services to the population of the municipality with prices of these products that are below the market average (Trygg, 2017) (Göteborg energi, 2015).

The development and implementation of infrastructure within the municipality of Gothenburg is divided into three different areas which in turn is divided into several different sub-projects. The three areas focused on are; the electricity grid and grid stations, district heating and cooling and lastly projects connected to the future of the energy market and smart energy solutions. The projects connected to the electricity grid are mainly conducted in order to increase the availability of electricity to new residential areas in order to increase the number of people connected to the electricity grid, as well as upgrading the existing grid to a smart grid in order to prepare for the future challenges of an increasing amount of individual electricity producers (Göteborg energi, 2015).

The second category connected to the distribution of district heating and cooling is conducted in a similar manner as the development of the electricity grid. When new large residential areas are built within the municipality, it creates a demand for district heating and cooling and a majority of the projects within this category is therefore to extend the distribution network of district heating and cooling to these areas in order to ensure a sufficient supply, now as well as for the future. Major efforts have also been conducted in order to increase the number of companies throughout the municipality that connect and use district heating and district cooling, where the goal has been to increase the number of corporate customers by 200-250 new ones each year (Göteborg energi, 2015).

The last category is the development and implementation of projects that are aligned with the future development of the Swedish energy market as well as smart energy solutions that facilitates the increasing future digitalization of the energy market. One example of such projects are the increased implementation of transportation that is powered by renewable energy where power stations for both electric bicycles and cars have been positioned in various parts of the municipality. Furthermore, Göteborg energi have entered a project in collaboration with the city of Gothenburg and several other actors in order to replaced busses powered by fossil fuels with busses powered by 100 % renewable energy on one of the bus routes. The main contribution provided by Göteborgs energi was to provide charging stations where the busses could be charged with renewable energy (Göteborg energi, 2015).

Göteborg energi AB is the parent company in the corporate group called Göteborg energi which is solely owned by the municipality of Gothenburg. As mentioned previously, the company is mainly active within the production, retailing and distribution of electricity as well as the production and distribution of district heating. There are 10 subsidiary companies present within the corporate group that are active within the areas mentioned above, and also active within broadband, biogas and natural gas. One of the dominating areas for Göteborg energi AB is within electricity retailing, which is conducted by a subsidiary company called Göteborg energi Din El AB which is the fourth biggest electricity retailing company in Sweden. Göteborg energi Din El AB accounts for
34 % of the total revenue of the corporate group, and 63 % of the revenue for Göteborg energi AB (Göteborg energi, 2015).

5.4.2 Financial aspects
When looking at the financial measures provided from the owners thru the ownership directives, it can be seen that the expected solidity of the company should exceed 30 % and that the return on equity should be in the range of 6-10 %. The solidity goal was achieved in 2015, where the solidity of Göteborg energi amounted to 41,2 %, which in turn was an increase of 0,7 % compared to 2014. However, the goal connected to the return on equity was not fulfilled and amounted to –9,2 % in 2015, which in turn was an decrease of 13,2 % compared to 2014. This was mainly due to a loss in 2015 that amounted to 645 million SEK, which in turn was due to several extensive write-offs of 1.027 billion SEK within the areas of biogas, wind power, district cooling and broadband (Göteborg energi, 2015). It should however be mentioned that the company has recovered well economically and made a profit of 620 million SEK in 2016 (Trygg, 2017). The total revenue of Göteborg energi in 2015 amounted to 5,64 billion SEK, which was a decrease of 396 million SEK compared to 2014. As mentioned previously, this decrease in revenue were present for a majority of energy companies in Sweden during 2015 due to mild climate that decreased the price for energy drastically. The total amount of investments in 2015 was 669 million SEK, compared to 671 million SEK in 2014 and the reinvestments in existing assets increased, whilst the investments in new assets decreased. The investments conducted were mainly focused on the areas concerning biogas, electricity grid and district heating (Göteborg energi, 2015). The expected dividend payed to the owners amounted to 91 million SEK in 2015 and this dividend is set to 30-35 % of the net profit for each year. To have a strong profitability is the main goal for the company. As mentioned previously, ecological and social sustainability as well as innovation is also highly prioritized, but the company believes that a sufficient profitability is needed in order to enable a development of the other categories (Trygg, 2017).

<table>
<thead>
<tr>
<th>Göteborg energi</th>
<th>Goal 2015</th>
<th>Achieved 2015</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solidity</td>
<td>&gt; 30%</td>
<td>41,2%</td>
<td>11,2%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>6-10%</td>
<td>-9,2%</td>
<td>-15,2%</td>
</tr>
<tr>
<td>Dividend to owners</td>
<td>91 MSEK</td>
<td>91 MSEK</td>
<td>0</td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td>5,64 BSEK</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: The financial measures for Göteborg energi in 2015 and the fulfillment of these (Göteborg energi, 2015).

5.4.3 Risk management
When looking at the willingness to invest in different projects/facilities and the risk connected to this, it can clearly be seen that the owners thru the ownership directives state that it is crucial that thorough risk assessments are conducted before any large investments are made. The importance of such risk assessments have increased, mainly due to the fact that Göteborg energi invested in a biogas production facility that was built in 2014. The forecasted cost of this project in 2010 when the decision was made
was calculated to approximately 1,2 billion SEK, where the final cost of the project amounted to approximately 1,4 billion SEK. When the decision to invest in this project was made in 2010, the forecasted price for oil in 2020 was 180-190 dollar per barrel and both the executives and owners of Göteborg energi therefore saw a great potential for biogas as an alternative to traditional petrol. However, the forecasting was wrong and thusly misleading and the price for oil dropped substantially. This meant that the production of biogas became unprofitable and the whole value for the facility was lost, leading to a great financial loss for the company. After this unsuccessful investment, the process of assessing the risk for different investments have been of greater importance. It should however be mentioned that the owner states that the company may conduct investments that are not necessarily profitable, if it clearly can be identified that this investments strongly contributes to an increased social and ecological sustainability (Trygg, 2017).

Furthermore, it is important for Göteborg energi that the investments conducted are focused on the region, meaning that it is not sought after to expand extensively outside of the municipality. This is due to the fact that the aim of the energy company is to benefit the population of the municipality by developing the region in which this population is present within (Trygg, 2017).

5.4.4 Future vision

One important part of the future vision for Göteborg energi is to enable the decentralization of energy production. The energy market is undergoing a rapid transformation within this area where an increased number of individuals are starting to produce their own energy. This creates a decentralization where the traditional large utility companies are not the only ones that produces energy and Göteborg energi wants to act as an enabler of this transformation. This should be done by integrating the small size production of the individuals with the large scale infrastructure that the company possess. The reason for this is that Göteborg energi sees a business opportunity connected to this transformation due to the knowledge and competence within energy production and distribution that the company has. This business opportunity would then compensate for the decreased revenue from energy production that the mentioned decentralization would entail for Göteborg energi (Trygg, 2017).

Another important aspect when looking at the future vision of Göteborg energi is the project connected to the development of the city that will be completed in 2035. This development of the city entails that 150,000 new residents will move into the city by 2035, which means that a substantial amount of new residential areas, approximately 80,000, will have to be built. The challenge for Göteborg energi lies in connecting these houses to the electricity and district heating grid, as well as providing broadband to the residents. The drastic increase in population will also lead to an increase of jobs, and providing these products to offices and industries will also be of great importance. A result of this is that Göteborg energi will have to conduct substantial investments within infrastructure in the future in order to meet the increased energy demand, and hire engineers in order to facilitate the construction of the infrastructure. The challenge of this extensive project is one of the main reasons to why the company is not seeking to
invest in projects outside of the municipality and is instead focusing on the development of the city of Gothenburg (Trygg, 2017).

When looking at the digitalization of the energy market, the number one priority for Göteborg energi is to utilize the data that the company possesses. At the moment, vast amount of data has been gathered from approximately 300,000 sensors, and the company therefore seeks to utilize this data by analyzing it in order to increase the knowledge regarding customer need and thereby improving the product offering. Furthermore, another important goal for Göteborg energi is to decrease the company’s carbon footprint and the aim is to have a 100 % fossil free heat production in 2030 (Trygg, 2017).

5.5 Jönköping Energi

5.5.1 Area of operations connected to ownership directives
Jönköping energi is the parent company in a corporate group consisting of several different subsidiary companies and is solely owned by the municipality of Jönköping. The areas of operations for the company are mainly within the production, retailing and distribution of electricity as well as the production and distribution of district heating and cooling. Furthermore, the company offers products and services connected to the infrastructure of the municipality, such as broadband and water/sewages and provides different solutions to the customers that facilitates an increased overview of their energy usage (Jönköping energi, 2015). Large investments of several 100 million SEK have been conducted particularly within the area of broadband in order to facilitate an increased connectivity for the population and businesses within the region (Eskilsson, 2017).

The ownership directives provided by the municipality of Jönköping state that the objective for Jönköping energi is to meet the energy demand of the population within the municipality by providing products and services within the different areas of operations that are competitive with consideration to price, as well as environmentally sustainable (Jönköping energi, 2015). Jönköping energy have also invested time and money into the development of the company internally, as well as the collaboration of the corporate group as a whole. It has been crucial that the different companies that the corporate group consists of have a good collaboration and that these companies work as one single unit. The employees at Jönköping energi has also participated in several education programs which has resulted in that the employees have obtained great knowledge regarding the future challenges that the company faces (Eskilsson, 2017).

It is also of great importance for the owners that Jönköping energi possesses a sufficient profitability in order to have the economic power to work towards the goals of the future, such as increasing the offering of products connected to the digitalization of the energy market. This sufficient profitability is partly achieved by the focus on ecological sustainability previously mentioned, where Jönköping energi identifies a business connected to having a profile of being a company focusing on ecological sustainability and a contributor to the society (Eskilsson, 2017).
The subsidiary companies owned by the corporate group are; Jönköping Energi Nät AB, Jönköping Energi Biogas AB and Huskvarnaåns Kraft AB. The subsidiary companies are mainly present within the distribution of electricity, the production, retailing and distribution of biogas as well as the production of hydropower (Jönköping energi, 2015).

