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## **A market still shaped by politics?**

A qualitative study of the implications of the German Energy Concept on Norwegian energy export

Master's thesis in European Studies

Trondheim, Spring 2011

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# List of Abbreviations

CCS- Carbon Capture and Storage

CDU- Christian Democratic party

CO<sup>2</sup>- Carbon dioxide

CSU- Christian Social Union of Bavaria

DGAP- German Council on Foreign Relations

EC2010- Energy Concept

EEA- European Economic Area

EFTA- European Free Trade Area

Energy2020- Europe 2020 Initiative: the EUs energy strategy

ESA- European Surveillance Authority

EU- the European union

FDP- Free Democratic Party

FU- Supply Committee (Forsyningsutvalget)

GFU – Gass Negotiating Committee (Gassfohandlingsutvalget)

IEA- International Energy Agency

LNG- Liquefied natural gas

LULU- Locally Unwanted Land Use

NIMBY- Not in my back yard

NRK- the Norwegian Broadcasting System

NSCOGI- North Sea Countries Offshore Grid Initiative

SDFI- the State's Direct Financial Interests

SEEP- the Smart Energy for Europe Platform

SPD- Social Democratic Party of Germany

SRU- German Advisory Council on the Environment

# 1. Introduction

The German Energy Concept released in 2010, marks a shift in the German energy and environmental policy. The policy document is the road map of the transition towards a future energy mix<sup>1</sup> more reliant on renewable energy. It may have significant consequences for the world's energy providers as Germany imports up to 60 percent of its energy consumption (IEA, 2007, p. 16). The Energy Concept will therefore have implications for Norway, as one of the world's largest energy providers (CIA, 2012). It is these implications that this master thesis analyzes.

The German Energy Concept is a relatively new document and its implications must therefore be assessed in a contemporary framework based on historic developments and contemporary statements from government officials. These variables together with current research reports should lead the way to a clear image of what implications the Energy Concept might have on Norwegian energy export to Germany.

Norway and Germany have had strong ties in the field of trade since the Hanseatic League settled in the coastal towns of Norway. Germany has since then become one of Norway's most important trading partners, second behind Sweden (SSB, 2011d). In particular, this is well founded in the energy sector. Norway's most profitable single export commodity is namely the export of oil and natural gas. The second largest importer of Norwegian natural gas is Germany, just behind Great Britain (SSB, 2011d). The relationship between Germany and Norway in the field of energy is thus also a relationship marked by interdependence; Norway is dependent on export of its natural resources, and Germany is dependent on import in order to cover its energy demands.

The idea of export of electricity has deep historic roots in the relations between Norway and Germany. In 1930 the first project was paused due to the financial restraints that the financial crisis of 1929 created for Germany. During World War two, a second plan was further developed. However, due to a lack of raw materials and qualified labor, the idea was yet again shut down (Thue, 2011). During the 1990's the idea of transfer capacities to Germany was revisited twice, but yet again shut down by Statkraft's German counterparts

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<sup>1</sup> The term "energy mix" is in this thesis used as a general description of a country's energy supply, usually comprising of some or all of the following: Oil, gas, coal, lignite, renewable energy and nuclear power.



(Midtun, Ruohonen, & Piria, 2012, p. 9). Today, there is a fifth project entitled Nord.Link which is planned to be finished in approximately 2020 (Statnett, 2011).

In Norway, both the electricity and gas sector were under government control at the very beginning, respectively the early 1900's and the late 1960's. The initial idea behind the governmental control of these sectors was that the state should have control over Norwegian natural resources and thereby ensure that the profit from these will benefit the Norwegian people. The electricity sector was the first to break free from government control through the Energy Act in 1990. The natural gas sector was not fully liberalized until the dissolution of the Gas Negotiation Committee (Norwegian: Gassforhandlingsutvalget, GFU) in 2002 (EC, 2002).

### **1.1 A brief literary review of relevant research**

The literature covering the relationship between Norway and Germany covers a variety of themes. Only a selection of these will be presented here in order to provide an image of the need for further research on the topic of Norwegian- German energy relations.

Nedrebø (1995) gives an account of the new challenges facing Europe with a reunited Germany. He dedicates a chapter to how the Norwegian and German relationship has developed, with emphasize on the post- World War Two era. After the war, Norwegian government officials did not trust their German counterparts- a situation which continued until Willy Brandt became chancellor in 1969 (Nedrebø, 1995). Nedrebø has developed this historical presentation with emphasis on the future importance of Germany in the EU and thus for Norway. He concludes that the previous post- world war two "German problem" has now developed to a "German challenge" and that the following development and significance of Germany is something worth paying attention to in the future.

Simensen, Grimnes, Hobson and Lorenz (1999) also present a historical account of the relationship between Norway and Germany with a focus on the political aspect of the relationship. In the closing chapter written by Nils Morten Udgaard, the emphasis is also here, on the relationship between Germany and Norway in relation to the EU and how Germany most likely will become Norway's most important partner in this context (Simensen, Grimnes, Hobson, & Lorenz, 1999).

In other words, these two historic accounts of German- Norwegian relations emphasizes the importance of the interconnectedness to the EU which both countries have, and how they must adapt to EU regulations. As such, Germany is stated to be Norway's "insider" within the union. Nevertheless, these works do not go in depth of the interdependence between Norway and Germany in the field of energy which has developed throughout the years. This is where the research of this master thesis becomes valid, by contributing to this.

The second important aspect of this master thesis is the theme of energy trade and liberalization. Literature concerning Norwegian energy trade and its liberalization process are present in a variety of works, either as collections of articles often focusing on a EU perspective (Austvik, 1991; Karlstrøm, 2012) or as historical records (Austvik, 2003; Nilsen & Thue, 2006; Ryggvik, 2009; Sekne, Thue, & Svinningen, 2011; Skjold, Thue, & Svinningen, 2007).

Austvik (1991) claims that the Norwegian gas market will continue to be politicized in spite of signs of liberalization. He also states that the Norwegian policy will have to comply with EU policy in the years to come. This was written before the Maastricht treaty and was therefore correct in its forecasts. As the analysis in this master thesis will show, these forecasts are still accurate today in a fully liberalized market. Later on, Austvik (2010) supports his previous statements in a book on innovative regulatory approaches, by claiming that the Norwegian government "succeeded in (...) finding new ways of intervening in the sector within the new legal framework" (Austvik, 2010, p. 125). The framework which he refers to in this case is the new EU regulations and liberalization of the Norwegian natural gas sector. Even though Austvik (1991, 2010) provides an excellent insight in the liberalization of the Norwegian natural gas sector and uses examples concerning Germany, neither he goes into detail of the relationship between Norway and Germany in the energy field.

Karlstad analyzes the deregulation of the Norwegian electricity market. He claims that the deregulation of the electricity market created problems, such as how public debates about the causes and effects of the system creates problems for policy-makers (Karlstrøm, 2012, pp. 7-8). Nonetheless, he does not deal with the issue of Norway's relationship to Germany or the future plans to establish an under- sea electricity grid with Germany.

In the review of the development of the electricity market accounted for by Thue and his co- writers, the essential focus lies on the relationship between the state, concerns about

security of supply, and eventually the interplay between these two and the market. The companies growing internationalization in the beginning of the 2000's is also something which they emphasize, countering that for the time being Statkraft will continue to remain a national power production company (Nilsen & Thue, 2006; Sekne et al., 2011). He thereby avoids the current debate and one of the themes of this master thesis, namely that of export of electricity to the continent.

Ryggvik (2009) approaches the liberalization of the petroleum sector with some skepticism by questioning when the search for new oil and gas wells will end. He also highlights the opposing values of environmental concerns, the petroleum companies and the national governments. He thereby gives a valuable account of the considerations which politicians today must deal with when developing petroleum policy. Moreover, he also gives a good description of the developments of the Norwegian petroleum policy. Nonetheless, neither he goes into detail on the relationship which has developed between Norway and Germany in the petroleum sector.

Because current trade between Germany and Norway is occurring in an EU framework, literature dealing with the internal market in the EU and its energy regulations is also made use of. Going beyond general EU textbooks explaining the energy policy of the EU, such as *European Union Politics* (Cini & Pérez-Solórzano Borrágán, 2010) and *The European Union: how does it work?* (Bomberg, Peterson, & Stubb, 2008) certain books specialize on EU energy policy in a national perspective. Three books especially worth mentioning in the context of this thesis are *Political Economy of Energy in Europe* (Fermann, 2007), chapter eight in *Utenfor, annerledes og suveren? Norge under EØS* (Claes & Tranøy, 1999) and *Energy markets and environmental issues* (Hope & Strøm, 1991). This is because they all focus on the implications of EU energy policy on national regulations, and thereby contributes to the perspective concerning Norwegian and German implementation of EU energy goals.

Most of these works have been employed in this thesis as they provide valuable historical accounts of the developments in the energy sector. Especially the focus on the political developments that some of these books have, has provided valuable insight in the subject matter discussed in this master thesis. Nonetheless, they do not depict a detailed current relationship between Norway and Germany in the field of energy.

In other words, the search for contemporary assessments of the relationship between Germany and Norway in the field of energy has proven to be unsuccessful. The exemption of this is a report on the future of the North sea Offshore windmill grid from the Smart Energy for Europe Platform (SEEP), an independent non- profit organization (Midtun et al., 2012, p. 3). This report assesses the political reservations towards the development of an off-shore windmill project entitled North Sea Countries Offshore Grid Initiative (NSCOGI). This discusses aspects which are of relevance in this master thesis as well, namely political attitudes towards the electricity market. It does not put this project in an explicit context with the new energy developments in Germany which the Energy Concept marks.

## **1.2 Research question, structure and arguments**

Germany changed its energy policy in September 2010 by presenting the Energy Concept (henceforth EC2010). This marked a change of focus in their energy supply; going from an energy supply highly reliant on nuclear energy, coal and imports of other fossil fuels (i.e. gas and oil), the EC2010 set out the road towards a future reliance on renewable energy. Due to Germany's dependency on imported fossil fuels (i.e. natural gas and oil) where Norway is a decisive contributor, one question comes to mind; what sort of implications could this change have on the future of Norwegian energy relations with Germany? More specifically; what will happen to export of natural gas from Norway, and what future possibilities for cooperation does the EC2010 entail? This is the overall research question of this master thesis.

In order to answer this question, there are several other questions that need to be assessed before providing an asserted answer. What does the German energy mix consist of, and to what extent does Norway contribute to this? What is the main focus of the EC2010, and will it sustain a governmental change?

Furthermore, it is also important to assess the natural resources of Norway, focusing on natural gas and electricity. What is the Norwegian policy in the field of energy, and what future possibilities does the Norwegian government see in energy exports? These questions arise in order to better analyze the possible implications of the interests expressed in the EC2010. The account of German energy utilization and Norwegian energy resources also shows the interdependence between Norway and Germany in the field of energy. Currently this is evident in the natural gas market, and in the future there will be a possibility for an electricity exchange between the two countries.

Having answered these questions, it is then possible to discuss the overall research question, namely what implications EC2010 has on export of natural gas and the future possibilities for electricity exchange between the countries. The answers to these questions, and hence the structure of this thesis is as following.

Chapter two presents the German energy mix and their reliance on imported energy resources. Thereafter the EC2010 is presented, highlighting the central aspects that will have future implications on Norwegian export of energy to Germany. The share of Norwegian gas in Germany's energy mix, and the expressed request for pumped storage power plants in Norway in the EC2010 makes these two areas the subject of further analysis. By assessing whether or not the document is sustainable and therefore reliable in case of a change in government, the different political parties' attitudes towards the policy document are presented. Asserting its sustainability, the strategy of the European Union (EU) on energy (Energy2020) is also shortly presented, making it clear that the EC2010 stands in accordance with it and can thus be deemed sustainable.

Following this, chapter three presents Norwegian access to and export of natural gas. The liberalization process of the natural gas policy is presented in order to make it clear to the reader that the Norwegian gas market is today formally liberalized. However, this will be disputed through chapter four. The EU gas directives influencing Norway is also presented to underline that, as Germany, Norway is also subjected to the same EU regulations. The third part of the chapter discusses current gas policy developments, and thereby presents the current government's policy on the matter. Thereafter, chapter three moves on to the possibilities of future export of electricity by presenting the electricity sector and its liberalization process. After this, the current developments within electricity exports are presented. This makes it clear that one can see the development of the Norwegian natural gas and electricity trade in a state- centered approach to trade policies, a perspective being accounted for in this chapter.

Chapter four discusses the overall research question of this thesis. This is done by stating the expressed possibilities. However, these explicit possibilities will be demonstrated to be shaped by political will, strongly influenced by public perception. The chapter first deals with natural gas. It first establishes that natural gas in Germany's future energy mix is only implicitly expressed, but becomes explicitly stated by German government officials after the nuclear turn- around in 2011. Before the changed policy on nuclear energy, the EC2010 rather implied cooperation on Carbon Capture and Storage (CCS) technology research with Norway

for utilization in their coal power plants, rather than an increased or continued import of natural gas from Norway. The discussion therefore addresses the arguments of a “new dash for coal” (Pahle, 2010), concluding that this will not occur. Even though the EC2010 implicitly opens up for import of Norwegian gas, the discussion demonstrates that there is a vagueness towards this expressed by German government officials. The uncertainty this is causing is expressed through statements from the Norwegian Petroleum and Energy minister Ola Borten Moe.

Continuing to discuss the overall research question, the second section of chapter four deals with electricity and possibilities for pump storage power plants in Norway. First, this section of chapter four confirms the German interest of pumped storage capacities in Norway through statements from German government officials as well as a demonstrated technological possibility. This leads to the discussion of what is hindering the development, seeing that they are aligned with Norwegian policy on the subject matter. The analysis reveals that there is a lack of political will on behalf of the Norwegian Government to see through these possible plans.

The third and last part of chapter four raises the question why this is so. Answers are sought by viewing the behavior of government officials in view of the history of the two sectors; the NIMBY- phenomenon and public pressure; as well as the state- and society-centered approach. Thus, the analysis implies that domestic public resistance and political will is hindering the factual implications which the EC2010 might have on the Norwegian energy sector.

Chapter five is the conclusion of this master’s thesis. It states that the consequences which the EC2010 might have is not a straight forward process as obstacles are through the analysis in chapter four to be found in public and political resistance. Chapter five also returns to the previously depicted matter of how politics still shape markets (cf. Austvik 1991,2010).

The presentation of the structure of this thesis makes it clear that some reservations regarding the implications have been taken. It is plausible that the EC2010 would have some ramifications on the cooperation on research of Carbon Capture and Storage (CCS) between Norway and Germany, e.g. the cooperation between the University of Stavanger and the University of Clausthal established in 2008. This matter will however not be further discussed, as this master’s thesis focuses on natural gas and electricity.

Another reservation is made regarding the previously mentioned cooperation in the North Sea between Germany, Denmark, Norway and Sweden on the establishment of offshore windmills under the “North Sea Countries Offshore Grid Initiative” (NSCOGI) (Midtun et al., 2012). As the private research center Smart energy for Europe Platform (SEFEP) have already conducted a research report on the subject of Norwegian attitudes towards this, there is little scope for this thesis to develop this further.

Last but not least, the importance of political ideologies connection to the resistance towards the subject matter discussed in this thesis would indeed be of relevance. It could further explain the opposition towards electricity transfer and natural gas utilization in a political-ideological perspective. The scope of this master thesis does however not cover this due to the volume and time restraints.

### **1.3 Theoretical approach: state and society**

By deploying theoretical concepts, the analysis of this master thesis can be further elucidated. In order to answer why the political actors influence trade relations which the analysis of speeches claim, two theoretical frameworks within political economy are relevant; the state-centered approach and society-centered approach to trade policy (Oatley, 2008). These are utilized due to their focus on state intervention in markets and how policies are shaped by the society from which they stem.

According to Oatley (2008), the state-centered approach to trade policy is when “national policymakers intervene in the economy in pursuit of objectives that are determined independent from domestic interest group’s narrow self-interested concerns” (Oatley, 2008, p. 96). This is said to “aggregate social welfare” (ibid). In other words, protectionism may occur in certain sectors because the state believes that this will benefit the overall good of the society. Protectionism can occur as tariffs, production subsidies or other policy instruments in ways which raise the total social welfare.

These interventions usually occur with so-called “infant industries” (Oatley, 2008, p. 97). An infant industry is a newly created firm/technology. These industries will not initially be efficient, but could become efficient in the long run if they are given time to mature. Government intervention in forms of e.g. tariffs or legislation in the given industries will enable them to become efficient and begin to export.

Why an industry could not be efficient in the short run, but rather in the long run has to do with “economies of scale” or “economies of experience”. In this thesis, the latter is applicable. Economies of experience are when efficient production requires “seasoned managers, skilled workers, and reliable suppliers of equipment and materials” (Oatley 2008, p. 98 after Kenen 1994, p. 280). Seeing that an infant industry often lacks these essential requirements, production at an early stage will be costly. However, over time, these skills can be acquired by the industry and costs of production therefore falls as they no longer need to invest in developing these skills. In an unprotected market, this industry will not be able to compete because of the heightened costs due to lack of trained workers and insight in necessary technology. Therefore, a steep learning curve must happen before production-costs fall and profits rise.

In order to allow for the infant industry to realize the cost savings and achieve greater efficiency, tariffs or other kind of protectionist measures can be imposed from the state. When this is done, the industry may begin to export and the “protection” can be removed. As the industry becomes compatible in the market, a social return in the form of labor, income etc. occurs, and as such benefits the social welfare. Hence, tariffs and other forms of government intervention in economies of experience may improve social welfare (Oatley, 2008, pp. 99-100).

The abovementioned protectionism usually occurs within a so-called strong state. A state’s strength is “the degree to which national policymakers are insulated from domestic interest- group pressures” (Oatley, 2008, p. 101). A strong state is therefore a state where policymakers are to a high degree insulated from the pressure of interest groups. This is usually due to a central authority and a strong coordination among institutions and state agencies. If these factors are in place, it is easier to develop long-term plans embodying national interests. This contrasts a weak state, which must often answer to the particularities and short- run demands of interest groups (ibid).

One weakness that the state-centered approach entails, is that it assumes that states make policy isolated from domestic interest groups (Oatley, 2008, p. 111). The society-centered approach may therefore be of help. This approach emphasizes interest groups’ influence on government policies. Therefore, government intervention in the economy is often “consistent with and shaped by the interests of the coalition of societal groups upon which the government’s power rests” (Oatley, 2008, p. 112).



