Europæisk Energipolitik

A study of the possibilities derived from the Energy Union in Spain and Poland

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RESUME

Denne opgaver omhandler den europæiske energi politik og de muligheder der skaber for virksomheder, med fokus på det spanske og polske marked i lyset heraf. Under den nuværende energi politik er der fokus på Energi Union, hvis lancering er hoved prioritet for Kommissionen.

Opgaver påpeger at den nuværende energi politik er resultatet af en længerevarende spill-over process, i overensstemmelse med neofunktionalistisk teori. Samarbejdet startede omkring energi produktion fra kul og stål, med videre integration af energi politikken mødte modstand blandt de daværende medlemmer. Selvom der skete noget politisk spillover, blandt andet i form af øget brug af samarbejdets domstol, så var det tyndt med integrationen i starten. Den egentlige integration af energi politikken kommer først meget sent, når man tænker på at samarbejdet startede inden for netop dette område, og er snarere et produkt af integration på andre områder. Oprettelsen af det indre marked skabte basis for lovgivning omkring gas og elektricitet selvom energi ikke var en del af traktat grundlaget. Yderligere fremgang på den miljøpolitiske front især i 70erne og 80erne skaber har direkte effekt på medlemsstaternes energi politik. Det skaber pres for indlemmelse af energi politikken i Lisbon traktaten i 2009.

EU klarer sig overordnet set godt i forhold til de mål der er sat, men der dog ikke ud til at nå energieffektiviseringsmålet. Blandt medlemsstaterne er resultaterne også blandende grundet deres forskellige nationale udgangspunkter som endnu ikke er blevet afhjulpet. For at eksemplificerer dette inddrager opgaven Spainen og Polen. Det ses at de to lande har vidt forskellige energiforbrugsmix, hvilket ikke mindst skyldes deres geografiske placering der stiller forskellige naturressourcer til rådighed. Polen har et intenst forbrug af kul både generelt, i elektricitetsgenereringen og i bygningssektoren. Spanien energi input er mere differentieret. Det skyldes ikke mindst en tidlig interesse for kernekraft og vedvarende energier, som resultat af landets sårbarhed i forbindelse med højt energi import. Både Spanien og Polen har store energi forbrug i deres bygningssektorer som er præget af gamle og dårligt isolerede huse. Grundet deres forskellige beliggenhed er også deres energi leverandører forskellige. Polen får store dele af sit energi import fra Rusland, og er bekymret for denne spillers tendens til at bruge energi politik som et politisk middel. Det skaber sammen med en stærk lobby for kul, fokus på de hjemlige ressourcer og en præference for netop kul. Det går dog ikke i tråd med EU's mission om at sænke udledningen af drivhusgasser. For Polen er energi sikkerhed imidlertid en prioritet over carbon neutralitet, hvorimod de to i EU er prioriteret lige. I Spanien er energi importen varieret over mange forskellige leverandører, hvoraf den største er Algeriet. De to har et jævnbyrdigt partnerskab, og står begge til at få gevinster ved samarbejdet om en ny forbindelse for algerisk gas til EU via Spanien.

Det ses i evaluering at både Spanien og Polen kan misse deres mål om andelen af vedvarende energier i det endelige energi forbrug. Det skyldes ikke mindst landenes nuværende politikker. I Spanien har den tidligere regering skåret ned på støttet til vedvarende energier for at imødegå den noget af den offentlige gæld. Det betyder at der ikke er blevet installeret nye anlæg i 2015, selvom Spanien er et af de førende lande inden for både sol og vind energi. Polen så store vindinstallationer i 2015, men efter valget i efteråret der gav de konservative flertal er der meget der tyder på at markedet vil krybe betydeligt. Regeringen har endnu ikke afholdt nogen auktioner på vindenergi, på trods af den var programsat til marts, i stedet er støtten til mine industrien åbenlyst erklæret. Det betyder at de som opererer inden for grøn energi må kigge sig om efter andre segmenter af de to markeder for at få afsat deres produkter, i den forbindelse er især de mindre forbruger og virksomheder der installere on-site i overensstemmelse med zero-energy house planerne,

interessante. Mens forholdene har været bedre for vedvarende energier i de to lande, er der et stort potentiale inden for energi effektivisering, særligt i forhold til de før nævnte bygninger som står for store dele af forbruget.

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1. Introduction

1.1. Background

Last year, in 2015, the European Commission presented the framework for the Energy Union, in order to address the main challenges on the European energy agenda. These concern the combat of climate change and the security supply, not least in the light of European Union's high levels of energy import dependency. It has further become an EU top priority to bring down energy consumption in general and of imported sources, which further implies large greenhouse gas (GHG) emissions in particular. The Energy Union is backed by a set of long term goals addressed in the Europe2020 strategy. These goals aim to reduce GHG emissions, improve energy efficiency, increase the use of renewable energies, and increase the levels of interconnectivity between the member states - all of which are to be reached by the year 2020.

Despite having had energy policy as a central area of cooperation since the foundation of the European Coal and Steel Community (ECSC), the EU has not yet managed to create an internal market for energy and only recently started to cooperate on energy politics. This is not least due to national differences between the member states. The differences are the results of several years of different energy politics and preferences surged as an effect of the presence or absence of natural resources.

In order to exemplify the many internal differences between the member states, the thesis will examine the energy situations of two member states comparatively. The choice has fallen on Spain and Poland, as they are allocated in opposite ends of the European continent and therefore represent different geopolitical and energy situations. They both have a home market of a significant size and represent some of the larger economies in the EU, which alone justifies for market interest. They are both relatively young democracies, with a somewhat turbulent recent history. Poland was locked in the Communist block for more than 40 years, and Spain was equally isolated from the rest of Europe during the fascist dictatorship led by Francisco Franco for about the same amount of time, ending, however, 10 years before Poland's liberation. The isolation from Western Europe has meant that both countries have had much catching up to do, especially in terms of economy and legislation, upon becoming member of the European Union. In recent times two very different economic situations has surged in the two countries particularly due to the

financial crisis. In terms of Energy politics Spain, who became member of the European Union in 1986, has shown some good results in the recent years and has become known as one the more progressive member states in the green turnover. While Poland, who became member in 2004 is considered more regressive, still hanging on to coal fired plants. However, both countries will have to implement the Energy Union legislation.

It is therefore interesting to see how the newest European political framework, the so called Energy Union, invokes on national energy politics in Spain and Poland and consequently what this means to those who are doing business within the industry of green solutions and energy, given the different national initial situations. The thesis will focus on the possibilities created by the European energy politics and specifically the Energy Union for businesses operating within the sector for green energy solutions. In terms of the industry, the focus will be on industries alleviating the two main challenges described initially: bringing down GHG emissions and bringing down energy dependency. Thus, those that are helping to bring down the energy consumption in general and indirectly decrease the emissions and the need for imported sources. And those who provide renewable energy sources, and thereby help bring down the emissions and the need for import.

1.2. Research Question

In the light of the Energy Union; How does the common energy policy affect the markets for green energy solutions in the EU, specifically Spain and Poland?

To further help answer this question I will be working with three sub assumptions.

- Firstly, that there a common energy policy in the EU today, it includes the energy union, and is the result of a spill-over process initiated with the founding of the ECSC.
- The second assumption is that there are still important differences between the member states despite the common policies, due to different national preferences, which surge as an effect of their respective trade interdependencies, consequently affecting their energy policy and energy mix.
- Thirdly, it is assumed that the legal framework of the Energy Union will affect the market for green solutions in Spain and Poland, however, differently due to their different national starting points

1.3. Limitation

This thesis will not discuss whether or not climate change is a result of human behaviour, or whether the measures of the current policies are sufficient to combat global climate changes. Even so, it recognizes that there is a close link between energy politics and climate and environmental politics. Especially, as these, in some political units, are placed under the same roof. Due to the essentiality of energy, energy politics will often have close ties with a wide range of other policy areas, including mainly trade politics and foreign politics. I recognize that these policy areas can invoke on the choice of energy policy, but will not present a deeper analysis, rather I focus on energy.

A broad range of initiatives and legislations has been put forward to support the Energy Union. Nonetheless, focus in this thesis will be on those created to support the use of RES and to support the increase of energy efficiency. The transport sector will not be treated, due to the extent of the thesis, which means that oil imports are left out as they are mainly consumed by this sector.