![Figure 11: The areas of operation for Jönköping Energi and the volumes sold in GWh for these (Jönköping energi, 2015).](image)

### 5.5.2 Financial aspects

When looking at the financial measures provided by the owners from the ownership directives, it can be identified that the expected solidity of the company should amount to 20 %, and that the expected return on equity should amount to 8 %. It can be identified from the annual report that the solidity of the company in 2015 amounted to 19 %, meaning that this goal was not achieved. Furthermore, the expected return on equity in 2015 amounted to 9 %, meaning that the company exceeded the goal from the owners with 1 %. The revenue for Jönköping Energi in 2015 amounted to 0.86 BSEK, which was an increase of approximately 13 MSEK compared to 2014. It can be seen from the annual report that the revenue for electricity retail decreased substantially due to the low price of electricity in 2015, whilst the revenue for electricity production and distribution increased compared to 2014 (Jönköping energi, 2015). The owners of Jönköping energi do not demand that the company pay them a dividend based on the profit each year. However, it is stated in the ownership directives that Jönköping energi should provide one or several of the subsidiary companies with a dividend if these companies are lacking funds and this dividend is set to 5% of the adjusted equity (Eskilssson, 2017).
<table>
<thead>
<tr>
<th>Jönköping Energi</th>
<th>Goal 2015</th>
<th>Achieved 2015</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solidity</td>
<td>20%</td>
<td>19%</td>
<td>-1%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>8%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>Dividend to owners</td>
<td>32 MSEK</td>
<td>32 MSEK</td>
<td>0</td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td>0,86 BSEK</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: The financial measures for Jönköping Energi in 2015 and the fulfillment of these (Jönköping energi, 2015).

5.5.3 Risk management

When looking at the willingness to invest in projects connected to risk, Jönköping energi should not per definition aim to risk taxpayer’s money in order to benefit the company and the region in which they are present. However, there is a shared understanding from the owners and the managers of the company that risk is necessary to take in order to develop the company and contribute to the development of the region, as well as increasing the wealth of the population in Jönköping. Per definition, the population in a region has funds invested in that regions energy company through tax money, and to take risks that has the possibility to contribute to the development of the energy company is the only way to increase these funds. If the same logic is applied, if no actions are taken in order to develop the company through projects connected to innovation, the competiveness of the company will decrease drastically which in term will lead to a decrease of funds for the population, and the region as a whole. It should however be mentioned that increasing the social benefits for the municipality is the number one priority for the company, and to achieve a high profitability is therefore of lower priority (Eskilsson, 2017).

5.5.4 Future vision

It can be identified from the annual report that great efforts are taken in order to align the company with the ongoing transformation of the Swedish energy market and the changing customer demand connected to this transformation. A new vision called “A good force for a good society” has therefore been developed in order to facilitate this transformation, and to guide the company as a whole when developing new products and services to the customers. The development and implementation of a project called ENVIS is a result of this new vision and the service entails an increased overview of the customer’s energy usage. The first step was to implement this service within the area of district heating, and it has now been furthered developed in order to cover the customer’s entire energy usage, meaning that the usage of electricity now can be calculated and presented to the customers. This new vision is however not only implemented in order to align Jönköping Energi with the ongoing transformation on the Swedish energy market with regards to new technology, but is also an important step for the company to facilitate their pursuit within sustainability. It is stated in the annual report that the company should provide environmentally friendly energy and communication products and services to the customers that entails long term environmental sustainability, and at the same time contributes to the development of
the municipality. By providing the customers with solutions that enables a better overview of the energy usage, a more efficient usage of energy can be achieved with less wastage, which then contributes to an increased environmental sustainability (Jönköping energi, 2015). The overall aim of the company is to provide a product offering that of course consists of the basic deliveries of energy, such as electricity and district heating, but also to provide services connected to these deliveries in order to increase the customer value. Examples of such services are the possibility for home owners to buy services connected to optimizing the indoor climate, instead of only buying kilowatt hours (Eskilsson, 2017).

Jönköping energi also aims to increase their offerings towards property owners. The company has managed to integrate the fiber infrastructure with the electricity- and district heating grid which facilitates wholesale solutions to the property owners and entails the possibility to conduct larger deals with these companies. In order for Jönköping energi to develop these services and to enable a digital transformation of the company, collaborations and partnerships with different actors are sought after. One of the main areas where further competences are needed is within business development with the focus on digitalization. At the moment, there are endless different products and services that has the possibility to increase the digitalization of the company and thusly increase the value for the customers. However, to identify which products/services that are most sought after are difficult, and it is extremely costly to develop a broad offering and hope that some of it will be relevant to the customers. Building this competence will therefore enable a better overview on what the companies offering should consist of and will thusly decrease the costs, and increase the profitability. Furthermore, due to the small size of Jönköping energi, these types of collaborations and partnerships will be important in order to achieve the sought after width of the company (Eskilsson, 2017).

5.6 Umeå Energi

5.6.1 Area of operations connected to ownership directives

Umeå energi is an energy company owned by the municipality of Umeå positioned in the north of Sweden and is the parent company in a corporate group consisting of several different subsidiaries, within several different areas of operations. The subsidiary companies that are solely owned by the parent company are called Umeå Energi Elhandel, Umeå Energi Elnät, Umeå Energi UmeNet and lastly Umeå Energi Sol Vind och Vatten. The parent company is also the majority owner of BioEndev with an ownership share of 66,7%. The main area of operation for the corporate group is divided into five different sub-categories, which are called; Electricity, Electricity grid, Energy solutions, Renewable energy and Broadband. The Electricity category mainly focuses on the retailing of electricity to both private and corporate customers. The category called Electricity grid is mainly focused within the distribution of electricity and ensures that the population within the municipality is provided with the electricity that is demanded at any given time. Energy solutions entails the production of electricity as well as the production and distribution of district heating and cooling. The category called Renewable energy focuses on the retailing of electricity originating from renewable resources, as well as the production of renewable electricity from wind and solar power.
Lastly, the Broadband category ensures that the population in the municipality are connected to the internet by building and maintaining infrastructure needed for a sufficient broadband network.

The ownership directives provided from the owner states that Umeå energi should facilitate the development of the municipality and provide energy to the municipality’s population with a high security of supply. Furthermore, the ownership directives states that the products and solutions provided by the company should be fairly priced and that the environmental impact of the company should be minimized as much as possible (Umeå energi, 2015). One of the main goals for the company is to be climate neutral by 2018 by discarding all fossil fuels when producing energy, something that the company is close to achieving. When looking at the pricing strategy, the aim of the company is to obtain a sufficient profit that enables Umeå energi to strengthen and reinvest in current assets, as well as investing in the development of the company. As long as the profit is enough to enable this, the company has no incentive to increase the prices of their products (Ernstsson, 2017).

![Figure 12: The areas of operation for Umeå Energi and the volumes sold in GWh for these](Umeå energi, 2015).

### 5.6.2 Financial aspects

The revenue of Umeå energi amounted to 1,2 billion SEK in 2015, which was a decrease of 10% compared to 2014. However, the profit of 168 million SEK entailed an increase of 6% compared to the previous year (Umeå energi, 2015). This positive economic development has continued and Umeå energi is currently fulfilling all economic goals set by the owners, and has during the last couple of years achieved a greater economic strength due to this (Ernstsson, 2017). Unfortunately, no information regarding the solidity, return on equity or expected dividend to the owners could be found in the annual report or retrieved from the interview with the CEO.
5.6.3 Risk management

When looking at the willingness to invest in projects connected to substantial risks, it can be seen that Umeå energi are willing to take risks as long as it can be argued that this investment contributes to the development of the region. The politician’s active within the municipality of Umeå is also in favor of this risk-taking approach and has recently pushed for substantial investment within fiber infrastructure in order to provide sufficient connection to the internet for the entire population of the region (Ernstson, 2017).

5.6.4 Future vision

It can clearly be identified from the annual report that the company is undergoing a substantial transformation in order to align the company with the transformation experienced from the Swedish energy market, and the customer demand connected to it. Umeå energi have thusly changed the overall aim of the company, from being focused on producing large amounts of electricity and district heating, to focusing on increasing the value for the customers and providing solutions that are relevant with consideration to the changing customer demand. The foundation of this transformation lies within increasing the efficiency of the company, as well as the customer’s energy usage. This entails that Umeå energi seeks to decrease their customer’s energy usage, to ensure a decreased environmental impact of the company, and the municipality as a whole (Umeå energi, 2015). The whole business model has therefore changed, from focusing on being a provider of energy in bulk, to being focused on the services connected to the energy provided to the customers. The transformation of the business model has entailed an increased cost connected to the increased need for innovation and the development of new products. A couple of years ago when the focus was still on the delivery of large amounts of energy, the R&D costs each year was approximately 5 million SEK. With the new business model that requires extensive product development and innovation, the R&D costs each year has increased to approximately 25 million SEK (Ernstson, 2017).

The company has also started to see the value of fiber infrastructure that enables a good connection to the internet and thusly facilitates the transformation to being a company that delivers services connected to their main products, and increase the digitalization of their offering. A good connectivity to the internet throughout the region will enable a better communication between the company and their customers, as well as improving the possibility for the customers to control their energy usage from home (Ernstson, 2017).

The utilization of data is also something that is sought after by the company. Just as other energy companies, Umeå energi gathers and stores large quantities of data from their customers, and this data is being gathered from what the company calls “the control room of the city”. However, this data is currently not utilized, and the company therefore seeks to use the data in order to increase the value to their customers by improving their offerings (Ernstson, 2017).

Furthermore, Umeå energi seeks to stimulate the decentralization of the electricity production, where the aim is that residents within the municipality is given the possibility to produce and sell their own renewable energy. In order to drive this transformation, several investments in the electricity grid are being conducted in order
to transform the traditional grid into a smart grid capable of handling the decentralized electricity production, and ensuring an increased efficiency of the customers electricity usage (Umeå energi, 2015).

One more important part of the company's new vision is too seek for partnership with different actors in the energy market in order to facilitate the transformation of Umeå energi mentioned previously. For example, Umeå energi are willing to engage in a partnership with other energy companies, where the overall aim and ownership structures of the two energy companies are similar. Instead of having multiple similar energy companies developing the same products on several different geographical locations in order to stay competitive, a partnership would lead to more centralized operations and decreased costs in areas such as R&D. Umeå energi is also seeking to connect the company with its customers in a more extensive way then before. The customers and the company should be connected from the moment the energy is produced, all the way into the customer’s resident/facilities where the energy is used. In order to enable this, partnerships between Umeå energi and other actors focusing on installation and service is sought after by the company (Ernstson, 2017).
6. Analysis

In this section, the analysis of the empirical material is presented with regards to external and internal factors that affects the strategical directions of the regional energy companies investigated. This analysis then enables an answer to the first and second research questions. The external factors are analyzed using the PESTEL framework and the internal factors are analyzed using the conflict & conflict management framework, which both were presented in chapter four.

