GÖTEBORGS UNIVERSITET
HANDELSHÖGSKOLAN

Bachelor Programme in Business Studies

Bachelor Thesis,

Vattenfall

-an analysis of its investments and production

Bachelor Thesis
Maria Alfredsson, 890506
Stina Börjesson, 871112

Tutor:
Thomas Polesie

Business/ Accounting
VT2011

Table of Contents

Foreword

The energy market is interesting because it is affected by so many different factors, both political and environmental. Companies have to navigate in a constantly changing environment of regulations, opinions, images and sudden changes to the rules of the game. This makes for an exciting scene with many actors. One of the larger actors in the European market is the Swedish company Vattenfall AB which is state owned and the largest company in Sweden. This essay aims to give a broad picture of Vattenfall to be used to help create understanding about the company. It gives a kind of overview of Vattenfall that has not been given before by focusing on measures that are easier to understand than the more commonly used financial ratios.

We would like to give our thanks to Professor Thomas Polesie who has been our supervisor and without who's help and guiding hand this essay never would have happened.

Abstract

Title: Vattenfall -a business analysis into its investments and production.
Seminar Date: 7th May 2011
Course: FEG313 V11 Accounting, Bachelors thesis. 15 ECTS
Authors: Maria Alfredsson, Stina Börjesson
Supervisor: Thomas Polesie

The purpose of this essay is to give an overview of Vattenfall's development from 1998 to 2010 and show how Vattenfall is affected by current changes in the environment in order to provide a good illustration of Vattenfall as an organisation.

In the empirics we have shown how Vattenfall's investments, production and finance have developed during the period studied and we use Stakeholder Theory to explain the current development and strategy of the company. When looking at finance we have used the Square Model.

Vattenfall has undergone a large expansion during the period studied and grown in all dimensions. The large increases represents its introduction into the European market through mergers and acquisitions. At the current point in time there are several factors that affect Vattenfall's strategy, these factors include changes in CEO and the Fukushima disaster.

Introduction

Purpose

There is currently an ongoing study at the School of Business, Economics and Law at University of Gothenburg looking into Vattenfall's communication. Our essay is meant to make a contribution to that study by giving an overview of Vattenfall. By looking at Vattenfall's production and investments and how they have changed over time we hope to give a clear image of the company and its operations. Furthermore we look at the financial aspects of Vattenfall by using the Square Model and at surrounding issues that might affect Vattenfall's strategy using Stakeholder Theory. To be able to fulfil this purpose we have formulated the following problem:

Problem

How has Vattenfall developed during 1998-2010 and how has the current changing environment affected Vattenfall?

Problem Discussion

Vattenfall is the largest company in Sweden and one of the largest energy companies in Europe. Its structure is very complex and it is not possible to get an overview without spending considerable time investigating the company. When conducting a research about a company with Vattenfall's size it is important to understand its basic characteristics to avoid loosing focus in the study. Our aim with this essay is to create a document that gives the necessary information about Vattenfall so that researchers dealing with other aspects of the company can get a good overview of it without spending too much time finding the information for themselves. The common approach for getting an overview of a company is to look at different financial ratios but we do not think that this is the best option. Fist of all Vattenfall is not listed on any stock exchange and thus the need for financial ratios, which is commonly said to be supplied to the benefit of potential share holders, does not exist. Secondly the models we use give a clearer and more easily interpretable picture of the company. By using the Square Model it is easy to see how Vattenfall has developed over time. Further we have refined the Square Model by inserting smaller squares representing different business units into the original squares and we are thus able to show very pedagogically where Vattenfall's growth has occurred.

To be able to answer our problem we have divided the main question into three sub-questions.

- *How does Vattenfall's production and investments develop over the studied period?*
- *How does the financial side of Vattenfall develop over the studied period*
- *Which stakeholders interests currently affect Vattenfall's strategic decisions?*

Our aim has been to show how Vattenfall has developed from 1998–2010. To understand Vattenfall's development we have looked both at the surrounding environment and the inside of Vattenfall.

Delimitations

We have chosen to look only at Vattenfall in our essay, for comparisons with other companies we refer to further research. Our aim has only been to give an overview of Vattenfall, for a more in depth study of Vattenfall's communication strategy and interaction with the outside world we refer to the study currently undertaken by Marina Grahovar. Since we have concentrated on Vattenfall's internal developments our sources are almost exclusively Vattenfall's annual reports. When it comes to the detailed squares under the finance section in the empirics we have refrained from doing them for the first two years. It would have been desirable to do them for all the relevant years, but regrettably the necessary data is not available in the annual reports.

Theoretical Framework

Theories / Models

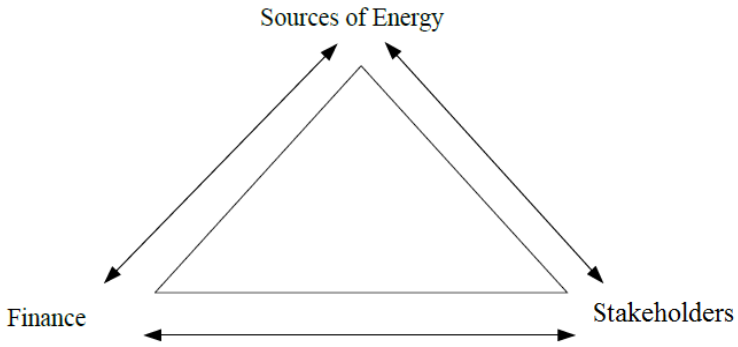

Figure 1. Three aspects that describes Vattenfall. Inspired by Holm et al. 2006:19

We have used three aspects to describe Vattenfall. These aspects are Sources of Energy, Finance and Stakeholders. The reason why we decided to use these three aspects to describe Vattenfall is because we consider them to give a good overview of the different dimensions of the company. Sources of Energy looks at where Vattenfall get its money from and where it spends the money, in other words how much of each type of energy Vattenfall produces and how much it invests in them. We have constructed bar charts clearly shows how the production and investment is distributed. Finance looks at the financial size of the company and its component parts, i.e. the business groups. This is done with the aid of the Square Model which gives a good and simple picture of the development of the company. Furthermore we show how the different geographical business group has developed in relation to Vattenfall as a whole by inserting the squares of each group into the larger square for the entire vattenfall. Finally we use Stakeholder Theory to incorporate the effect of events in the surrounding world on the two earlier aspects. We identify three stakeholders that we look closer at; the Swedish government, which owns Vattenfall, the German government, who's decisions Vattenfall is very dependent especially in the wake of the Fukushima disaster, and the EU, who's decisions always have impact on Vattenfall obvious right now is the certificates of emission that Vattenfall will have to pay for by 2013.

The arrows in Figure 1 show the interdependencies that exists between the different aspects. A change in either aspect affects the other two. If for example one of the stakeholders makes a demand to Vattenfall this demand will cause changes to the Finance and Sources of Energy.

Square Model

To show an overview of the financial development of Vattenfall between the years 1998 – 2010 we have chosen to use the Square Model developed by Thomas Polesie. The model uses a square to illustrate the size of a company. The height of the square represents the balance sheet while the width represents the income statement.

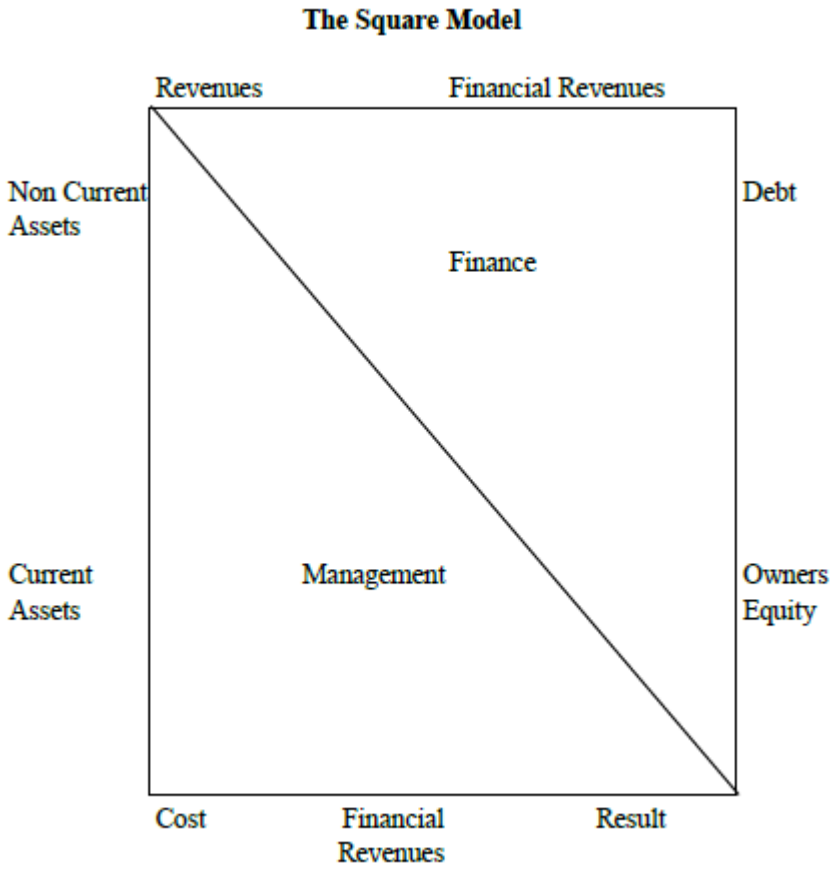

Figure 2: Explanation Square Model (Polesie, 1995:9)

This model is very simple, yet effective. It uses figures that are readily available for every company and it does not require any further refinement of them. Thus it is easy to get an overview of a company on which to base further analysis. It is a fact in accounting that the figures do not represent the "truth" and that they are more often than not coloured by arbitrary estimations. Thus it is impossible to develop a model that gives an objective image of the financial side of any company. We have decided to use this simple model on Vattenfall and draw what conclusions we may with the help of it. To be able to make more detailed observations we have refined the Square Model and make it more detailed by inserting the squares of each business group into Vattenfall's large square. This enables us to see which areas within

Vattenfall that has increased or decreased and how the areas have developed over time. Unfortunately information for different business units are not available for all the years studied so we have had to concentrate on the later part of the years we have studied.