1.4. Theory

In order to explain the evolution of the European energy politics from the establishment of the European Coal and Steel Community to the Energy Union, I will draw upon the neo-functionalist integration theory. It is a part of the liberal school, and is thus influenced by the positivism of liberalism. One of the most important voices in neo-functionalism is that of Ernest B. Haas, who has been a main character in the integration debate since the 1950s. He defines political integration as follows:

> *[It] is the process whereby political actors in several distinct national settings are persuaded to shift their loyalties, expectations and political activities toward a new centre, whose institutions posses or demand jurisdiction over the pre-existing national states. The end result of a process of political integration is a new political community super-imposed over the pre-existing ones. (Haas: 1958, 16)*

Haas followed the development of the ECSC closely, and the theory surged in close relation herewith, which is simultaneously one of its main critiques; that it does not apply to any other aspect of International Relations than the European Union (Kelstrup et al.: 2012, 190). For the narrow purpose of this paper, this is not problematic.

The main element of the neo-functionalist integration theory is the spill-over effect, which refers to the idea that integration in one part of the system will create pressure for further integration in other but related parts of the system, thereby *spilling-over* to other areas. Three different kinds of spill-overs exist; functional spill-over; concerning the integration of sectors, political spill-over; concerning the loyalty shift of actors to the new political arena, and cultivated spill-over; emphasising the importance of supranational institutions in improving the outcome of negotiations. An additional fourth spill-over effect has been added later: the deliberate spill-over effect, explaining that where integration does not occur automatically it can be planned or constructed politically, thus cultivating integration.

The neo-functionalist integration theory has received some critique for its tendency to underestimate the extent to which states operate according to their own national interest and consequently the theory comes to ignore the possibility of setbacks in the integration processes of cooperations (Jackson and Sørensen: 2010, 107). Therefore, in order to explain some of the obstacles in the integration of the European energy policy, I will draw upon another liberal theory referred to as Complex Interdependence, which tends less to the optimistic liberal belief that everything has changed to the better and that "the dictatorship of national interest" belongs to the old world (Jackson and Sørensen: 2010, 110).

Complex interdependence refers to relations in world politics caused by international transactions and "characterized by reciprocal effects among countries or among actors in different countries" (Keohane and Nye: 2001, 7).These reciprocal effects must be concerned with a certain cost, otherwise it is simply a case of interconnectedness. As the word interdependence suggests states are dependent on one another, often in an asymmetrical way, which can provide a source of power for the less dependent party. According to Keohane and Nye, power is thus understood as the ability to make others do something they would not do, thereby controlling outcomes.

Military power was previously considered to be the ultimate power, but has, according to interdependence theorists, lost great part of its importance in international relations due to the costs related to make the threat of its use seem credible. As the importance of military power decreases so does the importance of high politics and states become more concerned with low

politics such as welfare issues. Other sources of power thus become important, not least those provided in interdependent relations (Keohane and Nye: 2001, 16).

The power of interdependence is about short-run sensitivity and long-term vulnerability to changes in the system. A country which is sensitive to changes in the system will be affected immediately when these occur. However, a country which is vulnerable will not only be immediately affected, but also find it costly to restructure and adapt to changes produced. Of vulnerability and sensitivity, vulnerability will create the most power in complex interdependence relations as it affects bargaining positions in international relations. The importance of sensitivity should not be underestimated, as rapidly rising sensitivity can create pressure in the national politics and potentially surge and affect the international politics.

Depending on interest and position of the state, it might try to link different areas in order to manipulate the interdependent relation. In general, the states will try to manipulate interdependence in areas where they are strong and seek to avoid being manipulated in areas where they are weak.

The interdependence relations might also affect the macro environment of a country. To analyze the overall characteristics of the macro environment of Spain and Poland I will be using the PESTEL analysis model, which is used by companies to determine the macro environment of potential new markets. The analysis covers the political, economic, socio-cultural, technological, environmental, and legal environment of a country. These factors are all uncontrollable for the company, but important upon deciding whether to enter a new market or not. Clearly, the factors will not have different weight depending on the character of the company and the sector in question. The analysis can be used both to determine the current favourability of a market as part of a larger market screening process, as well as to anticipate situations that might occur and affect the business environment in the future (Yukel: 2012).

The PESTEL analysis will then be accompanied by a sector analysis using Porter's five forces. Both analysis methods are used at the fine grained screening stages of the international market selection process. While the PESTEL analysis focuses on the macro environment brought about by the country as a whole, Porter's five forces is used for analyzing the industry and more specifically its state of competition, thus permitting for an examination on business level. The model enables

an analysis of the opportunities for business in the specific market to position themselves in the most advantageous way, while avoiding being "squeezed" by the market (Hollensen: 2009, 104).

Porter assumes that the competition in the industry depends on five basic competitive forces: Market competitors, Suppliers, Buyers, Substitutes and New Entrants (Hollensen: 2007, 101ff). The model contains both the industry level; New entrants, Suppliers and Substitutes and the market level; Market competitors and Buyers. The industry is understood as a group of companies offering products, which can be seen as close substitutes for one another, the industry level makes up for actors both with a current and potential interest in the industry and can contain several markets. The market level, which forms part of the industrial level, consists of the sellers and the actual and potential buyers of the product.

1.5. Methods

In order to respond the research question I will first describe the common European energy policy focussing on the Energy Union and the policies supporting it, in line with the limits set in section 1.3 of this chapter. Hereafter, I will analyze the evolution of the common energy policy in the light of the neo-functionalistic integration theory. In this context I will argue that the Energy Union is a result of a long spill-over process starting with the ECSC. Considering the energy policy I will evaluate how the EU is doing so far in terms of its own goals and on the future challenges for the European Energy Union.

In the light of this evaluation I will in the following chapter zoom to the national level, of the two case countries: Poland and Spain. I will describe their energy situations; understood as the presence of natural resources, conduct of imports, and energy consumption. Following this, I will conduct a comparative analysis of their national energy policy and energy mix, using the theory of independence to argue for their national preferences and consequently their positioning vis-a-vis the European energy politics. The theory is chosen for its balanced view as it represents lower levels of optimism than liberalism in general does. With its focus on welfare, it is suitable for energy policy review, as energy is indispensable for the European societies' style of living. The chapter will conclude with a discussion of the challenges and opportunities produced by the Energy Union from a political point of view.

In the fourth chapter I will conduct an analysis of the market in the two countries from the point of view of business operators within green solutions and energy, as described previously. The macro environment will be analyzed using the PESTEL model, its factors described previously. The analysis of the legal environment will to a large extent build on the findings from chapter two. Likewise the analysis from chapter three will be the stepping stone for the examination of the political environment. The other parameters will mainly build on the Commission country reports. It is a qualitative model and will be used as such, supported by an interview with Lasse Bagge Hansen associate of the Danish chamber of commerce in Spain, using semi structured interview style (Kvale: 2009). The PESTEL analysis has been chosen for its holistic approach, however the degree to which the model actually is holistic can be discussed, as it treats each factor individually (Yukel: 2012). Nonetheless, it is worth noticing that the PESTEL factors are heavily interlinked, allowing for conclusions to be made on the analysis as a whole.

As outlined in 1.4, The PESTEL analysis will be supported by Porter's five forces, allowing me to perform a market analysis. I will not conduct the analysis in the scope of one specific company but rather apply it to the market for RES. The focus will be on wind power, as this is the most elaborated source in both countries, but assumedly there will be similarities with other RES, in terms of market forces. As the market for renewable energies have some global characteristics, a general analysis will be made rather than an analysis of each country. Nevertheless, in cases where the two case countries stand out it shall be noted. The analysis shall not be carried out with equal focus on the five forces. As especially the bargaining power of suppliers is likely to be affected by battles of forces in the multiple markets, due to the global character of the RES market, less attention will be paid to these. Instead emphasis will especially be laid on substitutes and their possibilities will be considered further in the last chapter, which will contain recommendations for the two markets and possibilities derived from the Energy Union.

Usually the purpose of international market selection is to figure out which countries and markets might be worth for the company to consider. However, for this paper the countries have already been determined previously to be Spain and Poland, meaning that my analysis will be reversed. Thus, I will be analyzing which type of companies that can benefit from the opportunities created by the Energy Union in the Spanish and Polish market.