6.1 External factors

6.1.1 Political

There are differences in opinion amongst the 6 studied energy companies regarding if there are any political external factors that are affecting the regional energy companies and how these are managed. The fact that the owners and board of directors consists of politicians and how this affects the regional energy companies is not included in this segment, but instead addresses in the conflict and conflict management part of the analysis. The political external factors that can be identified for regional energy companies is how the political situation in Sweden regarding the ruling parties at a given time affects the ownership directives, and thusly the strategical direction for the companies investigated.

Political structure of board

As mentioned previously, the ownership directives provided from the owners (local politicians) are updated on a yearly basis. However, it has been mentioned in some of the interviews that only minor changes are conducted each year if the political party structure for the board of directors of the regional energy company are the same as the previous year. If there is a change of this structure due to an election where the number of mandates for each political party is changed within the municipality, or if the election results in a complete change of board of directors, the changes of the ownership directives can become more extensive. This is due to the fact that different political parties often have different vision for the energy companies, and which areas of operations that should prioritize in order to align it with the overall vision for the political party in question. One of the interviewed CEO’s says that “As the definition of the challenges varies between the political parties, the ownership directives can be reflected by which party that possess a political majority”. The ruling party within the municipality is also responsible for appointing the chairman in the board of directors of the regional energy company, giving this party an increased chance of driving their political agenda within the energy company.

One of the interviewed CEO’s explained that this was the case when the current board of directors, consisting of a coalition of politicians from 4 different political parties were elected. The politicians from these parties then discussed how the ownership directives should reflect the political direction of each party. This resulted in an action plan consisting of 133 different actions, where some of these were implemented in the ownership directives of the company. It could be identified that a majority of these actions was suggested by the green party, a political party in Sweden focusing on
environmental issues. It could also be seen that several of these actions had been implemented in the action plan were only placed there in order for the political parties to gain the trust from the population of the municipality; the voters, and these actions were not connected to any commercial opportunity for the company. Due to the fact that the regional energy company in question is working on a commercial basis where profitability is highly prioritized, the company then has to see how these directives could be turned into business opportunities.

Furthermore, one interviewee expressed the difficulties with having a coalition of several different political parties within the same board of directors, with no political party that possessed a clear majority. This can then result in conflicts within the board itself, where the lack of a political party possessing a majority position leads to difficulties in deciding which direction the energy company should work towards, resulting in ownership directives where consistency and a red thread is missing. This then lead to uncertainties for the executives within the energy company regarding how the ownership directives should be interpreted and later implemented in the strategical direction of the company.

To summarize the external political factors affecting the regional energy companies, it can be seen that big changes of these directives are primarily conducted after an election where either the distribution of mandates is altered, or when a completely new coalition is elected. The energy company then have to interpret these directives and create a strategy based on them. It can be seen that one of the problems with the directives is that the politicians in some cases chooses to give directives that are not connected to any business opportunity, where the overall aim is instead to please the population within the municipality in order to increase the trust for the political party/parties, and thusly enable an improved result for these parties during the next election. It is then the regional energy company’s responsibility to interpret such directives and work strategically in order to identify possible business opportunities from these. Furthermore, problems may arise when there is no clear political majority within the municipality. This is due to the fact that different political parties have different visions for the energy company in question, which then can result in ownership directives lacking a red thread. This will then entail difficulties for the regional energy companies when deciding the strategical directions for the company.

6.1.2 Economic

Low profit margin for energy

One external economic factor that several of the interviewees mentioned that affects the different regional companies is the declining prices for energy, resulting in lower profit margins for these companies. It can be identified that the price for electricity has decreased substantially during the last couple of years. For example, the prices for electricity on the spot market has decreased approximately 65% since 2011 compared to the price today. This is mainly due to the lower prices of fuel such as coal, used when manufacturing the electricity combined with mild temperatures leading to a decreased demand for energy, and new renewable energy sources developed and implemented. This has led to extensively lower profit margins for the bulk delivery of energy and is one of the reasons to why energy companies have been forced to shift their product
offering, from being focused solely on providing the customers with large amounts of kilowatt hours, to being increasingly focused on services connected to this delivery.

Furthermore, it can be seen that the Swedish regional energy companies in some cases have difficulties in competing with foreign actors when looking at the prices for energy. One example of this is the production of biogas, where some foreign actors get a financial support for producing the biogas. One of the CEO’s explains that the biogas production companies in the Netherlands and Denmark get 0.5 SEK for every kilowatt hour of biogas produced, meaning that the costs for production gets substantially lowered. These companies can then offer a lower price for the biogas compared to the Swedish companies that does not receive such a financial support, and it therefore becomes more profitable to import biogas from these countries compared to producing it in Sweden.

This entails that completely new business models are implemented, where a majority of the energy companies investigated aims to decrease the amount of kilowatt hours sold to the customers by increasing the energy efficiency. The loss of revenue due to the low profit margins for energy is then avoided by pivoting the offering to being more service focused where the customer pays for the services, and the profitability of the energy companies is thus retained. The impact on the energy demand as a result of mild temperatures during the last couple of years will be further discussed under the environmental aspects and the impact of energy prices due to new renewable energy sources will be further discussed under the technological factors.

*Low prices for energy is sought after by the customers*

Even though the customer demand has changed drastically during the last couple of years where energy from sustainable sources have been increasingly prioritized and sought after, the price of the energy is still an important factor for the customers. The importance of low prices can especially be identified when looking at the corporate customers of the energy companies, due to the fact that low costs are often an important step for these companies in order to increase the profitability. The pricing for electricity is decided on the open competitive marketplace called NordPool, which entails that the price is set by the demand and supply for electricity. However, products such as district heating is present on a natural monopoly market where competition is often non-existing and where the energy companies decides what the customer should pay for this product. Several of the interviewees expressed that it is utter most importance that this market structure is not exploited when pricing these products. The energy companies has fought to prevent the implementation of regulations within the district heating market, and if the monopoly structure is abused when pricing the products and there is no effort to listen to the customer needs, regulations will most certainly be implemented. It is therefore of utter most importance for the energy companies that a good communication and relationship is built and maintained between themselves and the customers, and that the pricing for products such as district heating is mutually agreed upon by both parties. Several of the interviewees therefore states that Prisdialogen is an important tool to use in order to establish such a relationship and increase the transparency of the pricing strategy. It then facilitates fair prices for the
customers, and helps the energy companies to avoid the implementation of regulations for the district heating market.

Furthermore, a majority of the interviewees expresses that providing the customers with prices of products such as district heating that lies below the market average is something that is sought after by both the owners, as well as by the energy company itself. The underlying factor for this is mainly due to the fact that over priced products provided from the energy company may lead to major negative impact for the company, and the region as a whole. This is because too expensive products will most certainly lead to that the customer, both individuals as well as corporate customers will start to look for other alternatives, such as other energy companies that can provide lower prices of their products, or other solutions that entails a lower cost for energy, such as heat pumps. Loosing these customers will of course lead to a substantial economic impact for the energy company.

However, if the energy company provides products that are priced below the market average, this will then work as an incentive for current customers to remain as customers, and not seek for other alternatives. Furthermore, having lower prices than the market average will in many cases work as an incentive, mainly for large corporations to place their business within the region in which the energy company is present. This is of course both beneficial for the development of the region, as well as beneficial for the energy company.

To summarize the economic factors affecting the strategical directions of regional energy companies, it can be seen that the low prices of electricity has led to lower profitability and thusly the need for these companies to find new sources of income. This has led to that the product offering of these companies has started to pivot, where the bulk delivery of kilowatt hours are less prioritized, whereas services connected to the traditional offering is increasingly prioritized. The energy companies studied states that the customers are willing to pay for these types of services, such as increased energy efficiency or improved customer service, which then entails that the energy companies can increase their profitability, even though less energy is sold to the consumers.

Even though the customer demand has changed drastically during the last couple of years, where improved services are sought after, it can also be identified that the price of the products is still an important factor for the customers. It is thusly important for the energy companies to ensure that the products within the product offering that is not present on a free competitive market is priced fairly, in order to prevent decreased customer satisfaction. Some of the energy companies investigated even states that the aim is to provide such products to a price that is below the market value. This may seem as a practice that will entail a lowered profitability, but providing the products at low prices can be sought after by regional energy companies in order to improve the development of the region. Low prices of the products is desired both by individuals as well as by corporations, meaning that there is a clear incentive for these to move to a municipality which provides these. Increased population and an increased number of businesses is desired by the municipality in order to facilitate the development of the region, meaning that this is mostly a strategic decision from the regional energy companies.
6.1.3 Social

*Changed customer demand*

With new technology that facilitates increased production of renewable energy as well as the development of a more digitalized energy market, the customer demand is changing drastically. Looking back 100 years on the same market up until today, it can clearly be seen that the customers of the energy companies, both individuals and larger corporations prioritized a high security of supply of energy combined with low prices. Even though these two categories are still essential for the majority of the customers today, it can be seen that the customer demand has evolved substantially over the last couple of years, and services connected to the standard offering is now highly prioritized, whereas the bulk delivery of kilowatt-hours is less prioritized. A majority of the interviewees have therefore expressed the importance of pivoting the energy companies offering, as well as business model in order to meet the new customer demand, and to create a business regarding selling these services instead of only focusing on the bulk delivery of energy.

Looking at the current customer demand and the services connected to it, one of the most sought after energy services currently is increasing the efficiency of the customer’s energy usage. This is mainly due to the fact that a majority of the customers see environmental sustainability as an important question and decreasing the energy usage is seen as an important step in order to achieve this. This improved energy efficiency has become increasingly important for individual energy consumers that previously mainly considered the price of the energy as the most important factor, but several of the interviewees also states that the customer group that prioritize this efficiency the most is the corporate customers.

From the interviews, it was suggested that one of the main reasons for this is due to the fact that it has become increasingly important for businesses throughout the society to possess a green profile. The energy company's corporate customers sees a business opportunity of being perceived as an environmental friendly actor, where this profile then attracts customers that prioritize this factor as well. This potential business opportunity entails that the corporate customers of the energy companies are willing to pay more for an energy services that decreases their environmental impact, such as more efficient energy usage. This then helps to cover for the loss in profitability that a decreased amount of sold energy entails. One of the interviewed CEO’s explains this relationship well and says that "One can see that the sale of energy is somewhat decreased when the energy efficiency is increased. If not one more house would be built in the region, the heat supply would definitely decrease. However, the energy company believes that the most important thing for the company is to maintain customer trust while adding further services such as solar cells or the right indoor climate, and thus get more paid for offering more products."