Stakeholder Theory

Stakeholder theory was developed by Freeman in 1984 and is used as a method to form a strategic management by identifying which stakeholders have the largest interest in the company. (Friedman & Miles 2006)

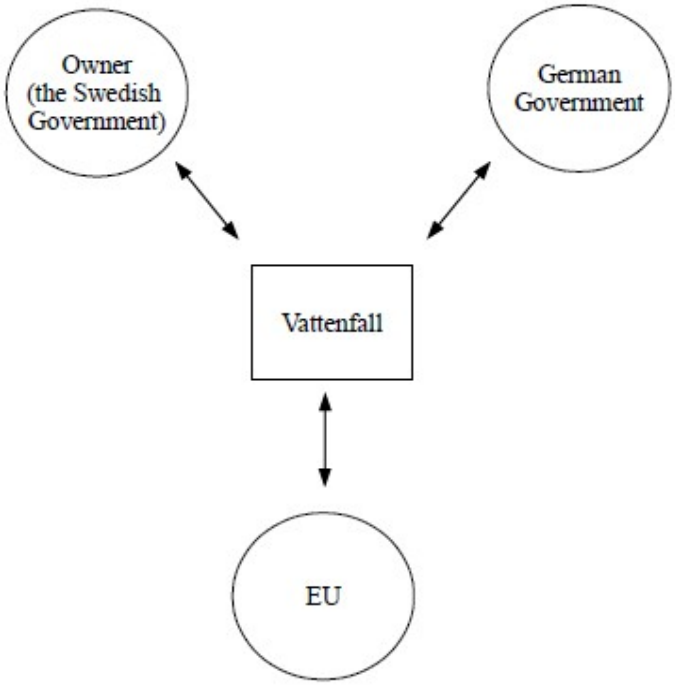

Figure 3 Stakeholder Theory, Vattenfalls current stakeholders

Vattenfall is a large company with many stakeholders with different interests. To identify every stakeholder for Vattenfall would be very difficult and time consuming, therefore we have focused on identifying the three stakeholders that we deem are most important for Vattenfall at present. These are the Swedish Government, the German Government and the EU. These stakeholders are important for Vattenfall for the following reasons: The Swedish government owns Vattenfall and has recently, in 2010, changed the management of Vattenfall by appointing a new CEO. The German Government has made a decision to shut down Vattenfalls nuclear power plants in Germany in the wake of the Fukushima disaster and EU is responsible for the interpretation of the Kyoto protocol that resulted in the system with certificates of emission.

Method

Throughout our essay our aim has been to give a picture of how Vattenfall has developed during 1998 to 2010. Our main focus has been to create a good image of Vattenfall with the aid of figures that are easy to interpret. The figures are focused on the Sources of Energy and the Finance and may seem simple, but without these it is difficult to get a grasp of Vattenfall as a whole. Using the Square Model we show how large the balance sheet total and the revenues are and how large Vattenfall is. This enables us to show the proportions of Vattenfall, both compared to other companies and to itself historically. Vattenfall is a large company with a complicated structure and it takes time and effort to understand how it is structured. Thus our essay provides Grahovar with the overview of Vattenfall that she needs.

Case study

The use of case studies is common in for example management accounting research. They are effective when there is a wish to explore or describe something that has been observed in a specific organisation. The case study form is suitable for this essay since the purpose is to look at one single organisation.

Qualitative or Quantitative Approach

Depending on the type of study a quantitative or qualitative approach is more or less suitable. A quantitative approach deals with figures and numerical data which is put through some kind of statistical analysis or non numerical data that is transformed into statistical figures, for example a survey with multiple choice questions. A quantitative approach aim to describe and explain the data and is suitable when there is a wish for comparability. A qualitative approach, on the other hand, focuses on understanding of the studied object. This can be reached for example through in depth interviews and unstructured observations. Qualitative approach is most suitable when there is a wish to understand social processes or individuals and the need for generalisations is low (Holme & Solvang 1997). This study is mainly quantitative in so far as we have concentrated on the numerical data. We have a model that can be used for any other company regardless of business (the Square Model). The way we have dealt with Vattenfalls Sources of Energy is applicable on any company in the energy sector. These two points show that we have chosen a quantitative approach and we can use our data and models to compare Vattenfall to other companies.

Reliability and Validity

The quality of a study can be expressed in terms of reliability and validity. The reliability is high if independent repetitions of the study generates the same or approximately the same data. It is also important that the data entered into models is carefully controlled to avoid mistakes (Holme

& Solvang, 1997). We judge that this study has a high reliability since we have used data that is easily available to the public. Thus it is easy to redo the study and get the same result. The reliability is lessened somewhat by the fact that we have bulked some of the data together in order to get fewer categories and increase comparability. If the study was conducted again a different bulking process might result in slightly different figures. This would however not change the results we have arrived at.

It is not enough to have reliability in a study. In order to reach credibility a study needs both reliability and validity. Validity is how well the collected data measures what it is supposed to measure (Holme & Solvang 1997). Our aim is to give an image of Vattenfall. We have chosen to do this by looking at its assets and revenues in combination with its production from different energy sources. This is only one of many ways to portray a company but we deem that our way can give a picture of any company that is clear and easy to review. Thus we deem that we have a good validity.

Secondary or Primary Data

Primary data is collected by the researcher and may consist of observations, experiments or interviews (Arbnor, 1994) but also documents in original form, for example correspondence (Holme & Solvang, 1997). Secondary data on the other hand is not collected directly by the researcher but consists rather of documents available to the researcher such as protocols, reports and articles (Arbnor, 1994). The data we have collected from Annual reports are secondary data. Any study based on secondary data has to be subject to some critique. It is important to state that every figure found in an annual report is to some extent subjective and subject to arbitrary valuations. The accounting practises in effect in the EU are meant to make figures arbitrary in the same way and thus create some comparability between different companies. This, however, does not mean that the figures represents the exact and fair value of assets and liabilities. The information we have gathered from daily press is also secondary data and subject to validity uncertainties. Articles in daily press are not reviewed in the same way as academical publications are and might therefore be more prone to subjectivity and factual incorrectness.

Collection of Data

Data for the first two parts of the essay, Sources of Energy and Finance, have been collected mainly from Vattenfalls Annual Reports for each of the years studied. When figures for the same year have differed in different Annual Reports as a result of changed accounting practises we have used the figures from the Annual Report for the specific year. For example if the data in the Annual Report from 2000 differs from the data for 2000 given in the Annual Report from 2001 we have used the data for 2000 from the Annual Report from 2000. Since we only have a set number of weeks at our disposal we have concentrated our search for data to the Company Report (förvaltningsberättelsen) and the Financial Reports as much as possible to limit the time spent on information gathering. In some cases we have found the information in other sections of

the Annual Reports. Furthermore we have used Stakeholder theory to identify some organisations and actions which we suspect have impact on the way Vattenfall will choose to invest. To find information about these identified issues we have looked into Vattenfall's annual reports and searched through the daily press for information of interest. The search was conducted through the database "Affärsdata" which we had access to through the university library. Some information was also found through Vattenfall's homepage and from relevant literature.

Disposition

The essay starts with a background were the reader is given an insight into subjects which we think is good for them to know about in order to understand the following parts of the essay. After the background follows Empirics which, as we have mentioned before, is divided into three aspects; Finance, Sources of Energy and Stakeholders. Under the Finance aspect we have focused on the years 1998, 2001, 2005, 2008, 2009, 2010. This is done because we notice interesting changes in the square models for these years. The empirics is followed by a discussion where we, aided by the background and empirics, aim to discuss the problem formulated above. Finally we have a conclusion where we which to recapture the discussion and conclude this essay.

Background

In the background we have written about subjects which the reader benefits from knowing something about. We start with the history of Vattenfall before the period we study begins, continue with a brief overview of the arguments surrounding the deregulation process in Sweden and a short account of the decision to lower the carbon dioxide emissions with the use of certificates of emission. After that we talk about the risks to Vattenfall, both in general and in the specific case of nuclear power. We conclude this section with an explanation of what Carbon Capture and Storage (CCS) is and how it works.

Vattenfall 1909-1996

Vattenfall was founded in 1909 as a Swedish energy company owned and controlled by the state. The purpose was to take advantage of the states right to build hydro power plants in rivers. The first plants were built to supply industry and railway with electricity. The development was rapid during the 20th century and together with the aftermath of industrialisation all of Sweden was electrified. Many companies were active on the Swedish energy market, these were owned by the municipalities or private companies, Vattenfall was the largest of these. Until the 1970's hydro power was the main source of energy in Sweden, complemented with imported oil and coal. In the 70's and 80's Sweden invested in nuclear power which removed the dependency on oil and coal as a source of electricity. In 1992 Vattenfall became a public limited company to better be able to deal with the deregulation of the electricity market initiated by the EU. The deregulation took place in 1996 and brought about a period of international expansion. (vattenfall.se)

Deregulation 1996

The background to deregulation was that the government found it necessary to have competition in order to create effective price setting (Bergsmath et al. 1996:99). Effective price setting was supposed to benefit consumers as well as increasing competitiveness between companies in the national and international markets. Deregulation was also supposed to create better usage of Sweden's natural resources (Bergsmath et al. 1996:100) and enable Swedish companies to expand on an international market (Bergsmath et al. 1996:105).