The state-centered approach therefore provides us with one decisive concept by emphasizing the interest of the state in protecting industries against foreign competition in order to make them competitive. The society-centered approach on the other hand highlights the importance of societal groups and their influence on policy makers.

The state-centered and society-centered approach can therefore be useful when the last part of the analysis discusses why the government officials act as they do. Furthermore, the state-centered approach helps us understand the development of the Norwegian natural gas and electricity sector. It will later on in chapter five be argued that the political control which was present prior to liberalization in order to make trade profitable is in some informal way still present.

#### **1.4 Analyzing documents: Method and sources**

In order to conduct the analysis, the thesis is based upon content analysis of documents, speeches and interviews. According to Manheim, Rich, Willnat and Brians (2008), content analysis is the “(...) assessing and interpreting of the form and substance of communication” (Manheim, 2008, p. 180). This type of analysis can provide the researcher with “evidence of the behaviors of, and the relationships between various types of political actors” (ibid). Therefore, content analysis of documents, speeches, articles and news- articles (online and on paper) as this master’s thesis conducts can provide an answer to the behavior and relationship between Norway and Germany.

The type of documents upon which this thesis builds its arguments are quite different, and therefore makes up a qualified qualitative analysis (Bøgh Andersen, Møller Hansen, & Klemmensen, 2010, p. 119). Documents are a type of written sources, whereas interviews and speeches are based upon oral statements. This provides us with two different angles for analysis and enables us to investigate political will expressed orally against what is stated in documents. However, considerations should be taken into account in both cases in order to utilize the documents in a correct manner and thereby concluding with accuracy (ibid).

First, the type of communicator must be taken into account. In this master thesis oral communication in the form of speeches or interviews will be dealt with. The speeches are held at meetings between Germany and Norway within the field of energy where government officials are focal speakers. Annual energy workshops have been arranged between the

countries since 2010 and speeches from October 2010 and November 2011 are used in this context. In addition to this, a meeting on energy at the royal Norwegian embassy in Berlin, Germany, 1<sup>st</sup> December 2010 has been used, i.e. one speech from this event has been located by the researcher.

In order to verify the credibility of the statements, support can be found in Speech act theory (Green, 2009). As the analysis utilizes speeches and statements from government officials, it is important to highlight this theory in order to confirm that these statements are more than political talk, but rather statements expressing political opinions. Thus, speeches can be regarded as acts influencing the possible implications which the EC2010 might have because of the act which the speeches might lead to. Speech-act theory namely raises the question of what force lies behind the words uttered, claiming that “saying it can make it so” (Green, 2009). However, not all sayings will equal acts; it depends on the person and context in which the words were uttered. According to Green, “only an appropriate authority, speaking at the appropriate time and place can perform [certain acts]” (ibid). Dealing with statements from government officials speaking at bilateral energy conferences, it is therefore possible to claim that their statements here can produce acts. The sincerity of the speaker must also be taken under consideration, seeing that some speeches can be lies and thereby represent a type of abuse (Green, 2009).

Having this in mind, one can only assume that when politicians “say so, it is so”. This is because they have the appropriate authority (i.e. they are ministers or secretaries of state), as well as the fact that the speeches are retrieved from meetings where cooperation are discussed, and can thus be deemed as statements representing the country the government officials represents. Therefore, the statements made by government officials may be interpreted as a desire to perform certain acts.

One exception to this reasoning is the statements from former German chancellor Gerhard Schröder who no longer represents the German government and therefore does not possess the authority mentioned in Speech-Act theory. In spite of this, he was speaking on behalf of the German Council on Foreign Relations, which is a think tank on the topic of amongst other energy policy (DGAP, 2012). Seeing that he spoke on behalf of a German think tank it follows that his statements are based on facts and thorough analysis, and can therefore be deemed reliable, albeit not a desire to perform the acts that he is speaking about.

Another concern about the speeches and interviews are biased attitudes and the statement's intended audience (Manheim, 2008, p. 181). In order to unveil biased attitudes it is important to examine the context in which these statements occur. As stated above, the statements are derived from official meetings mostly between government officials with attendance from industry and interest groups from both countries. One can therefore safely assume that their statements are in coherence with their national policies.

The meetings have not to a great extent been disseminated through the printed press, and one can therefore assume that the statements at these meetings have not been shocking. One exception also applies to this, namely the statement that Borten Moe uttered at a seminar at the University of Oslo in August 2011 (Lie, 2011). According to a Norwegian technical magazine, he supposedly shattered the dream of Norway as a storage battery for Europe. The news also got coverage in the medium sized newspaper *Morgenbladet* (Jørgensen, 2011).

The use of newspaper or magazine articles also creates methodological concerns in this context. One must question the comprehension of the journalist of the subject matter, and his possible biased attitude towards it. To eliminate this problem, newspaper articles have been chosen that are found in newspapers or magazines which have a clear focus on energy matters. These are the technical magazine *Teknisk Ukeblad* and the financial newspaper *Dagens Næringsliv*. One can therefore assume that they have certain knowledge on the subject matter and therefore will not falsely report on the matter at hand. Dealing with the journalists' possible bias towards the subject matter, this thesis only deals with quotes stemming from the politicians whom the journalist reports on, mostly consisting of direct quotes. Therefore, one can only assume that the statements are accurate.

There are however certain exemptions to this rule. *Morgenbladet* as mentioned above serves as one of these. *Morgenbladet* is however used due to the limited media coverage which the news item got, and can therefore be verified through the statements in *Teknisk Ukeblad*. The second exemption is the use of Norwegian Broadcasting System (NRK). NRK provided a thorough coverage of the electricity crisis during the winter of 2009/2010. They also provided in depth information about the issue of air-line grids. NRK are considered by the researcher to be a reliable source, due to their magnitude and importance as a news provider.

The documents that are used in this thesis also need to be discussed according to similar criterions. Relating to the type of communicator, the documents mostly stem from

international private agencies like Pöyry, the autonomous organization IEA consisting of 28 member states, or national research institutions like SINTEF (Norwegian research center) and the German Advisory Council on the Environment (SRU). Two official Norwegian reports have been utilized as well; one concerning Norway's EEA agreement and one on energy. The Official Norwegian reports are reports developed by independent researchers by appointment of the Norwegian government

Concerning bias, it is expected that the policy documents used will be biased towards the policy that the government in place wishes to promote. In Germany it is currently a liberal-centered government in place, namely the Christian Democratic Union (CDU) and the Free Democratic Party (FDP). Their policy is therefore to be expected to be of a conservative and liberal nature, stressing minimal state involvement in industries. In Norway on the other hand, there is currently a center-left government comprised of The Norwegian Labor party, The Socialist Left Party and the Centre Party. Their policy will therefore be biased towards a more socialist form of policies than what would have been the case of a liberal-conservative government. The policy documents are not analyzed as objective documents but namely as policy documents representing the government's attitude to the given subject.

Concerning dissemination, the documents have mostly been presented without broad media coverage. The topics which these policy documents represent have, however, been widely discussed in the public sphere. Energy and environment are intertwined subjects and matters of public debate. Power plants or grid infrastructure in particular are two subjects of public dispute due to their visibility in the public sphere. In Germany this public debate has concerned itself a great deal around nuclear energy and waste (cf. chapter two). In Norway, the debate has mainly revolved around electricity prices and how to improve the grid infrastructure (cf. chapter three).

“Intercoder reliability” is another matter that should be taken into account when evaluating the reliability of this research (Manheim, 2008, p. 191). That is, what kind of preconceived ideas and theories does the researcher have when analyzing the material? In order to overcome potential preconceived ideas or theories, two measures are taken. First, the speeches are carefully analyzed by excluding potential alternative meanings. The documents are taken at face value, seeing that policy documents are an expression of intended policy of the government/ politician(s) who formulated it. Second, the overall analysis based upon the

two different types of documents is brought into a theoretical context in order to exclude further bias towards the material.

Having taken these concerns into account and eliminated them as threats to a robust analysis, this thesis provides an analysis based on diverse sources thereby creating a holistic approach to the research question.

## **2. The German Energy Concept 2010**

This chapter sets out to demonstrate the change in Germany's energy mix towards renewable energy and away from nuclear energy, thereby becoming more reliant on other energy resources as a so-called transition technology. First, Germany's energy consumption and import is presented in order to understand the energy mix and the implications of the changes posed by the EC2010. Thereafter, the main aspects of the EC2010 that are central to the thesis question are presented. These are how the government would make usage of renewable energy socio-economic wise, and their focus on research, technology, storage capacities and grid infrastructure in order to achieve this. The third element of this chapter briefly presents the previous energy policy in order to demonstrate the need for a new policy on the matter. Lastly the EC2010's sustainability is taken into account by reviewing the opposition's views on the policy, as well as placing it in an EU context. This is done by presenting the EU energy strategy, "Energy2020", and viewing how the EC2010 goals correspond to the Energy2020 goals.

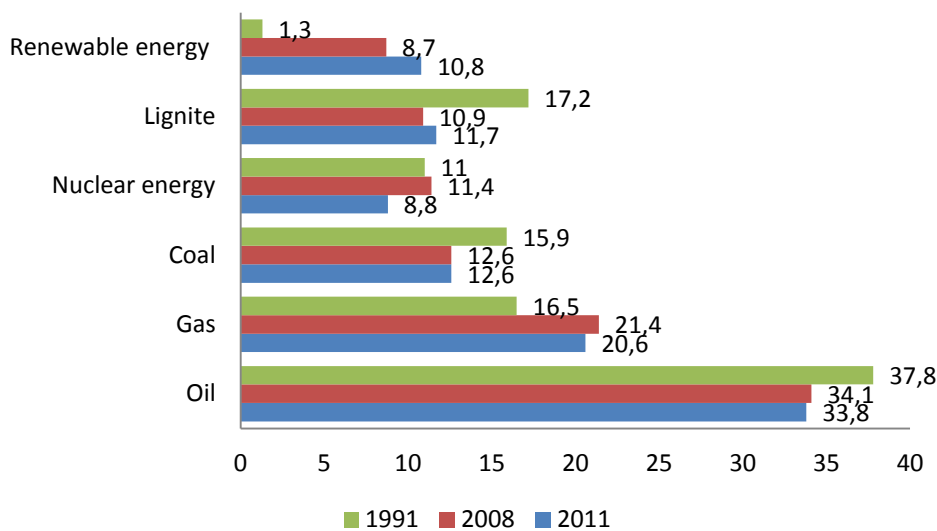
The presentation of Germany's energy consumption demonstrates their dependency on import of Norwegian natural gas. The review of the EC2010 will however, demonstrate that the future need for gas is not explicitly described, as opposed to what the need for storage capacities are. In addition to this, the chapter shows that the energy strategy of the EU as well as the German political parties are all pulling in the same direction; away from fossil fuels and towards a future reliance upon renewable energy. Thus, the EC2010 can be considered a sustainable policy and will therefore have long term implications on import of Norwegian energy.

### **2.1 Germany's energy supply**

Germany's energy mix is comprised of a variety of raw materials, including nuclear energy, coal, lignite, oil, natural gas and renewable energy. Figures from "Arbeitsgemeinschaft Energiebilanz" (AG Energiebilanzen) in graph one illustrate the resource distribution as well as the change in the overall energy mix in Germany in 2011 compared with 1991. This change is especially clear for gas and renewable energy, which have experienced the largest

growth. The use of oil and coal has on the other hand been reduced. The figures relates to so-called primary energy consumption, referring to energy material that has not yet underwent a transformation process in order to make it into electricity or other energy utilization (Bayer, 2009).

**Graph 1. Energy utilization 1991 - 2011**



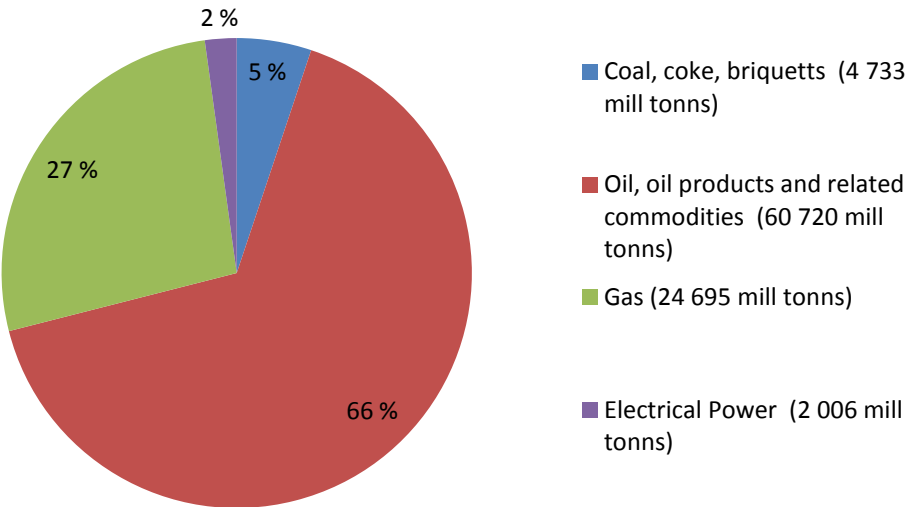
(Bayer, 2009, p. 7; Energiebilanzen, 2012, p. 5)

Graph number one makes it clear that the consumption of gas (+ 4.1 percent) has increased the most since 1991, together with renewable energy (+9.5 percent). Nuclear energy, oil, lignite and coal still play a major role in the overall energy consumption. However, oil (-4 percent), coal (-3,3%) and lignite (-5.5 percent) have seen a significant decrease. In addition to this, 2011 was the first year where renewable energy outweighed nuclear energy in the primary energy consumption. However, it is important to note that energy consumption itself was lower than the year before due to favorable weather conditions, an overall expansion of renewable energy as well as the warned abandonment of nuclear energy (Energiebilanzen, 2011).

Germany does not possess all of these raw materials, and is therefore heavily dependent on import of primary energy resources, amounting to 60 percent of total demand (IEA, 2007, p. 16). The main imports are raw materials such as oil, gas and coal. The percentage of coal imports is relatively low, seeing that German domestic coal production is rather high. Electrical power is another small group of the general energy import commodities, as primary energy is usually converted into electricity within Germany itself

(see graph two). Import of electricity has however doubled since 1991 according to the report published by the Statistisches Bundesamt. The expansion of imports and exports of electricity is however limited seeing that the transmission capacity is limited. The main exporting countries to Germany are France, the Netherlands and the Czech Republic (Bayer, 2009, p. 38).

**Graph 2. Groups of energy import (2008)**



(Bayer, 2009)

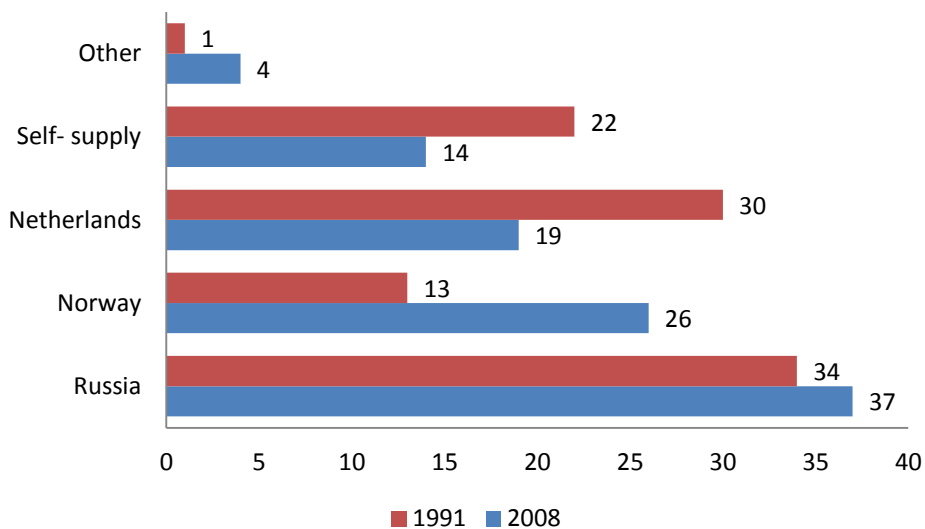
The main areas of import are oil and natural gas. Graph number three shows the share of total import of natural gas according to country in comparison with 1991. What is interesting to note in this regard, is that the import of natural gas from Norway and Russia has increased, while import from other countries has decreased. Russia stands out as the main competitor to Norway in the gas sector, with an increase of 7 percent gas imports to Germany (Bayer, 2009). Norway has on the other hand doubled its share of natural gas exports since 1991 and is now only 11 percent behind Russia, as opposed to being 21 percent behind in 1991.

The growth of imports is connected to Germany’s diminishing domestic access to energy and the country is today one of the biggest importers of energy in the whole EU-27.



Eurostat figures on import of energy resources in Germany from 2009 show an increase of 2,3 percent since 1999, making total energy import 61,6 percent of total energy demand (EU, 2011, p. 26). One third of this comes from Norwegian energy exports of oil or natural gas. Electricity generation is based primarily on coal and nuclear energy, with growing shares of natural gas and renewable sources (Eurostat, 2007).

**Graph 3. Import of natural gas 1991 and 2008 (percentage)**



(Bayer, 2009, p. 42)

## 2.2 The Energy Concept 2010

The EC2010 was released in September 2010 and was a strategy as to how Germany should cope with future energy demands and eventually develop a more self sufficient energy supply. The strategic objective was to become more reliant upon renewable energy, reaching a share of 80 percent of renewable energy for their power generation within 2050. In order to achieve this, the Christian Democratic Union, the Christian Social Union of Bavaria (CDU/CSU, henceforth CDU<sup>2</sup>) and the Free Democratic Party (FDP) focused on making renewable energy cost efficient in order to increase the share of renewable energy in the primary energy consumption.

<sup>2</sup> CSU is a political party only present in Bavaria, and is of the approximately same political opinion as CDU. They are therefore cooperating with CDU in Bundestag.

Germany has since the 1990s been a pioneer in renewable energy in Europe. One mean in achieving this goal was the Renewable Energy Source Act (EEG) which entered into force 1. April 2000, and was revised August 2010 (BMU, 2010). The purpose of the law was to facilitate the development of renewable energy by providing various subsidies for grid operators, energy companies and consumers when investing in, or using, renewable energy. This was to ensure a greater investment security in renewable energy seeing that the technology was new and thereby costly (Corino, 2003). The demonstrated growth within renewable energy implies the EEGs effect.