One of the interviewees gives an example of when the corporate customers have decided to pay more for increased environmental sustainability of the energy delivered by the energy company. The energy company in question is a member of Prisdialogen, which entails good communication between the energy company and its customers regarding the pricing of district heating. The energy company identified in 2015 that the cost for
producing heat to district heating had decreased, and therefore for the first time suggested a price reduction of 1 % for district heating, which was highly appreciated by the customers. In 2017, the same energy company identified that the prices for district heating could be lowered even more, and thusly initiated a dialog with the customers. The energy company then suggested that instead of lowering the prices for the district heating substantially, it would only be lowered by 0.5 %. The money saved on this smaller reduction of the price, approximately 70 million SEK, would then be invested in increasing the environmental sustainability of the production of district heating. This would be done by decreasing the usage of natural gas when producing district heating, and instead increase the usage of biofuels. Biofuels is a more expensive fuel, but increases the environmental sustainability of the district heating. The corporate customers to the energy company expressed that this alternative of investing in sustainable fuels instead of further decreasing prices was the favorable option which is a clear example of the changed customer demand. However, the CEO in question also stated that “This is a bit more difficult to implement when the customers are private individuals, as the price is still a greatly decisive factor for these. What we can see, however, is that even individuals prioritize the environment to a greater extent compared to a number of years ago”.

Another interviewed CEO confirms that the environmental sustainability of products/services provided by the energy company is highly prioritized by the customers today. He explains that especially individuals experiences a sort of pride from producing their own electricity with the help of for example solar panels. Even though the price for energy in general is currently rather low, and that the price for solar panel still is relatively high, it can be seen that the individuals are keen on producing their own energy. The same CEO confirms that the customers, especially the corporate customers are focusing less on the price of the energy and instead values the services connected to the products. He says that “It is clear that if you ask for a price, the customers always want a lower price, but there are many who would like to pay a little extra for a good service and a functioning situation. This can also clearly be seen when making brand measurements. Then you can have raised the price between two of these measurements, but at the same time done many other things that enables a higher customer value, which means that the customer thinks the services are more affordable despite having to pay more.”

**Low customer satisfaction**

As mentioned throughout the report and in the section above, it is clear that the customer demand has changed drastically during the last couple of years. It is also clear that all of the energy companies investigated in this study is acknowledging this fact and has, or will implement changes in their offering and business model in order to meet this demand. However, there are clear indications that there is a gap between what the customers demand and what the energy companies supply. One of the clearest indications is the measured customer satisfaction provided by the SKI index.

From this index, it can be identified that the customer satisfaction is at an all-time low when looking at several areas of the Swedish energy market, both for individuals, as well as for corporate customers. Several of the interviewed CEO’s believes that this rapid
decrease of customer satisfaction depends on that the customer has increased their expectations on the energy companies and is currently demanding improved service offerings and improved communication. At the same time, the energy company has not been able to fully offer such services to the extent that the customer demands, which has led to increased dissatisfaction. The importance of restoring the customer satisfaction is also mentioned by a number of the interviewed CEO’s, where one of them states that “This is still one of the issues that are extremely important to the company due to the fact that loyal customers are incredibly important for the profitability and are therefore worth fighting for”. Another one of the CEO’s states that “it is very important that the customer trust the company and that the trust is created by helping them not use the “wrong” energy, and not unnecessarily much energy. The company should be credible and be the best option for the customer. Of course, selling less energy can lead to challenges connected to the profitability, but the number one priority is to retain the customers”.

To summarize the external social factors that is affecting the strategical directions of regional energy companies, it can be identified that the rapidly changing customer demand is strongly connected to this. The customers are prioritizing environmental sustainability to a higher degree compared to a couple of years ago, meaning that the energy companies have to provide products that meets this demand. For example, corporations are keen on possessing a green profile due to increased business opportunities connected to this. A majority of the regional energy company is therefore providing the customers with services that enables an increased energy efficiency, and thusly an increased environmental sustainability. Energy produced from renewable resources is also highly sought after by the customers, which has entailed that several major investments within production facilities have been conducted by the energy companies in order to decrease the dependency on fossil fuels and provide the customers with “greener” energy.

It can also be identified that the customer satisfaction has decreased rapidly during the last couple of years, mainly due to the fact that the energy companies have not been able to provide a product offering that is aligned with the customer demand. This has then entailed that a majority of the companies studied have developed strategic plans where services connected to the traditional product offering will be prioritized, and where the communication between the energy company and its customers will be improved.

6.1.4 Technological

Decreasing the dependency of fossil fuels

As mentioned previously, the customers are starting to prioritize the environmental sustainability of the energy that the energy companies are supplying. This have therefore lead to that the energy companies seeks to decrease the production of energy using fossil fuels, and instead invests in facilities with technology that decreases the dependency of these fuels by using other alternatives. Several of the interviewee’s states that large investments, often of billions of SEK either have been invested or will be invested in the near future in order to possess the necessary technology to become 100 % climate neutral within the production of district heating.
However, it is not only the increased sustainability of district heating that is of importance for the energy companies investigated. Several of the interviewees also mentioned that the investments in renewable electricity production facilities are of great importance in order to be able to offer the customers environmentally sustainable electricity. Examples of this is the investments in wind power, that increases the production of renewable electricity that then can be provided to the customers that demands electricity produced from fossil free sources. It should however be mentioned that one of the effects of increasing the production of electricity from example wind power is that it leads to lower electricity prices on the spot market.

Furthermore, several of the interviewed CEO’s states that it has become increasingly important to facilitate a decentralized energy production, where the energy companies enable the customers to produce their own energy, due to the fact that this is sought after by an increasing amount of customers. This can for example be done by broadening the product offering and include products that facilitates the production of energy from renewable energy sources, such as solar panels in order to facilitate the customers own energy production. Large investments within the grid infrastructure is also necessary due to the fact that several of the customers producing their own energy is also seeking to sell parts of the produced amount, or all of it to the market. The grid infrastructure today is based on the traditional centralized energy production and distribution where a few large actors produces and distributes energy to the different parts of the society. When this production and distribution becomes decentralized, it therefore creates a need to upgrade the electricity grid into a smarter grid in order to align it with this new customer demand

**Demand for digital solutions**

From chapter 5, it can clearly be seen that all of the energy companies investigated are acknowledging the digitalization of the Swedish energy market, and the technology that drives it. To invest in such technology in order to facilitate the transformation and align the energy company with the customer demand has therefore become one of the top priorities for the energy companies investigated, and which areas of the digitalization that each of the company’s focus on depends on what they believe are the highest priority for the customers.

Investments within the expansion and development of the fiber infrastructure is of importance for several of the investigated energy companies. To only focus on energy production and distribution is a strategy that is outdated and not aligned with the current customer demand. The energy companies have realized that their customers value great broadband connectivity, and also realizes that this connectivity is crucial in order for the customers to fully utilize the increased digital offering that the energy companies provides, and is therefore a cornerstone of the digital transformation. The energy companies seek to improve the digital communication between themselves and their customers in order to become more accessible. This goal is that the customers should be able to contact the energy companies when it suits the customers, and also that the customers should be able to conduct changes connected to the offering from their home. The energy companies also seek to improve their customer’s energy usage by providing digital solutions, such as tools that increases the customer’s knowledge
regarding their energy usage. However, this digital offering becomes more or less useless if the customers do not have sufficient connectivity to the internet due to the fact that this is the main enabler for accessibility to this offering, and this is the main reason to why a majority of the energy companies investigated recently have conducted several large investments within the expansion and development of the fiber infrastructure.

Data management and increased business intelligence (BI) is also one area where several of the interviewed CEO’s sees as important to further develop. As the technology regarding sensors that register different types of data is developed, the need for efficient data management increases. An increased number of energy companies are also broadening their offering and providing products and services connected to the society as a whole, often called infraservice, which entails that the amount of data registered by the sensors increases drastically. The energy companies today identifies a clear opportunity to utilize this data in order to increase the knowledge regarding their customers behaviors and demands, and thusly an opportunity to use this knowledge in order to increase the customer value and thereby the customer satisfaction.

Lastly, several of the interviewed CEO’s states that new technology enables the company to become increasingly digitalized internally. Improved internal digitalization enables an improved communication within the company, and may also improve the automatization of different practices. This then leads to more efficient operation were requests can be handled in an improved way, and were the time and cost for different practices can be lowered substantially. Decreased costs for the internal activities as well as more efficient task management leads to lower prices for the customers and increased customer satisfaction.

It should be mentioned that a majority of the interviewed CEO’s states that the different types of innovation mentioned above is of great importance for the energy companies to implement in order to align themselves with the customers demand. However, in order to be able to develop, invest and implement innovative products and services, the company must have a sufficient profitability. This therefore becomes the cornerstone that must be in place in order to enable the sought after innovation. One of the interviewed CEO’s states that “In order to enable change, a good economy is required. If you do not have a good profitability, you cannot deliver sustainability or community benefit in the long run, which makes it the foundation for development”.

To summarize the external technological factors affecting the strategical directions of regional energy companies, it can clearly be identified that the regional energy companies seeks to invest in technology that facilitates the company’s alignment with the customer demand. As mentioned previously, an example of such technologies is investments in new production facilities that decreases the company’s dependency on fossil fuels. However, one of the top priorities for the energy companies currently is to invest in technology that increases the digitalization of the product offering. For example, several of the studied energy companies have invested hundreds of millions of SEK within the area of broadband. This has been done partly due to the fact that good connectivity to the internet is sought after by the customers, but also because improved fiber infrastructure enables the customers to utilize the increasingly digitalized product offering. If all customers, both individual as well as corporate customers have good
internet connectivity, more of the communication between the company and the customers can be managed digitally. It also enables the customers to conduct changes from home/the office connected to the products/services they are provided, hopefully leading to an increased customer satisfaction. To improve the data management is also of utter most importance for the energy companies, where it is sought after to utilize the tremendous amount of data from the customers that are currently only stored, and if this data can be handled in an efficient way, it will most likely increase the knowledge regarding the customer and thereby increase the customer value.

