

## Title

# Multinational Energy Companies (MNECs) Market Development: An exploratory study on co-evolutionary determinants of market expansion

## Authors

Anna Darmani, Department of Industrial Dynamic, School of Industrial Engineering and Management, Royal Institute of Technology, 100 44 Stockholm, Sweden.

ETSII, Departamento de Economía y Organización de Empresas, Universidad Politécnica de Madrid, 28010 Madrid, Spain.

E-mail: [anna.darmani@indek.kth.se](mailto:anna.darmani@indek.kth.se)

Niklas Arvidsson, Department of Industrial Dynamic, School of Industrial Engineering and Management, Royal Institute of Technology, 100 44 Stockholm, Sweden.

E-mail: [niklas.arvidsson@indek.kth.se](mailto:niklas.arvidsson@indek.kth.se)

José Albors, Departamento de Organización de Empresas, Universidad Politécnica de Valencia, 46022 Valencia, Spain.

E-mail: [jalbors@omp.upv.es](mailto:jalbors@omp.upv.es)

## Abstract

The direction and speed of the renewable technologies development are significantly determined by energy companies' strategic decision making. When it comes to energy sector it could be argued that, strategic decisions form as the result of interaction and coevolution between strategic planning of energy utilities and regional specific parameters. This significance of this co-evolutionary process can be manifested in diversified behaviors of Multinational Energy Companies (MNEC:s) subsidiaries in different countries, regardless of their common capabilities and strategies. This article probes into MNECs' climate strategies that are emerged in align with market elements, including customers, investors and intra-firm parameters in general, and policies in particular. By having firms as the unit of analysis, we investigate how different subsidiaries of a MNEC are flexible for altering their strategies based on the specific market framework as well as by which means they attempt to influence it. Study's objectives are accomplished by utilizing event history analysis methods and a conducted case study on Vattenfall, one of the leading European energy companies. A specific focus is on wind power, as one of the most mature sources of renewable energy.

## Keywords

Multinational companies, Determinants, Evolutionary economies, Renewable energy, Market growth, Energy policy.

## 1. Introduction

*“We must act globally in order to create the resources, human capital and financing that are necessary and then use these to think locally. (Vattenfall 2004)”*

The term of “global warming” was probably first used in August 1975 by Wally Broecker in his paper titled “Are we on the brink of a pronounced global warming?” (Broecker 1975). Since then, awareness rose constantly and more social sectors incorporated together in order to find a solution for this emerging challenge. In 1997, the Kyoto protocol was among the first major decisions influenced future planning of firms acting in the energy sector (Grubb, Vrolijk et al. 1999) and since then, this type of proactive approaches has become more common. This could be pinpointed by the recent strategies of European countries containing two main objectives of sustainability and security of supply (Doukas, Papadopoulou et al. 2009). Based on these alterations in energy market, since 1990, the development of renewable energy technologies has followed a double-digit growth rate. The benefits of this growth, however, are slow and the innovation processes are highly uncertain (Jacobsson and Johnson 2000). This shift in energy market has affected performance of energy companies vastly, which can be noticed in different strategies adopted by companies (Kolk and Levy 2001, Kolk and Pinkse 2004).

How does this divergence affect performance of MNECs? Globalization in the energy sector on one hand is coincided with increasing number of stakeholders holding conflicting ideas (van Tulder and Kolk 2001). On the other hand, it is align with gaining a lot of new opportunities through new environment, regulation and tax regimes impacting both tactical and strategical level of firms (Oxelheim 2001). Inevitably, MNECs are faced with different home and host countries as well as international pressures (Muller 2006). This is manifested in dissimilarities between timing, pace and type of climate projects they implement in different countries. When it comes to their decision making around this issue, some studies indicated the significance of the headquarters control over their subsidiaries in the field of environmental management, while others pointed to the importance of policy frameworks and social commitments as contributing factors in the decisions of a company/subsidiary concerning their climate projects planning (Christmann 2004). Therefore, the relationship between a national institution and a company could not be explained through a one-way process. It could be discussed that co-evolution of various system elements is what that contribute in emergence of a new technology and development of energy market specifically when it comes to development of renewable energy.

So far, regardless of the effort put to discover interaction between different system elements, there is still lack of both conceptual and theoretical work on variety creation and co-evolution as the result of real positioning in energy companies. As yet, political process and their impact on the development of renewable power have been studied by variety of researchers holding different perspective. Though, there is lack of knowledge about the divergence behaviors of a companies specifically MNECs in different countries due to diversified market elements (Wüstenhagen, Wolsink et al. 2007). Inevitably, lack of knowledge in this regard may lead to lack of understanding of system dynamics behind the energy market and likelihood of new systems' emergence. To address this issue, *this paper aims to explore co-evolutionary development process of MNECs in different regions and empirically analyze its significance and thereby, contribute in better understanding the dynamic behind Energy Company's strategic planning in diversified institutional framework.* It does so by providing detailed information about Vattenfall

globalization process and strategic planning in different region in align with boundaries of the each specific regional energy market.

This article is structured as follow, in the section 2 briefly a background around the notion of European policies and MNECs action within a system is discussed. Section 3 addresses the Vattenfall main boom and bust cycle. This is done through exploring the history behind the company's main strategic plan and simultaneous European political changes. This will be followed by section 4 in which historical development of Vattenfall in each of its three headquarters is assessed separately. Section 5 is merely dedicated development of wind power in this leading company as the most developed source of renewable energy and the motivators behind it. This study is finished by section 6 which encompass concluding remark.