As the main focus of the EC2010 was to make renewable energy more cost efficient and thereby more utilized in the energy mix, the focus of the policy was to a great extent on the need for further research on and development of CCS, storage technology, solar energy and windmills. Investments in these technologies should lead Germany to their aim of a energy mix more dependent on self- supply (BMWi & BMU, 2010, p. 5). Nuclear energy should function as a transition technology towards these end-goals and the already determined end- date for German nuclear power plants was extended by on the average 12 years. This decision was eventually revised in June 2011 as described in section 2.4 and the section describing nuclear power utilization (Section C.4.) is currently under revision.

Nonetheless, the aim of being more self sufficient in their energy supply was through utilization of domestic coal power plants. By developing CCS for these, they would be climate neutral, and thereby ensuring Germany a secure supply of inexpensive energy (BMWi & BMU, 2010, p. 16). As German domestic resources for coal is declining, and subsidies for these are cut, the CCS developed would mainly be used for lignite power plants (ibid).

The environmental goals of the EC2010 was a total share of 80 percent of renewable energy in the German power generation compared with 1990; to reduce power consumption with 25 percent compared with 2008; and to cut greenhouse gas emissions with up to 95 percent compared with 1990- all within 2050. However, in order to continue on the path towards renewable energy in times of financial unease, the CDU-FDP government aimed with the EC2010 to make the transition towards renewable energy financially secure, both for consumers and for the industry. In order to achieve this whilst simultaneously achieve the renewable targets of the policy, the government saw some obstacles that needed to be dealt with. The main obstacles highlighted in the EC2010 are to ensure a cost efficient expansion of renewable energy, development of storage technology, further exploration of windmills as

well as solar energy. These aspects require further research before being fully utilized (BMW & BMU, 2010, p. 8).

In the EC2010's suggestions for making renewable energy accessible in the market, the CDU-FDP government focused mainly on market considerations and how renewable energy needed to be cost efficient in order to compete with other traditional energy resources. In light of the relatively new technology on energy storage, wind and solar energy, the EC2010 stated that these kinds of technology needed to be phased into the market in order to be fully competitive. By slowly phasing in more renewable energy into the energy mix, the technology required in order to make it cost efficient, would have had the chance to be further developed. This should also ensure a renewable energy market that corresponds closely to demand.

The CDU-FDP government stated in the EC2010 that a cost efficient renewable energy market would create a larger energy market in general, seeing that energy will be more affordable to industries and individual consumers (BMW & BMU, 2010, p. 7). The most cost saving measure which the EC2010 presents is to cut energy consumption, an overall goal of the Energy concept. With the EC2010 Germany aimed to reduce primary energy consumption with 50 percent within 2050 and electricity consumption with 25 percent within the same year, compared to energy consumption in 2008. By introducing efficiency initiatives for private households, industries and transportation, they will achieve this (BMW & BMU, 2010, p. 11).

The development and research of wind energy, both onshore and offshore, was also another focal point of the EC2010. Germany aimed to boost offshore wind capacity to 25 GW by 2030, being merely 25.77 MW in 2010 (BMW & BMU, 2010, p. 8; Haluzan, 2010). In order to do so, new investments needed to be made according to the EC2010. However, the type of technology necessary to further develop the off shore wind capacity is relatively new and the investment risk for such a commitment is therefore rather difficult to calculate (Pinkse & Buuse, 2010). In order to overcome this financial hinder, tax income from nuclear energy producers should help finance projects aimed at developing smart solutions for wind energy.

Another area that needs further research is storage possibilities for energy. Due to fluctuating wind and solar capacity, it is necessary to have stored energy capacity. This technology must, however, be further developed and researched before being used to its full capacity. The EC2010 mentions biogas as one energy source that can be stored. Biogas can be

used in a multitude of ways, it is a known energy provider, and will in the future play an important role of the German energy mix (BMW<sub>i</sub> & BMU, 2010, pp. 9-10).

Germany's domestic access to bio-energy is however limited and they will depend increasingly on imports. In order to maximize storage capacity, the German government has proposed to have a medium- and long-term plan. For the medium term, the government wants to tap all the available potential in Germany. As a long-term plan, they would like to explore the possibility to use foreign pumped storage plants in order to boost Germany's energy supply. The EC2010 mentions Norway as one alternative for this, alongside the Alpine countries (BMW<sub>i</sub> & BMU, 2010, p. 21). Pumped storage power plants are hydropower plants, and supposedly the most cost efficient way to store power (Janardhan & Fesmire, 2011, p. 54). Generally one can say that hydropower production consists of two lakes on different heights. When the upper lake is drained (i.e. produced maximum of electricity by being led through a turbine to the bottom lake), the bottom one is "full". Water may then be pumped back up to the upper lake in order to continue to produce electricity by yet again "fall" through the turbine.

Electricity grid infrastructure was also important in order to facilitate continued use and development of renewable energy. The electricity grid must manage to handle the phasing in of renewable energies with conventional energies. Due to Germany's geographical location, the development of an efficient grid infrastructure further amplifies the importance of grid developments. Their location in Europe makes it clear that they not only need to efficiently transport electricity within their own country, but also function as a connector for energy transportation within Europe (BMW<sub>i</sub> & BMU, 2010, p. 28). Therefore, they planned to expand their electricity grid in the years to come.

To achieve these objectives, Germany does not only rely on its own knowledge within energy technology, but also wishes, together with German businesses, to establish bilateral partnerships with non- EU members. The aim of establishing these partnerships is to create a dialogue, develop new options and ensure long-term access to supplies of technology, raw material and energy resources for Germany and the EU. In order to achieve energy security, the government will actively provide political support to German businesses involved in infrastructure projects which contributes to the diversification of their energy supply (BMW<sub>i</sub> & BMU, 2010, p. 31).

As this presentation of the EC2010 has illustrated, Germany has developed a policy committed to expand the use of renewable energy through a socio-economically wise manner by focusing upon research and development of new technologies. By developing new technologies (e.g. storage capacities, wind and solar power) Germany aims to strengthen competition and market orientation in the energy market in order to secure sustainable economic prosperity, jobs and innovation. Storage capacities such as pumped storage power plants are supposed to compensate for fluctuating wind and solar power (BMWi & BMU, 2010, p. 3). The policy admits that connections abroad are necessary in order to succeed in this, especially in regards to possible storage capacities.

### **2.3 The previous energy concept: The energy road-map 2007**

The previous governmental period in Germany was lead by a CDU - SPD (2005-2009) government. This coalition meant a larger difference between the two parties and a coalition with a conservative/socialist orientation as opposed to the present conservative/liberal government.

In 2007 the government decided to implement a road map for the path towards 2020 entitled “Eckpunkte für ein integriertes Energie und Klimaprogramm” (BMWi, 2007; IEA, 2007). Its main goals were to reduce CO<sup>2</sup> emissions with 40% against the 1990 emissions and renewable energy should consist of 30% of the total energy consumption within 2020. Besides these aims, the road-map also sought to maximize energy production efficiency (BMU, 2009). In order to achieve the CO<sup>2</sup> reduction goals, the energy roadmap aimed to phase out nuclear power within 2022, increase the share of renewable energy in electricity production as well as developing sustainable power plants with CCS technology (BMWi, 2007, pp. 11, 13; IEA, 2007). The road-map also presented the expansion of the electricity grid infrastructure in order to provide the whole country more efficiently with power. Thus, the previous energy policy aimed to combine security of supply, affordability and effective environment protection, not far from the stated aims of the EC2010.

Nonetheless, it was one critical area of disagreement between the two parties, namely the issue of nuclear phase-out (BMWi, 2007, p. 7). The CDU opposed the relatively early phase- out which the SPD manage to introduce. In a review of energy policy in Germany, the IEA criticized the government for ending nuclear power production, saying that phasing out nuclear energy would harm all the stated goals of the energy policy; CO<sup>2</sup> emissions would not

be reduced because of a heavy reliance on gas which would follow. Financially, nuclear energy was also said to be a type of energy resource that is cost efficient. Other energy resources like natural gas which would have replaced it, do not (IEA, 2007, p. 7). In addition to this, the IEA found the policy at time to be incomprehensible and saw great difficulties in the opposing opinions which the energy strategy implicitly stated (ibid). This was in particular regard to the end of nuclear power.

## **2.4 Why revise the Energy Concept?**

When the original EC2010 was presented in September 2010 its main controversy was the fact that the new government discarded the previous plan of ending nuclear energy in 2022. The end- date for nuclear energy was, as demonstrated above, one of the main disputes of the previous government where SPD opted for an earlier end date.

In order to reach the goal of 80% renewable energy in their primary energy consumption within 2050, the CDU-FDP government deemed it necessary to extend the operating lives of nuclear power plants with an average of 12 years, depending on the age of the power plants. CDU-FDP argued that the operating lives of the nuclear power plants needed to be extended in order to make renewable energy production efficient and affordable enough for consumers before being able to be a fully integrated part of the German energy mix. The government therefore argued that nuclear energy should be considered as a transition technology (BMW<sub>i</sub> & BMU, 2010, p. 14).

This strategy did not stay the same for long. After the nuclear accident that occurred in Fukushima, Japan in March 2011, the German government changed the phase-out end-date back to the original plan of 2022. The reasons for doing so mainly revolved around public pressure as a result of the nuclear disaster. After the nuclear accident, the German population saw the damages that nuclear power could cause in a nation that is highly technological developed with a high focus on energy security. The opposition towards the German nuclear power therefore grew, seeing that nuclear security was the greatest cause for nuclear resistance in Germany (IEA, 2007).

Opposition towards nuclear energy was however not a new phenomenon; it had been present in Germany since the 1960s and has since then continued to grow (Hernes & Dryzek, 2003). Resistance towards nuclear power had therefore already a sound base in the left/green

part of the German political scene. During the spring of 2011 it grew to include a broader specter of political opinions. Hence, the German population emphasized that nuclear power production had to be safe and secure and not as long -lasting as stipulated by the EC2010. The government therefore chose to revise the strategy, finally implementing it in June 2011 (BMW & BMU, 2010, p. 1). The resistance towards nuclear power was an expression of the so- called NIMBY phenomenon. The NIMBY (The Not in My Back Yard) phenomenon generally describes opposition by residents in a city to a proposal for a new development close to them. The developments which the population resists usually interfere with nature in one shape or form. This could be for instance new transmission air-lines<sup>3</sup> (Schively, 2007, p. 265).

The CDU-FDP government strongly emphasized that their decision had nothing to do with the nuclear reactors safety. Instead, they argued that the cause for the change to be that after Fukushima the perception of safety in people's minds had changed. The secretary of state, Ursula Heinen- Esser said in a speech at Cologne University that the accident made it evident that it was limitations as to how much people could control nature and technology and that therefore the end date of nuclear power production had changed (Esser, 2011).

## **2.5 Is the EC2010 a sustainable concept?**

In order to rely on the EC2010 to be a lasting policy and thereby having long- lasting implications on Norwegian energy exports, it is important that it has political support in the opposition parties as well from the EU. The following section will therefore analyze the energy policy of the other political parties in order to determine what common grounds across the parties there are. If there is a common base between the parties beyond the end of nuclear power, one can assume that the ideas stipulated in the EC2010 will sustain and thereby create a predictable and long term relationship between Germany and its trading partners. By analyzing the different energy policies of the Left Party, the Green Party, and the Social Democratic party of Germany (Sozialdemokratische Partei Deutschland- SPD), it becomes clear that there is a varying view as to when the change should come about, as well as what type of transition technology and energy should lead the country there. Nevertheless, all

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<sup>3</sup> Often, this kind of unwanted interference is referred to as LULU (Locally Unwanted Land Use). However, for simplicity, NIMBY is used keeping with the same term as Støre utilized .

parties agree to the fact that Germany's energy mix should be heavily dependent on renewable energy in the future.

Thereafter, this section deals with the EU's Energy Strategy "Energy2020". By reviewing the goals stated in this strategy which Germany is subjected to follow, it will become clear that the EC2010 is in accordance with Energy2020.

### **2.5.1 Domestic political support**

The left party (Die Linke) focuses on the broader picture in its energy policy by connecting the use of energy imports to the cause of war and a general outlook on the climate change situation. With this reasoning they wish for a future where Germany could be independent of oil and gas imports. In addition to this, they are of the opinion that nuclear energy should be abolished. The party does not specify as of when or how this should occur. Instead, solar and wind energy should be the main energy providers. The left party believes, in contrast to the EC2010, that Germany can be fully reliant on renewable energy within 2050. In addition to this, the left party takes a big leap away from the stated cooperation between private and public sector which is expressed in the EC2011 by saying that the energy supply and grids should be operated publicly in order to facilitate the common good (Linke, 2012).

It is clear that the left party does not agree with the progress mapped out by the CDU-FDP government. Where the EC2010 relies on cooperation between private and public sector, the left party believes in a fully public ownership. A future fully reliant upon renewable energy is also not expressed in the EC2010, where the plan ends in 2050 with 80 percent. As for the Left- party, they claim that this is achievable within 2050.

The Green party is a left winged party with a main focus on environmental policies. It was established in 1980 on the basis of nuclear resistance and with environment as its focal point. With the title "Energiewende in Deutschland- Grün geht voran" has the Green party gathered their response to the EC2010 which includes concrete measures to alternative solutions. They claim that the speed of change which the government has chosen to convert Germany's energy mix to be reliant on renewable energy is rather slowing down the ongoing process, than speeding it up (Grünen, 2011).



Concerning the phasing out of nuclear energy, the Greens say a clear “yes, but”<sup>4</sup>(Grünen, 2011). This is due to the fact that Germany could, according to the Greens, in the timeframe of 5 years fully step away from nuclear energy. Neither do they believe in the use of nuclear energy as a transition technology. Furthermore, the Greens claim that Germany has the ability to step away from their dependence on oil and coal within 2030, and thereafter fully rely on renewable energy for electricity. Until this goal is reached, Germany should utilize gas and other energy resources as transition technology instead of nuclear energy. In order to reach this goal, funding allocated to research of nuclear power should be moved towards research on renewable energy. The Greens would also like to learn from Scandinavian storage technology, thus being aligned with the EC2010.

SPD do not oppose the EC2010 as strongly as the other two opposition parties. They do however feel that there are many questions yet to be answered in regards to the “energiewende”. The SPD is happy to see that there has been a shift in the phasing out of nuclear power, but do not take it lightly that the road towards total abandonment of nuclear power is still not clear. The party agrees with the Green party, and is critical towards using nuclear energy as a transition energy source.

Hence, all opposing parties agree to the fact that there must be a switch towards more sustainable energies in order to cope with future challenges. They are in other words all pulling in the same direction. The road towards this goal, and when it should be reached is however the main dispute between the political parties. It is clear that the left side of the political scale would like to terminate nuclear energy as soon as possible, and rather use gas in order to cope with energy demands until a total reliance on renewable energy can be reached. When this should be reached varies amongst the opposition, but they all agree on a more ambitious goal than 60% within 2050 which the EC2010 stipulates. It is therefore safe to assume that if a change in government would come about, the focus on transition technology rather than the aim of the strategy is what would have changed. One can therefore consider the EC2010 to be a relative sustainable concept in general terms, opposing political parties taken into account.

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<sup>4</sup> Own translation

### **2.5.2 EU political support**

In 2009 the EU presented a new energy strategy entitled “Energy 2020 - A strategy for competitive, sustainable and secure energy” (henceforth referred to as Energy2020). The strategy mainly focuses on energy efficiency, access to energy markets at an inexpensive price and across borders, as well as emphasized focus on technology (“Energy Strategy 2020,” 2010). The strategy is the first policy from the EU placing environmental concerns in focus alongside market considerations and has influence German energy policy.

The environmental target of the Energy2020 are more commonly entitled “the 20-20-20 targets” and refers to the goal of reaching several environmental targets with 20 percent within the year 2020. Firstly, they aim at a reduction in greenhouse gas emissions with 20 percent compared with 1990. Secondly they aim at reaching 20 percent of renewable energy of the total energy consumption. The third aim is a 20 percent reduction in primary energy use compared with projected levels. This should be achieved by improving energy efficiency. The commission proposed binding legislation to implement these measures. This would establish “a binding national emission limitation target for 2020 which reflects its relative wealth” (EU, 2010). This means that Germany will undertake a larger share of the EU burden, seeing the country’s relative wealth to other EU member states.

By shortly reviewing the EC2010 goals we can see that they stand in accordance with the Energy2020 goals with only one exception. The EC2010 aims to reduce greenhouse gas emissions by 40 percent within 2020; to reach 18 percent renewable energy of the gross final energy consumption and 35 percent of renewable energy of the power generation; and 20 percent reduction of primary energy use. The exemption is therefore the aim of 18 percent instead of 20 percent of renewable of final energy consumption energy within 2020.

Nevertheless, the targets set for Germany according to their wealth are something which Germany most likely will reach. By 2020 they will reach a total of 18 percent of renewable energy according to a forecast published by the Federal Republic of Germany in 2009. At the time this forecast was published, the estimation showed that they were going to exceed this goal with 0.7 percent, reaching 18.7 percent within 2020 (Germany, 2009).

In their progress report issued in 2011, the German government met and extended their set targets for 2010 reaching 11.3 percent renewable energy of the total energy consumption instead of the set target of 10.2 percent (Germany, 2011). In addition to this, new estimations

on share of renewable energy in the total energy consumption are estimated to reach 19.6 percent within 2020. It is evident from both the forecast, progress report and the goals of the EC2010 that the government supports the strategy (BMW<sub>i</sub> & BMU, 2010, p. 30; Germany, 2009; 2011, p. 6).

Thus, it is clear to see that the EC2010 also operates within an EU framework of set energy and climate targets. By viewing the progress reports it is clear to see that these goals are taken seriously, thereby enforcing the sustainability of the EC2010.

## **2.6 Summary**

This chapter has shown a reliance on Norwegian gas in the German energy mix and that this has grown steadily since 1991. In spite of this, the EC2010 does not discuss the future role of natural gas in Germany's energy mix. Therefore, the potential role for gas will be discussed later on in chapter four. Its possible growing role has been encouraged by the changed date for nuclear phase-out as of March 2011.

The EC2010 does however mention Norway in regard to utilizing storage capacities of hydropower, and hence electricity transfer. The area of possible cooperation in storage capacities will therefore also be presented in the following chapter.

### **3. Norwegian energy export to Germany**

This chapter deals with Norwegian energy export policies; current policy developments as well as its history and liberalization process in order to assess future opportunities for Norwegian energy exports to Germany. First, the chapter presents Norwegian natural gas export in general. Thereon, the development of Norwegian natural gas policy from the very beginning in the 1960s and up until today is presented in order to demonstrate a liberalized natural gas market, influenced by EU/EEA regulations.