The actors of the electricity market expected deregulation to lead to lower prices. (Bergsmath et al. 1996:110). However, there were those who thought that a border-trade would lead to higher prices. (Bergsmath et al. 1996:111) In Norway, England and Wales electricity markets were deregulated in the early 1990s. (Bergsmath et al. 1996:112) This deregulation lead to lower prices for the large electricity consumers in all three countries, however in England and Wales the electricity prices increased for the small electricity consumers. (Bergsmath et al. 1996:113)

After deregulating the market the prices at first increased during 1996 but subsequently decreased until 1998 (Svdsvenskan 19980102) thereafter it increased again. During the years since 1996 deregulation had received much criticism and the general judgement seemed to be that deregulation that were supposed to create a competitive market with lower prices had instead created an oligopolistic market with three main actors and soaring energy prices. (di.se 20031001) (GP 20080913)

Certificates of Emission

In order to lower the emissions of carbon dioxide in accordance with the Kyoto Protocol, the EU started a system of certificates of emission in 2005. The system means companies have to have a certificate for emission for every 1000 kg of carbon dioxide they are emitting (sweden.gov.se). Up until 2013 a proportion of these certificates is given to Vattenfall from the state free of charge. Starting 2013 Vattenfall will have to buy all of its certificates of emission on the open market. This will generate a significant cost for the company (Veckans Affärer, 20101216).

Risks

Risks in the energy sector- a general view

The companies in the electricity market are exposed to risks depending on several factors. The price of electricity is important since it affects the profit; this price is dependent on demand and supply of electricity (Vattenfall Annual Report 2010:78) . There are several factors that affect electricity demand on the one hand. These factors include the weather and conjuncture. If the weather is cold during winter demand will be higher due to increased heating of houses and more use of light bulbs because it gets dark outside earlier. Conjuncture affects the demand too because when factories cut down on production they automatically cut down on energy usage (Bergsmath et al. 1996:23).

The supply of electricity on the other hand is affected in different ways depending on which source we are talking about. Supply of hydro power, for example, is depending on the access of water and the available production capacity (Vattenfall Annual Report 2010:78). The production capacity as a whole is dependent of a lot of elements, for example if there is damage in a power plant a stoppage might occur which will be costly for the company. (Vattenfall Annual Report 2010:81–82). If the damage causes environmental pollution it can become a matter for a political decision, whether the plant or even the energy source should stay in production or be shut down and dismantled (Vattenfall Annual Report 2010:82). Politicians might make decisions with significant impact on the market to satisfy the public or their own political agenda. (Vattenfall Annual Report 2010:82)

Specific risks concerning nuclear power

In 1980 a referendum decided that nuclear power plants in Sweden would be phased out and permanently shut down by 2010 (Bergsmath 1996:31). Public opinion against nuclear power was then so strong that the government decided to force the closure of nuclear reactors. A change in public opinion together with changed government had the effect that the closure never took place in the way the 1980 referendum had decided and Swedish reactors continue to produce electricity as before for another 10 to 20 years after 2010 (NyTeknik, 20110504). This is one example of how governmental decisions and public opinion exposes Vattenfall to political uncertainties.

Vattenfall has had many problems with their reactors over the years. Brunsbüttel and Krümmel were both fast stopped in 2007 (Vattenfall Annual Report 2007) and have remained closed (Vattenfall Annual Report 2010:50), one reactor at Forsmark was fast stopped in 2006 but was back in production later the same year (Vattenfall Annual Report 2006:5) and two reactors at Ringhals were closed far longer than planned during the beginning of 2010 (Vattenfall Annual Report 2010:34). Every time a reactor is closed longer than planned it represents a loss of revenue for Vattenfall. The reason behind the production stops is to ensure safety in the plants. The long periods of stops in production at for example Brunsbüttel and Krümmel shows the risks in nuclear power production.

The most recent development on the nuclear issue is the disaster in Fukushima, Japan. Three reactors exploded and fires broke out in two reactors after the earthquake and the following massive tsunami on March 11. This resulted in radioactive leaks, meltdowns in three reactors (dn.se 20110524) and evacuation of the population living in an area 20 km around the plant. Many workers have fallen ill or died trying to get the rectors back under control (dn.se 20110318).

Carbon capture and storage

Carbon capture and storage (CCS) is the umbrella term for three main techniques (Oxyfuel, Postcombustion and Precombustion) that are used to prevent the carbon dioxide created in the process of burning coal in a power plant to leak out into the air. Oxyfuel combustion is a technique that is used at Schwarze Pumpe in Germany. Coal is burned in an atmosphere of pure oxygen and recycled flue gas. Sulphur and particles are separated from the gas, which then consists of almost only water and carbon dioxide. After the water is condensed the gas is almost pure carbon dioxide that can be transported to the storage location. Precombustion removes the carbon dioxide from the fuel before electricity is generated through combustion. In the first stage the fuel is gasified and consists mainly of carbon monoxide and water. After particles and residuals are removed from the gas, the carbon monoxide and water are converted to carbon dioxide and hydrogen. Now the carbon dioxide is separated and transported to a storage site and the hydrogen is combusted to create energy. This technology is currently in use at the Pilot Plant in Buggenum in Netherlands in which Vattenfall has a small part. The postcombustion process starts after the fuel is combusted and electricity generated. The flue gas is first cleaned from

particles and sulphur and then the carbon dioxide is separated with the aid of a chemical solvent from the rest of the flue gas which is released into the air. The solvent is then regenerated and the carbon dioxide is transported to a storage site. Vattenfall participates in the postcombustion pilot plant in Ferrybridge in the UK. (vattenfall.com)

To simplify storage the carbon dioxide is compressed to a liquid and stored in the bedrock. A large scale system for CCS would demand the carbon dioxide to be transported by either a pipe line or a ship. The company using CCS has to take into consideration which transport system to use. Luckily it is possible to use existing technology for these transports. Ships built for transporting petroleum gas and natural gas can be used for carbon dioxide gas too and a technology to transport carbon dioxide long distances in pipelines is in use in the US. (vattenfall.se)

The carbon dioxide can be stored both offshore and onshore, but it has to be stored far under ground, approximately 1000 meters under the bottom of the sea or under the surface of the land. (vattenfall.se) Carbon dioxide has been pumped down into the earth for a long time to enhance the recovery of oil and the same technology can be used to store the carbon dioxide permanently. Other possible sites to store carbon dioxide include depleted oil and gas fields and underground rock formations that contain salty water. (vattenfall.com)

Empirics

Sources of Energy

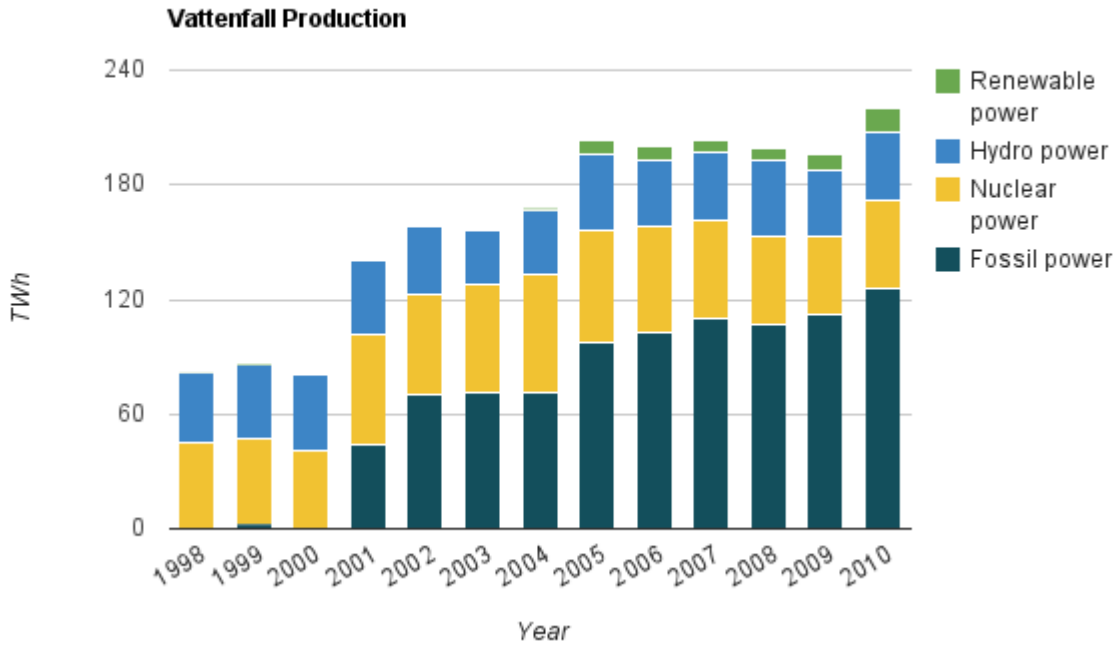

Figure 4. Accumulated Production for Vattenfall 1998-2010

The Categories in the Production Chart

Finding the data for the production table was difficult because of accounting practices and the layout of the Annual Report have changed over time. Efforts were made to discover Vattenfalls yearly output from each energy source. The full set of data can be found in Appendix 1. To get a lucid chart we bundled together the data into four different larger categories. Renewable power is the sum of wind power, biofuel and energy from burning waste, both when used for generating electricity and heat. Fossil power is the sum of electricity and heat generated by burning fossil fuel plus a post in 2003 where they have reported electricity generated by fossil fuels and wind power together. Nuclear power and hydro power is only used for generating electricity and is thus each a category in their own right.