1.6. Empery

The main part of this thesis will rely on data provided by the European Commission, as their recommendations and evaluations of energy policies builds on these. Using the EU data on both countries' performance on the Energy Union further provides for comparability. For more specific country data I turn to some of the bigger organizations related to the field of energy and environment in particular The European Environment Agency; an EU agency, International Energy Agency; an autonomous intergovernmental organization, European Wind Energy Association a European trade organization and World Wildlife Fund; an NGO. The variation of sources guarantees for a differentiated perspective. Unfortunately, data from 2015 on the energy targets has not yet been published and those for 2014 performances are somewhat limited. However, it will still be possible to give an overall picture of the tendencies in the countries.

A note should also be made on the language. As I speak Spanish, I have access to a wider a range of sources, including national sources, while I must rely on finding English translations or studies conducted by international actors in English in the case of Poland. In the analysis of the countries I will rely on studies carried out by European trade organizations among them the Danish, Spanish, and Polish wind energy associations.

1.7. Critique of Sources

Unfortunately, it has not been possible to get an interview with the relevant associate of the Danish chamber of commerce to Poland to balance the PESTEL analysis. The balance will thus be provided by Polish and foreign sector analyses. In terms of the Interview with Lasse Bagge Hansen, I chose him because of his experience as he has previously produced a sector analysis for the chamber on the Spanish market for green energy solutions. The view he presents does not represent the position of neither the Embassy nor the Danish ministry of foreign affairs.

Concerning the current political situation he might still answer in broad terms, according to internal code of the Embassy, but he is considered to be sincere about circumstances produced by the current political situation that would affect business operations.

A note should as well be made on the data collected from EU sources, especially the country reports which will be used in the PESTEL analysis. The country reports from the Commission on the member states tend to focus on the dimensions needing special attention and less on the areas where the countries are performing well.

2. EU Level: The evolution of the energy policy in the EU

In this chapter I will analyse the evolution of the energy politics in Europe beginning with the current politics and the Energy Union in particular. Then in the second sub chapter I will analyze how the EU got to the point it is today from the initial cooperation of coal and steel. Lastly, I will discuss the challenges and perspectives of the European energy policy.

2.1. The current political framework

This sub-chapter will examine the competencies between the most important actors in the European energy politics, and present the content of the politics including the number one priority; the Energy Union.

2.1.1. Actors in European Energy politics

The energy politics of the EU rest on three pillars, security of supply, economic competitiveness, and environmental stability. The legal base for the common energy policy is found in article 194 of the Lisbon Treaty on the Functioning of the European Union (TFEU), of which first paragraph states:

> *1. In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to:*
>
> *(a) ensure the functioning of the energy market;*
>
> *(b) ensure security of energy supply in the Union;*
>
> *(c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and*
>
> *(d) promote the interconnection of energy networks.*

The politics are decided upon in cooperation between the member states, the commission and the European Parliament. The general lines of the energy politics are decided by the Council, while legislation within these frames is adopted by the European Parliament and the Council of Ministers of the European Union jointly. This is though with the exception of legislation concerning nuclear power which is adopted by the Council of Ministers. The final choice of energy mix and energy sources remains a competency of the member states as well does the energy taxation.

2.1.2. The Energy Union

On the 26th of February 2015, The European Commission presented their strategy for the creation of the European Energy Union which is one of the key priorities for the Juncker Commission, who stepped into office upon the 2014 elections. The Energy Union builds on three main pillars, in line with the overall energy policy of Europe: security of supply, sustainability and competitiveness, addressing some of the current and future challenges in the European energy situation.

The vision of the Energy Union is to create a sustainable, climate friendly and decarbonised economy, with strong, innovative, and competitive enterprises, which can develop the necessary products and technology in order to spread energy efficient, low emission technologies (European Commission: 2015e). This has been translated into five priorities:

- *Energy security*

According to figures from the Commission, the EU imported 53 per cent of its energy in 2014 (ibid.). This not only signifies a relative high import dependency, it is also an important expense for the economy reaching yearly about 400 million Euros. However, the perspective of energy efficiency is not only economic, but also reflects a wish to become less dependent on Russian supplies. After the two gas disputes with Ukraine in 2006 and again 2008-2009, affecting some of the EU member states, it is concluded that Russia is not a reliable energy supplier and that the EU is vulnerable to Moscow's energy politics (Gurzu: 2015). In the event of supply shortage, the member states must be ensured that they can rely on other member states. It is put forward by the commission that in the event of crisis, considering especially gas, where a nation cannot sustain the demand of its protected consumers; such as households, neighboring states will have to prioritize these over their own non-protected consumers (Belin: 2016). The importance of a constructive dialogue with supplier countries is also stressed, as energy politics are often used as

foreign politics. On this background the Commission wishes to introduce a consultation duty, meaning that member states should consult the Commission *before* signing a deal with energy suppliers. In this context the commission has committed to legislation initiatives, which will promote diversification of the Union's gas supply. This will demand for a strengthening of the infrastructure and interconnectivity of the member states, which will be promoted through instruments such as Connecting Europe-Facility (CEF) and the European Fund for Strategic Investments (EFSI).

- *Internal energy market (IEM)*

Despite the EU having the single market since 1992, an internal market for energy still does not exist, especially due to the lack of infrastructure. The lack of a common market for energy hampers the European competitiveness keeping prices high for households and businesses. The vision of the Energy Union is a free choice of supplier and the possibility to buy energy from suppliers other than those originating from the consumer's home country. Furthermore, new legislation for grids has been proposed, particularly promoting regional cooperation. Including smart grids, permitting for a better more efficient distribution of the energy by redirecting RES production surplus from one country to one where the power generation from RES is lower. The Commission estimates that the restructuring of the energy market will cost approximately 200 million Euros per year throughout the next decade. Some means have already been found from the CEF and the European Investment Bank inter alia. Moreover, the EFSI will support projects of RES and energy efficiency. The Commission has further set guidelines and rules aiming to limit the negative effects of governmental interventions, even if these are occasionally legitimate in order to correct market fails. In this context the subsidies contributing negatively to the environment has to be phased out in order to send the desired signals to investors.

- *Energy Efficiency*

This concerns decreasing the use of energy by both direct energy savings and by using each unit more efficiently. This can help decrease the energy import dependency as well as the GHG emissions. The target is to improve energy efficiency by 20 per cent in 2020 and by 27 per cent in 2030. These targets are also pronounced in the long term strategies for the EU climate and energy policy for 2020 and 2030 respectively. EU is already one of the most resource efficient economies

in the world, but the high European standard of living absorbs a lot of energy and much is still to be done in order to decouple the economic growth from the energy consumption (Roberts: 2009, 246). Special attention is paid to the building sector, which represents the largest source of energy demand in Europe. The sector is furthermore a large consumer of the imported gas which is used for heating and cooling, why the Commission will create a strategy for a turn towards district heating and cooling. The Commission is also working on creating synergy between energy efficiency politics and circular economy this could be focusing on the potential of converting waste into energy.

- *Decarbonisation*

This includes switching to a greener economy and reducing GHG emissions. Getting there includes increasing the share of RES in the final energy consumption. However, for the optimal use of RES, the energy grids need to be adjusted, considering not least previous mentioned smart grids. Market based subsidies, conducted in line with rules for governmental subsidy, will be available for the production of energy from renewable sources. Subsidy programs to bring down costs on new wind and solar energy capacity are also on the way, while fueling with carbon will be made further expensive via a restructuring of the existing EU Emissions Trading System (EU ETS). It is considered that the development of the interconnective infrastructure will help decrease the costs of integration of energy from renewable sources in the IEM.

- *Research and Innovation*

This concerns encouraging the development of low-carbon technologies through EU and government funding as well as via partnerships with the private sector. The Commission heavily emphasizes the importance of technological development in RES in order to meet the goals of the long term strategies for energy. For the Energy Union to become an engine for further economic growth, job creation, and competitiveness in Europe, it is important that the EU takes a leading position in terms of intelligent technology applied in the energy sector. A new strategy for research and innovation will therefore constitute an important role in the Energy Union, in order to speed up the restructuring process of the energy system. This will imply that some sectors will need to make adjustments and that some employees will need further education or training, making the level of their previous formation and experiences important, in order to meet the

requirements of new job profiles. The Commission further wishes to explore the possibilities of public procurement procedure as a driver for innovation both in the industry and in the companies concerning green growth inside and outside the Union. By using the trade policies, the EU wishes to give these technologies and commodities related to the Energy Union easy access to foreign markets.