After providing information about Norwegian natural gas, the chapter moves on to electricity, more explicitly hydropower. A brief historic perspective is given in order to view the electricity sector in a historic context and see its early liberalization; from the “panic law” of the early 1900’s towards full liberalization with the Energy Act in 1990. The relevant EU/EEA directives on electricity will in this context also be presented. The overall aim of this chapter is to demonstrate the importance of natural gas exports for Norway, the potential for electricity exports and how Norway through the EEA agreement also must take EU regulations into account.

#### **3.1 Norwegian natural gas resources**

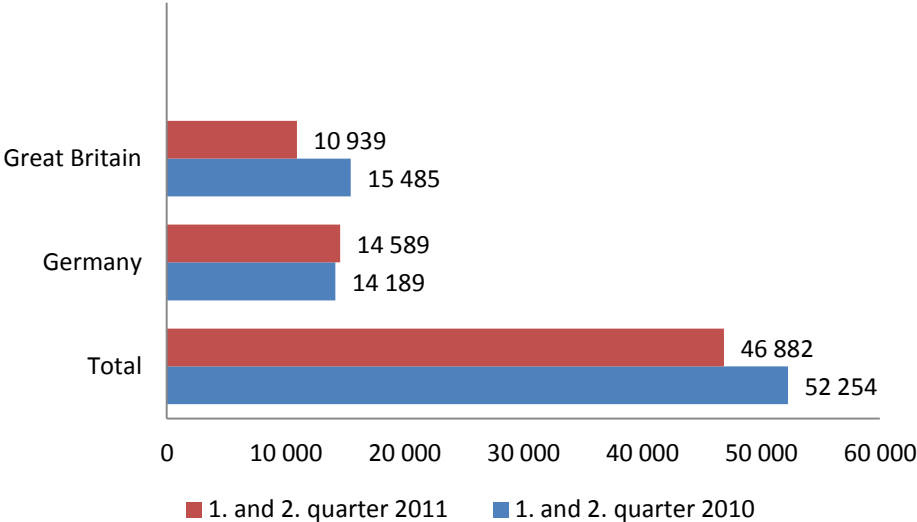
Natural gas is produced from gas wells or as a by- product of crude oil extraction and is formed under similar conditions to those that create oil, namely the decomposition of prehistoric plant matter (Janardhan & Fesmire, 2011, pp. 107-108). Norway is the world’s second largest exporter of natural gas after Russia (CIA, 2012). The production of natural gas on the Norwegian continental shelf has steadily increased the previous years, reaching a total production of 106 421 millions Sm<sup>3</sup> (standard cubic meter) in 2010. This means that it is slowly reaching the same level as oil production, and will in the coming years most likely exceed oil (SSB, 2012a). About 95 percent of this is exported to Europe and Asia through pipelines, or as Liquefied Natural gas (LNG). Gas becomes liquid when it reaches a temperature of minus 160 degrees Celsius, and can therefore be transported by ship to further distances. This makes it more flexible as an exporting commodity seeing that it does not require pipelines in order to reach transmission companies. In 2003, the demand for gas was expected to almost double within 2020 (Austvik, 2003, p. 24). Recent developments can

temporarily confirm this assumed development, even though a downfall in natural gas production was registered the first quarter of 2011 (SSB, 2011c).

It is estimated that only 25 percent of Norwegian natural gas resources have been extracted so far (OED, 2011c). This means that Norway still has a large natural gas reserve to tap into. Norway is actually the only country within Europe where natural gas production is inclining. From 2000 to 2008 Norwegian natural gas production has increased with 1.6 trillion cubic feet (EIA, 2011, p. 51). There have been several new findings of oil and gas fields on the Norwegian continental shelf the past years, amongst other Statoil’s findings in the Barents Sea and North Sea, the biggest being Skrugard and Havis in the Barents Sea (Ree, 2012). The future prospects for continued natural gas production and export are in other words good.

Europe as a whole is the largest importer of Norwegian natural gas with a total share of 46 882 Sm<sup>3</sup>, but it is Germany and Great Britain that are the main importers. Estimated from the first two quarters of 2011, Norway exported 27 percent of the total production to Germany (see graph 5). Another large amount went to Great Britain, making them the main exporting partners of Norwegian natural gas (OED, 2009). To a much smaller extent, other importing countries were amongst other; France, the Netherlands and Italy.

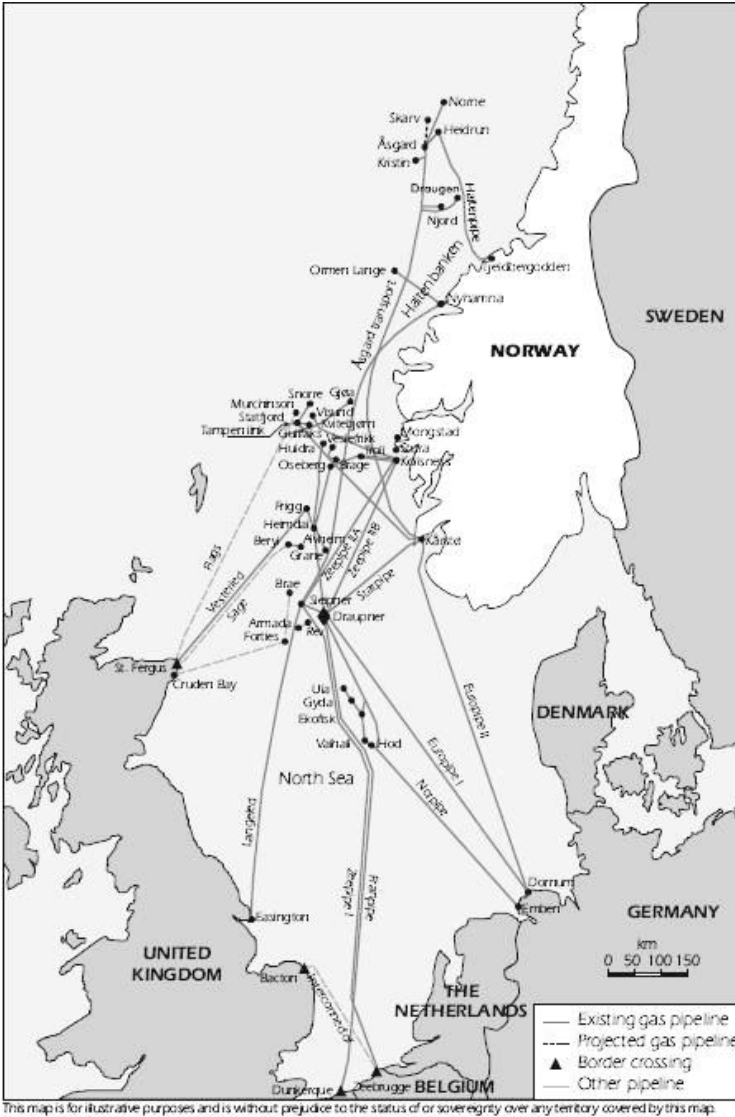
**Graph 4 – Natural gas exports to Europe 1. and 2. quarter 2010 and 2011**



(SSB, 2011a)

Norwegian gas is sold and re-sold several times before it reaches its end consumers. From the different rigs it first goes through pipelines, with landfall sites in Great Britain, France, Belgium and Germany. The transmission companies then sell the gas to local distribution companies, large industrial users and gas power plants. The industrial users and gas power plants use the gas themselves, while the distribution companies re-sell the gas to individual commercial and private users. The actual owner of the infrastructure going from the Norwegian continental shelf to Europe is Gassco, a Norwegian public company. The first pipeline came about in 1977 and was built from the Norwegian Ekofisk field in the North Sea. The name of the pipeline is Norpipe, which ends in the German city Emden (Gassco, 2012). As shown by the illustration below, the natural gas pipelines stop before reaching the newer fields, for instance Snøhvit, located outside Tromsø.

**Figure 1. Natural gas pipelines (IEA, 2011a, p. 68)**



Natural gas fields further north is therefore dependent on being turned into LNG for transportation. Early in 2010, Gassco proposed to establish pipelines going further north in the Barents Sea reaching the fields found here. This was because they assumed that the parts of the Barents Sea which are still not explored will contain more natural gas than oil. By establishing pipe lines here, development of new fields will be more profitable according to the proposal from Gassco (Bertelsen & Endresen, 2012).

### **3.1.1 Norwegian natural gas export: from cartel towards liberalization**

Ever since the “panic law” of 1906, which prevented foreign companies access to Norwegian waterfalls i.e. hydropower, it has been a strong believe that the natural resources belong to the Norwegian government and its peoples (Claes & Eikeland, 1999, p. 155). With the discovery of oil and gas, and the beginning of the petroleum era, this perception sustained. The new energy market was subjected to strong political influence on the distribution, ownership and overall control of energy resources. This is explicitly expressed in the 10 oil commandments which are still valid in the present petroleum policy (OED, 2011b). In essence, the 10 oil commandments state that the Norwegian state should control the continental shelf, as well as be involved in the petroleum industry on all necessary levels. In addition to this, environmental concerns should be taken into account (Lerøen, 2010).

Seeing that Norway neither had the expertise nor the political will in the 1960’s to bear the financial risk to explore for oil in the North Sea, foreign companies were the first to take a chance on exploration of Norwegian oil. The American oil company, Philips, was the first to discover oil at the Ekofisk field in 1969. Foreign companies were offered concessions to explore, on terms that they guaranteed a major share of the profits to the Norwegian State. This was aligned with a long Norwegian tradition of securing natural resources for the country’s own good (Riste, 2001, p. 246). In order to further secure national interests, a state owned company named “Statoil” was established which should employ at least 50 percent ownership in all concessions. Profit from petroleum production would through this arrangement benefit Norway and thereby be according to the 10 oil commands. Due to reliance upon hydropower for the country’s own energy resources, most natural gas became an export commodity. Especially Germany and Great Britain were evident markets for Norwegian exports, due to its geographical closeness and connections with the European Community (Riste, 2001, p. 249).

In their assessment of the EEA agreement and its influence on Norwegian energy policy, Austvik and Claes (2011) divide the period before the EEA agreement into four phases. The first period around 1973 was a phase characterized by a total purchase of each field, referring to how concession owners sold all the gas available at a given field. The second phase, starting in 1981, was marked by competition between gas buyers. During this period, gas had become more affordable due to the heightened oil prices that occurred in the 1970's due to the oil crisis and unease in the Middle East. This situation also made Norwegian gas more profitable due to the Cold War and its polarization of the two super powers USA and USSR. The United States did not wish for a complete reliance upon Russian natural gas in the European market, and therefore strongly encouraged a larger export of Norwegian natural gas. This led to a heightened price for Norwegian gas and the idea of "premium price for Norwegian natural gas" (Austvik & Claes, 2011). The third phase was around 1984-1986 in connection with negotiations concerning the Troll and Sleipner fields, was marked by a downfall of the "premium price". British Gas, one of the largest buyers of Norwegian natural gas, withdrew from negotiations about future contracts from the Norwegian continental shelf. Through negotiations concerning the Troll field it was decided that Norwegian gas should be priced according to market prices instead of having a "premium price". The fourth and final phase of Norwegian gas exports before the EEA agreement came about with the Troll negotiations and the so-called Troll Commercial Model (Troll kommersielle modell- TKM). Concession owners could under the TKM sell gas under the umbrella of a larger contract, i.e. under the Troll contracts, seeing that this often gave a larger profit (Austvik & Claes, 2011, p. 25).

This account of the different phases of Norwegian export has made it clear that there has been a strong national involvement in the allocation of concessions and control over profit and pipeline infrastructure. The governmental involvement in the gas market remained for a long time undisturbed by the EU. This lasted up until 1986 with the establishment of the Gas Negotiating Committee (Gassforhandlingsutvalget- GFU).

The establishment of GFU clearly demonstrated governmental control of natural resources. It also showed petroleum companies' resistance towards the control which the GFU exerted. GFU was established through white paper number 47 (1986-1987) to the Norwegian Storting. It was given a twofold role; firstly it was supposed to act as advisor towards the government; secondly, it was meant to prepare and see through natural gas sales. This was in order to secure higher prices, seeing that the government in place believed that free



competition between companies would cause lower natural gas prices (Austvik, 2003, p. 33). The GFU was composed of the three Norwegian petroleum companies: Norsk Hydro, Saga and led by Statoil. These three companies were the main actors on the Norwegian continental shelf, and one can therefore claim that the GFU functioned as a cartel.

A cartel is when price cooperation amongst actors in the same field occurs. By cooperating, the actors can prevent large price fluctuations by for instance keeping to the same price. A cartel can also exist when actors are obliged not to sell their commodities in another market. Keeping a cartel can however be damaging for the given sector due to the artificial prices that occur (Idsø, 2012). Especially the GFU was harmful in its operating manner and did not comply with the overall market liberalization that occurred on the continent in the late 1980's.

With market liberalization and integration in the European Community, a concept of market control that the GFU had, seemed outdated. Most scholars who have written about the subject claim that the GFU cartel limited the individual scope for action (Austvik, 2003; Matlary, 1991, p. 95). One example of this is how the GFU refused the German natural gas company Wintershall to buy natural gas from the Norwegian continental shelf. Saga proposed to the GFU in 1993 to buy gas in order to sell it to Wintershall. The two other partners in GFU, Hydro and Statoil, refused to do so in 1995. The official reason was that they feared that a so-called gas- to –gas competition in Germany would occur, seeing that Ruhrgas had a monopoly in Germany and was the largest buyer of Norwegian gas. As Ruhrgas did not want competition, they also lobbied effectively towards the same conclusion as GFU (Olkvam, 1995).

When the decision not to sell natural gas to Wintershall was made, the Bundeskartellamt reported the GFU to the European Commission seeing that it did not comply with the regulations for the internal market, which at this time affected Norway due to the EEA agreement (Austvik & Claes, 2011; Yngland, 1995). In 2001 the European Commission issued a Statement of Objections against Statoil and Hydro. One week earlier, the Norwegian Government had decided to dissolve GFU. The European Commission concluded with the same assumptions made by Wintershall in 1995, namely that the GFU hindered fair competition, and that the contracts signed under the GFU rule would continue to do so in the future due to its longitude (EC, 2002). This conclusion were valid in spite of the reforms made to the GFU in 1993 when gas sellers and distributors was included in the

decision making previously reserved to only GFU through the so- called Supply Committee (Forsyningsutvalget- FU)

This issue demonstrated two things; Firstly, the somewhat conflicting interests between private energy companies and the Norwegian government's interest in distribution of natural resources. Secondly, it demonstrates the effect decisions from the EU had on Norwegian energy policies, and thereby the country's bilateral relationships. It also made it clear that it is difficult to discuss the formation of a cohesive petroleum policy in Norway without mentioning the influence of the EU regulations. Gas export is something that affects the single market, an essential part of the EU, and thereby something that Norway must take into account when formulating policy and exporting commodities.

### **3.1.2 EU regulations of natural gas trade**

Norway's relation with the EU in the energy sector is closely intertwined and also an area that is said to be one of the most problematic in regards to the EU. This is partially demonstrated through the GFU issue. This is because, of the fact that most of Norwegian gas export is directed towards the European market, mainly Great Britain, France and Germany (OED, 2009). In this section, four different regulations which have affected Norwegian policy on the subject matter will be shortly presented. This is in order to see trade between Germany and Norway as something that exists in an integrated Europe and not as an isolated intergovernmental relationship.

Up until the signing of the EEA- agreement and the implementation of Directive 94/22/EC (hereon after the license directive) there was a general assumption in the Norwegian government that the EEA- agreement would not influence the energy sector (Claes & Tranøy, 1999). The license directive gave permission to search and extract oil and gas as long as the company had the necessary capacities needed for doing so. The directive said that even though Member States of the EU "(...) have sovereignty and sovereign rights over hydrocarbon resources on their territories" (EU, 1994, p. 1) they still had to decide upon concessions on basis of "the technical and financial capability of the entities; the way in which they propose to (..) explore (...) the geographical area in question; [and] (...) the price which the entity is prepared to pay in order to obtain the authorizations" (EU, 1994, p. 1).

In short, member states were still the sovereign owners of their natural resources, however the way in which the concessions were to be decided differed from previous Norwegian practice established in 1963. Previous concession regulation said that companies which showed financial strength, practical experience, real interest in benefiting the Norwegian society and possible other aspects of importance should be awarded concessions (Austvik & Claes, 2011). The criterion of experience (technical expertise) and financial means in order to see through the project was a subject of importance in the license directive as well as within the previous Norwegian concession practice. Besides this it is clear that the two strategies differ. The Norwegian Oil and energy department did however, not agree to this. They saw no major influences on Norwegian energy policy stemming from the license directive (Claes & Tranøy, 1999, p. 160). When the license directive was included in the EEA- agreement in 1995, the practice of giving concessions to Norwegian companies based on the fact of being a Norwegian company was no longer a solution (Austvik & Claes, 2011).

A second directive, 98/30/EC, was proposed in 1998 and sought to liberalize gas sales across Europe. In 2003 a revised version of the directive was implemented, namely directive 2003/55/EC. Amongst the countries wanting a more liberalized market was Germany and Great Britain, two of today's largest importers of Norwegian natural gas. The liberalization was aimed at providing an easier access to gas infrastructure (i.e. pipe lines) for producers and buyers, which was previously occupied solely by their owners, thereby allowing so-called third party access.

The directive provided Norway with mainly two issues. Firstly, the Norwegian government did not want third party access. The reasoning for this was that Norwegian gas was not properly produced when it reached the importing countries. This did however not come across well to the negotiating partner EU, and the Norwegian government was not exempted from the liberalization of free access to infrastructure (Austvik & Claes, 2011). Secondly, the directive provided some obstacles concerning Norwegian long-term contracts with suppliers. Due to a high investment cost in the establishment of pipelines, it was previously preferred to sign long-term contracts in order to better secure the investment made. By liberalizing the market through the gas directive, the Norwegian continental shelf has experienced a multitude of different and more short-term contracts. The gas directive thereby made it more difficult to make large investment in new and costly projects, but at the same time ensured easier access to natural gas.

### **3.1.3 Current developments in natural gas policies**

The liberalization of the Norwegian natural gas market is not solely due to integration with the EU through the EEA- agreement. The overall development of expertise and financial strength of the Norwegian continental shelf has made it possible for Norway to slowly liberalize the market, also independent of EEA- regulations (Austvik & Claes, 2011). From being dependent on foreign expertise and finances, Norway is today one of the leading nations within petroleum technology and has a liberalized market compared to other exporting countries like Russia and Algeria.