## 2. System Response to the Climate Change

Institutional framework of a country is what forms and bound the actions of the energy companies in a region(Coriat and Weinstein 2002). Accordingly, there is an strong interrelation between the behaviors of energy companies and the surrounding market parameters. Whereas it has been discussed that, that the relations between energy companies and political framework are mostly go from institutional levels to organizational ones, it has been discussed that, occasionally institutional framework of a country might end up changing and emerging as well (Malerba 2002). Coriat and Weinstein (2002, P. 289) argued that,

*“The complex relation between “authority” and “discretion” that we have started to explore, emphasize the co-evolution of organization and institutions. Co-evolution does not mean congruent and smooth evolution, but rather a dynamic form of interplay, accompanied by more or less strong and tension.” (Coriat and Weinstein 2002).*

When it comes to the European energy market, the history is indicator of growing importance of renewable energy in this market portfolio. European energy system always was concerned about three main parameters, which keep the balance in the whole system. This includes, environmental sustainability, economic efficiency and, security of supply(Figure 1). Based on these influential factors as well as changes in demand and availability of energy sources at the moment, different European countries started enforcing diversified support schemes. European commission, however, tried to emphasize on the advantages of harmonization in the whole European level (Commission 1998). Nevertheless, MNECs, even in Europe, are still functioning in diversified climate policies(Hamilton, Brewer et al. 2003). This requires them to adopt multi-domestic strategies and plannings(Baron 1997, Kolk and Pinkse 2004) that have resulted both negatively and positively on MNECs' business and economy (Kolk and Pinkse 2004).

In follow, this somewhat unexplored vein of research is the main focus of this study. In order to achieve our objective, we utilize event history analysis tools by having firms as the unit of analysis. Event history analysis was proposed for first time by Poole (Poole, Van de Ven et al. 2000) and Van de Van (Van de Ven, Polley et al. 1999) which later on has been recognized as one of the most useful methods for analyzing innovation system complexity and longitudinal data(Alphen 2011). Moreover, this study builds its empirical

foundation on a case study conducted in Vattenfall, one of the leading European multinational energy companies, with a special focus on its three headquarters in Sweden, Germany and Netherland. The data are gathered by documentary material in any forms of press releases, annual reports and other internal or external news and reports. Besides, 2 interviews are conducted with experts, one in political and one in organizational position, involved enough in Vattenfall market development. This study attempts to cover the lack of existing empirical data in this context through obtaining detailed information out of this conducted case study.

### 3. Vattenfall Boom and Bust Cycle

Vattenfall was established in 1909 and expanded its services to the point that it has become among the first leading energy producers in the Europe. As of 2012, Vattenfall offers its services in more than 7 countries and holds 8 different sources of energy in its portfolio. With the evidence of about 30% generation market share in 1930 and 50% in 1980 and almost constant rate afterward, this company grew significantly over the years (Högselius 2009). Vattenfall has always been fully owned by Swedish government. However, justification behind its public-owned fact changed as soon as Vattenfall made the plan of globalization. It has been discussed that the rationality behind the this type of ownership decreases as the company expand its boundaries over the society (Midttun 2001). Accordingly, while the change of this ownership has been in the company's agenda from time to time, due to the large profit gained by government, this goal has not been achievable so far (Högselius 2009).

Company's documents reveals that maintaining the current status and constant growth of Vattenfall were neither easy nor similar in different regions. During the past decades, many surrounding parameters have affected the development process of this company that influenced the company's decisions and position in their accordance. Nevertheless, this company based on its international reputation, has not played a passive role. This could be pinpointed by Vattenfall CEO message (2007, P. 50) stating: *"Vattenfall has been one of many players that have helped push the climate issue up to the top of the international agenda. Vattenfall has thereby played an active part in strengthening Sweden's voice in this important future issue"* (Vattenfall 2007).

The energy market is capital intensive. Accordingly, holding a leading position in this market requires an energy company to plan its strategies in response to the market demand and social responsibility at the same that it maintains high profitability. Based on this argument, Vattenfall set the goal of achieving average 15% of yearly profit (Vattenfall 2011). In order to response this major goal, Vattenfall had two option of expanding their technological diversification profile or entering into the foreign markets. Vattenfall has always been considered as the company that struggles for both expansion and growth and this formed many of their decisions through the years (Högselius 2009). Diversification of Vattenfall plan can be depicted in their major action of changing their service title from an "electricity company" to an "energy services company" (Vattenfall 1990). This decision came about while Swedish energy market was facing stagnation around 1985. As the second opportunity, expansion, Vattenfall started looking for the new possibilities in cross borders. Though, the process of internationalization lagged behind and it was not before 1990, that the first attempts were seen in the company's management board (Högselius 2009).

“*Becoming a leading European energy company*” was Vattenfall dreams from the very beginning. As stated, Vattenfall performs in more than 7 countries around the world among which it owns three headquarters in Sweden, Germany and the Netherlands. At the present time, these three core markets together cover about 85% to 90% of the total cash flow of the group (Vattenfall 2010). Analyzing the existing energy market of Vattenfall in its headquarters reveals that globalization requires both entrepreneurial activities and institutional supports (Högselius 2009). Vattenfall has always been renowned as an environmental friendly company with a positive reputation around Europe. This status is compatible with the company’s dominant generation portfolio of hydro and nuclear power with low amount of emission. One may argue that this positive reputation was that brought them success in many conducted acquisitions that is noticeable in the prosperous expansion profile of Vattenfall in European countries. Though, in order to start with Vattenfall history of performance in the globalized market, it is essential to have an understanding about the company’s main strategy and planning directions.