6.1.5 Environmental

High temperature entails low energy usage

It can be identified that the climate greatly affects the different areas of operations of the regional energy companies. One part of the climate that has a direct impact on the results of the regional energy companies is the temperature during the year. This is due to the fact that the heating of homes/facilities is directly correlated to the outside temperature. For example, if the overall temperature during a year is low, this will entail a greater need for the consumers to use more energy in order to possess a sufficient indoor climate, and will thusly lead to that the energy companies will have to produce and distribute an increased amount of energy compared to a “normal” year. Using the same logic, it can also be seen that a year with overall warm temperatures will lead to a decreased demand for energy from the consumers, and less energy will then have to be produced and distributed by the energy companies.

There are both pros and cons with these two different scenarios due to the fact that it entails two different strategies for the energy companies. If the overall temperature during a year is lower than average, it will increase the amount of produced, sold and distributed energy, which then will increase the profitability of these areas of operations. However, an increased demand for energy from the consumers leads to that it may be necessary to use fossil fuels when producing this energy in order to meet this demand, which then decreases the environmental sustainability of the energy company. Several of the interviewed CEO’s states that large investments have been conducted within energy production facilities that enables the production of environmentally friendly energy. However, these CEO’s also states that if the outside temperature decreases substantially during the winter months in Sweden, it may be necessary to complement this energy production with already existing facilities that produces energy from fossil fuels, leading to a decreasing environmental sustainability.

If instead the overall temperature during a year is higher than normal, the energy companies have the possibility to meet the energy demand from the consumers by using environmentally sustainable fuels and production facilities. This then entails that both the energy demand, as well as the increasing demand for renewable energy can be met in a satisfying way. However, high outside temperatures decreases the amount of energy produced, sold and distributed to the consumers, which may result in decreased profit of these areas. The challenge for the energy companies then becomes to find alternative products/services that can be sold to the consumers in order to compensate for the lower income from energy.
The climate effect on renewable energy production

As mentioned previously, a majority of the studied energy companies have, or are planning on conducting investments in renewable energy production facilities. Examples of such investments are wind turbines and solar panels that enables the energy company to provide their customers with energy produced from renewable resources. These renewable energy production methods are highly dependent on the weather, meaning that unfavorable weather conditions entails a low energy production from these sources. This is also the case for hydropower that is dependent on the precipitation in order to stock enough water to produce the energy that the customers demand. Unfavorable weather conditions can therefore have a large impact on the energy companies’ ability to produce renewable energy, and it is therefore important to form a strategy that takes this external factor into consideration and enables the energy companies to use alternative energy production methods when needed.

The climate, more specifically the change of it is also one of the main factors for the energy companies drive to become increasingly environmentally sustainable. The effects of the vast CO2 emissions globally is acknowledged by a majority of the population, including the energy companies. This has then entailed that actions are taken by these companies in order to slow down the negative effects that these pollutions are causing on the planet, which is one of the reasons for the strong focus on energy efficiency and the vast investments within renewable resources.

6.1.5 Legal

When interviewing the CEO’s of the energy companies investigated in this study, all of them states that the municipal law is a legal external factor that affects the strategies and the areas of operations of the regional energy companies greatly and the effects of these factors are analyzed in detail below. It should also be mentioned that several of the interviewee expresses frustration when explaining this topic. This is due to the fact that the general opinion of the interviewees is that the municipal law affects the regional energy companies negatively, and that there is no reason to why some of the energy companies in the Swedish energy market should operate under it, whereas other energy companies does not have to take the law into account when operating the company. The frustration is also based on the fact that the CEO’s of the regional energy companies does not feel heard when addressing this issue. One of the interviewee says that "The size of the restriction that the law entails is rarely highlighted. There is rarely anyone considering the consequences of the law from the perspective of the population of the municipality. When you address this problem, it feels as it is considered as a feeling rather than facts."

Effects on geographical expansion of areas of operation

The foundation of the municipal law is that it restrains companies that operates under it to expand their areas of operation geographically, more specifically outside of the municipal boundary. This means that even if a regional energy company seeks to expand one or several of their areas of operations geographically in order reach out to more customers, the municipal law prevents them from doing this. Several of the interviewed CEO’s states that this has large negative impacts due to the fact that very few parts of the regional companies operation is connected to geographical boundaries. This means that
several of the most important customers to the regional energy companies might be situated outside of the municipality, and is thusly not accessible to these companies.

Furthermore, the restriction of geographical expansion for regional energy companies have negative impacts on the possibility to collaborate with smaller, local energy companies. Several of the interviewed CEO’s raises concerns regarding the future for local energy companies. There have been clear indications that some of these local companies have problems connected to low profitability. It could therefore be beneficial for these smaller companies to engage in a partnership with a bigger regional actor and at the same time, such a partnership would enable a larger customer base for the regional energy company. However, the municipal law prevents such a partnership due to the restriction of geographical expansion, and several of the interviewees have mentioned that this will lead to great problems for the local energy companies, due to their lack of funds.

Effects on competitiveness
The municipal law and the previously mentioned restricting effects that it entails also have a serious effect on the competition between regional energy companies, and the governmentally/privately owned energy companies that does not operate under the law and thusly is not affected by it. From the interviews, three different effects of the competitiveness can be identified, where the first one is the restriction of geographical expansion previously mentioned. Several of the CEO’s states that the regional energy companies are just as relevant for the customers as the three largest energy companies. There is also a mutual opinion that the regional energy companies in some areas are even more innovative and more relevant to the customers compared to the energy companies that is not affected by the municipal law, but where the restriction of geographical expansion prevents these products/services to reach the customers that demands them. There are areas of operation that is not affected by the law, such as the retailing of electricity that is conducted on an open marketplace. However, these areas are connected to a low profit margin, making it difficult to achieve a high profitability. It can also be seen that the larger energy companies that are not affected by the law sometimes utilize it in order to take over projects initiated by regional energy companies. One CEO says that as long as the primary purpose for the project initiated by the regional energy company is to contribute to the society in some way, they are encouraged to conduct it. However, if this project is also starting to become an economic profitable project, the larger energy companies often states that it is not compatible with what the municipal law states, which may lead to that the project is handed over to an energy company that is not operating under the municipal law.

The second effect is that the municipal law entails that collaborations with other parties are affected negatively. One of the CEO’s says that “Many of the actors that our energy company seeks to cooperate with do not want to work with a small energy company that is active within such a small area that we are. They want to work with someone who has national or international ambitions, which means that they choose to cooperate with other energy companies instead of us.”

The third effect of the competitiveness is based on the fact that the low growth potential that the municipal law leads to less possibility to utilize economies of scale. If the
regional energy companies was not restricted by laws, these companies could be able to grow and expand, which then would entail higher profitability by the possibility to exploit the economies of scale. This is not possible at the moment, making it harder for these companies to achieve a desired economic strength.

One of the interviewed CEO’s uses a comparison with the newspaper business in order to highlight the problems with the municipal law and the effects on competition that it entails. He explains that the competitive climate in the energy business can be explained as if the big national newspapers in Sweden was able to report on all news, both national and international, whereas the smaller newspapers positioned in different municipalities only was allowed to report and write about news that concerned this municipality. The same CEO explains the negative effects on the society that is connected to the municipal law. Due to the fact that different rules applies to different energy companies, the competition is unfair and not balanced. This entails that the governmentally/privately owned energy companies possess an advantage were these have a greater possibility to reach out to a larger amount of customers with their products and services. This also means that these companies will have a bigger opportunity to affect the energy market, and the society as a whole. At the same time, the smaller regional energy companies often possess a clear focus on the three pillars of sustainability and are keen on benefitting the population of the municipality in which they are active in. The unfair competition thus leads to increased difficulties for the regional energy companies to provide a large customer group with such products/services, and have less impact on the society as a whole.

It should however also be mentioned that the municipal law does not only lead to unfair competition between Swedish energy companies, it also leads to unfair competition between Swedish regional energy companies and foreign actors with interest in the Swedish energy market. One CEO mentions that there has been situations were foreign actors has pressed charges regarding competition infringement on Swedish regional energy companies. This is possible due to the fact that the foreign actors do not operate under the municipal law, which the entails that the competition between Swedish regional energy companies and foreign actors are unbalanced as well, where the foreign actors have a greater possibility to reach out to a larger customer base compared to Swedish regional energy companies.

To summarize the external legal factors affecting the strategical direction of the regional energy companies, it can clearly be seen that the municipal law is affecting these companies greatly. First of all, it hinders the regional energy companies to expand geographically beyond the borders of the municipality. This means that the areas of operation that are not connected to a free competitive market is delimited to the municipality itself, and the population within it. It also means that even if a regional energy company sees a business opportunity by providing potential customers outside of the municipals boarders with their products, the municipal law prevents this. The geographical restriction that the municipal law entails of course also affects the competiveness between the companies that have to operate under the municipal law and the ones that do not have to take the law into consideration. This is due to the fact that the regional energy companies have less opportunity to reach out to large customer
groups due to this geographical restriction. The municipal law also impairs the possibility for regional energy companies to engage in partnerships with actors outside of the municipal. This is partly due to the geographical restriction, but also due to the fact that the small size of the regional energy companies and their local ambition is not sought after by these potential partners. One effect of this is that some of the studied energy companies has built their whole strategy on only operating within the borders of the municipality. There is no ambition to expand geographically and instead, the companies focus on developing the region in which they are present within.

6.2 Internal factors
6.2.1 Politicians as owners
The energy business is characterized as a sector that requires large investment within infrastructure and new technology, in order to meet the current and future customer demand. At the same time, the energy market is experiencing a tremendous transformation pressure which is connected to a number of challenges, both for governmentally/privately owned energy companies, but also for energy companies owned by a municipality. The fact that the owners, and the board of directors within the regional energy companies consists of politicians can then become troublesome, as expressed by several of the interviewees.

One of the interviewed CEO’s explains this problem very well and says that “The energy market has existed for 150 years and has been quite predictable. It is the energy companies that have dictated the terms of what is going to happen in this market, and customers have been using the infrastructure provided by the energy companies on the energy companies' premises. There has been a common understanding of the challenges that affect the energy company, such as when climate impact occurred, and then it has been easy to identify reasonable strategies with the owner to become a winner in that conversion. On the other hand, what is happening now is incredibly interesting and everything in the energy industry will be at the forefront over the next few years. This common understanding between the owners and the executive team of the energy company that existed previously based on a long history that made the future predictable is now gone. This means that knowledge gap between the company and its owners becomes gigantic.”