The most recent step in market liberalization was the privatization of Statoil in 2001 and the establishment of Gassco and Petoro after the failure of GFU in 2001. Statoil was privatized as the Norwegian state sold 20 percent of Statoil's equity to private owners. After slowly selling more shares, the Norwegian state owns today about 67 percent (Statoil, 2009). Accompanying this, the Norwegian government established two new state owned companies to run the business previously done by Statoil, namely Gassco and Petoro. Petoro was established to manage all direct state ownerships in oil and gas fields, as well as pipelines. Its main task was to monitor Statoil's sale of oil and gas produced for the State's Direct Financial Interests (SDFI). SDFI is a portfolio of the Norwegian state's financial interests managed by Petoro since 2001 (Austvik, 2003, p. 36). Petoro is restricted to solely deal with the Norwegian Continental Shelf and is stated not to have any international interests. In addition to this, it will not be financed through revenues from the SDFI, and should therefore be ensured a complete independence from the Norwegian state (Austvik, 2003, p. 39).

Gassco was created take over operation of gas pipelines. It was supposed to act neutrally towards all users of the infrastructure (foreign and domestic), and play a key role in further development of the transport systems (Austvik, 2003, p. 38). In 2003, all of the major infrastructure systems on the Norwegian Continental Shelf were gathered under the company of Gassled. Gassled is under administration of Gassco, but owned by the original owners of the infrastructure. Gassled has its infrastructure open for third party access and Gassco is supposed to ensure nondiscriminatory access to the infrastructure owned by Gassled (Midthun, 2007). In other words; it is today a clearer separation of gas sales and access to infrastructure in relation to state ownership.

A recent trend in the gas market and as a consequence of liberalization is a shift away from long-term contracts towards more flexible short-term contracts. This development is not

solely due to liberalization, but also due to a technological shift. That is, the development and discovery of LNG and Shale gas. To transport LNG by ship makes gas more flexible than by using pipe lines, seeing that a ship can change direction. Shale gas is natural gas found in shale, and is today very profitable to exert than what it was before, due to technological developments. Thus, these two technologies gives greater opportunity to price competition as what “traditional” gas with construction of pipelines does, as the former is more flexible and the latter more cost- efficient (OED, 2011b).

In its most recent government document on the subject, White Paper number 28 (2011-2012) ”An industry for the future- Norway’s petroleum activities”, the Norwegian government focused on how they will continue to work for more efficient and well-functioning gas markets in order to better the dialogue on energy between producer and consumer. The whitepaper dealt with several aspects that are important according to the Energy2020 strategy. Seeing that the EU wants to reach 20 percent renewable energy within 2020, the Norwegian government emphasizes how gas is one of the least damaging fossil fuel regarding CO<sup>2</sup> emissions. The white paper also presents a scenario which claims that if coal was to be replaced by gas throughout Europe, the CO<sup>2</sup> goals for Energy2020 would be reached. Further, it is expected that the Energy2020 strategy will have a major impact on the Norwegian natural gas export. This is because renewable energy upon which the strategy relies will have natural fluctuations; wind and sun capacities will differ with weather conditions and the EU will therefore be in need of a constant energy reserve. Norway strongly suggests that this should be gas instead of coal (OED, 2011a).

A second recent development shaping the natural gas market is the implementation of the Energy2020 strategy in the EEA agreement in December 2011. As the targets are set relative to the country’s wealth, Norway is supposed to reach 67,5 percent renewable energy within 2020. This would mean an overall increase of 9.5 percent since 2005. Nevertheless, these goals will not be counted as a part of the overall 20 percent target for the EU seeing that the share of renewable energy in the Norwegian energy mix far exceeds EU standards (UD, 2011). The Energy2020 strategy also enabled cooperation between countries on renewable energy measurements. Amongst other cooperation possibilities, Germany has proposed cooperation with Norway on windmills in the North Sea (Germany, 2009).

### **3.1.4 Summary**

Section 3.1 has confirmed the interdependence which chapter two implied; Germany is Norway's second largest buyer of gas, and Norway is Germany's second largest provider of gas. It is therefore especially interesting to investigate the future possibilities of natural gas in Germany's energy mix. Chapter four will therefore analyze why this is so.

Furthermore, this section of chapter three has demonstrated the current and future growth of natural gas resources. It has also shortly depicted the transformation of the Norwegian gas sector from a centrally controlled market to a liberalized one. It has been implicitly made clear that the state-centered approach as described in chapter one is applicable in this situation. From being an infant industry reliant upon foreign skills, the Norwegian petroleum sector has grown to become one of the largest petroleum providers in the world (an "economy of experience" cf. chapter 1.2). Accompanying this is the gradual deregulation of the gas-sector.

Following this section, the development of Norwegian hydropower, i.e. electricity is presented as the EC2010 expresses an interest in participation and development of pump storage power plants in Norway.

## **3.2 Electricity Exports**

The Norwegian electricity market is a fully liberalized market, consisting mainly of renewable energy. Most households use electricity produced through hydro energy, and it is mainly the off-shore industries which make use of gas and other fossil fuels. The total electricity production in Norway was in 2009 131.8 TWh, meaning one billion kilowatt i.e. the energy required to produce one kilowatt during one hour. Of these 131.8 TWh was a total of 14.6 TWh exported (SSB, 2011b), where a total of 0 kilowatts went to Germany (SSB, 2012b).

The Norwegian electricity market is in an unique situation in Europe, consisting of 96 percent hydropower in 2009 (NVE, 2011). Hydropower comes from waterfalls or rivers. The energy from the falling water, often led through pipes, is transformed into electricity by one or more generators in the different power stations, and from there led through wires to a transmission station and finally reaching the consumers (Statkraft, 2012). In addition to being abundant, hydropower is cheaper to produce than other energy resources, amounting to about a 60 percent lower production cost (Karlstrøm, 2012). Other energy resources which are used

are traditional fossil fuels like natural gas and oil. These are mainly used in large industries or off-shore industries.

### **3.2.1 Historic development: from local initiatives to liberalization**

Today, consumers can choose freely which energy provider they would like to buy electricity from. This was not the case before 1990. The electricity market underwent a drastic liberalization in 1990; from being completely state owned and regulated, it became commodity like any other. The electricity market regulated by the state was at its peak alongside the peak of social democracy in Europe during the 1970's. It was then considered a natural area of state control and/ or regulation. As opposed to the natural gas market, however, the electricity market was liberalized at an earlier stage in Norway and as a complete national initiative by the conservative government in 1990.

In the early ages of hydropower in Norway in the late 1890's, transportation of electricity was not possible over further distances. The first wire with considerable length was 15 km long and leading from the waterfall Sarpfossen to the city of Fredrikstad. From thereon the distances have increase as well as the amount of power the wires can transfer (Skjold et al., 2007, p. 22)

The lacking technology on transportation of electricity lead to the establishment of several small local and privately owned power plants. Around the turn of the century in 1900 12 out of 22 hydropower plants were privately owned. The municipalities would however eventually take over these as the concessions for private practice had a time limit. This policy did however change, mostly due to the previously mentioned "panic law", hereon named revisionary right. Foreign companies had started to take a great interest in Norwegian hydropower, something which the Norwegian government disliked. The aim of the revisionary right was to secure national control over hydropower. This meant that foreign companies had to seek concessions from the Norwegian government in order to establish hydropower plants in Norway. The following years this law expanded to also include public ownership of the water resources and later to be valid for other natural resources (cf. section 3.1.1) (Skjold et al., 2007, pp. 48-50).

The local power transition center had its own responsibility for local supply and required to guarantee electricity for their area. Prices were held constant throughout the

country because the parliament set prices each year and due to cross subsidies. Cross subsidies referred to the fact that costs of new power plants was to some extent paid by profits from older, more profitable plants. Whenever demand started to reach supply, an expansion of the electricity market had to occur, i.e. new power plants had to be built, in order to avoid supply problems. The electricity market was up until the liberalization horizontally integrated, meaning that it was the same company responsible for production, transmission and sale; much like the Norwegian natural gas sector up until liberalization (Karlstrøm, 2012, p. 57).

The liberalization process of the electricity market came about at the same time as a general political shift in Europe. Social democracy was somewhat abandoned in exchange for a market liberal policy. In 1980, the socialist government at the time proposed merging a large number of small power plants into larger units. The proposal did not transpire into legislation before a change of government occurred in 1989 and a centre- right government took over. They extended the proposed change with a stronger focus on economic principles. Under the new legislation was the electricity market no longer seen as an obvious part of the government, rather as a commodity like any other; a market with the possibility of different types of contracts in both the long and short term (Karlstrøm, 2012, p. 57).

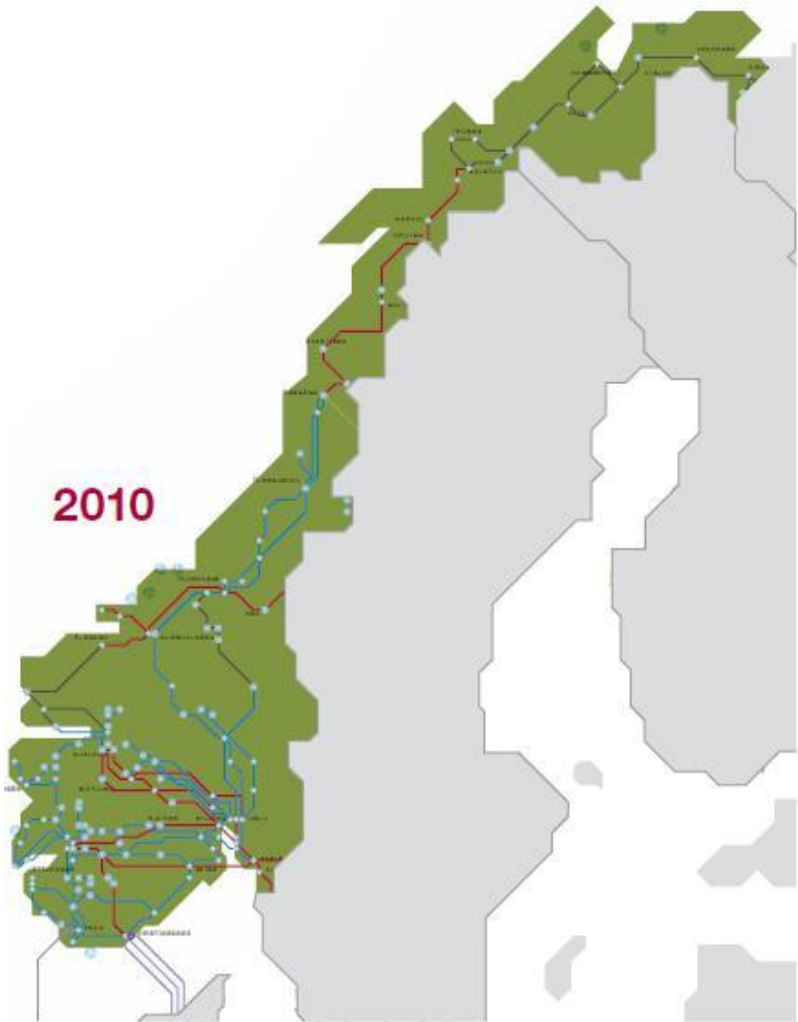
Separation of production and distribution capabilities was a central part of the legislation. This should introduce a better price to consumers and also provide an improved basis for investment decisions. In effect, Statkraft was divided into two parts, namely Statnett and Statkraft in 1992. Statnett would have responsibility for the network distribution (a so-called transmission system operator) and Statkraft would be responsible for production (Skjold et al., 2007, p. 490).

In order to better facilitate for competitiveness in the market, a power exchange for sales of large quanta of electricity between companies was established between Sweden and Norway in 1993. This was named Nord Pool Spot. In 1996 Finland joined the power exchange, and so did Denmark in 1999. This established common market of electricity between the countries, run by the different transmission system operators (for instance Statnett in Norway). This was possible due to the interconnectivity of the Scandinavian market. The first electricity cable connected the eastern part of Norway with Sweden in 1963 with a transfer capacity of 400 kW. In 1973 Northern Norway was connected to Russia, and in 1976 was the first connection to Denmark established with a capacity of 250 MW. In 1977 yet another electricity cable was established to Denmark with a transfer capacity of 500 MW



(Skjold et al., 2007, p. n.a). The Nord Pool Spot market could with these participants ensure a security of supply for all and make prices more predictable.

**Figure 2- Norwegian Central grid and connections abroad**



(Statnett, 2010, p. VIII)

Due to the early liberalization of the electricity market, the first electricity directives from the EU had close to no effect on the Norwegian market. The EU sought to liberalize the European electricity markets in the late 1990's and early 2000's, but due to conflicting business and national interests, the process was relatively slow. According to the Official Norwegian Report on the EEA agreement, did the Norwegian model also help influence the two first European electricity directives (NOU, 2012, p. 558).

The relationship between the Norwegian state and the EU concerning electricity directives has however not always been peaceful. This dispute was again connected to private

ownership, as it also was with the GFU issue in the 1990's. This time it related to the revisionary right of hydropower power plant concessions. It was the European free trade area Surveillance Authority (ESA) that investigated the revisionary right in the early 2000's. In 2002 they concluded that the law discriminated against private owners, thereby violating the EEA agreement. In 2005 the Norwegian government decided to keep the revisionary right. ESA therefore summoned the Norwegian state to the EFTA court of justice. The court decided in favor of ESA, but made it clear that public ownership was in itself no problem as long as it was made consistent. Thus, the Norwegian government decided to strengthen public ownership of power plants (NOU, 2012, p. 560).

### **3.2.2 Current developments**

The developments during the previous years have had an impact on current affairs in the Norwegian and European electricity market and policy. Domestic disputes about the development of the central grid infrastructure have occurred as a result of the electricity crisis in the winter of 2009/2010. Another important factor that is presented in this part of the chapter is a progressing internationalization of the electricity market, marked by for instance a planned electricity cable to Germany and the third electricity directive of the EU.

In the winter months of 2009 and early 2010, electricity prices in the Mid- Norway rose to new heights. During normal winter seasons, a daily consumption of about 400 MWH is regarded as normal. The winter of 2009/2010 however, showed a daily consumption often surpassing 500 MWH. This vast increase in consumption created a large increase in electricity prices (Drabløs, 2010). A growing skepticism towards Norwegian electricity exports came as a result of the cold winter and its high electricity prices. The skepticism went as far as a suggestion to forbid export of electricity from the trade union for energy workers (Sprenger, 2010). This was shut down by politicians, making sure to highlight the security of supply which the grid connections to Sweden, Finland, Russia and Denmark provides for Norway during cold winters or dry seasons (ibid).

The cold winter made it evident that the central grid needed to be renewed and expanded. This was especially valid for Bergen and the western part of Norway which over the course of several years had come to realize the need for this (Berget & Stabrun, 2010). This led to a debate on how the expansion could take place. The alternatives were through undersea cables or as a traditional air-line grid. The decision fell on the air-line grid due to

additional costs and time span which would have been the consequence with undersea cables. The undersea cables would have had an additional cost of 3.4 billion Norwegian Kroner and taken about 7 more years to finish (Lindeberg, 2011). The decision to develop air-line grids through the western part of Norway created a great public debate about the visual aesthetic burden that power grids like this would create. Even so, the decision to establish air-line grids were taken in march 2011, with a clear statement from Borten Moe that visual concerns would not be taken into consideration (Ljone, 2012).

In spite of these protests, the Norwegian transmission system operator Statnett is currently planning the development and establishment of the first undersea cable of direct current connecting Norway to Germany. The planned connection is set to be finished in 2018-2021. It is named “Nord.Link” and it will be more than 600 km long with a maximum capacity of 1400 MW. It was previously presumed that the transfer capacity could reach 7000 MW, however a recent report from Statnett reduced its capacity because of a need to further strengthen domestic infrastructure and electricity production. Moreover, the initial plan was to build two cables, Nor.Ger<sup>5</sup> and Nord.Link. However, after Statnett and Nor.Ger revised their plans after a request from NVE, Statnett and Nor.Ger joined forces and decided to apply for one concession in late October 2010. This was due to a stated lack of transfer capacity from the Norwegian central electricity grid (Statnett & NorGer, 2010).

Statnett uses environmental arguments as well as socio- economic reasons as to why the undersea cable will be profitable. The environmental reasoning is based upon the Energy2020 strategy, seeing that hydropower is a renewable energy resource and therefore will help the EU reach the goal of 20 percent CO<sup>2</sup> reduction. Producing almost one fourth of all hydro energy in Europe as well as having wind- energy capacities makes Norway the largest renewable energy resource country in Europe. In addition to this, wind and hydropower work well together; hydropower can compliment wind power in times of low winds. By connecting Germany and Norway, Statnett wishes to secure the access to renewable energy which can contribute to balance a power supply. This would create a larger share of renewable energy in both countries.

The socio- economic reasoning is that the undersea cable will provide a more efficient power production between the two countries and thereby strengthen the competition in both markets. This will of course be of advantage for both producer and end- buyers (Statnett &

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<sup>5</sup> NorGer is a company owned by Statnett (50 percent), Agern Energi AS, Lyse produksjon AS and the Swiss electricity company Elektrizitäts Gesellachaft Laugenburg (AG) (each owning 16.67 percent).

NorGer, 2010). In addition to this, Statnett expects higher employment during the planning, construction and operation of Nord.Link (Statnett, 2011).

In March 2012 a new white paper on the subject of expansion of the electricity grid was presented to the Storting, entitled “White paper number 14 (2011- 2012) ‘We build Norway- On the expansion of the electricity grid’”<sup>6</sup>. The white paper presents the government’s policy in regard to expansion and reinvestments in the electricity grid infrastructure. The overall goal of the expansion is that it should take socio economical concerns in mind, according to the Energy Act of 1990. Amongst themes discussed within the frames of expansion are domestic and foreign expansions of the grid infrastructure.

A socio economic wise allocation of the grid expansion will according to white paper number 14 mean that the project where the benefits outweighs the costs is chosen. Cost-benefit consequences should be considered when contemplating connections to countries outside Scandinavia. In order to realize such connections, transmission system operators in the different countries should cooperate closer (OED, 2012, p. 70).

The white paper thereby explores grid expansion abroad. A future expansion of renewable energy production abroad will demand a better and more sustainable electricity grid. This is due to the fact that most renewable energy resources are placed further away from consumers, requiring a higher voltage transfer in the grid (OED, 2012, p. 44). In addition to this, the white paper states that a secure supply of energy emphasizes the need for coordination amongst nations, stating that a secure flow of energy between areas will increase the necessity of common rules and a common development of technology and solutions. The development of a new grid infrastructure between countries may last up to eight to ten years, making it a time consuming process involving several actors in public administration as well as transmission system operators (OED, 2012, p. 50).