It was not before 2004 that Vattenfall expressed its concerns around “greenhouse effect” directly in its annual report. Appearance of this issue, exactly one year after publication of their Corporate Social Responsibility (CSR) report in 2003, was not an accident. In 2003, raising climate concerns motivated Swedish government to enforce the certificate system regulation in Sweden that increased both awareness and concerns in the system. As the consequence, energy utilities, specifically stated-owned Vattenfall, attempted to respond to this change. This response becomes more noticeable in 2005 when, environmental concerns formed one of the main lines of the company strategic plan. This new strategic view was indicators of five main lines of, number one for the customer, number one for the environment, profitable growth, benchmark for the industry and employer of choice. However, year of 2005 was not only significant in the history of Vattenfall. This year was a milestone in the history of whole Europe energy system by the initiation of new emission allowance trading system in EU. The purpose behind this policy was clearly to manage and reduce emissions in different European countries.

The second milestone in the history of Vattenfall strategic plan concerning environmental issues happened in 2007 by launching the famous 3C (Combat Climate Change) strategic plan (Vattenfall 2007). This plan was in align with the perspective of cutting the company emission’s rate in half by 2030 and become a “climate-neutral” by 2050. Keeping the reputation of environmental friendly company, was one reason that explained the logic behind this major strategic change. Vattenfall has been criticized massively between 2006-2007 based on the big coal plants purchases in Germany and occurred accidental incidents in their nuclear power plants was criticized massively (discussed in detail in the next sections). Accordingly, Vattenfall, in order to indicate its awareness and capabilities around the climate issues, developed this new strategic plan. In another big step, Vattenfall took the lead and published a public Climate Manifesto at a press conference in Brussels in 2008. Vattenfall invited the public to sign this manifesto to urge politicians around the world to take necessary measures to improve the climate issue. In this manifesto, which been signed by more than 235,000 people, 3 main points were identified; 1- requirement of a global price for CO<sub>2</sub> emissions. 2- necessities of more support for climate-friendly technologies. 3- necessities to implement more climate standard for products (Vattenfall 2008)..

The latest strategic plan of this leading MNEC was formed in 2010, after three continuous years of not meeting the 15% expected profits. This new strategic plan, which launched after authorization Øystein Løseth as the Vattenfall new CEO, followed 4 main directions of profitability, focusing on core market, concentrating on three main product including, electricity, heat and gas and lastly, reduction of CO2 emission. In order to achieve this goal, Vattenfall made the plan of consolidation in the first four years (2010-2014) that will be followed by years of growth (2014- ). This huge attempt to decreasing the associated cost in this known profitable company was a huge sign of need for change. While the result behind this decision can be traced back existing financial crisis in several European utilities that started as early as 2008(Vattenfall 2010), it could be also explained by the profile status of Vattenfall in different regions, mainly its headquarters.

## **4. Globalized Vattenfall**

### **4.1. Vattenfall in Sweden**

Vattenfall initiated its services in Sweden in 1909 with the aim of exploiting large-scale hydropower(Högselius 2009). As of 2012, Vattenfall is among the most dominant energy producers in Sweden. Development history of Vattenfall in Sweden is indicator of not very challenging situation for keeping its constant growth and market share, based on their cheap energy prices, company's competitiveness and reliable and green sources. However, one may argue that Vattenfall expansion in Sweden could be considered as a special case, since this publicly-owned company's actions were somewhat fitted within the institutional framework of Sweden. Looking at the development of Vattenfall within Sweden is highly indicator of the objective of company in providing the Swedish habitant with clean and cheap source of energy and profiting from it.

Generation portfolio of Vattenfall in Sweden, is mainly dependent on hydro and nuclear power. Accordingly, contribution of this country in the green gas pollution is limited to a great extent. This successful generation portfolio, is triggered partially by the supporting Swedish policies that have been introduced to aid energy utilities, including Vattenfall. Among which, the known Green certificate was enforced in 2003, with the aim of making renewables cost efficient, accelerate their development and increase competition and innovation in both electricity and certificate markets(Bergek and Jacobsson 2010). Nevertheless, it has been argues that the support from the Swedish government in comparison to their counterpart is limited. Why this reluctance exists within this green society, could be explained by the current promising generation portfolio of Swedish energy market. Consequently, based on the country geographical potential and practical policy framework, Vattenfall was not required to make a huge efforts to follow its main strategy of being a green and profitable energy utility in the country of its origin.

In 2005, Vattenfall faced with the thread of competition in the Swedish market, which the company decided to response it with advancing their capabilities and services. Accordingly, the first step for fortifying the green generation portfolio of Vattenfall in Sweden could be noticed in this year. This started by the plan of commissioning of the largest Swedish offshore wind farm, Lillgrund. This decision that was made in the same

years with the introduction of trading system in EU, was just the beginning of Vattenfall movement toward becoming the largest wind power producer in Europe. However, whereas Vattenfall decision concerning building large wind farms was look upon positively in the energy system, not many favorable policies within Sweden existed in support of that. This lack of support, accordingly, affected the future establishment and progression of off-shore wind farms in Sweden. As pointed, Swedish energy policies, particularly certificate system, were generally supportive of more mature and less costly renewable sources. This implies, while the Swedish policies, specifically green certificate system, are affecting technical change process in energy sector, their contribution is considered marginal(Bergek and Jacobsson 2010). Accordingly, Vattenfall decision of investment in green sources, were mainly set to fulfill their company's central goal. Yet, the result of this lack of support could be seen occasionally Vattenfall projects. This includes the three on-hold offshore wind farms of Vattenfall, due to lack of Swedish support system in meeting their requirement and associated expenses(Bergek and Jacobsson 2010).