So far there has been no set deadline for the full implementation of the Energy Union, but as it is one of the key priorities of the Juncker Commission, it is fair to expect that its foundation will be in place by the end of his mandate; 2019 (Gurzu:2015). The Commissions has identified fifteen action points to create the Energy Union. Among these are revisions of several of the existing directives in order to make sure they support the reach of the 2030 goals. Furthermore, a new package on RES will be proposed including a new policy supporting the use of biomass. In addition, the Commission will propose a legal framework to ensure the security of the electricity supply and support the creation on single market for energy. As to infrastructure, the Commission will define *projects of common interest*, which will be supported via the CEF and other EU funds (European Commission. 2015e).

2.1.3. Europe2020 and beyond

The Europe2020 is a long-term target plan, deploying measurable targets for the EU to complete by 2020 within 5 focus areas: employment, research and innovation, climate change and energy, education, and the combat of poverty. Europe2020 supports the plan of creating an Energy Union with specific targets for the member to meet in the area of energy politics by 2020, listed below.

- 20 per cent decrease of GHG emissions compared to 1990 levels
- 20 per cent increase in the use of RES
- Towards a 20 per cent increase in energy efficiency
- 10 per cent of the energy use in the transport sector must come from RES
- 10 per cent interconnectivity

The targets are to be implemented in national programs. This in effect means that not all countries will have to reach a 20 per cent decrease of GHG emissions by 2020, but the EU as whole has to. Thus, the strategy considers the differences among the countries, as those who are already doing

well on these parameters will be met with more ambitious goals, while those with a poorer initial situation will be met with realistic specific goals.

In terms of GHG emissions, countries have committed to legally binding national targets set in the Effort Sharing Decision (ESD).The ESD covers emissions not covered by EU ETS, including transport (excl. Domestic aviation), energy use in households and services, agriculture, and waste.

The individual targets set for RES are also binding and includes another legally binding target of reaching a 10 per cent share of renewable energy in the transport sector. The national targets for energy efficiency can be set on the base of different indicators, but for their comparability they must be translated to levels of primary and final energy consumption in 2020. The problem with the efficiency target is that it does not tell whether good results stem from efforts to improve energy efficiency or if it is produced by economic deflation. It should also be noted that the target for energy efficiency is not legally binding, like the others.

Beyond 2020, the Europe2030 strategy applies. It is equal to the Europe2020 strategy, but with higher targets, requiring a 40 per cent cut in GHG emission, a 27 per cent increase of the share of renewable energies in the final and 27 per cent improvement of the energy efficiency, while the interconnectivity is set at 15 per cent. The most important difference from the Europe2020 is that the Europe2030 does not hold any national targets; the targets apply to the EU as whole. This means that should the EU look to fall short on the targets it will be up to the Commission exclusively to deal with it. The long term strategy for the time after 2030, is the EU 2050 and operates with the same dimensions, only higher targets.

2.1.4. Directives supporting the Energy Union

RES directive 2009/28/EC

The directive concerns the production and promotion of energy of RES such as wind, solar, geothermal, hydropower, biomass, and sewage treatment plant gas. The member states set national targets in their respective national renewable energy action plan and the progress is measured every two years in the national renewable energy progress report. The directive also promotes the cooperation between member states for instance in the shape of joint renewable energy projects or joint renewable energy support schemes.

Energy Efficiency Directive 2012/27/EU

The Commission estimates improvement of the energy efficiency around 17-18 per cent with the current policies. Revisions of the directive are currently on the way to turn this estimate around, focusing as well on the targets for 2030.

The member states have to prepare a long-term renovation strategy on their entire building stock. High energy standards are put on the public sector in the directive. It dictates that 3 per cent of the total storage building areal in buildings owned by the state must be renovated in terms of energy efficiency each year. There are, however, possibilities of alternative actions, as long as it ensures the equal energy savings on state owned buildings. The member states must further ensure that the public institutions in larger purchases prioritize only highly energy efficient products, services, and buildings.

Energy Performance of Buildings Directive 2010/31/EU

This directive supports the previous examined directive but focuses exclusively on the building sector. An important share of the European buildings is old and has a huge potential for energy efficient renovation. The directive states that by the end of 2020 new buildings have to be nearly zero consuming and that the public sector should be a frontrunner and set an example by pursuing the buy or rent of these buildings. The directive forces member states to set minimum energy requirements for buildings. The energy to these buildings should be produced close to the site if not on-site. This directive has also been reviewed in order to meet the targets of 2030.

Common Rules for the Internal market in Electricity Directive 2009/72/EC

This part of the plan seeks to create an internal market for electricity. A similar directive also exists for gas focusing on the differentiation of gas sources and especially on LNG. The smart grids can help improve integration of the RES in the production, e.g. by relying on wind when it is windy and when it is not windy and the mills are producing less power, turn up the uses of other energy plants. The EU aims to install 200 million smart meters, in order to reduce costs and it will equally help increase energy efficiency by an estimated 9 per cent.

2.2. From ECSC to Energy Union

The following chapter will analyze the evolution of the energy politics in the European cooperation. The argument is that the common energy politics, and thus the Energy Union is the

result of a spill-over effect from the first cooperation of the ECSC. The spill-over effect is part of the neo-functionalistic theory on integration widely used in this chapter.

2.2.1. Establishing ECSC

The energy supply has been a central political topic in the European collaboration since the establishment of the ECSC. The purpose of the time was to "place the instruments of war at service of peace" as Jean Monnet, put it (European Commission: 2012). This concerned creating a connection between the supplies of Germany and France in such a way that war between these two historical combatants became "not merely unthinkable but materially impossible", as Robert Schuman elaborated (Vogler: 2013, 5).

Italy and the Benelux countries also formed part of the community established officially on April 18 of 1951 with the Treaty of Paris (Urwin: 1995, 48). The Treaty presented an economic objective of a common market and a political objective to create a supranational authority. These objectives were repeated in the Rome Treaty in 1957; establishing a community for cooperation in the nuclear sector: EURATOM and The European Economic Community, though with an addition to the political objective, which concerned making the Community more than just a common market (Nugent: 2003, 42).

Both Monnet and Schuman saw the plan of establishing a European community for coal and steel as a step toward political integration. The Schuman plan, a preparatory paper on the ECSC, stated that "the pooling of coal and steel production will immediately provide for the establishment of common bases for economic development as a first step in the federation of Europe" (Urwin: 1995, 46). In this mindset the ECSC was planned to be just the first of many communities to drive the integration of the economic sectors (ibid. 58), in this light that the EUROATOM and European Economic Community (EEC) were created in 1957.

The sector approach to the integration of Europe was also a key for the neo-functionalist. To them the integration of one sector would create pressure for integration of related sectors; exactly the idea behind the functional spill-over effect. It seemed logic that the integration of the markets for coal and steel of the six countries would eventually bring about integration of other sectors such as transport, via the functional spill-over effect. Integration of the transport sector was however quite complex, as it reached much further than just the six who with their respective national

systems and regulations already made integration difficult (ibid. 58). Thus the functional spill-over effect in the energy policy did not work as first predicted. Instead spill-over effects such as political spill-over and cultivated spill-over have invoked influence despite a rocky beginning of the new institutions, established by the treaty of Paris.

The treaty of Paris established four common institutions. First, the High Authority whose purpose it was to ensure the objectives set in the Treaty and survey member states. This supranational body could issue on its own initiative or on the assent of the Council of ministers. The Council of Ministers consisted of the national ministers and was to balance the power of the High Authority. Thirdly, the Common Assembly was set to bring about a democratic input to the cooperation. Its members were appointed by the national parliaments, but its actual powers were limited to an advisory role. The fourth institution was the Court of Justice, whose job it was to mantle in conflicts and protect the Treaty, not only that of the ESCS, but also of the EURATOM and later of the EEC.

In the early years of the ECSC, the two supranational institutions had several battles with the member states not keen to aside their own national interest (ibid. 53). These difficulties might have been foreseen by the neo-functionalists, as they pointed out that the spill-over effect, and thus integration, was likely to work better on low politics and be more difficult on high politics. While coal and steel are not directly hard politics, they are important for warfare equalling high politics. The first bigger battle between the High Authority and the Council surged as an effect of overproduction, and resulted in community crisis in 1959. Due to two warm winters the economic slow-down provoked a fall in the demand of coal and the overproduction crisis was inevitable. Unable to set in motion the powers related to the state of "manifest crisis" – defined by the treaty of Paris – to solve the crisis, the High authority as well as the ECSC faced a loss of prestige (ibid.).The crisis of overproduction proved that no shift of loyalty had happened within the political actors, as no qualified majority could be found in the Council to activate the state of manifest crisis.