Furthermore, when emphasizing the importance of electricity grid connections with other countries outside Scandinavia, the white paper makes it clear that foreign connections will be vital when unforeseen incidences occurs, i.e. if there is an energy surplus or deficiency. Through foreign electricity connections, will it be possible to benefit from different production systems and patterns. The storage capacities of Norwegian hydropower makes it possible for Norway to import electricity when prices are low on the continent (during weekends and at night) or when there is a surplus of electricity stemming from solar and wind energy. When prices are high on the continent, Norway will be able to export

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<sup>6</sup> Own translation. Norwegian title: “Melding til stortinget nr 14 (2011- 2012) ‘Vi bygger Norge- om utbygging av str mnettet’”. There is currently no English version of the white paper.

electricity to a heightened price and thereby profit from a electricity transfer abroad (OED, 2012).

### **3.3 Summary**

This part of the chapter three has demonstrated the development of a state owned electricity sector which underwent a relatively early liberalization process. The above mentioned should make it evident the importance of Germany as a buyer of Norwegian gas. Keeping the EC2010 in mind, what is then the future of Germany as one of the main exporters of Norwegian gas? Are there still political obstacles to overcome or is the relationship between the two countries predictable enough to continue to have a predictable development? The following part of the analysis will demonstrate political hindrances to overcome in the future from both the side of the politicians, in light of the mentioned documents as well as from a business perspective.

## **4. Implications of the EC2010 on Norwegian energy exports to Germany: Influenced by public pressure and political will?**

This chapter analyzes the future possible implications of the EC2010 on Norwegian natural gas and electricity exports to Germany based upon political statements. The statements are compared with research reports on the subject matter and information provided in the previous chapter in order to demonstrate how political will and public perception are hindering the possible implications of the EC2010.

First, the chapter establishes that natural gas will be a reliant supplier in years to come, and could therefore be considered a possible transition technology. It then explores how German domestic coal resources might pose a threat to the future use of natural gas exports as the EC2010 appears to date. The analysis argues that a “dash for coal” (Pahle, 2010) will not occur in spite of a growth of coal power plants, German interest in developing CCS for utilization in these, and the fact that gas utilization is not elaborated on in the EC2010. The counter argument finds its support in the change which occurred after the nuclear accident in Fukushima, recent research reports on the future of natural gas and coal, and statements from German government officials.

Nevertheless, the analysis demonstrates an ambiguous interest in gas from German government officials before the Fukushima accident, and a stronger interest after the revision of the nuclear power end- date. Simultaneously, Norwegian government officials attempt to promote natural gas as a transition technology towards the EC2010 climate goals. The EC2010 can as such be said to have an implication on Norwegian gas exports by creating a level of uncertainty among Norwegian decision-makers.

Thereafter, the chapter deals with the implications and possibilities of future electricity exports. The argument focuses on the idea of Norway as a “storage battery” for Europe based on the proposal of development of pumped storage power plants. The analysis shows that it is still reluctance amongst Norwegian government officials to develop such, in spite of technical possibilities and interest from Germany. Analyzing why this is so, the public resistance towards air-line grids and fear of increased electricity prices due to export, serves as explanatory variables. These attitudes are present in the statements from Borten Moe, and are therefore barriers to expand the energy cooperation between Norway and Germany which the

EC2010 opens up to. Thereby, these attitudes influence the possible implications of the EC2010 on electricity cooperation.

The third part of this chapter summarizes the findings of the two other sections of this chapter. By placing the behavior of the government officials in a theoretical context (as provided in chapter one), the last section of this chapter attempts to answer why they act as they do. The analysis thereby shows how Norwegian politicians still have the opportunity to shape the development in the energy sector in spite of the depicted liberalization process.

#### **4.1 Natural gas: The lesser of three evils**

As the previous chapter has shown, Norwegian gas resources are in a decisive amount going to Germany, adding up to 26 percent of Germany's energy mix in 2008 (Bayer, 2009). Energy exports going to Germany in the future is therefore of great importance to the Norwegian continental shelf. The EC2010 does certainly have an impact on the future composition of the German energy mix, and might alter the current situation. Will the shift towards renewable energy based on economic incentives and security of supply lead to a weakened dependence on import of natural gas from Norway?

The EC2010 did not mention gas explicitly as a transition energy resource before reaching its set goals for renewable energy in 2050. The main reason for keeping natural gas somewhat excluded from the energy mix had to do with the initial plan of expanding the usage of nuclear power, and thereby use it as a transition technology towards renewable energy dependence. However, after the revision of the EC2010 in June 2011 as a consequence of public protests (cf. chapter two), German government officials orally expressed that Norwegian natural gas would be of importance in the future German energy mix ("*Nærings- og teknologiminister Rösler på besøk i Norge*," 2011).

Besides focusing on nuclear energy as a transition technology, the EC2010 also focused a great deal on CCS for utilization in domestic coal power plants. According to the policy paper, the utilization of domestic coal should continue, and in the future be subjected to CCS in order to make it climate neutral. In order to analyze the future of Norwegian gas in Germany's energy mix, its sustainability must be confirmed. Furthermore, two questions of political importance must be answered: After abandoning nuclear power, will Germany rather rely on utilization of coal than gas? And, are the signals from German government officials

after the revision of the nuclear-end date clear enough in order to conclude that import of Norwegian gas will continue, and increase, in the future?

#### **4.1.1 Reaching its peak?**

Natural gas is a finite resource and will not sustain as a long term energy supplier. There has been a strong belief that fossil fuels will soon reach its peak (Leggett & Ball, 2012, p. 611). Exactly when this will occur differs between researches as well as politicians. Söderbergh, Jakobsson and Aleklett claim in their article “European energy security: the future of Norwegian natural gas production” that Norwegian natural gas exports as well as production from recoverable reserves will peak at around 2015 (Söderbergh, Jakobsson, & Aleklett, 2009, p. 5053). They argue that the reason for this is that there have not been any significant findings on the Norwegian continental shelf the last 10 years. According to the authors, this will have a negative impact on the energy security of the EU seeing that the EU then will be dependent on import from other less reliable suppliers within 2030 (Söderbergh et al., 2009). This will have a major influence on the future of Norwegian natural gas exports, because of the high costs accompanying natural gas exports as well as Germany’s dependency on energy supply security. In order to further develop natural gas power plants and infrastructure there needs to be a reliable supply of natural gas in the future.

Taking the review of the IEA, new findings on the Norwegian Continental Shelf (cf. chapter three), and statements from Borten Moe into account, these researchers are faulty. The IEA report of 2011 upholds that Norwegian natural gas will peak at around 2030 depending on potential new findings in the high north. The IEA also estimates that production of gas from the Norwegian Continental shelf would experience an increase of 0.5 percent within 2035. This is aligned the average of the OECD gas production increase (IEA, 2011a, p. 64; 2011b, p. 165).

These estimations can find support in the aforementioned new findings in the Barents Sea, amounting to 22 in 2011 alone. Amongst these, one was estimated to be amongst the five largest fields ever found on the Norwegian Continental shelf (Sverdrup, 2012). Amplifying the argument of increase capacity on the Norwegian continental shelf is that there is a great certainty of new findings in the high north area, more specifically the Barents Sea. The assumption of major findings here is so certain that there are currently discussions between



politicians and oil companies as to whether to transport natural gas from the high north through pipe lines, or as LNG (cf. chapter three) (Bertelsen & Endresen, 2012; Nordlys, 2012).

The facts stemming from the Ministry of Petroleum and Energy as presented in chapter three, additionally states that there still remains about 70 percent of untapped reserves in the fields already found. There are in other words still decisive amounts of natural gas yet to be extracted from the Norwegian continental shelf.

Borten Moe strongly underlined the longitude of secure deliverance of gas from the Norwegian Continental Shelf to Germany during a seminar arranged by the German gas company Wintershall and the German Council on Foreign relations November 2011. Here, Borten Moe made it very clear that Norwegian gas production has grown more or less uninterrupted for 20 years, and will continue to do so. He also emphasized the vast amount of untouched resources, by using the Ekofisk field as a main example saying that new calculations estimated operational time on the field to be about 80 years, and thereafter still have available resources (Moe, 2011b). In addition to this, Borten Moe said that Norway will be able to uphold supply to the EU and Germany in “generations to come” (Moe, 2011a). These arguments are rooted in the fact that there is as above demonstrated, still a large untapped potential in the Barents Sea, large reserve in already existing fields, as well as the discovery of new fields.

Through these facts and statements it has been confirmed that supply from the Norwegian Continental Shelf will sustain for many years to come. Hence, it can continue to provide Germany with natural gas during their transition towards an energy mix dependent on renewable energy. Nevertheless, as previously mentioned, the EC2010 does not clearly mention Norwegian natural gas as a part of the solution for their future energy mix. Rather, it mentions coal utilization- a subject which the following section will analyze.

#### **4.1.2 Coal instead of gas?**

In the EC2010, the usage of natural gas is not explicitly mentioned. Following the recommendations of the EC2010, there is however still a place for coal. As previously demonstrated in chapter two, the use of lignite and hard coal amounts to a total of 24.3 percent of their energy utilization, whereof imports amount to 2 percent. Through the

EC2010, Germany therefore “want to create the prerequisites for making electricity production from fossil energy sources, e.g. domestic lignite, climate- neutral in the future” (BMWi & BMU, 2010, p. 16). The overall aim of the EC2010, to create an energy supply which is “economically viable and secure in the long run” (BMWi & BMU, 2010) further supports the idea of utilization of coal instead of gas, especially after the revision of the nuclear power end-date. This is because domestic production of coal is financially more competitive than gas. In addition to this, being a domestic resource, exploitation of coal does not depend on international conditions which might happen with import of gas (Pahle, 2010). It is therefore a valid question to rise, if coal could play the role which natural gas does today.

A recent article from Michael Pahle (2010) confirms the realities of the increased focus upon coal in Germany. The article concludes that the expansion of coal power plants is connected to the need of a transition technology. This is because of the nuclear phase out, the favorable economic and technological prospects for coal compared with natural gas in the long run and explicit political support for coal. Important to note in this regard is the fact that the article is written before the release of the EC2010. The phase out deadline for nuclear power plants is however the same after the revision of the EC2010 and his arguments are therefore still considered valid.

Pahle shows to the fact that current investments and plans concerning natural gas and coal (lignite and hard coal) far exceed that of natural gas. Hard coal and lignite will amount to a planned capacity of maximum 31,7 GW and natural gas amounting to a maximum of 14 GW. He further argues that natural gas prices will far exceed that of coal prices up until 2030 and beyond due to its connection with oil prices (Pahle, 2010, p. 3435). Another argument that Phale presents is the fact that prolonged utilization of coal power plants has great political support, referring to energy road maps in both the BMU and the BMWi as of 2009 which says that coal has a place in the future energy mix, especially in the electricity supply (Pahle, 2010, p. 3440). This political support is still current in the EC2010, having the previous quote in mind.

Nonetheless, the IEA’s forecast “World Energy Outlook 2011”, the climate goals of the EC2010 as well as statements from central political decision makers questions the argument posed by Pahle and the implicit focus on coal as initially presented in this section. The World Energy Outlook 2011 indicates that there will not be an overall rise in the use of coal in the OECD Europe up until 2035 (IEA, 2011b, p. 394). Coal demand in Europe has

been declining partially due to an expansion of natural gas and renewable energy, something which graph one in chapter two concerning energy utilization from 1991 up until 2011 in Germany demonstrated. Renewable energy had in 2011 increased with 9.5 percent and natural gas utilization with 4.1 percent since 1991 in the German energy mix. There is not much in favor of reversing this development, and hence, according to the IEA an indication of the decline of coal utilization.

Further undermining the argument of usage of coal instead of gas are the set climate goals of the EC2010 and its plan to end coal subsidies. Adding to the resistance towards coal utilization, is that coal is known as a “climate killer”<sup>7</sup> amongst the German population (Pahle, 2010, p. 9). This expression refers to its large amount of CO<sup>2</sup> emissions that harms the environment. Due to this, Germany wanted with the EC2010 to facilitate for the development of CCS for utilization in their coal power plants. This is however in the long-term, meaning that the first CCS facility is planned to be built in 2020 (BMWi & BMU, 2010, p. 17). Having in mind the public resistance that ended in a revision of the nuclear end-date, it is imaginable that expanded utilization of coal power plants might lead to further public resistance. This could in turn influence decision makers as seen with the issue of nuclear power. Therefore, an expanded utilization of coal power plants is not very likely before CCS technology is in place.

The phase out of subsidies to coal mines is another reason for the fall in coal production according to the IEA report. Having in mind the end of coal subsidies which follows the EC2010, it is therefore to be expected that coal extraction will decrease in the future in Germany. Additional support in favor of this is to be found in a statement from Westerwelle which addressed the issue of subsidies as a negative aspect of policies during his speech at the German- Norwegian Energy Workshop in 2010. He said that subsidies for coal made “yesterday’s success (...) today’s burden” (Westerwelle, 2010) and further underlined the need to rather invest in innovation and research (ibid). It is therefore safe to assume that role played by coal in Germany’s energy mix will continue to decline until proper CCS is in place. Hence, gas and renewable energies can continue to incline.

Moreover, the EU also supports utilization of gas before coal. The Energy2020 strategy of the EU recognizes the use of natural gas as a climate friendly measurement in order to reach the set climate goals. This is because the EU realizes the reliance upon fossil fuels, and therefore chooses to focus upon natural gas as one of the lesser evils of the fossil

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<sup>7</sup> Germans often refer to coal as “klima- killer”

fuels (OED, 2011a). As Germany must follow EU legislation, this is also applicable to the German concept of transforming the energy sector.

Additional arguments to support the reasoning that coal will not take over the role of gas in Germany's energy mix are the foreseen price developments for coal and gas. A recent research report made by Pöyry on "The challenges of intermittency in North West European power markets" estimated that the difference in price between the two fossil fuels will slowly diminish. This would make power plants for natural gas just as profitable as those for coal (Pöyry, 2011). These calculations are further supported by the IEA report, which claims that *both* coal and natural gas will experience a price incline due to the abandonment of nuclear power which they foresee in the future (IEA, 2011b, p. 447). Nevertheless, with more equal prices it would only be logical to choose the lesser of three evils, natural gas, as these are in accordance with climate goals as well.

The scenario forecasted by Pöyry also indicates that the share of coal in the future energy mix would drastically be reduced within 2030, however that the share of natural gas will remain approximately the same (Pöyry, 2011, p. 4).

The future of natural gas thus looks bright taking natural gas reserves and new discoveries, future price competitiveness with coal and environmental concerns into account. This section has thereby demonstrated that utilization of natural gas has far more benefits than what coal does: It complies with the socio-economic reasoning of the EC2010, whilst simultaneously benefiting the climate goals of the EC2010 and the EU. Therefore it would be logical to think that Germany would like to continue, if not increase, import of Norwegian natural gas. As the following section of the chapter will demonstrate however, is this not necessarily the case.

#### **4.1.3 Natural gas as transition technology?**

In spite of factual arguments in favor of natural gas as an advantageous energy resource instead of coal, the statements from German government officials prior to the revision of the EC2010 were not in accordance with this. It was namely a discrepancy between Norway and Germany: Norway needed confirmation on the future demands of natural gas exports to Germany, and Germany did not send any clear signals concerning this. This is shown in the way the Norwegian governmental politicians promoted natural gas towards German

government officials and natural gas companies. The lower interest on the German side is to be detected through the focus of the EC2010, as well as how German politicians spoke about the matter. They rather express an interest in cooperation on CCS research and storage capacity development. After the revision of the EC2010 this behavior changed to some extent, and made Norwegian and German interests more aligned.

The Norwegian political scene was very eager to showcase the importance of Norway as a trustworthy, stable and long term secure supplier of natural gas to Europe after the release of the EC2010 (Moe, 2011b; Støre, 2010). During the first German- Norwegian energy workshop held in 2010 organized by both countries ministry of foreign affairs, Støre spoke warmly about the opportunities for Norwegian natural gas exports to Germany. He said that gas “has a key role to play in reducing CO<sup>2</sup> emissions and as a transition to a low carbon energy future (...)it will have a prominent place in the German energy mix for many decades to come” (Støre, 2010). A large share of Støre’s speech was devoted to further emphasizing the climate benefits and strong relations between Norway and Germany in natural gas trade. He also underlined that “Gas has a key role to play in balancing the (...) contributions to the German grid from windmills and other renewable energy sources” (Støre, 2010).

His colleague, German foreign minister Guido Westerwelle, also spoke at the opening of the energy workshop. He did not on the other hand, emphasize the importance of natural gas as a transition technology, but rather chose to focus upon the importance of establishing cooperation on CCS and off- shore windmill research (Westerwelle, 2010).

This shows that Westerwelle’s focus lies elsewhere than ensuring Norway of future import of gas. He rather expresses an interest in the future project of off-shore windmill research. It is thereby clear to detect a diverging interest in the theme of energy between the two political parties. Thus, the lack of focus on the future of Norwegian natural gas becomes even more evident.

The importance of natural gas import from Norway was however addressed by state secretary Jochen Homann from the Federal ministry of Economics and Technology at a later occasion in December 2010 during a German- Norwegian Energy Conference. Speaking about natural gas cooperation between the countries, Homann said that the EC2010 had been criticized for not placing enough emphasis on gas. He did not agree to this, saying that the EC2010 very clearly stated that Germany “will pursue an energy policy that is open to all types of technology based on market principles” (Homann, 2010). He thereafter continued to

say that Germany needed an energy supply that is dependable, affordable and ecological (ibid). Nevertheless, this quote from the EC2010 only implicitly states a future need for gas from Norway and can thus be interpreted in several ways. The uncertainties about the future need for Norwegian natural gas in Germany was thus even more apparent.

By reviewing these two meetings and the speeches presented here, diverging interests between the two countries are detectable. Støre strongly promoted gas as a flexible, financially and environmentally wise option as a transition technology towards renewable energy. Homann and Westerwelle on the other hand, rather focused on CCS and renewable cooperation, without mentioning the use of natural gas explicitly. The only exemption is Homann. His statement as cited above, does imply that Germany in 2010 did consider natural gas as long as it was “dependable, affordable, and ecological” (Homann, 2010). This statement is however somewhat vague, implying that there are certain conditions which gas from Norway must meet in order to be considered as a part of the future German energy mix. The reason for this vague attitude expressed by German government officials was due to the fact that this occurred at a point where the EC2010 still relied on nuclear energy as a transition technology which therefore would balance the contributions from renewable energy instead of natural gas.