On the customer side, Vattenfall held a positive perspective from their energy consumers in Swedish energy market. This is not a surprise if concerns of Vattenfall in meeting their customers demand and expectation yearly take into consideration. As of 2006, this company by giving the customers the option of choosing their own energy sources indicated company's respect toward customers' preferences. This option came into the being specifically after the incident of Forsmark in 2006. Forsmark was the Vattenfall largest nuclear power plant in Sweden at the moment. While the consequence of the happened incident in Forsmark has been considered as small scale incident, some called it just luck the consequence of this incident were different with Fukushima disaster. The accrued incident in Forsmark caused huge fear and budget loss for this company. However, this incident in Sweden, unlike what has been seen in Germany, did not bring huge deviation in the both governments and Swedes perspective regarding nuclear powers. This almost positive perspective is measured by the energy system in Sweden through a yearly questionnaire.

This supporting framework, however, does not mean that Vattenfall has not been criticized quite occasionally in Sweden, due to their dependency on nuclear power. Though, so far this has not caused significant change in the generation portfolio of the company, due to positive supportive Swedish regulations. This could be depicted by pointing to the Barsebäck 2, the only terminated nuclear plant in Sweden, owned 74% by Vattenfall. Interestingly, this termination was mainly due to the pressure posed by Danish government. Based on this positive view, in 2010, Swedish government made the regulation that the number of nuclear reactor constant over the years starting from beginning of 2011 by total amount of 10 which give the energy companies authorization to rebuilt new reactors. This favorable decision concerning nuclear power gives the energy utilities possibilities of investing in new plants and reactor.

All in all, strong performance of Vattenfall in Sweden, origins in highly established renewable technologies (i.e. hydro and wind power) as well as accepted nuclear power and compatible institutional framework. Accordingly, expansion of Vattenfall in the Swedish energy market to the extend that this company has became one of the leading energy generator, can be explained by existing organizational competences and developed company's strategy that simply suits into the institutional framework of this country. This compatibility made it possible for Vattenfall that at the same time that it

pursues its main strategy of growth and climate combat strategy, benefit of the company existing competence, such as Vattenfall high capabilities of nuclear power. However, considering the positive harmonization perspective in EU, we can discuss that maybe it is not possible for the company to keep up with the same level. Swedish customer almost through all the history of Vattenfall based on their high quality services hold a positive toward this company.

#### **4.2. Vattenfall in Germany**

Development of Vattenfall in Germany started as early as 1992. This process began with the major goal of increasing Vattenfall annual sales outside of Sweden (Vattenfall, 1991). In the early 1990, Carl-Erik Nyquist, Lennart Lundberg and Andres Hedenstedt started to travel around the Europe and seek for the new opportunity (Högselius 2009). Based on this investigation, by purchasing 50% share of a small consultancy and construction company, in Energie-Anlagen Berlin GmbH (EAB) acquisition of German market started officially. This penetration in to German market expanded to the extend that as of 2011, Vattenfall ranked as the third largest producer of energy in this country (Vattenfall 2011). Acquisition of Germany was considered as huge success for the Vattenfall and was big step in the sense of accomplishing the company's firm aim of increasing their growth.

Vattenfall development in Germany, started after finding the opportunity of expansion and increasing the growth. Development of Vattenfall in Germany initiated with the aim for expansion through cooperation in the existing system. Though, this cooperation altered to confrontation, as soon as Vattenfall attempted to shape a new relationship rather than sticking to the existing one (Högselius 2009). Hence, Vattenfall history of development and acting as a huge player in the German energy market were both result of massive experimentation and learning as well as changes in Germany. During Vattenfall establishment in Germany, the company was benefiting from the positive German energy systems perspective toward this company, based on their environmental friendly actions and cheap production of electricity. This reputation, however, were challenged when Vattenfall faced with the one-time opportunity of expansion in German market. The aim of becoming a large energy company and the significant chance of acquiring BEWAG and VEAG and also, LAUBAG, three big coal power plants, was too appealing for this company to resist. This purchase, which accomplished by 2001, resulted 60% raise in the group's net sale in 2002. Although the negotiation behind this this massive coal-based plant purchases lead to a very limited and low asset equity ratio for Vattenfall in the first years, the profitable following years compensated for this loss.

This decision was a conspicuous indicator of prioritized Vattenfall strategy of growth and expansion in above of any other plans. This controversial bidding could be was the first signs of flexibility of company strategies within the German energy market. Interestingly, this controversial contract bound after the presence of Vattenfall new CEO, Lars. G. Josefsson. It was not before this new leader that Vattenfall reinterpreted the consequences of purchasing and acquiring the coal power plants and opted to take the risk. However, regardless of the made decision, Lars G, J Josefsson were known for his significant efforts for solving environmental issues. His strives were to the extend that he entitled climate hero by the TIME magazine in 2005 and one year after, he became the advisor of the German Chancellor Angela Merkel's on climate issues.