Yet, before jumping to the conclusion that no loyalty shift had happened and that no political spill-over effect had taken place, it is worth to highlight the previously mentioned Court of Justice. It received several appeals from the member states and industries over decisions of the High

Authority. In almost all of the cases the appeals were rejected and the further verdicts of the Court were accepted (ibid. 56). This does not only show the power of the Court as the rulings and verdicts were accepted, but it also shows that the actors indeed turned to the community court to solve their problems. The use of the community court indicates a shift in loyalty and thus political spill-over, believing their interests benefitted from it.

In the 60s the court managed to further manifest its central role for the integration with two pivotal rulings. In 1963, the court expressed the *direct effect* in a case known as Van Gend en Loos, which came to mean that citizens of the member states could also argue on the base of the treaty. In 1964, the court ruled in the historic case of Costa vs. ENEL that the community treaty prevails before national laws, even if the national law is newer. The court's case law approach was helped by vague formulations in the Treaties that permitted interpretations, which would always reflect the objectives of the Community. Although only able to act when asked, the court managed to upgrade the common interest by ruling in accordance with the community objectives, and not the interest of the member states. According to the neo-functionalists, upgrading of common interest in the cooperation is seen as one of the core competencies of the supranational institutions, enabling the cultivated spill-over effect. In this matter it is important that the supranational institutions possess the adequate competencies or its efforts will not result in any spill-over. A point might therefore be that it was easier for the member states to accept the actions and the role of the Court as they would already know this type of actor from their national constitutions, while the High Authority and later the Commission were new entities that the member states would have to accustom to first. Therefore its problem might not have been a case of just inadequate competencies, but just as much that the loyalty shift to a complete new type of institution would prove more difficult.

The ECSC did not have a smooth beginning and additionally the integration process should not be taken for granted. Nevertheless, the importance of the supranational institutions in terms of driving this integration becomes evident very early, although the cultivated spill-over was impeded to a large extent because of the member states. They were unwilling to give the High Authority the competencies needed, as seen in the case of the coal surplus crisis in the 60s. The choice of sector should likewise be accounted for some of the difficulties in the beginning of the integration phase

as insinuated earlier. It is, however, questionable if the ECSC would have been successful in stabilizing Western Europe, if a sector of low politics were chosen instead, as it would not have created the same degree of costly interdependence between the member states.

2.2.2. Environmental Issue pressure

The importance of coal and steel did not remain essential to energy production; the use of oil, gas, and nuclear power increased and the member states were becoming energy source importers rather than producers. For the Community to remain important it would require a common energy policy and not just a common policy on coal and steel (Nugent: 2003, 38). The late 70s saw an enormous rise in oil prices and the cooperation proved to be vulnerable, due to a lack of substitute products. The oil crisis had serious effects on the ECC, which had become heavily dependent on oil imports to fuel its economy and rising welfare, bringing about both high inflation and rising unemployment rates. Even if a strategy was put forward by the Council of Ministers in 1974, the problem was still handled nationally trying to diversify supply and suppliers of the national energy mix, in some countries leading to further investments in the nuclear sector and inevitably this meant further fragmentation of the energy policy among the member states.

However, it still proved difficult to elaborate a common energy policy. Nevertheless, the crisis did bring greater receptivity to the idea of a common energy policy and during the 80s it became evident that energy could not be isolated from the Single European Market, which remained the economic objective (ibid. 315). Furthermore, the European publics were becoming more concerned with environmental questions, but as with energy the Commission had no legal base for activities (Lenshow: 2005, 318).

While failing in its direct attempts, the Commission used the momentum for environmental concern in 1974 to help set up the NGO European Environmental Bureau, in order to get societal support for the objectives (ibid). Thereby they created a new political arena, as the NGO was not concerned with national environmental issues, but European. This act can also be seen as a case of planned integration; deliberate spill-over. The needed support from the member states to integration was non-existent. They tended to impede functional spill-over, and they were reluctant to produce the political spill-over themselves. However, the Commission by choosing to

establish the EEB was supported by a public voice, which could create the political spill-over that the member states would not provide, thereby creating pressure on legislators at European level.

In the 70s the EEC adopted an energy policy strategy put forward by the Council with guidelines on energy supply and demand and energy goals for 1985. This policy strategy adoption could be granted some success in integration terms, as the member states at least chose to use the European arena for discussing problems created by the oil crisis, qualifying for a political spill-over. Nonetheless, significant integrational advancement in this period was rather made in the field of environmental policy. The first Environmental Action Plan (EAP) adopted in 1973 already contained many of the elements of what we today would denominate as sustainable development (Hey: 2006, 18). The program established what was becoming more and more accepted; economic development, prosperity, and protection of the environment are mutually independent (ibid.). The second EAP was adopted in 1977 and took up an even broader range of problems. Thanks to the two programs a number of directives were adopted throughout the 70s and early 80s, yet still facing some trouble and lack of success as the recession took on (ibid.).

The third and fourth EAP from 1982 and 1987 respectively, were concerned with the completion of the Internal Market. Environmental policies were included in the Single European Act, the treaty preparing for the final establishment of the Internal Market, but energy politics was still missing despite the fact that energy as a traded good would be concerned by the internal market. While much focus was laid on the completion of the economic objective of the founding treaties, the Court underlined the green European path, ruling in favor of the environment on behalf of the internal market e.g. in the Danish bottle case of 1988 (ibid.). The court ruled in favor of the mortgage on bottles as a precaution for environmental protection, thus enforcing the importance of environmental politics in the EU and with cultivated spill-over further driving the integration of environmental politics.

Another policy area where integration had developed significantly – in contrast to the standstill tendency of the energy policy – was the field of economic policies. The Maastricht Treaty of 1992 was going to establish a European Monetary Union and eventually a common currency. In the same treaty the Commission had not been able to convince the member states of the inclusion of a separate chapter for energy. In the treaty energy issues were therefore only considered in

relation with economic issues (Langsdorf: 2011, 5). The references made to energy in the Maastricht Treaty were so vague that they could barely constitute any basis for legislation (ibid.). Nevertheless, it did not mean that no legislations were realized in the field of energy following the Maastricht Treaty, only that progress did not result from neither political spill-over nor cultivated spill-over as the Commission was unable to *europeanize* this policy area (Lenshow: 2005, 319). However, thanks to the legal framework of the Internal Market and environmental politics a functional spill-over happened to the area of energy.

The early 90s present an example of functional spill-over with the legislation on energy and gas based on the Internal Market, thereby spill-over from trade policies to energy policies. Another example comes from the directives on renewable energies from 2001 and 2003 and legislation concerning the introduction of emissions trading in 2005. The directives were created in terms of environmental policies and legislation, but they affected the energy politics immensely. Adjustments had to be made in the national energy policies to live up to the directives even though they stemmed from environmental legal framework. Thereby another functional spill-over was provided to the area of energy policy this time from the area of environmental politics, creating a pressure for integration as well.

In the light of the tendencies seen after the oil crisis, it seems easier to integrate on environmental politics than on energy politics. Firstly, environmental politics is low politics, which, as mentioned, should improve the spill-over effect according to neo-functionalists. Secondly, a broad range of environmental issues do not care for national borders. High investments in environmental politics in one country might therefore be wasted if the neighboring country does not put any attention to the same matter, making sense to coordinate efforts. Hence, it is an obvious policy area for the creation of political spill-over, because the problems exist not only on national level, but on a common European level, constituting a problem for all and making sense to solve it together.

Once the integration was running on the environmental area, the spill-over to the energy sector is harder for the member states to impede. As long as the integration has to take off from the area of energy, the member states could limit this e.g. by vetoing new treaty chapters on energy or limiting the scope of new programs or action plans. Apart from the environmental area also the

Internal Market produces functional spill-over to area of energy, as it sets forth a free market for goods and services which per se includes energy.