As described in chapter two, the decision to phase out nuclear energy came in March 2011. The shift after the nuclear turnaround marks a change in German attitudes towards Norwegian natural gas. Norwegian interests were throughout held constant from the release of EC2010 in September 2010. During political meetings after Fukushima accident however, it is clear to detect a change in German attitudes towards the importance of gas.

In August 2011 visited Rösler Norway where he and Moe co-wrote the article entitled “Norway and Germany expands cooperation on energy”<sup>8</sup>. The approximately one paged article laid out future areas of cooperation mainly focusing upon CCS and electricity transfer. Nonetheless, the article does comment on the need for flexible power plants, i.e. natural gas power plants for utilization during the establishment and development of this new technology. The article also said that it was necessary to maintain the interest of gas buyers and sellers simultaneously when dealing with a liberalized market and the swift changes that could occur there (Moe & Rösler, 2011).

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<sup>8</sup> Own translation. Norwegian title: “Norge og Tyskland utvider energisamarbeidet”

Rösler took this statement a bit further in an interview where he was reported to have said that “after the decision to phase out nuclear power within 2022, the role of natural gas in the German energy mix will grow” (“Nærings- og teknologiminister Rösler på besøk i Norge,” 2011). During the same visit he emphasized that by importing Norwegian gas, Germany would ensure security of supply- thus mirroring the essential purpose of the EC2010.

During the same year’s German- Norwegian energy conference, arranged by the German council on foreign relations (Deutsche Gesellschaft für Auswärtige Politik, DGAP) and Wintershall in November 2011, Borten Moe and former German chancellor Gerhard Schröder spoke. Borten Moe invested a great effort in reassuring German representatives that the Norwegian continental shelf will continue to deliver natural gas in “many generations to come” (Moe, 2011a). He also connected the use of natural gas with the overall EU climate goal of reaching a 20 percent reduction in CO<sup>2</sup> emission within 2020. He elaborated this by saying that:

[Germany and Norway] need backup for solar power and wind power on days where the wind is not blowing or the sun [is] not shining. (...) Even though Norway has a lot of hydropower, it is- unfortunately- not enough to be a backup for all of Europe. Gas, on the other hand, has this potential (Moe, 2011b).

Thus, Borten Moe made it clear that Norway would rather focus on optimizing exports of existing technology, i.e. natural gas exports, than primarily focus on exports of hydropower, claiming that the resources are too scarce for this.

Former German chancellor Gerhard Schröder also spoke at the energy workshop about the need for a secure supply of energy from Russia and Norway. In order to achieve this, Schröder spoke about the importance of fossil fuels in the medium and long-term in order to fully convert to renewable energy within the timeframe stipulated by the EC2010. He highlighted that even though the aim of renewable energy is to amount to 35 percent of power generation within 2020, there will still be necessary to cover the remaining 65 percent with fossil fuels. As natural gas is the fossil fuel with lowest CO<sup>2</sup> emissions, “the demand for gas in Germany will increase, also because gas power stations complement renewable energies extremely well since, (...) [renewable energy] cannot yield energy constantly” (Schröder, 2011).

One can through this account see that it in late 2011 came to a shift from the previous year. In 2010 when the German government had extended the lifespan of the nuclear power plants with approximately 12 years, there was much less focus on the importance of Norwegian natural gas, and rather a focus on CCS and pumped storage capacity when speaking of bilateral cooperation. When returning to the original plan of closing the nuclear power plants in 2022 is it possible to detect a stronger focus on the future need for natural gas imports.

However, in spite of indications from German political officials, there was still a lack of clarity in the exact demand for future Norwegian natural gas. Borten Moe's need for stronger signals from Germany was highlighted during his speech to the German- Norwegian energy conference in 2011, as well as statements from January 2012. In the previous mentioned interview during the Energy Conference 2011, Borten Moe again repeated the message when answering the question "Does Norway have the resources to maintain the partnership [as the second largest provider of natural gas to Germany] in the future?" Borten Moe answered by stating that "(...) what is most important now is that we will receive clear signals from German decision makers that Norwegian gas will have an important [role to] play in the future German energy mix" (Moe, 2011a). He repeated this message and said that it would be vital to know this in order to open up for new exploration on the Norwegian Continental Shelf.

In mid January, Borten Moe also highlighted this need in connection to the possible expansion of infrastructure to the Barents Sea. He said that the decision as to whether or not to invest in this infrastructure depended largely on a clear signal from Europe of the future need of Norwegian natural gas. If Norway do not receive any indications on the necessity of a new gas pipe line, Borten Moe said that Norway rather should value the flexibility of LNG and the access to the global market which LNG provides (NTB, 2012). Seeing that Germany and the UK are the main importers of Norwegian Natural gas, it is obvious that Moe specifically needs clear signals from these.

This account of the future possible implications of the EC2010 on Norwegian energy exports to Germany has made it evident that there has been a shift in the interests in Norwegian natural gas from the German side after the nuclear turnaround. Statements from government officials have become less divergent after the Fukushima accident and the subsequent change in nuclear power end-date. This is demonstrated in the statements from



Rösler during August 2011. In spite of stating that natural gas will play an important part of the German energy mix in the future, he did not specify that this would come from Norway. Two months after this statement, Borten Moe still expressed a concern about the future of Norwegian natural gas exports to Germany. This emphasize the underlying uncertainty of the Norwegian government concerning future need for Norwegian natural gas. It is therefore possible to question if the issue of the future of Norwegian gas was clearly addressed and answered during the meeting between Rösler and Borten Moe. Through these public statements, the ambivalence from the EC2010 and the German government regarding the future need for natural gas and the concern this creates for Norway becomes evident.

Thus, it can be said that the implications of the EC2010 on future gas trade between the countries remains an area with lack of clarity. It is evident that there is still a possibility to continue to increase export to Germany in generations to come, however, there is less clarity from Germany as to what extent this could occur. As demonstrated in this part of the chapter, this is connected to the future possibilities of CCS in the field of coal power plants, which would be profitable for Germany. The fact that the Norwegian government officials promote the use of natural gas implies that they too consider the EC2010 as uncertain regarding the role of gas.

## **4.2 Electricity transfer: An issue of public and political support**

This part of the chapter analyzes the expressed possibilities in the EC2010 for export of hydropower to Germany, and the unwillingness in Norway to make use of these possibilities. First, the socio-economic, security of supply, and environmental arguments in favor of electricity transfer and pumped storage capacities will be presented- in order to confirm the possibilities for such. However, following this presentation, this section demonstrates that there is a strong political will influencing the development away from the stated possibilities in the EC2010 and white paper number 14. In the field of electricity, it is Norway rather than Germany that are vague in expressing the future possibilities due to a lack of political support. Norwegian government officials rather focus on the challenges concerning pumped storage power plants and utilization of natural gas. They thereby demonstrate unwillingness to cooperate on the matter; an attitude that through the analysis will be shown to stem from domestic perceptions.

Thus, the analysis exhibits how political will can go against technical support of a given option. Through this kind of actions they implicitly exert control over the energy market in spite of liberalization.

#### **4.2.1 Political possibilities- converging interests?**

The motives and aims of both Germany and Norway's policies as presented in the previous two chapters rely the following themes; socio economic reasoning, security of supply and environmental concerns. They both see the need for a grid expansion and admit that future energy supply cannot be solved on a solely domestic basis; a need for a European grid connection is present.

##### ***Electricity transfer as socio-economic wise***

There are prevailing socio economic benefits for both Norway and Germany through a possible power- exchange by positively influencing price differences in both countries. This is demonstrated through the previously mentioned study made by Pöyry, and the Official Norwegian Report on Energy (henceforth Report on Energy)

In the study made by Pöyry on Western Europe's future energy mix, it was concluded that with the conversion to renewable energy, price changes would be the lowest in the Nordic countries due to the reliance on hydropower. In Germany, the prices would be rather high due to fluctuating wind and solar power. Therefore, if importing hydropower from Norway, Germany could also benefit from the price stability this could provide functioning as a storage battery in times of low winds and little sun (Pöyry, 2011, p. 8).

For Norway, the benefits from electricity trade will be present in lower seasonal price fluctuations which currently are the case. By being able to import solar and wind energy in times of low trickle of water, more hydropower could be stored and thereby create a greater stability in prices as well as security of supply. The high reliance on hydropower could create high electricity prices in times of low trickle of water, something which happened in the winter of 2009/10 (IEA, 2011a, p. 111). Price stability would benefit the consumers and could therefore be consider a socio-economic wise choice.

The Report on Energy strongly emphasizes the socio-economic benefits of a connection with the continent as well. This is founded in the same argument as the IEA and

Pöyry report. (Akselsen, 2012, pp. 182-183). When explaining how the electricity transfer will benefit Norway financially, the Report on Energy says that it will stem from the difference in electricity prices between Norway and Germany. By selling electricity to Germany, Norway will benefit from so-called “bottleneck income”. “Bottleneck income” is equal to the price difference between areas (e.g. Norway and Germany) multiplied by the flow volume going from one to the other (Roggenkamp & Boisseleau, 2005). This sum is most commonly divided equally between the transmission system operators (Statnett and its foreign partner) and benefiting the consumers due to lower network costs which this income usually ensures. This is why the price difference between Norway and Germany is of importance. Germany having one of the highest electricity prices in Europe makes for a profitable partner (Akselsen, 2012, p. 183; Goerten & Ganea, 2010). A higher transfer capacity would therefore maximize profits.

***Pumped storage power plants: ensuring supply and reaching climate goals***

Another argument supporting electricity export to Germany is that it encourages investment in pump storage for hydropower operators, which in turn helps to ensure security of supply and increased transfer capacity. The development of pump storage is encouraged because a connection to Germany will mean import of thermal power, which in turn leads to price variations between day and night. This gives the hydropower plants a better incentive to expand capacity in order to provide more flexible solutions and maximize profit, i.e. make use of pump storage.

Additionally, the arguments in favor of establishing energy exchange between the two countries are also founded in the renewable energy goals. Due to Norway’s hydropower capacities, it would be ideally for Germany to import this renewable energy resource when necessary. This would further help them reach the goal of 80 percent renewable energy of their generation of power within 2050. Norway on the other hand, would uphold its renewable energy share by importing renewable energy from German windmills instead of import of electricity stemming from fossil fuels. By doing so, Norway would also more easily reach its climate goals as stipulated in the Energy2020 strategy of the EU.

This idea is more precisely mapped in a research report on how to transform the German electricity sector to be 100 percent reliant on renewable energy. The main idea relating to Norway in this report is to propose the use of pumped storage capacity (SRU, 2011). The report assumes that “there would probably be relatively little public opposition to

such [pump storage] projects [in Norway]” (SRU, 2011, p. 25). This is according to the report, because of the expected lack of interference with the ecological system. The report therefore assumes that what is needed in order to see through this proposal is a clear political signal from Germany that connecting German and Norwegian hydropower is central for the EC2010 as well as a proactive energy foreign policy (ibid).

Additionally, there is also a financial aspect to the option of developing pumped storage power plants in Norway and not elsewhere, namely that Norway is the most cost efficient country to develop pump storage capacities in (SRU, 2011, p. 25). This further emphasizes the possibilities for an even stronger connection between Germany and Norway in the field of energy in a long term perspective.

As a response, one can turn to the research report developed by the Norwegian research center SINTEF entitled “Increased storage capacity in Norwegian hydropower plants”. Here, it is concluded that the possibilities for increasing storage capacity in Norwegian hydropower plants are present through optimization and by using pumped storage. The report says that by using pump storage by night, or whenever the electricity consumption is low, it would be possible to increase the periods of actual power production in the water reservoirs. The future need for this amount of electricity in Europe and the Nordic countries is however uncertain (SINTEF, 2011, p. 81). The greatest environmental concerns which the report finds are issues of erosion, change in circulation and water temperature, and changes in ice formation. These changes might affect the eco system. However, the conclusions drawn concerning environmental concerns are mere superficial estimation and require further research (SINTEF, 2011, p. 81). The report also concludes that electricity exchange abroad will not affect the domestic transfer capacity. Nevertheless, it would be beneficial with an overall technical improvement for both the cables going abroad as well as the domestic central grid (SINTEF, 2011).

The report presented by SINTEF does contradict the German report on the matter of ecological interference by implying that such will indeed happen. The assumption of the German report is also to be questioned, namely that “(...) there would probably be relatively little public opposition to such [pump storage] projects” (SRU, 2011, p. 25). The following section (4.2.2) will demonstrate how this is not the case in Norway, and thus, how the German attitude to pumped storage capacities is quite different than that of Norway.

Nonetheless both the reports from SRU and SINTEF confirm that the idea of pumped storage is indeed feasible in Norway and a good solution in order to reach stated climate goals, both in national and EU context (cf. chapter 3). Pumped storage power plants also ensure a surplus of energy which would enable a better electricity transfer between the countries.

In short, the two countries will benefit socio-economically from an electricity transfer, and utilization of pumped storage capacities. These developments are in coherence with both nations' policies on energy. Nevertheless, cooperation on electricity exchange between the countries has proven to be an area of political discussion. The following discussion will show how political perceptions stands in the way of a fruitful cooperation between the two countries.

#### **4.2.2 Electricity transfer: win-win situation?**

The idea of an electricity cable between Norway and Germany has today materialized into the previous mentioned plan "Nord.Link" (cf. chapter 3). The prospects of an electricity transfer between the countries were a subject of discussion during several official meetings between the German and Norwegian government officials.

During the first German- Norwegian Energy Workshop in Bonn in 2010, Støre spoke under the title "Europe's energy mix and Norway's role" about how "construction of electric cables to facilitate power exchanges (...) could benefit both countries" (Støre, 2010). He did however see some future challenges concerning the possibility of a power exchange. Amongst the obstacles which he mentioned, were the NIMBY phenomenon as well as perceived price increases as a result of European market integration (Støre, 2010). Through his statement, Støre implied that Norway was interested in an electricity exchange, but at the same time he highlighted the obstacles that he saw concerning further export of electricity in Norway.

Støre's German colleague, Westerwelle spoke in greater detail about the possibilities of electricity exchange at the workshop. He emphasized the fact that:

[w]ind energy in the North Sea and northern Germany and pump storage capacities in Norway could complement each other perfectly once we integrate our power grids. It could help balance the highs and lows of power generation from wind energy in Germany. Norway could increase its exports by selling power to Germany, and storing German surplus production when it is cheap. This is a win- win situation. We should not miss this opportunity (Westerwelle, 2010).

Thus, Westerwelle spoke according to the policy stipulated in the EC2010. Addressing the challenges that Støre had emphasized, Westerwelle made it clear that public acceptance of transmission grids (and windmills) is of importance, but that politicians should make it clear that “[o]ne cannot be for renewable energy but against investments in energy infrastructure” (Westerwelle, 2010). He thereby discarded the obstacles emphasized by Støre, by implying that political willingness to see through these changes came before public concerns, and was a necessity in order to see through the plan of a future dependence on renewable energy.

It is clear to detect an interest from both countries through these speeches about exploring the possibilities of an electricity transfer. They both see future challenges within this field. Where Støre chose to present the challenges ahead, Westerwelle chose to answer them with a clear indication that there are greater concerns than mere public resistance. When taking the statements from Westerwelle and Støre into account, it becomes clear that they do not share the same view of the importance of public support. This implies a greater will with the Germans to see through projects which might have some challenges concerning public support in order to achieve the goals of a secure supply of energy whilst keeping socio-economic concerns in mind than what is the case of Norway.

Speaking at the German- Norwegian energy conference in December that same year, Homann also explored the possibilities of electricity exchange between Norway and Germany by addressing the possibility of Norway as a storage battery of hydropower. He more specifically expressed a wish to make use of pumped storage of hydropower in Norway. Homann said that “Germany aims to establish long- term cooperation with Norway in the field of electricity supply” but that this will mainly revolve around storage capacities (Homann, 2010, p. 16). Homann thereby confirmed the statements from Westerwelle that same year, and made it very evident that there is a great interest amongst German politicians to develop pumped storage capacities in Norway in order to achieve the goals set out in the EC2010.

In spite of this positive focus on energy exchange between Germany and Norway, the NordGer and Nord.Link were reduced to one, namely Nord.Link, as previously depicted in chapter three. Simultaneously, its transfer capacity was reduced from 2000 MW to 1400 MW (cf. chapter 3). This reduction could be interpreted as a signal from the Norwegian government that the possibility for an interconnected grid was there, but that it was not a focal point of the Norwegian energy policy as perhaps wished from Germany. It is therefore questionable if Norway considered electricity exchange with Germany a win- win situation as what Westerwelle described it as in 2010. The development through 2011 as outlined below will further emphasize the reluctance among Norwegian politicians to explore export of hydropower to Germany.

These meetings have made it evident that there is a different focus between Norwegian and German government officials regarding the concerns of a power exchange. Norway focuses on public concerns arising from previous experiences during the electricity crisis in 2009/2010 and the subsequent discussion about air-line power grids. Germany on the other hand makes it clear that there would be no room for such discussion if they aim to achieve the EC2010 goals. As Norway attempts to “sell” natural gas to Germany, Germany attempts to “sell” the idea of electricity transfer between the countries to Norway by calling it a win- win situation. As the following discussion will show, the Norwegian government does not consider their part of the bargain, i.e. benefits of the electricity transfer, a winning situation.

### **4.2.3 A policy based on facts or wishful thinking?**

The interest for Norwegian hydropower amongst German policymakers has been established. They needed a future reliable energy resource which could contribute to the renewable energy goals and thus contribute to the overall aims of the EC2010. These ambitions were expressed during several meetings between high level government officials. As a response, Norway downplayed the possibilities of hydropower exchange, and rather focused on natural gas. This happened in spite of common goals of interests which previously have been demonstrated. How this occurred is something this section of the chapter will attempt to answer.

In the article written by Moe and Rösler they emphasize that grid infrastructure across national borders is of importance in order to promote security of energy supply for both countries. Nevertheless, the article took some precautions saying that a solid national grid

must be in place before being able to provide the undersea cable with electricity. In order to sort out further obstacles, the two ministers also intended to establish a working group on the subject matter in order to make an informed decision about further developments (Moe & Rösler, 2011). The article did not mention pumped storage possibilities, thereby implying reluctance amongst the Norwegian government to explore this possibility, as it is a stated aim in the EC2010. By not focusing on pump storage in an article on how to further expand the energy cooperation, therefore emphasizes Norway's reluctance.