General Observations

The first thing that can be seen in this chart is that the production of electricity in Vattenfall has increased in periods. The first increase for the period studied occurred in 2001 and the second in

2005. There is a suggestion that another increase in production has occurred in 2010, but only time can tell if this is an ongoing trend.

Development in Hydro Power

Over the 12 year period studied hydro power production has been stable with only slight decreases in 2003. Vattenfall mostly have hydro-power plants in Sweden with few small plants in Germany and Finland (produktion.vattenfall.se).The main reason for the stability in hydro-power production seems to be that it is increasingly difficult to get permission to build hydro-power plants from the Swedish government.

Development in Nuclear Power

Nuclear power in Sweden was already developed when our measurement period starts. Therefore the nuclear power production is constant the first three years. In 2001 we can see the expansion Vattenfall made into Germany with the increased production of nuclear energy. After 2001 there follows another period of stable production. In 2007 we see a slight decrease, probably due to the fast stop and following production stops at Vattenfall's two German reactors at Brunsbüttel and Krümmel. In 2010 we see another decrease in production. Not only were the German reactors still stopped, but both plants in Sweden experienced prolonged down time due to massive auditing at the beginning of the year (Vattenfall Annual Report 2010:34). This year the German government decided to prolong the lifespan of their nuclear reactors. That decision caused Vattenfall and E.on, with whom they own Krümmel, to increase their efforts to put the reactors back into production.

Development in Fossil Power

Fossil power is the area were Vattenfall has grown most over the period considered. All other types of energy have been more or less stable with small fluctuations over these twelve years. The first occurrence of fossil fuels appears in 1999, however this was a rather insignificant investment and represents natural gas for resale and fuel for the company vehicles. In 2001 we see the real increase when Vattenfall entered the German market and bought coal power plants there. We see other increases in 2002, 2005 and 2010 when Vattenfall continued to expand in Germany and more recently in Benelux (Belgium, Netherlands and Luxembourg) with more coal plants and some natural gas plants. Right now Vattenfall have coal and/or natural gas plants in Germany, Poland, Denmark and Benelux.

Development in Renewable Power

The smallest sector in the chart is Renewable power. There is virtually no sign of it until 2005 and the growth has been negligible since then. Only in 2010 does it show signs of increasing**.** Renewables consist of wind power and biofuel and the largest increases have been in UK and in Ireland. The increases on Vattenfall's home market Sweden have been low due to, among other

things, the difficulty of getting permission to build plants (Rönnborg 2009:200). In 2010 renewables accounted for a mere 5,6% of Vattenfalls production.

Investments

Vattenfall's investment charts are divided into two different charts because Vattenfall changed the way it presented its investments in the Annual Reports in 2004. Before 2004 investments were divided in a very accounting like fashion. In 2004 this was changed to types of energy which gives an insight into what Vattenfall considers important and what it wants to show the readers of its annual report.

The charts show much increases and decreases over the twelve year period. In connection with the change of CEO in 2000 investments soared and peaked in 2001. This mirrored Vattenfall's expansion during the same years. The following years the company remained approximately the same size, which we can see in the decreasing investments. When there are no investments, the company does not grow. The company starts growing significantly again in 2008 and the investments too.

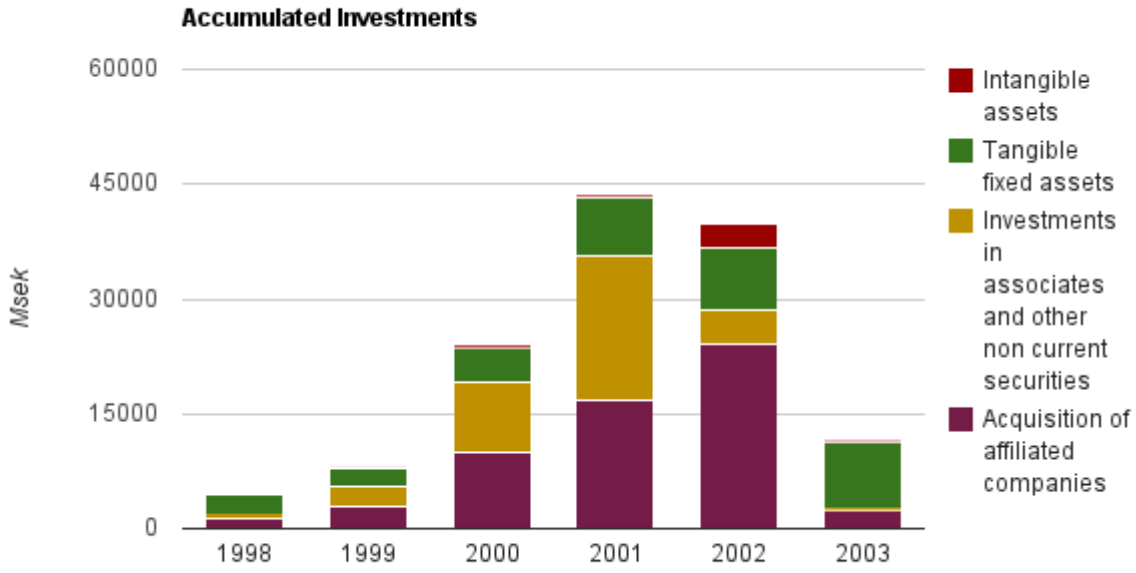

Figure 5. Accumulated Investments in Vattenfall 1998-2003

Overview investments 1998 to 2003

The general trend for the years 1998 to 2003 was that between 1998 and 2001 investments in associates and other non-current securities increased distinctly every year, but 2002 and 2003 it decreased. Acquisition of affiliated companies increased between 1998 to 2002 but 2003 it decreased to almost nothing. Investment in tangible fixed assets increased slowly between 1998 and 2003. The investments in intangible assets have been small for the entire period but

experienced a negligible increase between 2000 and 2001. In 2002 it increased distinctly but decreased again in 2003. Over all the largest investments have been in acquisition of affiliated companies followed by investments in associations and other non-current securities.

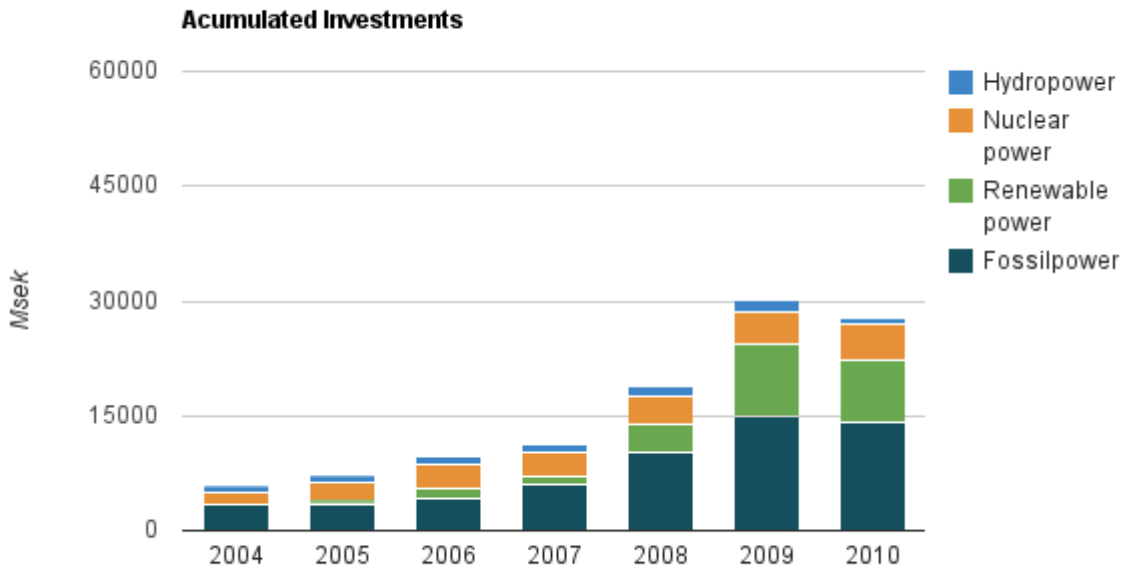

Figure 6. Accumulated Investments in Vattenfall 2004-2010

Overview investments 2004 to 2010

Investments in fossil power increased between 2004 and 2009 but decreased somewhat in 2010. Investments in nuclear power increased scantly between 2004 and 2010. Between 2004 and 2010 the size of investments in hydro power was quite stable. Investments in renewable power increased much in 2009 and decreased slightly in 2010 but it is still larger than it has been earlier in history. All in all it can be noted that fossil power comprises the largest part of the investments between 2004 and 2010.

Vattenfalls investments 2004 to 2010

In the following discussion we will only consider the period between 2004 to 2010. Reports from the earlier period do not convey any detail about investments in different types of energy and therefore will not be considered. Investments into both hydro-power and nuclear have been stable throughout the period. It is possible to see slight increases in nuclear power investments which we presume is due to the increased maintenance at the reactors both in Germany and Sweden.

Investments in fossil power has increased steadily since 2004. Many of these investments are probably due to the research into CCS, but also new acquisitions in coal and natural gas in

Europe and more specifically in Benelux. After the CEO change in 2010 management at Vattenfall has changed strategy and is now aiming to sell of coal plants instead of acquiring more.

Investment in renewables have grown from negligible amounts in 2004 to levels comparable with fossil power in 2009 and 2010. By 2009 investment in renewable energy was approximately half that invested in fossil energy. In 2010 the investments in renewables have decreased slightly.