The German policy framework has always been a successful example of how policies can drive renewable technologies forward. Generous feed-in system in Germany enforced in 2000 and motivated diverse energy utilities acting in Germany for undertaking more renewable power projects. In 2005, in a huge step, German government allocated subsidies to the renewable generation power. This law in align with appearance of emission allowance system and increasing taxes specifically in nuclear fuel which expectedly, caused an additional stimulus for Vattenfall to consider development of energy from renewable sources. This could be noticed in investment of Vattenfall in renewable powers such as wind power, Hydro and Bio-fuel in Germany from this year forward. Vattenfall, in align with its competitors, started to take the opportunity and look for the substitution for fossil fuel generation in the coming years. This motivation magnified after estimation of lower projected growth by Vattenfall in the years after 2005 due political pressures.

Despite the huge interest and investments of German government in green energy, when it comes to Vattenfall market development, inconsistency of these policies imposed huge impacts on their actions. A clear case may be the formed policies and regulations around the nuclear power of this country. In 2010, German government decided to extend the lifetime of their nuclear power plant by average 12 years. This decision extended the lifetime of two nuclear power plants of Vattenfall, Krümmel and Brokdorf, by 14 years and 8 years, respectively. This promising decision motivated Vattenfall to make an agreement with E.ON to optimize the functioning of these plants. The main reason behind this regulation was due to the belief that renewables are still not the fully viable to meet all the energy demands of German society. Accordingly, nuclear power could be used as a “*bridge*” until the increasing the practicality of renewables. Nevertheless this decision completely changed its form as the consequence of earthquake in Japan, in 2011. As the consequence of this catastrophe, German parliament decided to close all their 17 nuclear power plant by 2022 at the latest. This big decision lead to lack of certainty in restarting the two partially owned nuclear power plants (Brunsbüttel and Krümmel) and in consequence, a massive loss for Vattenfall.

Sensitivity of nuclear discussion in Germany and dependency of Vattenfall on its nuclear competences could be one reason that changed the history of Vattenfall and its position in the German market at the moment. In 2007, the two nuclear powers of Brunsbüttel and Krümmel in Germany faced with independent incidents at a same time. This initiated a huge criticism for this company. Controversies around managerial aspect of these incidents were to the extend that German subsidiary CEO Klaus Rauscher to step down from Vattenfall Europe and followed by dismissing the head of Vattenfall Europe's nuclear energy operations Bruno Thomauske, as well as company spokesman Johannes Altmeppen. On the other hand, lack of Vattenfall transparency about the full detailed information of accrued accidents in Germany rise up the other dark side of critics. This lack of openness answered by Chancellor Angela Merkel stating, *"That is why my sympathy is really limited when the company is criticized."* These incidents were dominant factors in the future decision of German Parliament for phasing out nuclear power in Germany. Combination of this accidents in align with increased energy prices is what that resulted loss of 2500 Vattenfall customers.

Combination of all these events and their consequences, stimulated the prior plan of Vattenfall to cut its yearly cost. Vattenfall plans of cost reduction, specifically after formation of the Vattenfall new strategies in 2010, had its prevalent influence on its

German market share. While Vattenfall focus on its core markets magnified since that year, their attempt to reshape their generation portfolio and cutting their cost during the consolidation phase resulted only, selling 25% stake in the Rostock coal-fired power plant to RheinEnergie AG and followed by several other sales, mainly in coal power plants.

Another justification behind the Vattenfall statement of unreliability of German policy framework, goes back to the development history of Carbon Capture and Storage (CCS) demonstration power plant at Jämschwalde, Germany. Vattenfall always attempted to pave the way in the most suitable promising way for the company based on their own competences. In 2008, Vattenfall announced that, they intend to build a its new CCS power plant at Jämschwalde in Germany. This project, which was among one of the 6, funded project by EU in 2009, refused by German government in 2011. Based on this decision Vattenfall due to the lack of German policy consistency and will and other unknown reasons canceled project (Vattenfall 2010). However, this project termination can be seen from the different perspectives. The German Bundesrat (Federal Council) supported their decision by pointing to the fact that there is no logic behind giving Vattenfall reason for continuing fossil-fuel their production. Moreover, as they stated, CCS might bring up unknown environmental hazard, which per se raised the huge public concerns and opposition (Reuters,xxxx).

Overall, when it comes to German market, the co-evolutionary determinants of the development of energy market conspicuously change their forms in comparison with Swedish ones. Vattenfall defines the energy system of Germany with specification such as supporting but inconsistent policies, fragmented customer, lower value added offerings (Vattenfall 2010). However, looking to the development history of Vattenfall objectively, development in this country was mainly followed in the purpose of achieving high amount of growth and expansion. This profitable profile, is what that altered the positive perspective of German market toward this company. Vattenfall through this acquisition became known as the leading European company and accessed a dominant position in German electricity market. Though, lack of political consideration and not sticking to organization main strategies and competences changed the outcomes of this market.

Profitability of coal-powers is probably a factor that Vattenfall decided to continue the existing portfolio in this country. Though, selling the coal-plants in Germany after encountering with financial concerns and indicated lack of profitability logic for this company. Moreover, Vattenfall did not maintain its positive perspective between their segmented customers in Germany. While Vattenfall attempted to win back its customer, by answering their customer demands in Germany by offering heat and pump technology in Germany (2005) or building CCS services in Germany, the outcome were not promising for them. This loss of market share was one reason that Vattenfall started looking for new expansion opportunity in European market.