This can then become the source for conflicts and one of the reasons for this is due to this knowledge gap between the executives and the owners/board of directors regarding the Swedish energy market and the challenges that it is facing. A result of this knowledge gap is the creation of conflicts regarding investments, both in existing assets as well as in new facilities and technologies. This is mainly due to the fact that the politicians in some cases can have a hard time to identify the benefits of such investments in the sense of its economic benefits, as well as the benefits regarding social and environmental sustainability. According to a majority of the interviewees, such conflicts can be avoided by having a clear and continuous communication between the executive team and the board of directors/owners. An example of this important communication is when the energy company seek to conduct a large investment. It is then important that the executive team of the energy company thoroughly explains the benefits of this planned investment from the three pillars of sustainability, as well as explaining why this investment is important to conduct at the given moment. It is also of
great importance to inform the owners of the potential risks connected to the investment in order to facilitate a sufficient risk analysis. One of the CEO’s explains that his energy company sought to invest approximately 1.7 billion SEK in a district heating facility in order to decrease the company's dependency on fossil fuel. Before this could be done, the CEO and the executive group had meetings in the evenings with each political party present in the municipality in order to inform about the benefits of this investment, as well as the risks connected to it and it was also an opportunity for the politicians to ask questions regarding the investment. This kind of communication that enables the politicians to increase their knowledge regarding the Swedish energy markets and the challenges that it is facing, and how the energy company then should operate in order to stay competitive is therefore crucial in order to minimize the number of conflicts and improve the relationship between the executive team and the owners of the regional energy company.

However, several of the interviewee’s states that even though a good communication is present between the owners and the regional energy company, there is still a risk that the owners chooses to ignore the suggestions from the executive team. One of the interviewed CEO’s says that “If the owners do not even want to discuss questions regarding strategic decisions for the future it will be problematic, but it can be even more problematic if you discuss these questions and the owners says that they understand the problem but do not want to act upon it for some reason and refuses to implement an alternative strategy. If this is the case, it can have devastating consequences for the energy company.” Furthermore, one of the interviewed CEO’s states that the owners of the regional energy company in question does not even acknowledge the ongoing transformation on the energy market.

Even though several of the interviewee’s states that conflicts may arise when the owners as well as board of directors consists of politicians, it is also mentioned that there are clear benefits with having laymen in these positions. This is due to the fact that the politicians within a municipality often are focused on increasing the benefits for the population within this municipality. This then entails that the top priority for the owners of the regional energy company is the development of the region, instead of only focusing on the profitability of the company. This mindset is beneficial to possess in today’s energy market where the customer demand is rapidly changing from mainly focusing on price, to being more focused on the services connected to the “traditional” products, and also prioritizing environmentally friendly products. One CEO explains this by saying “I see it as an advantage that some of the board members are not experts within the area. This is because the company seeks to provide a customer experience, and this may not be a priority if the board consists solely of energy experts. The company focuses heavily on having satisfied customers, and if the board is a reflection of the customers, it will be easier to achieve this.”

The theoretical framework regarding conflicts and conflict management also states that interdepartmental conflicts can be beneficial, and even crucial in order for an organization to successfully transform and align itself with regards to future challenges. If an organization is moving towards greater differentiation and complexity due to an ongoing transformation, there is a clear risk that conflicts may arise due to two or more
different visions for the company. However, if these conflicts can be managed in an efficient way, it may instead facilitate and enable the change, which shows that efficient interdepartmental conflict management is of utter most importance for regional energy companies. If the conflict is not handled in the proper way, there is a clear risk that the result of the conflict possesses a destructive nature instead of a beneficial one. There is a risk that the departments in question then starts to work against each other, leading to lacking communication and a win-lose mentality between the departments. This means that in order for one department to “win”, the other one must loose, and an efficient collaboration is not prioritized. This highlights the importance of an efficient conflict management, due to the fact that it may be one of the most important underlying factors for a successful transformation of an organization. Which type of conflict management that is most effective in certain organizations varies greatly, and there is no right answer to how conflicts between the owners and executive group at several different Swedish regional energy company should be managed. This is mainly due to the fact the conflicts between these companies varies greatly, and even though there are conflicts that are similar to each other when investigating the studied energy companies, the individuals within these organizations reacts differently to different conflict management approaches, making the recipe for efficient conflict management highly individual for each company. However, the framework states that there are four clear outcomes of conflict management where the first two outcomes are a result of poor conflict management and the last two are results of effective conflict management (Berkovitch, 1983). These are:

1.) Withdrawal
2.) Dominance
3.) Compromise
4.) Creative problem solving

6.2.2 Aim of ownership
There are several different aims for the municipalities of owning an energy company, where some are more focused on environmental sustainability and the development of the region as a whole, whereas others focus more on the economic benefits of it. Depending on these different aim for the different municipalities, the ownership directives might vary greatly. From a majority of the interviews, it can be identified that the overall aim of ownership from the municipality is to facilitate the development of the region focusing on the three pillars of sustainability (economic, environmental and social). This means that the economic measures is prioritized to the point that it enables the energy company to provide the owners with the expected dividend, as well as keeping enough funds to facilitate the development of the company. A majority of the interviewed CEO’s states that without a sufficient profitability, the energy company cannot be developed and will thusly loose its competitiveness. This development is partly conducted with regards to the remaining two pillars of sustainability and also with regards to the technological development that is necessary in order to align the company with the digitalization of the energy market. This approach of having a good economic strength combined with a focus on environmental and social development
seems to be sought after by both the owners and executives of a majority of the regional energy companies investigated, and there are several different examples of when this balance has not been achieved that has then resulted in extensive negative impacts for the energy companies in question. The most common reason for this has been that the municipality's overall aim of the ownership has been to increase the economic strength of this municipality. This has then entailed that the energy company has had to pay unreasonably high dividend, and there have even been situations where the municipality has sold the energy company if the profitability of it has not been high enough. This is confirmed by the theoretical framework regarding conflict and conflict management which states that one of the most common sources of interdepartmental conflicts is the competition within an organization of scarce resources (Berkovitch, 1983).

If the relationship between the owners and the executive team of the regional energy company instead is good, where the owners sees other benefits of owning the energy company besides only profitability, this can result in benefits for both the energy company as well as the region as a whole. The approach from the owners of focusing on the sustainability aspects of the energy company is mainly conducted in order to facilitate the development of the region. That the energy company and the municipality possesses economic strength enables low prices for the energy provided to the customers, except for the electricity where the price is decided by the demand and supply. This combined with that the energy company also provides environmentally friendly energy and social benefits leads to that the region becomes attractive for individuals, as well as for corporations. This can then entail that an increased number of individuals and businesses relocates to the municipality in question, which then helps the development of this municipality.

6.2.3 State of municipality
It can clearly be identified from the interviews that there is a strong relationship between the economic state of the municipality and the ownership directives. A majority of the studied energy companies operates within a municipality possessing great economic strength. This has then entailed that the owners have not demanded unreasonably high economic measures from the regional energy companies. However, several of the interviewees explains that there have been a number of cases were the financial situation within a municipality have been poor, which then have had negative impacts on the energy company within this region. As stated above, the theory of conflicts and conflict management describes that scarce resources for an organization is one of the most common source to interdepartmental conflicts, which then can result in serious negative affect on economic measures if not handled correctly (Berkovitch, 1983). Such conflicts can easily be identified within the regional energy companies, and in some cases it has even gone so far that the municipality have decided to sell the energy company in question due to low profitability, and thereby difficulties to meet the economic goals set by the owners.

One area of the financial measures provided by the ownership directives that may lead to conflicts if not handled properly is the one regarding the expected dividend payed to the owners. As mentioned previously, most of the municipalities demands that the
regional energy company should pay a dividend each year, where the size of this dividend varies greatly between different companies. The main problem regarding this mentioned by several of the interviewed CEO’s is that the figure set in the ownership directives is not properly argued for. This means that the expected dividend often is a fixed figure that is not connected or adjusted in a clear way to the different results of the energy company each year. A majority of the CEO’s explains that the present expected dividend has remained the same for a number of years. It can also be identified from the interviews that when the expected dividend do change, it is often only based on the fact that they have remained the same for several years in a row and that the profitability of the energy company has increased during these years. One CEO says that “you should link the expected dividend to some kind of index, such as consumer satisfaction or inflation etc. so that it is not a fixed figure that remains the same for a number of years.” The fact that the owners of the energy companies often does not provide the executive team of the company with information regarding the reasons for the set amount of the expected dividend is a clear source of conflicts. This is especially true when the dividend is raised substantially to the point where it creates economic instability within the regional energy company. As mention previously, it is of utter most importance to possess an economic strength in order to develop the environmental and social sustainability of the energy company, as well as transforming the energy company to align it with the future customer demand, and if the owners then demands an excessive dividend, there is a clear risk that this development will be impaired. There have even been cases where Swedish regional energy companies have been forced to loan money in order to pay the expected dividend to the municipality. When looking at the expected dividend for the regional energy companies studied in this thesis, it can also be identified that it varies greatly between the companies. One of the reasons for this is of course that the total revenue varies greatly for these companies, where the one with the highest revenue have nearly 6 times larger revenue compared to the company with the lowest revenue. This then affects the expected dividend to the owners, where a lower revenue often entails a lower expected dividend. Another reason for this great variation is due to the fact that some of the investigated regional energy companies have updated their expected dividend to the owners, whereas others have not done this. One of the interviewed CEO’s that is an employee within one of the energy companies with low expected dividend states that the owners have expressed that they seek to raise this dividend in the near future, due to the fact that the company in question have increased the profitability substantially. Another one of the CEO’s states that the expected dividend for the regional energy he is managing has just been increased due to the fact that it has been rather low compared to the profitability of the company. This then shows that the expected dividend varies greatly between the two companies mentioned above, even though their revenue and profitability is similar, due to the fact that one of the companies have updated their ownership directives, and the other one have not.

Furthermore, the economic strength of the municipality can affect the pricing of the products that are not present on an open competitive market. One of the interviewed CEO’s says that one of the reasons to why they decided to join Pridialogen was because the municipality in question possessed a good economic strength that entailed the possibility to provide low prices of district heating to their customers. The same
interviewee says that it can be problematic to join Prisdialogen if this economic strength is no present. This is mainly due to the fact that the owners of the regional energy company then can demand a unreasonably high dividend if money is needed to the municipality which then most likely would entail an increased price for district heating, which would be hard to argue for to the customers if the company was a member of Prisdialogen.

6.2.4 Risk assessment
When looking at the possibility for regional energy companies to invest in projects and thus becoming increasingly competitive, the owner’s willingness to take on risks is a factor that affects this greatly. All the investments that the energy company is seeking to conduct must first be approved by the owners, and if these owners are not willing to take on any risks at all, very few of these investments will be approved. This will most likely have a negative effect on the energy company’s competitiveness, due to the fact that few conducted investments will lead to a slow development of the company.