Investments by Geography

Vattenfall had already started their internationalisation in 1998 with acquisitions in Germany, Czech Republic, Poland and Lithuania but they were still mainly focused on Sweden. This changed in 2000 and 2001 when they increased their presence in Germany by acquiring four companies there and made smaller investments in some Swedish, Norwegian and Polish companies. By 2005 they were firmly established in Germany and acquired one company in Denmark. Vattenfall experienced large growth in 2008 by acquiring several companies in the UK. The expansion in Britain and Ireland were continued in 2009 with the acquisitions of an Irish company. This year they acquired yet another German company and most importantly the Dutch company Noun. Finally in 2010 Vattenfall abandoned their expansive strategy and started selling companies instead. The sales occurred in Germany and Denmark and the only acquisition took place in Liberia (Vattenfall Annual Report 2010:45).

Finance

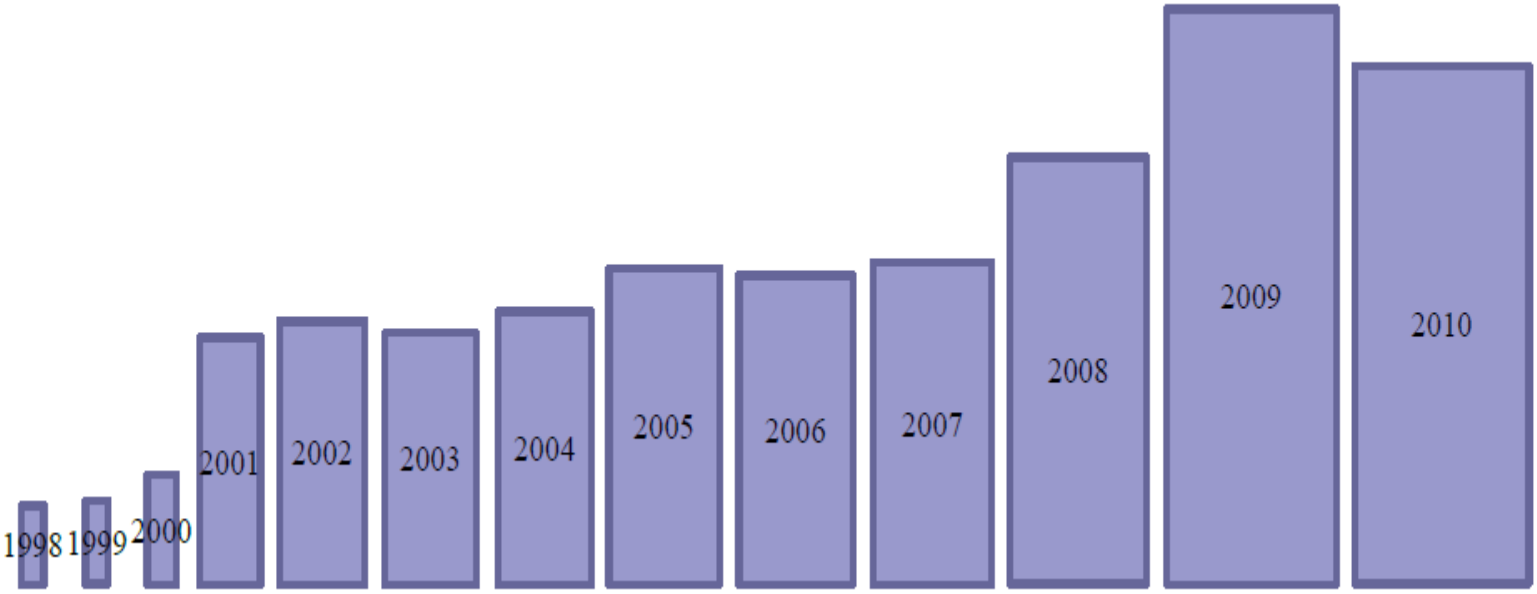

Figure 7. Square Model Vattenfall AB 1998-2010

Square Model Vattenfall

The Square Model for Vattenfall for the years 1998 to 2010 shows the company's large growth. 1998 and 1999 are equal in size but in 2000 we can see the beginning of the expansion into the international market that booms in 2001. After 2001 growth was slow for a few years. In 2005 we can see a slight increase in both balance sheet total and revenues, but in 2008 we can see the large increases again. Under 2008 and 2009 Vattenfall grows by one third of its size the previous year. This illustrates an increased expansion internationally, mostly in Central Europe and Benelux but also in UK and Ireland. In 2010 the square is smaller than 2009 as a result of the change in strategy coupled to the change of CEO in April 2010. The new CEO wants to sell of large assets in Denmark and Poland, mostly to get rid of the environmentally troublesome coal plants. This will decrease the balance sheet total and thus the height of the square.

1998

1998 Net Sales decreased 1,7% from 1997 to 28 thousand million SEK and Cost of Products Sold increased 1,9%. This resulted in a decreased profit with 21,6% to 2 664 million SEK. The Balance Sheet Total increased 5,7% with the largest increases in Non Current Liabilities (17%) and Current Assets (7,2%).

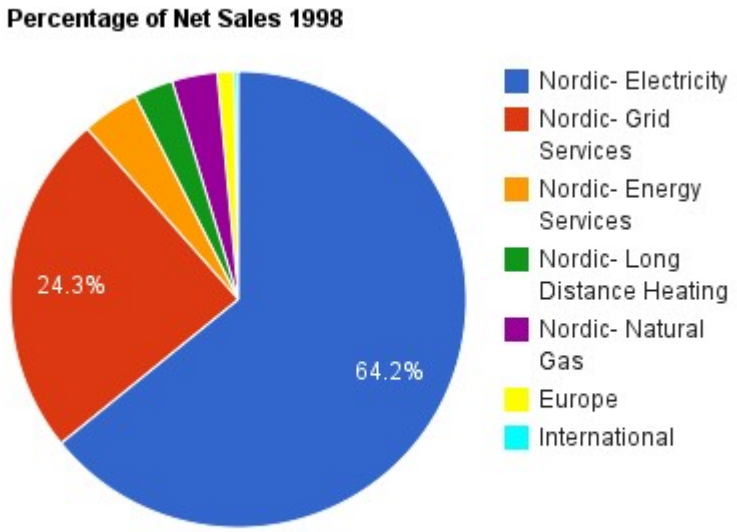

Figure 8. Pie chart of the business groups shares of total net sales in 1998

In 1998 business groups where divided into Europe, International and different production segments within the Nordic countries. It is not possible to find figures for the different business groups assets in the annual reports for this year and therefore it is impossible to make a detailed square like the ones we have made below. In order to give an image of where Vattenfall operates we have chosen to show the different groups shares of Net Sales. As can be seen in the pie chart above the vast majority of net sales were generated in the Nordic countries. Europe and International has a very small share, about 1,5% of net sales where generated outside the Nordic countries.

2001

2001

Net Sales increased 118% to 69 thousand million SEK, mainly thanks to the German acquisitions, and Cost of Products Sold increased 123% to 52 thousand million SEK. Profits increased 41,1% to 4 thousand million SEK. The Balance Sheet Total increased 125% with the largest increases in Current and Non Current Liabilities (161% and 170% respectively) and Capital Assets (138%).

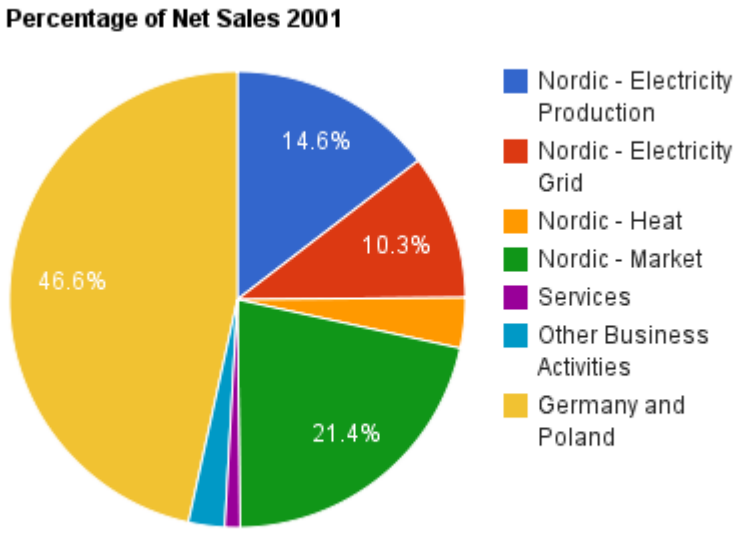

Figure 9. Pie chart of the business groups shares of total net sales in 2001

The data for 2001 was also insufficient to make the detailed squares we have done for the subsequent years. The above pie chart again shows the different groups share of total net sales. The difference from 1998 was remarkable. Nordic had a much smaller share of net sales in 2001. About half of net sales originated from the Nordic countries compared to 98% in 1998. The segment representing Vattenfall's operations outside the Nordic countries had grown much, from 1,5% in 1998 Germany and Poland generated 46,6% in 2001. This illustrates Vattenfall's expansion into the European market and specifically into Germany and Poland.

2005

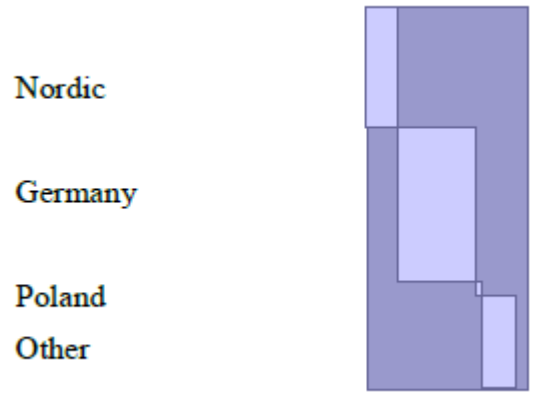

Figure 10. Detailed square for 2005 showing the different business groups

Net Sales increased 13,9% to 129 thousand million SEK and Cost of Products Sold increased 11,7% to 94 thousand million SEK. Profit increased 74,2% to 21 thousand million SEK. The Balance Sheet Total increased 15,9% with the largest increases in Current Liabilities (82,1%) and Current Assets (52,2%).