2.2.3. The green Lisbon Treaty

With the Lisbon Treaty in 2009 finally energy receives its own legal basis introducing article 194 in TFEU, examined in the previous sub-chapter. What has changed since the beginning of the cooperation is that energy rather than being the base of war making, and thus hard power has become the base of the welfare state and thereby an issue of soft power. Although not indicating that integration of energy policy from now on will be trouble free, it should however be easier.

The article 194 states the ensuring of supply to be a Community tasks and no longer responsibility of the member state. The Community as a whole had become an energy importer, relying to a broad extent on energy suppliers rated with high or medium political risk, with the exception of Norway (Wood:2010). Especially the gas import dependency on Russia provided for a political crisis, when Russia shut off the gas during the two gas disputes with Ukraine in 2006 and again in the winter of 2008-09. The cut off also meant a sudden stop in the gas flow to some EU-countries. It was thus made clear that modern European energy policy would also have to consider foreign energy policy. Again it is seen that the discussions on the issue were made in the Council and even if they did not bring about significant immediate response, they provided for future common action to be taken in this field. Cemented in the Energy Union as well as in the pillars founding the energy policy is the security of supply, providing for a case of political spill-over.

In spite of the spill-over effects and further integration of the energy policy, national discrepancies still exist. They were evident already when only environmental policies were discussed and in general terms divided the member states in two groups: the leaders and the laggards (Lenshow: 2005, 314). The leaders are to a broad extent the richer countries in the North while the laggards are the poorer countries who have other investments priorities, bringing environmental issues down the agenda (ibid.). In terms of energy policies a similar tendency is seen; the progressive countries on the switch to a green and sustainable economy are denominated the green growth group, while its opposition depends on the matter in question. An example is the four Visegrad countries: Czech Republic, Hungary, Poland, and Slovakia. It is important to note that despite disagreements among the member states on the energy policy, the issues remain European issues

and also that opinions are organized among member states and not solely nationally, also a proof of political spill-over.

What had also enforced energy policy on the European agenda was the global climate change debate. Climate change was linked directly to energy politics and made for a good common goal for the European Union, as they were of such a scale that it made little sense to address them nationally (Langsdorf: 2011, 6). This is also represented in the current pillars of the energy politics as environmental stability.

Some draw the conclusion that the Energy Union is just a "repacking" and unification of former energy policies (Gurzu: 2015). The great difference is, however, that since then a political spill-over has occurred, heavily provoked by the importance of climate change in global politics and the question of security of supply, leading the European leaders to believe that the EU arena is the best forum for addressing the problem. Hence, a political spill-over effect has occurred supporting integration of energy politics. This does not mean that all national discrepancies are elements of the past, but rather that the problems, which surge from here are less prone to exclusively be treated nationally because of the political spill-over, which has taken place.

2.3. Challenges and Perspectives

This sub-chapter will concern the performance of the EU in terms of their own energy politics followed by the main challenges for the EU as whole.

2.3.1. Performance

Last year the EU presented its first State of the Energy Union; a program created to keep track of the performance of the EU and the member states. It showed that within the first 9 months of adoption significant progress had already been made on the Energy Union.

Concerning GHG emissions, EU is on track to meet the 20 per cent target and even outperform this. The data from 2013 showed that the emissions were already 19 per cent below 1990 levels. Depending on implementation of new policies including the directives for energy efficiency, EU is estimated to have decreased GHG emissions with at least 24 per cent by 2020 (EEA: 2014).

In 2012 EU managed to overachieve the mid-term goal for the shares of RES in the final energy consumption set to 13 per cent but reaching 14.1 per cent. The same tendency had been seen in

the previous two years, which is why the EU is surely on track to meet the target of 20 per cent for 2020. Some of the success should be accredited to the EU ETS, which helped bring about investment in the sector for RES (Andoura: 2015).

The report on energy efficiency showed improvements in the final energy consumption. A general decline is noted between 2005 and 2012 of 7 per cent, but a growth was seen in 2013. As mentioned earlier it is still doubtful whether or not the EU will be able to meet the 20 per cent target. In the State of the Energy Union, the Commission remains optimistic, though recognizing the need for accelerated efforts and an increase in the level of ambition. Sector wise, the residential sector represents a 3 per cent decrease in 2013 compared to 2005 levels, while the final consumption of the Industry decreased with 16 per cent in the same period. Moreover, the directive on energy efficiency in buildings has brought about more stringent requirements and thus helped bring down the energy consumption per square meter.

2.3.3. Challenges

The Commission has elaborated a roadmap for the Energy Union, leaving several tasks on their desk for 2016 and the following years in terms of revisions of directives and regulations. The effect thereof will, however, depend on the member states. As we saw above the EU as a whole is, except from energy efficiency, on track to meet its 2020 target, however the performance among the member states differs significantly.

Meeting the energy efficiency target will depend on decoupling a potential economic growth from producing growth in the final energy consumption. A durable change would require not least better information to the consumers about energy efficiency options and improvement of investment conditions in order to accelerate the renovations of the building stock.

Despite the good results on the targets for RES and GHG emissions challenges are also found here. The renewable directive has brought about a national focus and thus not helped incentivize the desired cooperation between the member states (Andoura: 2015). Furthermore, the investments have been made almost exclusively in mature technologies, thereby failing to sustain the European eco innovation. The EU does however not have authority within research and development and investment activities in the field of energy and improvements will be up to the member states (ibid.).

The common energy policy has a wide range of policies to build on, but no common integrated market thus its development still is likely for some time to be political rather than functional. The success will by large depend on the performance of the member states in terms of political will and fruitful implementation - an aspect which will be examined in the following chapters.

2.4. Sub-conclusion

It is seen that the EU has a common energy policy, with legal base in the Treaty of Lisbon, and that this policy constitutes the base for the development of the targets and strategies which have been elaborated. We have seen that the number one priority on the Energy Agenda is the establishment of an Energy Union.

The Energy Union which is currently under elaboration is the result of several spill-over effects from ECSC. However, the original cooperation on part of the energy politics did not create a direct spill-over for further integration of the energy politics, due resistance from the member states. Rather an economic integration came about creating spill-over on environmental politics, which created spill-over providing for integration of the energy politics. Although big steps have been taken in terms of energy integration, challenges are still awaiting the EU in future considering not least the creation of an internal market for energy.

3. National level

Despite now having a common energy policy, there are still important areas, such as energy mix decisions, which remain a competency of the member states, who have different preferences according to the situation in their country. In light of this, I wish to conduct a comparative analysis of the energy situation in the two chosen case countries: Poland and Spain in relation to the common energy policy. While in the previous chapter the functionalist branch of liberalism was used to explain the integration, this chapter relies on another liberalist branch; complex interdependence to explain the simultaneous tendencies of disintegration, provoked by different national preferences resulting from interdependent relations. Firstly, I shall describe the initial energy situations in the two countries. Based on this, I will continue with an analysis of their energy mix and foreign energy relations with their most important partners, analyzing how these affect the Spanish and Polish opinion on the common energy policy. Lastly, an evaluation shall be

made on their actual performance on the Energy Union, including its prospect for the two countries respectively.

3.1. Internal Energy situation

This subchapter introduces the energy situation in the countries and will provide the base for the further analysis of their position in their respective foreign energy relations.

3.1.1. Presence and Import of Natural Resources

- Poland

Poland has an important presence of solid fuels especially hard coal and lignite, of which Poland is the main producer in EU. The overall energy trade balance in Poland is negative corresponding to the general trend among the member states, although the polish case lies a little under the EU average in terms of percentage of GDP.

Historically, coal has played an important role in the polish economy, but its importance is now declining not least due to the low productivity seen in this sector (Bukowski et al.: 2015). Many of the plants are rather old; about 25 per cent have been operating for over 30 years (Euracoal: 2015), and more than half of them will need to be replaced (European Commission: 2016). The mining sector, which currently employs about a 100.000 workers, is under immense pressure. In order to make profit the mines will need to cut down their workforce with 50 per cent, while still keeping up with the demand (Mørch: 2015). Nevertheless, thanks to the presence of coal Poland, despite only limited production of gas and oil, can enjoy low import rates on energy sources in general terms.