It can however be seen that several of the regional energy companies investigated have conducted different large investments connected to great risk, even though the company is partly funded by the taxpayers money. This substantial risk is often connected to the fact that similar investments have not been conducted previously, ad that is therefore problematic to assess how the investment will be received by the customers. As mentioned previously, a result of this has been that the market has not been ready for several of the investments conducted by the regional energy companies previously, which then have resulted in that the projects have been canceled.

The reason that the regional energy company and its owners decides to invest money from the taxpayers into projects that are connected to an substantial risk and in projects where it is known that the investment will not yield any profitability, is because such investments drives the development of the energy market, as well as the development of the region. One of the CEO’s explains that “If the regional energy companies in Sweden had not dared to take any risks, several areas such as district heating would not have been as developed as they are today. These companies have always dared a little more than privately/governmentally owned energy companies. In a way, you can of course see it as endangering the taxpayers’ money, but in the same way you can see it as building and developing a society that is sustainable and adapted to the future”. Furthermore, a majority of the interviewed states that the energy company and its owners are more than willing to invest in projects that does not improve the economic strength of the company or the municipality, as long as it can be shown that such an investment benefits the environmental or social sustainability in a clear way.

6.2.5 Interpretation of municipal law
It can clearly be seen from the interviews that the different regional energy companies investigated interprets the municipal law in different ways. The main difference of interpretations is based on how strict the law is followed, were some of the companies follows it on a strict basis, where as other companies are utilizing the fact that some areas of the law consists of grey areas, where it is up to the regional energy company and its owners to choose how to interpret the law. One CEO states that “It was a very long time since some clarifications or revision of the legislation was conducted, which
makes it very much up to each regional energy company and its owners to interpret the legislation in a way that makes it relevant to today’s market situation.” These grey areas are also a result of vague directives of which laws that applies to which area of operations. One example of this is the production and distribution of district heating for regional energy companies. The municipal law states that the company should only operate within the geographical boarders of the municipality. At the same time, the district heating law states that the production and distribution of district heating can be conducted outside of the municipal, in nearby municipalities’ boarders as long as it benefits the municipality that the energy company originates from. This then entails that energy companies either can follow the municipal law strictly, leading to less opportunities for geographical expansion, or instead focus on the district heating law which then entails increased opportunities for operating outside of the municipality. How far outside of the municipals boarders that the energy company is allowed to operate if looking at the district heating law is also a question of interpretation. The law states that the production and distribution of district heating can be conducted in the surrounding municipalities which entails that it is up to the regional energy company and its owners to interpret and define what counts as “surrounding municipalities”. Several of the interviewed CEO’s states that their energy company currently operates or has operated several miles outside of their own municipality. However, none of these companies have ever been subjected to an audit regarding their areas of operations. One of the CEO’s explains that the company previously produced and distributed district heating as far away as 110-120 kilometers from the municipality in which the company originated from, and that it most certainly would show that this was not aligned with the district heating law if an audit would have been conducted.

However, if it is sought after by both the executive team and the owners of the regional energy company to expand outside of the municipals borders, there are more ways to avoid the restrictions that the municipal law entails. This is either done by creating a partnership with nearby municipalities, by incorporating these municipalities within the corporate group. By doing this, the regional energy company is allowed to operate both within its own municipality, and also within the municipality that is part of the ownership, thusly erasing the geographical restriction. Another way is to own a CHP plant, both producing heat used for district heating as well as electricity. This plant can then be operated outside of the municipal boarders due to the fact that the plant partly produces electricity, which is allowed to be done outside of these boarders for regional energy companies according to the electricity law.

How the municipal law is interpreted and thusly how strictly it is followed mainly depends on the overall vision for the company from the owners and the executive team. If for example the overall goal for the company is to develop the region in which it is present, the municipal law is often interpreted very strictly due to the fact that there is no desire to expand the business outside of the municipal’s geographical boarders. However, if the energy companies sees great business opportunities outside the municipality, there can be an increased desire to interpret the law more vaguely and thusly enable expanding the operations outside of the municipality.
How the executives and the owners of the regional energy companies relates to the municipal law in some cases also depends on the structure of the corporate group. There are examples where the departments of the municipal is obliged to operate under the municipal law, but where the energy company itself within the corporate group is a limited company that does not have to operate under the municipal law, where the main goal is to increase the value to the shareholders. This entails that the ownership directives provided by the owners will be based on the municipal law and that the executives within the energy company then have to create a strategy where these ownership directives can be transformed in to value creating operations for the shareholders. This can for instance entail that the owners are interpreting the municipal law in a very strict way, whereas the executive team may see potential business opportunities outside of the municipality. The owners then does not want to exploit possible loop holes in the law and one of the interviewed CEO’s explains this by saying “This is a result of the fact that politicians do not want any unnecessary problems, they do not want to create any turbulence in such matters and then feels as if it is better to follow the law very strictly”. The theory of conflicts and conflict management describes that interdepartmental conflicts often occurs when the overall strategic aim for different departments is not aligned and thusly, if such differences regarding the overall strategy of the energy company is not handled in an efficient way, it may result in conflicts between the owners and the executive team (Berkovitch, 1983). If for example the owners feels as if the energy company is focusing too much on the measures connected to profitability, or if the executive team thinks that the ownership directives are not in any way connected to creating a profitable business, conflicts may be created. In order to avoid these types of conflicts, it is therefore crucial to have a clear communication were each party gets the opportunity to explain their vision for the company and this hopefully then results in a compromise were both the owners and executive team feel as if their goals can be achieved.
7. Discussion

In this section, the results of the analysis will be discussed. This discussion will be based on the strategical directions for the regional energy companies investigated, both with regards to external and internal factors identified in chapter 6.

7.1 Discussion of external factors

When all of the external factors affecting the regional energy companies were analyzed, it could clearly be seen that some of these factors affected all energy companies, not only the ones owned by a municipality, whereas other factors affected all energy companies in Sweden. Two of the external factors could exclusively be connected to regional energy companies, which were the political and legal factors. This is due to the fact that the ownership structure of the regional energy companies which entails that the political situation in Sweden highly affects the strategical decisions of these companies are unique, and not present for the three largest energy companies. This is also true when looking at the external legal factors where the municipal law only affects the regional energy companies, and not the privately- /governmentally owned ones. It can therefore be argued that these two categories have the biggest effect on the competitiveness between the regional energy companies and the three largest energy companies.

When looking at the political external factors, it can clearly be seen that these factors can have a great impact on the regional energy companies’ ability to be competitive. The regional energy companies have to adapt their strategy to the owner’s vision for the company. As mentioned previously, these owners are politicians, which entails that some of the ownership directives that these provides to the executive team might not be connected to a business opportunity. Instead, it is possible that some of the ownership directives are only based on the fact that the politicians within the municipality seeks to gain popularity from the population. If a regional energy company is provided with such ownership directives, it is likely that the profitability of this energy company will decrease. If the profitability is decreased, there will be less funds to invest in projects that enables a development of the company, which then will lead to a decreased competitiveness compared to other energy companies.

It can be seen from the PESTEL analysis that some external factors were mentioned to a higher degree compared to others. The legal external factors are also an example of factors that mainly affects the regional energy companies. This entailed that there were an abundance of empirical material regarding this topic, which then facilitated the analysis of external legal factors present for regional energy company. It could be argued that one of the reasons for this is that a majority of the interviewees feels that this is an external factor that solely impairs the regional energy company's ability to operate in an efficient way, and operate in a way that is sought after by the executive team and the owners. Several of the interviewees states that the municipal law entails unfair competition and that it gives the three largest energy companies a clear advantage. This feeling that an external factor is unfair was only stated regarding the legal factors, which might be the answer to why the CEO’s were so keen on talking about this subject. Of course, some of the interviewees mentioned that external political factors could be
problematic for regional energy companies, and not something that the three largest energy companies would be affected by, but the word “unfair” was never mentioned regarding this external factor. Several of the interviewed CEO’s also mentioned that the municipal law was old and outdated, and that there were different examples of when the studied energy companies had operated far outside of the municipals borders without any consequences.

This then raises the question “Is the municipal law working as it should do?” The information presented above suggests that the answer to that question quite possible is “no”. The reason for this is that it affects the competiveness, both between regional energy companies and the three largest energy companies, but also between different regional energy companies. It is clear that the law needs to be updated in order to fit the current situation of the Swedish regional energy companies. New products and services has been added to the traditional product offering of these companies, and if the law does not state the rules regarding the area of operation for these new products, it becomes up to the regional energy companies to interpret how strictly the law should be implemented for these products. If this reasoning is taken one step further, it can be suggested that this will have an impact on the competiveness between the different regional energy companies. If one of the regional energy companies interpret this law strictly, this company will then have less possibilities to reach out to a large customer base compared to a regional energy company that interprets the law less strictly. This is due to the fact that the regional energy company that interprets the law less strictly have a greater possibility to expand geographically and thereby reach out to more customers.

It can thusly be argued that the municipal law needs to be updated in order to entail a fair competition between the regional energy companies in Sweden, by having clear directions on how these companies should conduct their different areas of operations.

The second part of the problem with the municipal law and the effect on the competiveness that it entails is the lack of audits expressed by several of the interviewed CEO’s. A number of these interviewees explains that their company have carried out expansions on for example the district heating grid in the past that has led to that this area of operation has been conducted several 100 kilometers outside of the municipal borders. This has then not led to any penalties for these companies due to the fact that this expansion has not been audited. A lack of auditing can of course be problematic due to the fact that it sends out signals to the regional energy companies that operating outside of the municipal law does not lead to any negative consequences, and may therefore encourage such behavior. It can therefore be identified that in order to improve the competiveness between different regional energy companies, it is important to update the municipal law, as well as make sure that the law is followed by the companies operating under it in by conducting audits on the different areas of operations of these companies.

To summarize it, there is a great need for an updated version of the municipal law. This is due to the fact that the current version both have negative impact of the competiveness between companies that operates under it and those who do not, as well as between companies that both operates under it. An updated version would hopefully entail clearer directions on what the law states, and thereby prevent the regional energy
companies to interpret the law themselves, as well as revise the parts of the law that leads to unfair competition between the regional energy companies and the three largest energy companies.