In 2005 Vattenfall named its markets the Nordic Countries, Germany, Poland and Other countries. Germany were the largest market largely depending on the large investments Vattenfall made there in 2001. The Polish market was very small in 2005 while Nordic and Other was approximately equal in size.

2008

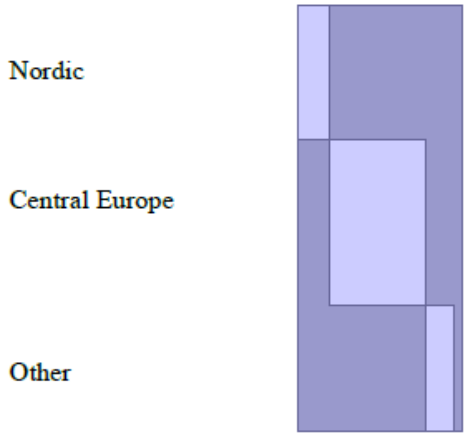

Figure 11. Detailed square for 2008, showing the different business groups

Net Sales increased 14,6% to 165 thousand million SEK and Cost of Products Sold increased 18,9% to 123 thousand million SEK. This resulted in a decrease of Profit with 14,1% to 13 thousand million SEK. The Balance Sheet Total increased 31,8% with the largest increases in Current Assets (74,3%) and Current Liabilities (70,8%).

The next time we observe an interesting change in the squares is in 2008. The company as a whole grows and the markets grows proportionally. Germany and Poland have been combined under the name “Central Europe”. It is Central Europe that has grown the most on the revenue side, both the Nordic Countries and Other have mainly grown on the assets side. Other has almost doubled its assets while the Nordic assets has increased with approximately one third.

2009

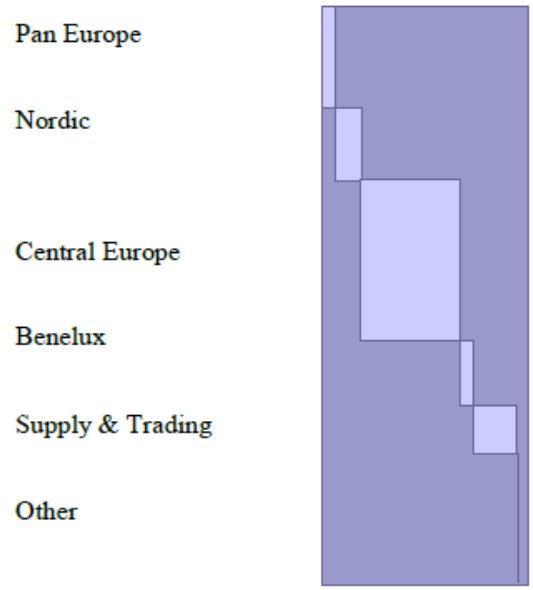

Figure 12. Detailed square for 2009 showing the different business groups.

Net Sales increased 24,8% from 2008 to 205 thousand million SEK. The large increase is mainly due to the consolidation of N.V. Nuon Energy. Cost of Products Sold increased 32% to 163 thousand million SEK and Profit decreased 24,3% to 13,5 thousand million SEK. The Balance Sheet Total has grown with 35% since 2008. The largest increase has been in Non Current Liabilities (63%) and Current Assets (44%)

In 2009 the company as a whole grew by approximately one third. The markets were rearranged into new segments: Nordic, Central Europe, Pan Europe, Benelux, Supply & Trading and Other. The divisions have changed, so the comparability is limited. For example the business units Nuclear, Wind and Engineering are collected in the group Pan Europe, which makes the group Nordic appear much smaller than before and Central Europe somewhat smaller. Supply & Trading has many functions which were previously distributed over the other groups. The group Other has lost almost all of its revenue-creating activities and mostly deals in financing activities which increases its assets. The largest change is the addition of the group Benelux which shows the acquisition of the Dutch energy company Nuon in July. Noun was one of the three largest energy companies in the Netherlands. Through the acquisition Vattenfall received a new geographical market and knowledge first and foremost about natural gas but also concerning wind power.

2010

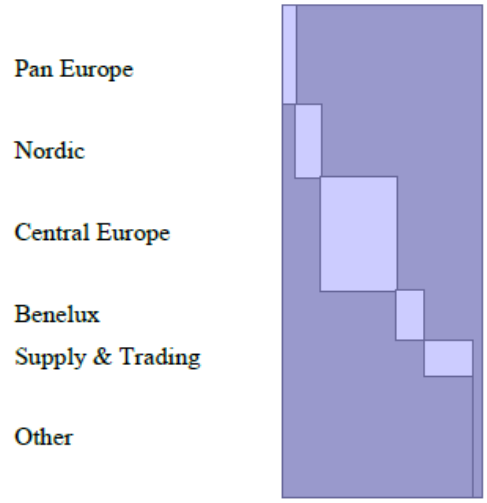

Figure 13. Detailed square for 2009, showing the different business groups

Net Sales increased 4% from 2009 to 214 thousand million SEK at the same time that Cost of Products Sold decreased 2,1% to 159 thousand million SEK. Despite the decrease of Costs of Products Sold and the increase of Net Sales, Profit decreased 2% to 13 thousand million SEK. The Balance Sheet Total decreased by 10% since 2009 to 541 thousand million SEK. The largest decreases occurred in Current Assets (17%) and Non Current Liabilities (11,4%).

Vattenfall's square shrank in 2010. The largest decreases occurred in Central Europe. Pan Europe and Nordic remained the same size, while both Benelux and Supply & Trading increased their revenues. That increase compensated for the revenue decrease in Central Europe and revenues remained constant for Vattenfall as a whole.

Stakeholders

The German Government

The nuclear reactors at Fukushima nuclear plant in Japan has become the centre of attention in the nuclear debate after the record-breaking earthquake on March 11 2011 (TT, 20110311). The disaster caused the public opinion about nuclear power to swing almost overnight. For Vattenfall this became most apparent in Germany where the government decided to close seven plants, two of which were Kümmel and Brunsbüttel owned by Vattenfall, during a three month moratorium (DN, 20110329). In May all parties in Germany agreed that the nuclear plants should be phased out as soon as possible. The eight reactors that had been closed during the moratorium (the seven mentioned above and one more) would remain closed and the other nine would probably get their uptime severely shortened. The decision will be made in July. (DN, 20110511)

EU

In the Kyoto protocol it was agreed that carbon dioxide emissions should be cut significantly. In order to implement this EU launched a program with certificates of emission that will be fully implemented in 2013.

In 2008 Vattenfall initiated a pilot plant with CCS technology in Germany which was the first of its kind in the world. (Vattenfall Annual Report 2008:10). The reactions to using CCS technology have been both positive and negative. In Germany the people are against placing carbon dioxide underground since they are afraid that it might leak (Veckans Affärer, 20110303). The CCS technology is furthermore expensive to implement and one third of the fuel in the power producing coal plant would be needed for the separation process (Veckans Affärer, 20101216). Vattenfall hoped at one point to use CCS technology to lower their carbon dioxide emissions and thus minimise the implication of the certificates of emission.

In 2013 Vattenfall will be required to buy certificates of emission for all of its carbon dioxide emissions. The management in Vattenfall changed its strategy from 2010, rather than focusing on expanding the company through investments management decided to sell its assets mainly in Poland and Denmark to reduce its carbon dioxide emissions. The Management in Vattenfall has also changed its attitude to CCS insomuch that it for now no longer is its flagship solution to decrease carbon dioxide emissions. (Veckans Affärer, 20110303)

Apart from the decrease in carbon dioxide emissions through selling assets, Vattenfall's emissions will decrease when old coal power plants mainly in Germany shut down. However the main effects from this will not show until after 2015. To decrease its emissions of carbon dioxide the management in Vattenfall also puts effort into replacing some of the coal, mainly in the mineral coal fuelled power plants, with biofuel (DI, 20101026).

The Swedish Government

As the owner of Vattenfall the Swedish government has the final say when it comes to who should have a leading position in the company. In April 2010 Vattenfall appointed a new CEO, Öystein Löseth. He replaced Lars G Josefsson who had been CEO in Vattenfall for ten years and had led the company through the large international expansion. (SvD 20100211). In an interview in Veckans Affärer Gunnar Lindstedt writes about Vattenfalls new strategy after the CEO-change. From an aggressive expansive strategy under Josefsson to selling of their assets in Poland, Denmark, Belgium and Finland under Löseth. The journalist Lindstedt argues that Josefsson made bad decisions that put Vattenfall in a situation where they own far to much heavily polluting brown coal plants in Europe and have paid too much for acquisitions. For example the 2009 acquisition of the Dutch company Nuon gave rise to a Goodwill post of 50 thousand million SEK. The Josefsson regime was also criticised for their contract in Germany concerning their nuclear reactors where Vattenfall had almost unlimited liability for damages should there ever be an accident. These problems on the European market coupled with rising energy prices for customers on Vattenfalls home market Sweden led to a somewhat hostile environment for Josefsson to work in. This is an environment that Löseth now has inherited. (Veckans Affärer 20110303)

Discussion

In the above section we have aspired to give an overview of Vattenfall. In this section our aim is to discuss what we have found in the empirics and to a limited extent bring the opinions we have formed during our work with this essay into the argumentation. First we will have a general discussion about the problems Vattenfall has in making feasible long lasting decisions and the limitations it encounter within the different sources of energy. Thereafter we will give answers to the three questions we stated in the beginning and we will end this discussion with a section portraying the interdependencies of the three aspects we have dealt with.