#### **4.3. Vattenfall in Netherlands**

Vattenfall commenced its services in Netherlands by acquisition of 49% of Nuon stocks partially. Nuon started its services in Netherlands around 1995 as an energy utility company. Competition with leading European utility company is what that motivated Nuon as of 2007 to be probe to sell its shares. This bid was accomplished by investment of considerable amount of money from the Swedish partner, Vattenfall and acquisition of

Nuon with the aim of keeping their “solid credit rating” in February 2009. This irresistible but reasonable investment has brought many challenges for Vattenfall at the present time.

On the positive side, through this acquisition Vattenfall gained variety of competitive advantages. This includes gaining number of expertise in natural gases, several wind power farms as well as vast number of customers both in Netherlands and Germany. German newspaper “Die Welt” described this situation as: *"A big day for the Swedish state-owned Vattenfall and a bad day for German consumers. By taking over the Dutch energy company Nuon, Vattenfall head Lars Josefsson has not only bought his way into the lucrative natural gas business; he has also taken care of one of his company's annoying little competitors. Nuon's 'Yummy Power and Gas' ad campaign had already found many takers in Vattenfall's key markets of Hamburg and Berlin. And now Nuon Germany will be subsumed by Vattenfall. The consumer's freedom of choice is smaller; the range of products is narrower; and prices will probably go up."*

Accordingly, acquiring huge sources of that through acquisition of Nuon provided Vattenfall by an obvious dominant competence. Lars G. Josefsson, CEO of Vattenfall (2009), said: *"I'm very pleased that we can take this important step. Nuon's widely respected knowledge in renewables and clean energy technologies is a very valuable addition to our own. It will accelerate the realization of Vattenfall's strategy to make electricity clean"*. Maybe it was based on this perspective that Vattenfall started the largest ongoing investment in natural gas in Netherlands with commission expectancy of 2012. Natural gases are normally views as large system that brings monopolies for their owners and they have significant advantages in compare with coal and lignite in the matter emissions. Nonetheless, it did not stop Vattenfall from investing in in Dutch coal power.

Moreover, Nuon and Vattenfall joint, promised more advanced development of innovation in the future of Vattenfall. The initiation of this cooperation was expected to increase the Vattenfall capabilities in advancing in different technologies. The result of this advancement can be seen in development of technologies such in CCS installation at Germany (Schwarze Pumpe) and Nuon (Buggenum) or advancement of wind power.

Accordingly, at the first glance this acquisition was a potential investment with a high prospective income in future. However, after four years of this acquisition, this company still has not benefited from this huge amount of investment. Current situation is indicated that the paid money for this purchase was excessively high that the gained profit so far, has not compensated that. This is to the extend that, this investment is considered as the “Swedish worst investment” by Swedish reporters.

Overall, looking into the Vattenfall short history of development in the Netherlands, is indicators the company's aim for finding the additional competences. As we, Vattenfall was facing huge challenges and criticism since 2007 in its both headquarters. Accordingly, finding the opportunity of increasing their market share both in Germany and Netherlands as well as acquiring new competences in natural gases was precisely compatible with the company's business logic. It purchases also promised a potential resources for substituting the massive coal generation portfolio of the company. Since 2011, Vattenfall also tried to follow the EU transparency in energy market plan by publishing detailed information about their generation portfolio in Netherlands.

## 5. Wind

We discussed that being “number one for environment” and “combating climate issue” have always been in the Vattenfall strategic plan. In response to these strategies, Vattenfall declared its plan of becoming the biggest wind power players in Europe in its annual report in 2005. Accordingly, the development of wind power, as the most mature source of energy in this company, is what that might make us able to understand what triggered the development of renewable technologies with this firm.

Undoubtedly, wind power did not become viable until cost associated with it decreased to a great extent. However, even despite of this maturation, profitability of this source of energy is tremendously dependent on policies support. Vattenfall’s wind power development has been momentous during the past seven years. This significance could be pinpointed by 117% generation progress of Vattenfall in 2007 only in compare with the prior year(*Figure 1*)(Vattenfall 2007).

The start of this notable development commenced in 2004 in Sweden by acquiring Örestad and planning to build the Swedish largest off-shore wind farm, Lillgrund. This decision, was made one year after enforcing the certificate system in Swedish energy market. However, despite what was expected, the certificate system only marginally covered the cost associated with offshore wind powers. It is noted that only 3 of Vattenfall offshore wind plants in Sweden, are on hold due to insufficiency of political support(Bergek and Jacobsson 2010).

While the development of wind power in After considering the development of wind power in the first priority of the company, acquisition of Danish market This acquisition that enforced one year after issuing of emission allowance trading system in Europe, was just the beginning of Vattenfall looking for opportunity and increasing their wind power generation.

By introduction of emission allowance trading system in the EU and Vattenfall plans of becoming the wind power leader in Europe in 2005, Vattenfall started entering strong Danish wind power market. This acquisition resulted the first a big leap in the wind power generation portfolio for the Vattenfall in 2006. It was through this acquisition that Vattenfall gained expertise and competences to change its generation of wind power development at the European level. As of 2007, undertaking several large wind power construction project project, including DanTysk (North sea), Alpha Venus (Germany), Lillgrund (Sweden), were huge steps in increasing their generation portfolio from wind sources.

In 2008, acquisition of UK wind market reinforced position of this company in the whole Europe. Acquisition of these companies in UK brought several advantages for Vattenfall among which was taking over the ownership of the world’s largest off-shore wind farm, Thanet. Establishment of Vattenfall in UK based on only mono energy source could be explained by high degree of competition in this country and feasibility of wind projects due to policy supports (Foxon, Gross et al. 2004). Vattenfall argues, *"The wind power investments in the UK are one of many examples of how Vattenfall is working actively and methodically in accordance with our strategic direction, which we summaries in the three words Making electricity clean"*.