The Polish domestic production of oil covers about 4 per cent of the total demand and almost all the oil consumed in the country is imported. Over 90 per cent of the oil imports come from Russia through the Druzhba pipeline. The domestic production of gas is also limited and covers about one third of the total national gas consume. Poland is considered to have important shale gas deposits, however, the interest in exploiting these seems to have deteriorated (Neslen: 2015). Of the gas imported about 80 per cent come from Russia, covering about 60 per cent of the polish consumption. The main pipeline for Russian gas to Poland is the reversible Yamal-Europe gas pipeline which also continues to Germany and enters Poland in Kondratki from Belarus. Additional two entry points allow for Russian gas to enter Poland, Drozdowicze via Ukraine and Wysokoje

also via Belarus. From Germany gas is led into Poland via Lasów. Only in 2015 did the first LNG terminal in Poland open; in Świnoujście. It is the largest of its kind in both Northern and Central East Europe with a capacity of 5 billion cubic meters (Werenberg: 2015). The LNG terminal will start operating from second quarter of 2016 receiving gas from Qatar.

- Spain

Natural resources for the production of energy are very scarce in Spain. The country's only significant energy source is coal and only limited domestic production of oil and gas exist, and in none of the cases is the domestic production able to sustain the demand. Because of the limited presence of natural resources the energy trade deficit in Spain has traditionally exceeded the EU average significantly. As import dependency rests around 70 per cent in 2014, but recently a decrease towards EU level is seen (IEA:2015).

Historically Spain has had a significant coal production, as this is one of the only natural sources for the production of energy found in the country. A continuous rise in the costs has, though, led to closure of several mines. The majority of the remaining mines is over 30 years old, but due to not least the fierce competition with natural gas, the productivity and competitively of the industry remains high (Euracoal: 2015b).

Oil and gas represent the main energy import. The import dependency on these two fuels is reaching towards 100 per cent. The national production of gas is also limited and the picture is much the same as for oil. The suppliers are diverse, but noting a higher concentration – reaching 59.7 per cent in 2014 (IEA: 2015). The shares of the remaining suppliers rest around 10 per cent. It should be noted that no natural gas is imported from Russia. Over half of the Spanish gas consumption is LNG, meaning that Spain has some of EUs highest LNG levels. Spain also holds one of the biggest LNG capacities in the EU with seven terminals. Moreover, the country has interconnected undersea pipelines with Morocco and Algeria, equally two pipelines to Portugal; Badajoz and Tuy, and two to France; Larrau and Irún. The wall of the Pyrenees and a previous strong resistance from French power companies to the cross-border electricity and gas flows has made Spain – along with Portugal – a European energy island (IEA: 2014).

- Sub-conclusion

The Spanish import dependency is very high due to limited existence of natural resources. Meanwhile the Polish import dependency is lower, but relying almost exclusively on two suppliers; Russia and Germany, while Spain has a diversified supplier portfolio although a large share of gas imports come from Algeria. In terms of infrastructure, Spain enjoys high flexibility due to the large use of ship transportation and LNG, Poland is just beginning to use LNG.

3.1.2. Energy Demand

- Poland

Although the Polish energy intensity decreased by no less than 30 per cent between 1990 and 2012 (EEA: 2016), the current levels of energy intensity in Poland still lies significantly above the EU average, though decreasing faster than the EU average (EEA: 2015). The total energy consumption expressed in primary energy consumption reached 93.2 Mtoe in 2013. The Energy consumption per capita was 2549 kgoe/c in 2013, and for electricity 3222 kWh/c (European Commission: 2015a).

While the energy consumption of the industrial sector has been decreasing and approached the EU average, the consumption of households remains, although also decreasing, above EU average. The polish building sector is energy intense and 70per cent of the stock is characterized by high heat losses due to bad isolation (BPIE: 2016). As 70per cent of single family houses are coal fired, coal is the largest contributor to the household energy consumption with 29.7per cent share. The second and third largest contributors in 2013 were district heating and gas with 21.9 and 17.2per cent respectively (Głowny Urząd Statystyszny: 2015). RES hold a 13.9per cent share of cooling and heating (European Commission: 2016)

The oil demand comes by large from the transport sector exceeding 60per cent (IEA:2014). The biggest consumer of gas is the industry with 39per cent, 25 per cent of gas is consumed in the residential sector and only 7per cent is being used to produce electricity (IEA: 2014).

Coal is the most used source in the electricity production, making up for 85per cent of the total production. Gas constitutes 3per cent of the total electricity generation mix and oil only 1per cent. In 2013 wind energy made up for 4per cent of the electricity generation. This means that electricity in Poland as well is a contaminating energy source, because of the way it is produced.

- Spain

The Spanish energy intensity has been decreasing since 2007 and lies now below EU average, not least due to the financial crisis. The total consumption in 2013 was 113.6 Mtoe expressed in final energy consumption. The Energy consumption per capita was 2549 kgoe/c in 2013, and for electricity 4980 kWh/c (European Commission: 2015c)

The transport and industrial sector are the most energy intensive consuming a little over 30per cent each of the total product (IEA:2015). The same trend of decline in consumption since 2007 is seen in the industry, which represented 15.1per cent of the total energy consumption in 2013, relying for the most part on natural gas, 37.8per cent. Oil accounted for 28.7per cent and electricity constituted 23.9 per cent. There is noted a trend towards gas rather than oil for fueling the industry. This tendency of fuel switch is also seen in the residential sector, where demand goes towards electricity and gas rather than oil. Of the gas the industry consumes a 31per cent share, and the residential sector a 12per cent share. Most buildings built before 2006, the year when a new law was made on the isolation of buildings, are considered to be in the need of renovation to become energy efficient, the estimate is that the goes for 90per cent of the building stock (Hansen: 2015).

Furthermore 39per cent of gas is destined the transformation sector, turning it into heat and electricity. The Spanish electricity mix is dominated by high diversity: the nuclear power provides 24.3 per cent of the electricity generation, natural gas 8.4 per cent, and coal 15.6 per cent and only one per cent comes from oil. This means that Spain has one of the lowest shares of fossil fuels in its electricity in the EU, making their electricity relatively clean.

- Sub-conclusion

Per capita the picture is the same in terms of overall energy consumption in the two countries; Spain has though higher levels of electricity per capita. This is likely to be due the higher use of electricity in heating in Spain were Poland still prefers coal. The transport sectors in both countries are highly dependent on oil, and in both countries the Industry is the largest consumer of gas. The Spanish electricity mix is more diverse and generated from cleaner resources than the polish which relies on coal.

3.2. National Energy Policy

In this sub-chapter I will introduce the political factor, which is important for the determination of vulnerability and sensitivity. These invoke on the choice of energy mix, which shall be analyzed in the light of the theory of complex interdependence.

3.2.1. Government

- Poland

Since the transition to democracy the Polish political scene has been dominated by power shifts between the liberal party Civic Platform (PO) and the conservative party Law and Justice (PiS). Only once since the end of communism did the same party manage to win two elections in a row. The many power shifts have resulted in a *yoyo effect* in the national reform program, where reforms initiated by one party tend to be rolled back, by the other party once the government power shifts (Rae: 2013). It is therefore fair to expect that president Andrzej Duda, sworn in August 2015, and his PiS party who won the general elections in autumn 2015, will be roll back some of the reforms initiated by the previous PO government, as they furthermore have majority.

PiS is led by Jarosław Kaczyński, twin brother of former Polish President Lech Kaczyński, who died in the Smolensk plane crash in 2010. While playing a highly important role to the party politics and thereby in national politics he has no constitutional function, and his responsibilities thus becomes hard to place. The PiS government has created a new constellation of ministries. In Prime minster Beata Szydło's government energy policies and environment policies are represented by each their ministry, while under the PO government energy policy matters were handled in five different ministries, among others the ministry of economy (Europe Decides: 2015). PiS, who has already had several disputes with Brussels, is known to be against the EU emissions target, and to further support the coal miners and the polish mining industry, promoting a coal based energy sector.

- Spain

Since the return to democracy after the death of the dictator Francisco Franco in 1975, the Spanish political scene has been dominated by two large parties; the conservative People's Party (PP) and the Spanish socialist labour party (PSOE), none of which are associated with EU skepticism. Minority governments have been common, with PSOE supported by the regional parties pleading further regional autonomy, while PP has defended centralistic administration of

the country supported by the parties on the right. After two periods governed by PSOE, the 2011 elections favoured the conservatives, and granted the leader Mariano Rajoy and PP absolute majority.