Decisions- how do they come about?

The management at Vattenfall must accommodate to certain restrictions when deciding what direction the company should develop. The problem is that the restrictions are not constant over time but change depending on the political situation in the world, for instance, Vattenfall has not always had to buy certificates of emission to compensate for all of its carbon dioxide emissions.
The result of this is that decisions made by the management may have to be reconsidered at a later point in time. This can force management into changing their strategies to comply with new regulations and give rise to the problem that the management might be hesitant to make big decisions in fear of them not being feasible in the end. Unfeasible projects will undoubtedly affect the value of the company in a negative way. An example of this is the big coal acquisitions in Germany. It seems clear that Vattenfall thought of them as a good investments and thought it would be able to deal with the emissions through CCS technology. Since the CCS technology is not a practical solution to the carbon dioxide problem as of yet, Vattenfall faces political dislike and large costs for certificates of emission. In 2000 the Kyoto Protocol was signed and it put a limitation on the amount of carbon dioxide emissions allowable and Vattenfall knew that a system of certificates of emission would soon be in effect. This ought to have given Vattenfall signs that coal power was not the way to go. However, the CEO at the time, Josefsson, was a firm believer in the advances of technology and he was convinced that they would find a way to get rid of the carbon dioxide emissions from the coal power in time to comply with the Kyoto Protocol (Veckans Affärer 20101216).

Limitations in Production Possibilities

It is not easy to determine how large and which decisions Vattenfall can make without risking they will be unfeasible. The fact that there are limitations and restrictions to most of Vattenfalls sources of electricity makes it even more difficult to determine what magnitude of decisions to make. For instance, Vattenfall only has access to certain quantities of hydro-power since they are not allowed to build new hydro-power plants in the rivers (Bergsmasth et al. 1996:26). There are

also limitations when it comes to how much wind-power Vattenfall can produce since it can be difficult to acquire building permission for wind turbines, due to the potential for harm to the local environment (Rönnborg 2009:215). Vattenfall has had plans on using biomass instead of coal in some of their power plants in order to reduce carbon dioxide emissions, but due to competition for space with food crops the cultivation of biomass fuel is not without its limitations (GP 20110409).

Nuclear power is also subject to many limitations. The used nuclear fuel is difficult to store and it has to be stored for at least 100 000 years before it is harmless (vattenfall.se). Furthermore the risk of accidents is always present and they pose a substantial risk to the environment. Accidents such as those in Chernobyl, Three Mile Island and more recently in Fukushima highlight these risks. The severity of the accident determines the political response concerning the future of the nuclear plants. Political decisions also limit the usage of coal power as a source of energy, for example the introduction of certificates of emission to compensate for carbon dioxide emissions. These certificates will be a significant cost for Vattenfall.

However history has shown that even if some political decisions about the future are made, those decisions might not always be the same when they come into effect. For example the Swedish government decided that all nuclear power in Sweden should be shut down in 2010 but changed this decision and gave permission to the nuclear power plants to continue production for another 10 to 20 years after 2010.

Three Sub Questions

In the introduction we presented three sub questions which we attempt to answer here:

How does the financial side of Vattenfall develop under the studied period

Vattenfall has grown in all financial dimensions, both assets-wise and revenue-wise. The largest growth occurred 2001 and 2008 and -09. Overall the period 2001-2009 has been marked by a large growth and the company has doubled its size many times. The largest growth was in Germany. The German market started to grow in 2001 and has continued growing until 2009. From 2010 Vattenfall has started to diminish in size.

How does Vattenfall's production and investments develop under the studied period?

The bulk of Vattenfalls investment have been in fossil power. In 2005 investments into renewable power started and in the same year production of renewable power started too. Geographically investments into fossil power have been concentrated to Germany and Central Europe while investments in renewable power has been more concentrated to UK and Ireland.

Which stakeholders interests currently affect Vattenfall's strategic decisions?

The stakeholders that currently affects Vatenfall the most are EU, the German government and the Swedish government. EU affect Vattenfall through regulations, most predominant right now is the full implementation of the certificates of emission in 2013. The German government affect Vattenfall through their decisions concerning the nuclear reactions in their country and most of all the forced shut down of Brunsbüttel and Krümmel. The Swedish government affects Vattenfall through their decision to change CEO. There are two possible explanations to the change of CEO. The first is that a changing environment demands a changing management style and one person can not lead a company in every situation. The second is that changing CEO is a very powerful tool for the owners of Vattenfall to use when they want to tell the world that they want to make changes to the company. These current changes affect Vattenfall in a way that has not happened before in its history. This is evident in their recent commitment to sell coal power plants in Europe.

We have now answered our three questions one by one. Here follows a text about Vattenfall's development in order to present an image of how interdependent the three aspects are.

Vattenfall's development

When the management in Vattenfall initiated a strategy to expand the company's operations through investments in 2000, Germany was developed into a central market for Vattenfall. At that time the German government had not made any decisions to shut down the nuclear power and Vattenfall did not have to buy certificates of emission for all of its carbon dioxide emissions. Thus the decision to invest in German nuclear power and coal power was passable at that point in time and it was a way for Vattenfall to grow and increase their profits.

At first Vattenfalls expansion strategy worked well and they grew a lot. However after a while some things changed in the surroundings that eventually forced Vattenfall to change its expanding strategy. A decision had been made that resulted in Vattenfall having to buy all its certificates of emission for all of its carbon dioxide emissions on the open market by 2013. This decision, coupled with other events, made the management in Vattenfall realise that a change has to be made in the amount of carbon dioxide Vattenfall is releasing, to minimise future costs for emissions. Therefore Vattenfall is now planning to sell investments mainly in Poland and Denmark. Furthermore the accident in Fukushima occurred and led to a decision to shut down both the nuclear power plant in Krümmel and the nuclear power plant in Brunsbüttel. Thus changes in the surrounding environment effects what sources of energy Vattenfall is allowed to use which in turn effects the financial size.

Conclusion

Our aim with this essay was to give a clear and easy to understand overview of Vattenfall to aid the understanding of the company. When we have used our chosen models and analysed our empirical data we have been able to reach the following answer to our question:

> *How has Vattenfall developed during 1998 to 2010 and how has the current changing environment affected Vattenfall?*

Vattenfall's production and investments increased a lot during the studied period with correlation to its financial side. From 1998 Vattenfall has increased manifoldly in almost all respects, from balance sheet totals to revenues to production of energy. The only aspect that we have looked at that does not increase more or less linearly is investments which vary from different years but had its peak in 2001. The linear development we have observed seems to be broken in the last year in our period, in 2010 the square shrinks but energy production still increases.

We have looked at the three aspects Finance, Sources of Energy and Stakeholders separately, but they are very interdependent. Most of all Finance and Sources of Energy depends on the Stakeholders. Never before has Vattenfall stood before so vast changes in the surroundings and their upcoming strategy will depend much on how resent events; changes in CEO, Fukushima, the global climate change debate and so on, develop. The recent development has been effected and will continue to be effected by events in the surrounding world. How the development will continue is a matter of interest that we hope Marina Grahovar will answer in her thesis.

Looking back at Vattenfalls investments over the years we can conclude that it probably was not a very good idea to invest as much as it did in coal power. Vattenfall had faith in CCS technology when it expanded, but that faith is gone for now. At the same time it is important to remember that Vattenfall viewed coal power as an opportunity to increase profit and that there are limitations to what sources of energy it can invest in. Vattenfall did succeed to create an increasing profit for many years with the aid of coal power. However since it has to pay for all of its certificates of emissions from 2013 Vattenfall has had to change its strategy to decrease its carbon dioxide emissions.

The conclusion is that development of companies in the energy sector is heavily dependent on changes in the surrounding environment. Since the future is impossible to predict with any accuracy it is difficult to develop a strategy that will work for a long period of time.

In this essay we have given Grahovar a comprehensive overview of Vattenfall to aid her and others who looks at different aspects of Vattenfall in ther thesis-work.

Suggestions for Further Research

This study has been concentrated exclusively to Vattenfall and Vattenfall's developments. It would be interesting to look at other actors on the same market for comparison. Vattenfall is the fifth largest energy company in Europe and a study into how Vattenfall differs from other large companies both within Sweden (E.on and Fortum for example) and within Europe would be very intriguing. A company with approximately the same geographical origin as Vattenfall but with a different focus is the Norwegian company Statoil, since Statoil has also made investments into CCS technologies a comparison in that aspect would be very appealing.

When it comes to investments we would have liked to be able to see how much Vattenfall paid for each specific company they acquired during their expansion and thus be able to identify which acquisitions were the most significant ones and to get a deeper understanding how the connection between finance and investments looks for Vattenfall.

Regarding energy production we would suggest to look more into the different energy sources in order to investigate for example how much brown coal there is in the category fossil fuels and how much wind power there is in the category renewables. Another thing to look at would be how production of renewable energy and the other types of energy in Vattenfall compare to in other companies? A very intriguing question is how the situation with the nuclear power plants in Germany will work out and whether Vattenfall will demand financial compensation from the German government. The outcome of such demands is very doubtful and an investigation into the turns of that debate will undoubtedly involve intricate political negotiations.

In finance there are several things one can look at. For a start making detailed squares with better background figures for all the years would be good. This time we only had the figures Vattenfall gave in the annual reports which was somewhat abbreviated and not entirely complete. Further it would be interesting to take a close look at how Vattenfall has financed their acquisitions.

It would be interesting to make an evaluation of national government and EU policy in energy to see if the political institutions have coherent longer term policy or if they are really just bowing to public opinion and political agendas when making decisions about energy.