In 2009, by integration of Dutch market into the Vattenfall community, and operationalization and acquisition some other wind farm formed another big milestone formed in the history of wind power development of Vattenfall. All in all, at the present time Vattenfall own wind farms in around 9 countries in the world, which are mostly settled in Sweden and Denmark. Vattenfall is the largest Swedish wind operator and the second operator of off-shore wind power in the world. This company declared that 55% of its total investment would be conducted on low emission energy and heat sources between 2012 and 2016, specifically wind power. While the history of Vattenfall is indicator of their partial aims for innovation and advancing immature sources of energy, focusing on development of wind power as a feasible and cost efficient technology reveals the company inclination for choosing ready-to-use technology.

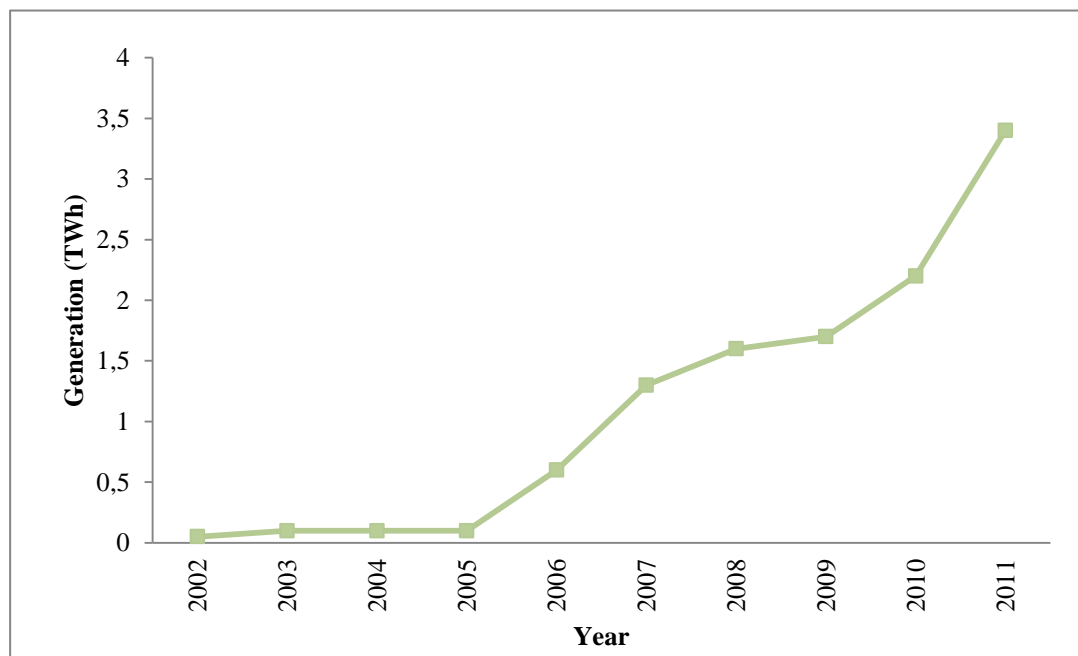


Figure 1 – Vattenfall Wind power generation profile

## 6. Conclusion

In this paper, we assessed the development of Vattenfall in its three market headquarters through a co-evolutionary perspective. We aimed to explore how Vattenfall managed its strong performance in different regions, having varied political and institutional frameworks with respect to its strategies. Vattenfall, as a successful example of MNECs, recorded significant success and growth during the past decade in its profile. At the present time, more than 85% of this profit origins in its three headquarters in Sweden, Germany and Netherlands.

Vattenfall started its services as state-owned company in Sweden. The clean, cheap and stable energy portfolio of Vattenfall in Sweden, did not caused them significant challenges to fulfill their strategic at the same time with following their business logic at the same time. Accordingly, Vattenfall co-evolved in a region that suits their existing

competences, quite smoothly. We argue, Vattenfall generation portfolio in Sweden is dependent on hydro and nuclear power in Sweden. This compatible generation portfolio with political framework and regional parameters is what that made possible for Vattenfall to take the advantages of its organizational competences at the same time that it acquired targeted market share in Sweden. Nevertheless, the more political supports could have aided this company in conducting more advancement in the case of renewable energy, such as offshore wind power.

Vattenfall development in Germany revealed a rather different story. Acquisition of German market initiated with the aim of becoming a leading European energy company through increasing Vattenfall market share. This was at the same time that this acquisition promised significant augmentation in the company growth. Accordingly, this decision was in align with company main strategy of growth and expansion. Though, the one-time opportunity of expansion and acquiring massive profit through the acquisition of massive coal-plants in Germany, changed the history of Vattenfall in this market forever. This acquisition was a conspicuous example of how business logic could prevail the company's strategic view in this country. During this acquisition, where as Vattenfall response directly their strategy of growth and profitability, they disregarded the political consideration as well their reputation as green portfolio company. Consequently, this decision brought lots of insecurity and barriers in the future development history of this company especially considering more environmentally centered regulation both at the EU and German levels. This was to the extent that it forced Vattenfall to later on adopt new strategy plan and withdraw its partial market share since the country boundaries did not let the company to benefit from their prior investment.