Furthermore, other external factors was only mentioned briefly by the interviewed CEO's, meaning that these factors were somewhat underrepresented within the PESTEL analysis. One example of such external factor was the environmental factors, which was hardly mentioned by any of the interviewees. However, this did not mean that this external factor was classified as irrelevant, mostly due to the fact that the overall climate during a whole year has a strong correlation to the energy sold, and thereby the profitability of the energy companies. This correlation was mentioned continuously when reading the studied companies annual reports, and it was therefore decided to complement the lack of information regarding this subject from the interviews with information obtained from the different annual reports. It could be argued that this lowers the validity of this part of the PESTEL analysis due to the fact that the information was retrieved from secondary sources instead of primary sources. However, annual reports are credible sources that are written in collaboration with the CEO of the company, meaning that the validity of this information is not substantially impaired.

When looking at the generalizability of the external factors, it can clearly be seen that there are some areas that are brought up by all interviewees. For example, the changing customer demand where services connected to the traditional offering is increasingly prioritized by the customers was brought up by all interviewees. All companies studied had also started to work towards an increased alignment with this changed customer demand in one way or another. However, it is not only the regional energy companies studied that realizes that the digitalization of the energy market entails a large transformation pressure on the energy companies. When studying the annual reports of the three largest energy companies, it can clearly be identified that all of these are working towards a more service minded offering towards their customers. It can thusly be argued that the social part of the PESTEL analysis is connected to a high degree of generalizability, mainly due to the fact that the changing customer demand is independent of geographical boarders. This means that the customer demand is more or less the same for two different regional energy companies, or for a regional energy company and governmentally/private owned energy companies.

Furthermore, there are parts of the PESTEL analysis were the generalizability for regional energy companies are high, but where these external factors not can be connected to a governmentally/private owned energy company. An example of this is the Political part of the PESTEL analysis that explains how the political situation in Sweden affects the regional energy company. It can then be identified that a majority of the interviewees explains that there are political factors that affects the operation of the company due to the fact that both the board members and owners consists of politicians. This is the case for all regional energy companies, which entails that the generalizability of the political external factors are high for regional energy companies. However, the privately owned energy companies does not possess the same corporate structure where the board members and owners are politicians, which then leads to that the
political external factors are not applicable on these energy companies, and that the generalizability therefore becomes low.

7.2 Discussion of internal factors
When looking at the internal factors affecting the strategical direction of the regional energy companies, it can be seen that there were areas within this perspective that the interviewees focused on, just as for the external factors. One of these areas were the possible conflicts that could arise from the fact that the board members and owners of the regional energy companies consists of politicians. However, it was only the CEO's of the regional energy companies that was interviewed regarding this internal structure of the energy companies. It could therefore be argued that it would be interesting, and possibly increase the robustness of the study if the board members/owners of the regional energy companies were interviewed as well regarding these possible conflicts. This is due to the fact that interdepartmental conflicts that is studied within this thesis occurs between two different parts of a company. If only one of the two parts are question regarding possible conflicts, it therefore impairs the possibility of obtaining the whole picture of the problem and thereby decreases the robustness of the results. It could therefore be suggested that it would be highly interesting to investigate the internal factors from the politician's perspective, in order to identify the difficulties in giving directives to a regional energy company based on the vision of the political party in question, and balance this with the economic situation of the municipality.

Furthermore, all of the interviewees explained during the interviews that there were no present conflict between the owners and the executive team within the respective energy company. On the contrary, a majority of the CEO’s initially expressed that the relationship between the executive team and the owners were great. It could then be argued that due to this, the empirical material gathered from the interviews regarding these conflicts possess a low validity. However, several of the interviewees had experienced these type of conflicts previously, which then entailed that they could accurately speculate regarding possible conflicts in the future, and why these conflicts might arise. A majority of the interviewees also possessed vast knowledge regarding conflicts present in other regional energy companies, meaning that the information obtained from the interviews regarding the internal conflicts can be seen as valid.

Even though a majority of the interviewed CEO’s first stated that no conflicts were present between the executive team and the owners of the studied energy companies, it could not be argued that such conflicts does not exist within these companies. One of the reasons for this is that the interviewed CEO might not want to provide information regarding conflicts due to the sensitive nature of such conflicts, and therefore not share the whole picture of the relationship between themselves and the owners. Another reason is that several of the interviewed CEO’s mentioned that such conflicts would most likely arise in the near future due to the rapidly changing Swedish energy market. They explain that even though conflicts are avoided today, the transformation of this market has just started, and with this transformation comes a need for the energy companies to align themselves with it. It is due to this that several of the interviewees expresses a deep concern regarding possible conflicts in the future between themselves and the owners of the company, where the vision of how the energy company should
align themselves with the new customer demand might vary between the owners and the executive team.

When looking at the analysis of the internal factors that affects the strategical direction of the regional energy companies, it could be seen that there where both positive and negative things connected to having politicians as owners. One interesting aspect of this was that a majority of the interviewed CEO’s stated that if this was not handled in a proper way, it could lead to several negative impacts, but if it instead was handled in a good way, it could entail several different positive results. The reason for that these results were interesting was due to the fact that having politicians as owners, and the positive effect that this could have on the regional energy companies was not considered in the beginning of this study. Of course, all interviewees stated that if the relationship and communication between the owners and the executive team was managed poorly, it could entail several negative consequences for the regional energy company. However, if a good communication was maintained that benefitted the owners understanding of the energy market, and the executives understanding of the political challenges for the owners, it could then result in positive benefits for the regional energy company. The reason for this according to the interviewees was due to the fact that the owners (politicians) were not specialized within the technical solutions of the energy market, and therefore focused more on the customers, and what these customers values. This approach of focusing on customer value is arguably beneficial to have in this transforming energy market, due to the fact that the customers are starting to prioritize services connected to the traditional product offering, instead of only focusing on the delivery of energy. This means that if the relationship between the owners and the executive team of a regional energy company is poor, it will most likely have several negative effects on the regional energy company in question. However, if a good relationship can be achieved, it may result in better results for the regional energy company compared to an energy company where the owners are not politicians.

When looking at the strategical directions of regional energy companies, it can be identified that the owner’s aim of ownership affects this greatly. From the interviews with the CEO’s it can be seen that a majority of the regional energy companies prioritize the profitability to a great extent, which then indicates that the overall aim of these companies compared to the three largest energy companies does not differ as much as stated in the background of this thesis. However, the big difference between these companies is that the main aim of achieving a sufficient profitability for the regional energy companies is due to that the owners must be provided with the expected dividend stated in the ownership directives, and that the company must have enough funds left to invest in projects that facilitates the development of the company itself, and the region in which it is present. When this is fulfilled, the overall goal for a majority of the regional energy companies is to improve the living standards for the population within the municipality by working towards environmental and social sustainability, and the profitability works as a tool for achieving this. Of course, it can be argued that the three largest energy companies also seeks to improve the social and environmental sustainability in the region in which they are present, but the local presence of the regional energy companies entails that the overall strategy of these are focused on developing the municipal in which they operate.
8. Conclusions

This chapter seeks to present the main findings of this study based on the pre-study as well as the in-depth interviews. These findings are used in order to answer the two presented research questions, and lastly to help fulfill the purpose of this study:

“The purpose of this study is to analyze the different ownership directives and strategies of 6 regionally owned energy companies in Sweden, based on internal and external factors affecting these companies.”

8.1 RQ 1

When interviewing the CEO’s of the studied regional energy companies, it can clearly be seen that there are several internal factors that affects the strategical direction of these companies. The main reason for this is that the ownership structure of regional energy companies differs greatly compared to governmentally/privately owned energy companies. This is due to the fact that the board of directors and the owners of the company consists of politicians, where the vision for the energy company might differ greatly depending on these politicians. For example, the political situation of the municipality directly reflects the structure of the board members, meaning that the political agenda of that/these parties will be reflected in the ownership directives provided to the regional energy companies. The fact that the politicians are laymen with limited knowledge regarding the Swedish energy market was also mentioned by a majority of the interviewees.

It can be concluded after analyzing the empirical material from the interviews that this ownership structure can become problematic if not handled correctly, and then become a source of conflicts between the executive team and the owner of the regional energy companies. These conflicts can for example regard the expected dividend of the owners, or the lack of willingness to invest in new projects. There have been situations where such conflicts have resulted in major negative economic impacts, as well as impacts on the competitiveness of a regional energy company and in some cases, such conflicts have resulted in that the energy company has been sold. However, it can also be seen that if the communication and relationship between the executive team of the regional energy companies and its owners are sufficient, the ownership structure can entail positive effects. For example, several of the interviewed CEO’s mention that the fact that the owners of the companies are not experts on the market can be positive, due to the fact that these owners to a greater extent prioritize the customers and the customer needs, which is becoming increasingly important in today’s energy market.

8.2 RQ 2

The investigation of the 6 different companies’ annual reports combined with in-depth interviews with the CEO’s of each company helped to identify several different external factors affecting the different studied regional energy companies. The PESTEL analysis then enabled a categorization of these external factors and helped to identify how the strategical directions of the studied regional energy companies was affected by these. It could be seen that there are several external factors that regional energy companies must take into consideration in order to stay competitive. These factors can in some cases be relevant for all energy companies present on the Swedish energy market, and in
other cases only relevant for energy companies owned by a municipality. The different identified external factors affecting the regional energy companies can be seen in figure 13 below, where the factors marked with the color red is only present for the energy companies owned by a municipality, and the factors that are not marked are potentially present for all energy companies within the Swedish energy market.

![Diagram showing external factors affecting the strategic directions of the studied regional energy companies.](image)

*Figure 13: The external factors affecting the strategical directions of the studied regional energy companies.*

All of the interviewed CEO's mentioned that the current transformation of the Swedish energy market, where the customers are starting to prioritize services connected to the traditional product offering, rather than just the delivery of kilowatt hours are important for the company to acknowledge. Some of the companies just started to work towards aligning themselves with this new customer demand by pivoting their offering, whereas others have worked extensively during a longer period of time in order to stay relevant to the customers. However, the common opinion for all investigated regional energy companies is that there is a lot left to be done before the company is completely aligned with the customer demand.

At the same time as the investigated companies are trying to become increasingly relevant to their customers, there are external factors that are affecting the competitiveness between themselves and other energy companies that are not affected by these factors. An example of such a factor is the municipal law that prevents the regional energy companies to operate within same conditions as the energy companies that do not have to obey this law. It is therefore of great importance for the regional energy companies to create a strategy where there is a balance between meeting the customer demand in an efficient way, and doing this without breaking the law.
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