Finally it would be appealing to look more at stakeholders. A good start might be to read more articles to get a more detailed image of what has happened concerning the issues we have looked at and then continuing to identify other stakeholders that has had an impact on Vattenfall's strategy and discuss their importance for the past and present strategy.

Bibliography

Annual Reports

Vattenfall AB 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010

Literature

Arbnor, I., Bjerke, B. (1994) *Företagsekonomisk metodlära*. (2nd ed.) Lund: Studentlitteratur
Bergsmath, M., Polesie, T. & Strid, M. (1996) *Nya spelregler på elmarknaden.* Göteborg: Bokförlaget BAS
Friedman, A.L., Miles, S. (2006) *Stakeholders – Theory and Practice.* New York: Oxford University Press
Holm, F. Jönsson, F. (2006) *TOTAL - från olja till energi*: Göteborg: Bokförlaget BAS
Holme, I.M., Solvang, B.K., (1997) *Forskingsmetodik- Om kvalitativa och kvantitativa metoder.* Lund: Studentlitteratur
Polesie, T. (1995) *Drift & Finans - aspekter på företags ekonomi.* Lund: Liber-Hermods AB
Rönnborg, P. (2009) *Det där ordnar marknaden... Investeringspraktik på den avreglerade elmarknaden*. Göteborg: Bokförlaget BAS

Internet sources

Avskiljning och lagring av koldioxid (CCS)
http://www.vattenfall.se/sv/file/1_Koldioxid_och_v_xthuseffekten_11336710.pdf [2011-05-15]
CCS technology
http://www.vattenfall.com/en/ccs/technology.htm [2011-05-24]
Certificates of Emission http://www.sweden.gov.se/sb/d/7039 [2011-05-25]
Energy sources in Vattenfall: http://produktion.vattenfall.se/#/energy-source/hydro/sort/electricity [2011-05-12]
Lagring av koldioxid
http://www.vattenfall.se/sv/file/6_Lagring_av_koldioxid_11336328.pdf) [2011-05-11]
Storage of nuclear waste
http://www.vattenfall.se/sv/avfallshantering.htm [2011-05-25]
Transport av koldioxid:
http://www.vattenfall.se/sv/file/5_Transport_av_koldioxid_11336712.pdf [2011-05-15]
Vattenfall's history http://www.vattenfall.se/sv/koncernens-historia.htm?WT.ac=search_success#1997_2009 [2011-05-09]

Articles

DI: Dagens Indusri, *Säker och billig el utlovades - det blev alldeles tvärtom*, 2003-10-01
DI: Dagens Industri, *Vattenfalls nya plan*: Lundin, K. 2010-10-26
DN: Dagens Nyheter, *ANALYS. Kraftprov för Merkel*, 2011-03-29
DN: Dagens Nyheter, *Fukushima har stöpt om tysk politik*, 2011-05-11
dn.se: *Härdsmälta i tre japanska reaktorer*: 2011-05-24
dn.se: *Detta har hänt: Katastrofen i Japan*: 2011-03-18
GP: Göteborgs Posten, *Elmarknaden behöver statlig styrning*: Gustavsson A. 2008-09-13
GP: Göteborgs Posten, *Biobränsle driver upp matpriserna*: Carlsson, Y. Senosi, K. Melander, K. 2011-04-09
NyTeknik, *Så dåliga är vi på kärnkraft. Svenska reaktorer tredje sämst när det gäller oplanerade stopp*: Lundberg, F. 2011-05-04
SvD: Svenska Dagbladet, *Nu ska vindarna vända i Vattenfall*: Flood, L. 2010-02-11
Sydsvenskan: Sydsvenska Dagbladet, *Räkna med dyrare el under 1998*: Nilsson G. 1998-01-02
TT Nyhetsbanken, *Reaktorproblem efter Japans skalv*, 2011-03-11
Veckans Affärer, *INTERVJU: ÖYSTEIN LÖSETH - Den ståndaktige elsoldaten*: Lindstedt, G. 2011-03-03
Veckans Affärer, *SPECIAL: VATTENFALL - Brunkol uber alles*: Lindstedt, G. 2010-12-16

Appendix

List of appendices:

Production table
Investment table 1998-2003
Investment table 2004-2010
Square Model table
Detailed Square Model table -05, -08 to -10

Appendix 1 Table of Production

TWh

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hydropower	36,91	38,2	39,6	39,45	35,6	28,1	33,42	39,8	35,2	36,6	39,5	33,9	35,4
Nuclearpower	44,71	45	40,6	57,77	53	56,5	61,83	58,9	55,2	51,3	46,2	41,5	46,3
Fossil		2,3		43,68	70		71,25	69,9	73,8	77,7	75,1	80,4	89,7
Fossil and windpower						71,2							
Windpower, biofuel and waste							0,6						
Coal	0,16												
Biofuel	0,1	0,53						0,4	0,6	0,6	0,8	1,4	1,5
Other Thermal power	1,62		3,5										
Windpower	0,08	0,05						0,1	0,6	1,3	1,6	1,7	2,2
Heat	4,1	4,4	2,4		34								
Fossilpower								27,2	28,9	31,9	31,6	31,6	35,8
Biofuel/waste								6,6	6,3	4,2	3,9	5,8	8,7
Other								0,3	0	0	0		
Long distance heating			14,6	4,1	32	13							
Natural gas	9	4,5	9,1										
Gas sales												21,2	63,3

Table 1 Complete table of data collected about production of different types of energy.

TWh

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hydropower	36,91	38,2	39,6	39,45	35,6	28,1	33,42	39,8	35,2	36,6	39,5	33,9	35,4
Nuclearpower	44,71	45	40,6	57,77	53	56,5	61,83	58,9	55,2	51,3	46,2	41,5	46,3
Fossilpower	0	2,3	0	43,679	70	71,2	71,253	97,1	102,7	109,6	106,7	112	125,5
Renewable power	0,181	0,58	0	0	0	0	0,6	7,1	7,5	6,1	6,3	8,9	12,4

Table 2. Summarised table of production of different types of energy. This table was used to create the chart used in this essay.

Appendix 2 Investments

Year	1998	1999	2000	2001	2002	2003
Acquisition of affiliated companies	1286	2916	10035	16675	24045	2254
Tangible fixed assets	2554	2462	4426	7454	7975	8554
Intangible assets	11	19	337	229	3338	134
Investments in associates and other non current securities	677	2519	9042	19085	4574	414

Table 3. Investments 1998-2003

Year	2004	2005	2006	2007	2008	2009	2010
Hydropower	883	915	1196	1229	1260	1459	813
Nuclear power	1563	2307	2929	3017	3583	4263	4688
Fossilpower	3367	3493	4288	5932	10219	14993	14171
Renewable power	30	475	1325	1172	3768	9402	8044

Table 4. Investments 2004-2010

Appendix 3 Square Model

	Consolidated Statement of Income			Balance Sheet						
Year	Revenues	Costs	Profit/Loss	Non Current Assets	Current Assets	Balance Sheet Total	Non Current Liabilities	Current Liabilities	Owners Equity	Balance Sheet Total
1997	30 117	26 718	3 399	63 090	15 782	78 872	28 769	16 641	33 462	78 872
1998	28 973	26 309	2 664	66 436	16 920	83 356	33 675	15 143	34 538	83 356
1999	29 472	26 934	2 538	68 538	18 125	86 663	33 338	17 506	35 819	86 663
2000	37 323	34 353	2 970	90 195	25 064	115 259	55 973	18 927	40 359	115 259
2001	76 850	72 660	4 190	214 997	44 046	259 043	150 975	49 410	58 658	259 043
2002	108 289	100 723	7 566	217 650	58 626	276 276	166 324	54 863	55 089	276 276
2003	114 782	105 659	9 123	216 203	48 762	264 965	163 965	39 115	61 885	264 965
2004	117 226	105 450	11 776	238 912	46 293	285 205	164 971	37 126	83 108	285 205
2005	139 058	118 540	20 518	259 964	70 457	330 421	174 336	67 619	88 466	330 421
2006	143 294	123 436	19 858	251 893	71 273	323 166	150 215	65 277	107 674	323 166
2007	148 695	128 009	20 686	264 864	73 372	338 236	148 322	65 782	124 132	338 236
2008	171 764	154 001	17 763	317 912	127 915	445 827	192 578	112 363	140 886	445 827
2009	213 321	199 873	13 448	417 504	184 623	602 127	314 402	145 321	142 404	602 127
2010	218 879	205 694	13 185	388 263	153 169	541 432	278 693	129 118	133 621	541 432

Table 5. Data for creating Square Models

Appendix 4 Detailed Squares

2010 Msek Business Group	Net Sales	Assets
Pan Europe	15,423	108,530
Nordic	28,387	79,936
Central Europe	83,786	124,793
Benelux	30,986	56,353
Supply & Trading	53,271	40,479
Other	954,000	132,857

Table 6. Net sales and assets in the different Business Groups 2010

2009 Msek Business Group	Net Sales	Assets
Pan Europe	13,301	105,711
Nordic	26,708	76,204
Central Europe	102,990	165,603
Benelux	15,303	69,379
Supply & Trading	44,592	49,390
Other	1,340	134,287

Table 7. Net sales and assets in the different Business Groups 2009

2008 Msek Business Group	Net Sales	Assets
Nordic	34,196	141,257
Central Europe	99,582	173,001
Other	31,394	132,184

Table 8. Net sales and assets in the different Business Groups 2008

2005 Msek Business Group	Net Sales	Assets
Nordic	26,893	103,272
Germany	67,197	134,483
Poland	5,664	12,977
Other	28,520	79,820

Table 9. Net sales and assets in the different Business Groups 2005