Hence, loss of major profit in German market, at the same time with increasing necessities of substitution for the Vattenfall coal power portfolio was a motivation that opted Vattenfall to aim for Dutch market. While the result of this acquisition are yet to be seen, it could have noticed significant investment in this new market during situation for Vattenfall did not promised prosperity for the future of this Vattenfall. In addition, once again Vattenfall followed acquisition of a market based on the business opportunity rather than it's the core market strategic plan.

All in all history of development of Vattenfall reveals that this company has played an opportunistic role when it comes to its establishment in Germany and Netherlands. This opportunistic role was somewhat interfering with the political consideration of Germany and caused huge setbacks in their future development and expansion. These setbacks resulted the last developed strategic plan of Vattenfall with the aim of cost reduction.

Last but not least, in this paper we acknowledge the limitation of analyzed data and dependency of most part of the study on the secondary data sources. This is mainly due to not feasibility of performing more interviews and discussion with related authority at the moment, which we aim to cover it in the future.

### **Acknowledgement**

This research was conducted within the framework of the European Doctorate in Industrial Management (EDIM). This doctorate program is funded by The Education,

Audiovisual and Culture Executive Agency (EACEA) of European Commission under Erasmus Mundus Action 1 programs.

## Reference

- Alphen, K. V. (2011). Accelerating the development and deployment of carbon capture and storage technologies - An innovation system perspective. PhD, Utrecht University.
- Baron, D. P. (1997). "Integrated Strategy, Trade Policy, and Global Competition." California Management Review **37**(2): 47-65.
- Bergek, A. and S. Jacobsson (2010). "Are tradable green certificates a cost-efficient policy driving technical change or a rent-generating machine? Lessons from Sweden 2003–2008." Energy Policy **38**(3): 1255-1271.
- Broecker, W. S. (1975). "Climatic change: are we on the brink of a pronounced global warming?" Science (New York, N.Y.) **189**: 460-463.
- Christmann, P. (2004). "Multinational Companies and the Natural Environment: Determinants of Global Environmental Policy Standardization." Academy of Management Journal **47**: 747-760.
- Commission, E. (1998). Commission Report to the Council and the European Parliament on Harmonization requirements. Directive 96/92/EC concerning rules for the internal market in Electricity, COM (1998): 167.
- Coriat, B. and O. Weinstein (2002). "Organizations, firms and institutions in the generation of innovation." Research Policy **31**(2): 273-290.
- Doukas, H., A. G. Papadopoulou, C. Nychtis, J. Psarras and N. van Beeck (2009). "Energy research and technology development data collection strategies: The case of Greece." Renewable and Sustainable Energy Reviews **13**: 682-688.
- Foxon, T. J., R. Gross, A. Chase, J. Howes, A. Arnall and D. Anderson (2004). "UK innovation systems for new and renewable energy technologies: drivers, barriers and systems failures." Energy Policy **33**(16): 2123-2137.
- Grubb, M., C. Vrolijk and D. Brack (1999). The Kyoto protocol: a guide and assessment, Royal Institute of International Affairs.
- Hamilton, K., T. Brewer, T. Aiba, T. Sugiyama and J. Drexhage (2003). "Corporate engagement in US, Canada, the EU and Japan and the influence of domestic and international policy." London: RIIA.
- Högselius, P. (2009). "The internationalization of the European electricity industry: The case of Vattenfall." Utilities Policy **17**(3): 258-266.
- Jacobsson, S. and A. Johnson (2000). "The diffusion of renewable energy technology: an analytical framework and key issues for research." Energy Policy **28**(9): 625-640.
- Kolk, A. and D. Levy (2001). "Winds of Change: Corporate Strategy, Climate Change and Oil Multinationals." European Management Journal **19**: 501-509.
- Kolk, A. and J. Pinkse (2004). "Market Strategies for Climate Change." European Management Journal **22**: 304-314.
- Kolk, A. and J. Pinkse (2004). "Market strategies for climate change." European management journal **22**(3): 304-314.
- Malerba, F. (2002). "Sectoral systems of innovation and production." Research Policy **31**: 247-264.
- Midttun, A. (2001). European energy industry business strategies, Elsevier Science.
- Muller, A. (2006). "Global Versus Local CSR Strategies." European Management Journal **24**: 189-198.
- Oxelheim, L. (2001). "On the treatment of finance-specific factors within the OLI paradigm." International Business Review **10**: 381-398.

Poole, M. S., A. H. Van de Ven, K. Dooley and M. E. Holmes (2000). Organizational change and innovation processes: Theory and methods for research, Oxford University Press, USA.

Van de Ven, A. H., D. E. Polley, R. Garud and S. Venkataraman (1999). The innovation journey, Oxford University Press, USA.

van Tulder, R. and A. Kolk (2001). "Multinationality and Corporate Ethics: Codes of Conduct in the Sporting Goods Industry." Journal of International Business Studies **32**: 267-283.

Vattenfall (1990). Annual Report. Stockholm, Vattenfall AB.

Vattenfall (2004). Annual Report, Vattenfall AB: 114.

Vattenfall (2007). Annual Report, Vattenfall AB: 134.

Vattenfall (2008). Annual Report, Vattenfall AB: 134.

Vattenfall (2010). Annual Report, Vattenfall AB: 148.

Vattenfall (2011). Annual Report, Vattenfall AB: 148.

Wüstenhagen, R., M. Wolsink and M. J. Bürer (2007). "Social acceptance of renewable energy innovation: An introduction to the concept." Energy Policy **35**(5): 2683-2691.