It is therefore imaginable that the issue with transfer of electricity lies elsewhere. It could be the general negative attitude towards electricity exchange in Norway that prevents Borten Moe from expanding the German- Norwegian cooperation in this area. This attitude is founded in the previous mentioned electricity crisis in 2009/2010 and the fear of heightened prices due to electricity export as described in chapter three. This is yet again rooted in Norway's long-lasting access to cheap electricity as a consequence of the locally driven hydropower companies at the beginning of the 1900s (Thue, 2011). The negative attitude towards pumped storage power plants is also connected to skepticism to interference with the natural surroundings though establishment of more air-line grids (cf. chapter three), and thus, the so-called NIMBY-phenomenon.

During a seminar in August 2011, Borten Moe continued to underline the skepticism towards pump storage in Norway, and thereby confirmed the notions described above. Referring to the German hope of developing pumped storage capacity in Norwegian reservoirs, he explicitly said he did not believe in the idea of this, seeing that it could have harmful environmental consequences to let water rise and fall over such short time and to such a large extent (up to ten meters according to Moe) (Lie, 2011).

In the same speech, he also said that the use of pumped storage capacity will not only be costly and cause environmental concerns, but also be an aesthetic burden to the environment in form of grid infrastructure (ibid). The message was repeated later that year when speaking during the energy conference held by Wintershall and the German Council on Foreign Relations. Using the electricity crisis of 2009/2010 as a main argument and the following evident need for improvements of the central electricity grid, Borten Moe said that "We [Norway] need to base our policy on fact, and not wishful thinking" (Moe, 2011b).

He thereby characterized the planned electricity transfer and possibilities for pumped storage in Norway as wishful thinking. Export of natural gas on the other hand, is something



which he characterized as a policy based on facts. However, taken the previous described statements from German government officials, export of gas was not necessarily in coherence with the EC2010, rather electricity transfer and storage capacities between the two countries were so.

The quote above made it evident that Borten Moe considered the possibility of Norway as a storage battery for Germany as a utopia rather than a feasible reality, as he had done earlier that year in August 2011. He instead chose to emphasize the importance of natural gas, a resource which was according to Borten Moe more accessible: “Norway has a lot of hydropower. It is- unfortunately- not at all enough to be a backup for all of Europe. Gas, on the other hand, has this potential” (Moe, 2011b). In spite of saying “*Europe*” in this context, one can assume that Moe implicitly means Germany, due to its share of Norwegian natural gas export. This sends a strong signal to the Germans that it is natural gas which will be the main focus from Norway, rather than future export of hydropower.

Gerhard Schröder, who was the German political representative at the meeting held by Wintershall, said that Germany was indeed interested in Norwegian storage capacities. Nevertheless he emphasized that political and public support was needed in order to fully see through these plans:

Norwegian pumped storage power plants can help solve the problem of storage of renewable energies in Germany. However, a fundamental prerequisite is the readiness to build pumped storage power plants and electricity cables here. (...) the concerns of the Norwegian population will have to be considered (Schröder, 2011, p. 5).

Important to bear in mind however, is the fact that Gerhard Schröder comes from the socialist party in Germany, and in this context spoke on behalf of the think tank German Council on Foreign Affairs. His attitude can therefore be considered to be less market oriented than the attitude of the central/ liberal German politicians which the current government consists of.

Nevertheless, taking the mentioned statements from Moe into account, the readiness that Schröder mentions in his speech from the Norwegian population was not present. The quote might also serve as an indication that Germany realized the limitations which the lacking political and public will concerning pump storage capacities posed. This was not the case in 2010, as previously mentioned, when Westerwelle spoke of how public support cannot stand in the way for necessary infrastructure.

An interpellation on the subject of future electricity exchange at the Norwegian Storting in January 2012, made it evident that there was still a great reluctance present with Borten Moe regarding electricity exchange with Germany. During the debate, he presented another argument, namely lacking capacity. More specifically, he said that Norwegian capacity cannot cover the total German need for renewable energy. According to Moe, Germany will need a total of 70 GW of power in order to balance out their own renewable energy resources. Norway could provide 30 GW hydropower. Due to this discrepancy, Norway should provide natural gas instead (Moe, in *Interpellasjon fra representant Siri A. Meling*, 2012 time: 11.03.16).

This statement was however based upon Moe's views, rather than forecasts presented in the previously presented report by SINTEF. The report showed to a possible increase of capacity from Norwegian water reservoirs by using pumped storage capacity and optimization. It estimated that these measures would cause an increase of 20 GW, making the Norwegian capacity a total of 50 GW (SINTEF, 2011).

This does not cover the total of the German energy supply. The fact of the matter is however, that Germany also plans to cooperate with the Alpine countries<sup>9</sup> in order to reach its full storage need. They are therefore not fully reliant on Norwegian electricity storage. Nevertheless, the increased capacity will minimize their need for storage alternatives abroad, and Norway could in the long-run thus be an important partner for Germany as a future "battery".

The arguments of this section should not only make it clear that the statements from Moe are in conflict with the potential capacity of Norwegian hydropower, but they should also emphasize that he disregards the socio-economic benefits and security of supply which electricity transfer and pump storage power plants could create. Something which further underlines this ambiguity was Borten Moe's answer to Siri A. Meling representative in the Norwegian Storting. She asked if he actively wished to promote exchange of electricity to the continent, to which Borten Moe provided the following answer:

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<sup>9</sup> The Alpine countries being defined as Austria and Switzerland, which also utilizes hydropower to a great extent (SRU, 2011).

My point of departure [concerning Norwegian electricity exchange with the continent] is that we should manage Norwegian energy and nature resources keeping the benefit of the Norwegian society in mind. (...) With converging interests [between these] the answer is yes<sup>10</sup> (*Stortinget- Møte onsdag den 4. mai 2011 kl. 10 Spørsmål 10*, 2011).

With the previous arguments from Moe in mind, it is clear how he does not consider export of hydropower resources (nature resources) to benefit the Norwegian society. Implicitly this refers to his objections towards utilization of pump storage power plants, as this according to him would have a dramatic impact on the environment (natural resource), even though it would benefit the Norwegian society to utilize such. This in turn emphasizes that it is not socio-economic incentives or security of supply that steered Borten Moe's attitude towards electricity transfer. This again supplements the initial presented argument that it is in essence the NIMBY phenomenon that is preventing this development to happen.

The above analysis show clear converging interests between economic benefits for the Norwegian society, the renewable targets for the Energy2020 and exploration of hydropower exchange. German government officials have as this analysis shows made it very clear to Norway that this is an option which they highly considers. Nevertheless, the statements from Borten Moe provide a different perception of the consequences of this kind of technology, and uses underlying NIMBY- arguments in his reasoning for why it is so. Hence, it becomes clear that there is a political unwillingness on behalf of Borten Moe when dealing with future export of hydropower and pump storage capacity.

### **4.3 Implications of the EC2010: A question of political will**

The previous parts of the chapter have displayed a discrepancy between Norwegian and German interests in the possible implications of the EC2010. This difference has been shown in a vague expression of interest of German government officials regarding the future import of Norwegian natural gas. A reluctance of Norwegian government officials has been demonstrated regarding the possible implications of the EC2010 concerning the possibility of pump storage power plants. The following and closing part of the analysis will therefore attempt to answer why this is so: what reasoning lies behind this attitude? Explanations can be found in the historic development of both sectors, the NIMBY phenomenon, and the state-

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<sup>10</sup> Own translation.

centered and society-centered approach as presented in chapter one. The society-centered approach complements the state-centered approach and will be utilized to further elucidate the comprehension of the research question.

### **4.3.1 Natural gas**

As demonstrated through the presentation of the export and import between Germany and Norway, the relationship between the two countries is marked by interdependence in the field of natural gas. This chapter has also demonstrated that access to natural gas will continue to grow for at least 20 more years before reaching its peak. Therefore, having in mind the share of natural gas actually going to Germany today, the socioeconomic benefits of this is of great importance for Norway, and thus something that Norwegian government officials would like to maintain today. As for explaining why Borten Moe promotes the future of natural gas to reluctant German government officials, it is important to consider the contribution of the gas sector to the Norwegian government and society. The importance of the petroleum sector for the Norwegian society and its history as a state owned sector makes it understandable that the government has vested interests in this. They therefore do not wish to see a shift in its importance as a trade commodity. As the EC2010 does not explicitly state an interest in natural gas, it is imaginable that Norwegian government officials needed to emphasize its importance for Europe and Germany. This is also understandable when considering the new and possible new gas fields in the Barents Sea, something which was confirmed by Borten Moe's statements concerning the proposed new gas pipe-line going to the Barents Sea. In short, the Norwegian government officials might fear that Germany might not be an equally decisive partner in the future.

Furthermore Borten Moe is managing Norwegian interests in a liberalized market, as the historic review of the natural gas sector has demonstrated. State influence on Norwegian natural resources is nevertheless present as demonstrated through quotes from Borten Moe. In the current liberalized market however, Borten Moe must navigate between market interests, domestic political concerns, EU political concerns as well as the interests of the companies established in Norway. Therefore, one can view his speech at the meeting in November arranged by Wintershall as a way of operating in the crossing between private and public interests, and through this promote further import of Norwegian natural gas.

The promotion of natural gas is even more relevant for the Norwegian government after the new, and potential, findings in the Barents Sea. Borten Moe said, as mentioned earlier in chapter four, that if Europe does not want Norwegian natural gas, then it could be transported as LNG to other destinations. The need for clear signals from Germany is thus interfering with the potential planning of gas- pipes going to the Barents Sea. With clear signals it would be a greater incentive to establish these, as there already are pipe-connections going to the second largest buyer of Norwegian gas, Germany. Thus, a lack of clear signals can be said to to some extent hinder the development of pipe-lines in the Barents Sea, something that makes Borten Moe emphasize natural gas to a greater extent.

The analysis earlier in this chapter has also shown that the German interest to discuss future need for natural gas from Norway was rather low prior to the described revision of nuclear end- date. After this however, it has become evident through oral statements from Rösler, saying that there is a place for Norwegian gas in the future German energy mix. This was a result of public pressure to end nuclear energy based on the NIMBY phenomenon. Thus, indirectly, public pressure in Germany facilitated for clearer signals from German government officials regarding the future of import of Norwegian gas. It is therefore possible to say that the German people shaped the political decision to revise the EC2010.

The EC2010 in its current edition does not express any future for import of natural gas. However, by removing the expansion on nuclear power it implicitly opens up for clearer need of import of Norwegian gas. Nevertheless, Borten Moe expresses a level of uncertainty concerning the future role of Norwegian gas in Germany. Hence, the EC2010 can be said to have the implication on Norwegian gas exports in a way of creating a level of uncertainty.

### **4.3.2 Electricity**

Concerning electricity, it becomes clear that Borten Moe's resistance towards pump storage and increased transfer capacity to Germany is a matter of political will- influenced by public perceptions. In his statement in August 2011 he emphasized aesthetic concerns and thereby made an issue of the challenges expressed by Støre and Westerwelle the preceding year. That is, the so-called NIMBY phenomenon; the issue of public opposition towards grid infrastructure, and thus amplifying the challenge which Støre highlighted and Westerwelle discarded.

The public opposition towards new grid infrastructure in the western part of Norway as depicted in chapter three did however not trouble Borten Moe. Answering environmentalist Lars Haltbrekken who opposed the grid infrastructure, Borten Moe said that in order to transfer renewable energy, investments in new electricity grid infrastructure are necessary (Holter, 2011). He thereby did not take into consideration the NIMBY phenomenon by not regarding the complaints expressed by the public and environmentalists towards grid infrastructure. Borten Moe emphasized in this statement that he agreed with the statement Westerwelle made the preceding year, namely that one cannot be in favor of renewable energy but against the grid infrastructure facilitating for it. Based on this statement, it is possible to believe that Borten Moe supports interference with nature if it is for the overall good for the development of renewable energy.

Nevertheless, Borten Moe himself utilizes the NIMBY-argument when reasoning against pump storage power plants August 2011. He thereby embodies the underlying public opposition towards industrial interference with nature, by not wanting it in Norway's "back yard". He also expresses a concern about the environment by fearing water levels to rise and fall up to ten meters as a consequence of pump storage technology. These concerns are however as previously demonstrated, questioned by research reports on the subject. Thus, it becomes evident that Borten Moe's opinion regarding pump storage power plants is mostly based on his political opinion, influenced by public perceptions.

It is thereby clear that Borten Moe makes use of the NIMBY-phenomenon in order to justify a policy which he does not want to pursue, and disregards it when there is a policy which he does want to pursue. Thus, the choice of policy is a matter of political will. However, having established this, the question still remains why Borten Moe opposes pumped storage power plants and thus increased electricity export to Germany, but promotes future natural gas.

The reluctance towards electricity exports is closely connected to the Norwegian government's vested interests in the natural gas sector as depicted above. Therefore, it is understandable why Borten Moe would like to promote natural gas rather than electricity. Natural gas is a current option and will continue to be so in decades to come, being very profitable as the largest trading commodity, as described through this chapter. Electricity on the other hand requires a great deal of investments with implications for the Norwegian population in form of grid infrastructure and change of prices. Natural gas on the other hand

will not affect the Norwegian population and will not be an issue of public resistance as what electricity is. It is also therefore easier to promote natural gas, than what it is to promote electricity transfer, in spite of its benefits.

As the analysis above has shown, the electricity sector has not been encouraged to establish pumped storage power plants. Therefore, the transfer capacity will not be optimized. Hence, the political unwillingness prevents the expressed demands for pumped storage capacities in the EC2010.

Recalling the state- centered and society-centered approach from chapter one, these theoretic concepts can provide further explanation as to why Borten Moe promotes gas and hinders cooperation on electricity.

In a state- centered perspective, it could be said that the protectionism which was the case prior to liberalization of the gas and electricity sector was a way of ensuring social welfare. Arguments in favor of this can be found in the revisionary act and the way in which the previously state-owned company Statoil was entitled to 50 percent of all concessions. These mechanisms provided the state with secure finances and security of supply, which in turn benefited the social welfare of the state.

After liberalization of the two sectors however, the analysis of recent developments of both sectors has made it evident that the political protection is to some extent still present, as government officials send strong signals through their statements as demonstrated above. In this regard, it is also important to remember the speech- act theory which claims that when the right authority “says so, it is so” (Green, 2009). Hence, these statements could be considered an act of hindering the implications which the EC2010 might have.

The reason for the lack of support for electricity export is something we can find by investigating the society- centered approach. By regarding the public protests against the increased electricity prices during the electricity crisis, these protests can be considered a coalition of societal groups; a group with the similar perception exerting strong objections. In addition to this, chapter three has also demonstrated how the workers union of energy workers proposed to prohibit export of electricity.

The society- centered approach also enables us to view the German change of behavior in a theoretic framework. As public protests grew, the CDU-FDP government decided to

change the end- date of nuclear power plants. Thus, a coalition of societal groups helped form the German energy policy.

In view of the state-centered approach, the energy concept and the actions of German government officials are not as obviously classified. It is however possible to say that prior to revision, by focusing on utilization on nuclear energy as a transition technology, the government to some extent exerted protectionism in the form of relying heavier on self-supply.



## 5. Conclusion

This master thesis has set out to investigate the implications of the EC2010 on the Norwegian energy sector. It has concluded that this is not a straight forward process, despite of converging interests expressed in both countries' energy policies, and interdependence. As this master thesis has sought to emphasize, these obstacles are founded in political will, influenced by public reluctance.

The analysis has shown that the EC2010 have implications on the gas and electricity market. Concerning gas, this is not explicitly mentioned in the EC2010 and did not become an expressed option for the German government until the nuclear disaster in Fukushima, Japan, and the subsequent growing public resistance towards nuclear power in Germany. Thus, it was demonstrated how international occurrences and domestic public resistance can shape the development of an adopted policy and thus political will. Overall, the EC2010 has been demonstrated to have implications on the Norwegian gas sector by creating a level of uncertainty concerning Germany's future demand. Hence, the implication of the EC2010 on Norwegian gas export is not a straight forward process.

Despite of Germany's interest in electricity and pump storage capacities in Norway, as expressed in the EC2010, it has been demonstrated that there has been a lack of political will on behalf of Norway. Reasons for this are found in domestic circumstances, i.e. the reaction to the electricity crisis in 2009/2010 and the following growing skepticism against export of electricity. Borten Moe plays on these sympathies when arguing against pump storage and thereby arguing against an increase in the transfer capacity to Germany which originally was planned. Hence, domestic public resistance and political will again shaped the outcome of the implications of the EC2010. Thereby, the establishment of pumped storage power plants as described in the EC2010 is not a straight forward process.

Through the depiction of the liberalization of the gas and electricity market, it has become evident that the state- centered approach is applicable. The Norwegian government has protected the two respective industries as they were "infant industries" and reduced control and protection over the sector as the competitiveness of the two industries grew. Nevertheless, this protectionist attitude followed the politicians in spite of liberalization, perhaps much to do with the underlying perception that Norwegian natural resources should benefit the Norwegian society. Regarding electricity this is also founded in the historic

phenomenon of relatively inexpensive access to hydropower in Norway. Due to local access, and inexpensive production costs, Norway has been blessed with relatively low electricity prices. This created the public resistance which in turn could be said to shape the policy.

The thesis found that the society- centered approach could be of help in order to elucidate this argument. It explains how the government will support one policy area rather than another due to pressure from a coalition of societal groups. The thesis argued in favor of regarding the peoples of Norway who resisted electricity export as a result of the high electricity prices in 2009/2010 to be a societal group. Therefore, according to the society-centered approach, this group influenced the decision - makers and hence the policy on the subject matter. In turn, this influenced the possible implications of the EC2010 by slowing down the establishment of a stronger electricity transfer.

The overall implications of the EC2010 on natural gas and electricity exchange can therefore be said to be largely influenced by political will and public opinions, and thus serves as an example as how politics still shapes markets. It is however relatively early to predict exactly what will happen, especially regarding natural gas, as the EC2010 is under revision after the abandonment of utilization of Nuclear Energy. This revision may, as Rösler implied during his visit in August 2011 to Norway, have great consequences on future import of Norwegian natural gas. The need for explicit signals which Borten Moe requested in November 2011 could become a matter of fact after the revised concept is published.

The argument that politics still shape markets, are very much in the same line of thought as presented in the works of Austvik (1991, 2020) as presented in the brief literary review in chapter one. Nonetheless, this master thesis contributes to the research on German-Norwegian relations by presenting obstacles to the future development of the interdependent energy relationship. Could this interdependence be breached if, in the long run, the import of natural gas becomes less important to Germany, and the electricity transfer between the two countries remains at a low capacity due to hesitation in Norway to develop pumped storage power plants?

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