PP's mandate ended last year and elections were successively celebrated in December 2015, however, producing a rather abnormal situation, unknown in the country's political history. The new Spanish parliament turned out so colourful that the creation of a new government has proven impossible. This is not least due to the rise of the two new parties, Podemos and Ciudadanos, who has surged as a protest to the politics of the old parties. It is though worth noting that this protest is not a part of the EU sceptical left turn, which is seen in various other member states. As it continues to be impossible for the party leaders to agree to base of the formation of a new government, Rajoy and his ministers continues as a caretaker government until new elections will be celebrated on June 26.

- Sub-conclusions

The polish government has a strong mandate, despite the tensions with the EU, as it enjoys majority rule. Their power to create and execute policies to mend changes will thus depend on party discipline. The Spanish government must be considered less strong as it is only a caretaker government and thus has limited power and most likely will be replaced by the summer election. While there might be political will, the parliament is very fragmented which will also limit the government's ability to change policies in the event of changes in the system.

3.2.1.1. Issues in National Energy Politics

- Poland

The restructuring process following the breakdown of the communist era means that RES have only recently become a subject of interest. As well environmental protection has not received significant interest until recently as the main focus for the years after the fall of communism was the transition to market economy. The current situation in the mining industry is as well reminiscent from the communist past. The mines have historically been state owned and subsidized which has hampered the development of a competitive businesses. Even if from an economical point of view there would be no doubt of their unprofitability the mines remain a central issue in polish energy politics, as the industry is very well organized and has a strong

political voice (Adamczewski: 2015). Many jobs were lost in the mining sector in the recent years, and in their election campaign PiS stated that they would protect the interest of this sector. Providing a situation anticipated by the theorist of complex interdependence. The growing pressure on the mining industry to deliver has created a demand for political action, an interest which PiS is protecting. Despite the importance of the mining industry the long term energy policies goes towards further diversification of the energy mix, however still with the preference for domestic production. This is in order to bring down the high level of dependency on Russia which is seen as a threat to the energy security, and prioritized over climate goals.

- Spain

Much of the Spanish energy policy is derived directly from the energy politics of the EU, of which Spain has been a member since 1986. Before accession to the Union both energy politics and environmental politics were poor. Spain is much concerned with increasing its energy efficiency as this can help bring down the energy dependency. The focus on RES and nuclear power shall also be seen in this light. This has provided for Spain to become a very progressive country in terms of sustainable energy. However, with the change of government in 2011 a change was noted in the policy on the RES, as concerns evoked around assuring the national economy in the severe financial crisis and bringing down the national budget deficit. This has meant suspension of the subsidies to renewable energy industry in order to diminish deficit created in the renewable energy tariff system. The economic crisis has hit Spain particularly hard, and bringing down the public deficit has been prioritized over the industry of renewable energies. Another important issue in the national energy politics is the bill for infrastructural projects. Spain is very poorly connected with the rest of Europe and generally in the need for infrastructural developments. In 2014 the bill for the Castor offshore gas storage unit was passed on to the consumers over electricity prices.

- Sub-conclusions

Both countries are looking to bring down the energy dependency of foreign sources via diversification of the energy mix. In the Spanish case this is not least an economic question, further enforced by the financial crisis, due to its affect on the budget. The polish wish to bring down energy dependency of foreign sources is less concerned with economy and more with

energy security. It is noted that there is still a gap in the market transition in terms of the industry of the unprofitable mines and that interest for RES is still very new, compared to Spain who started their transition process a decade earlier.

3.2.3. Choice of Energy Mix

- Poland

The polish energy mix is heavily relying on coal. The diversity of the polish energy mix is low, which is a little alarming in terms of dependency considering that the diversity of suppliers is limited to mainly Germany and Russia. The Polish energy mix has a slightly lower dependency on petroleum products and gas compared to the EU average, however also RES play a smaller role than in the EU average. The RES have seen a notable increase in the Polish energy mix since 1995, well above the EU average for the same period. Last year Poland was furthermore the EU country after Germany to install the most wind capacity with 1.3 GW, thus reaching a total national installation of 5.1 GW (EWEA: 2016). Poland has no solar power production and only limited hydro power, making wind the most significant renewable energy source in the country. Poland has no nuclear plants yet, but plans are to constructed plants which can produce energy to the Polish energy mix by the end of 2022.

Interdependence Relations with Russia

Russia is by far the largest foreign contributor to the Polish energy mix. During the Ukrainian gas dispute in 2006 drops in the gas delivery of 40 per cent was recorded in Poland (Kubosova: 2006). At the break out of the Ukraine crisis in 2014 delivery drops were seen as well (Warsaw Voice: 2014).The gas disputes have shown the Polish vulnerability to Russian energy politics. The Polish interest is, as mentioned, to diminish energy dependence on Russia. In this context it is the poor or costly alternatives which provides for the Polish vulnerability, as shall be examined.

As the domestic gas production only covers one third of the total demand, Poland has a number of measures ready facing a cut off of Russian gas supplies. These include the use of the gas stock and reduction of supply to the biggest consumers according to agreements. Should this prove to be insufficient, the Ministry will need to impose restrictions on the consumption. While restricting the use and bringing down the consumption in the event of disruption crisis, the measures do not bring any new gas into the system and can thus only constitute a solution for a limited time.

Further the Polish gas plants are not able to switch fuel in the case of switch off of gas supplies. Changing this feature of the plants is both costly and not doable over night.

Disruptions of gas will hit its main consumers such as the industry, who will have to limit their consumption which is likely to affect their productivity. Even if the industry brings consume to a minimum it is still unlikely that the domestic production of gas would be able to sustain the national demand, without effect on the household who depend on natural gas for heating. The households might then consider switching to temporary electrified heating. As we saw earlier the role of gas in the electricity production is limited, instead a raising demand for electricity would create a pressure on the coal industry. Subsidies could be found by increasing the imports from Germany, who also receives Russian gas but via the North stream which is not passing through neither Ukraine nor Poland. It is though doubtful that the Germans would be able to meet the entire Polish demand. A general problem is that the existing infrastructures do not provide for relation with that many different suppliers and new infrastructure is costly and takes time.

The opening of the Świnoujście LNG port will however invoke positively hereon. Even if the capacity of the port is limited compared to the total demand, it brings about a greater flexibility in the supplier choice due to its infrastructural character which is not dependent on fixed pipelines. Contracts are right now only made with Qatar, but using LNG could potentially serve for increased diversification of suppliers as well. For the LNG to be able to constitute a plausible substitute for the Russian pipeline transferred gas, serious investment would still have to be made increasing capacity. This means that also this is a very costly way to deal with the dependency on Russia.

The infrastructure of the gas as well makes Russia dependent on Poland in terms of channeling sale, as Poland is Russia's largest costumer among in the Central and Eastern European countries and the fourth largest in the EU in 2015 (Gazprom Export). The construction of the North stream and the North Stream 2 directly from Russia to Germany can thus be seen as a Russian strategy to diversify its costumers and be less vulnerable to Poland's energy politics facing the possibility of losing a market and not being able to direct the product to a new one.

The problem for Poland is that diversification is limited both in terms of suppliers and in terms of energy sources. Very few countries serve the Polish energy mix with very few different resources. Should one supplier thus not comply its delivery it is likely to have immediate effect, provoking the

emergency measures to be put into force, especially if this supplier is Russia, as the country's share of the Polish consumption are remains significant. Current installations of RES is a way of bringing down dependence and vulnerability, and might be able to substitute the role played by gas in the electricity mix, but also here investments in infrastructure will be needed. Not to mention the costs linked to the two other domestic energy sources considered by Poland as substitutes; nuclear power and shale gas exploitation. As a result subsidizing the Russian supply will be costly no matter what, why the country is vulnerable to Russian energy politics, which can explain their preference for coal over gas in both heating and electricity. Although the current partition of mandates provide for a strong government, beneficial for its bargaining position, Russia seem to be the less vulnerable of the two.

- Spain

Except from a lower dependency on solid fuels and levels a little higher on petroleum products, Spain is very much in line with the average EU energy mix. In terms of RES Spain is found with values a little over EU average, constituting 15.8 per cent in 2014. Having about 4.8 GW installed, Spain is a front runner country in the field of solar energy. The solar energy production alone contributed with 5.1 per cent to the total energy production in 2014. Wind power is the most important RES to the Spanish energy mix with a total capacity of 23 GW making Spain the EU country with the second largest wind power installation, although no new installations were made in 2015 (EWEA:2016). The country also has a hydro power capacity of 19.1 GW. Earlier disruptions of the oil supply especially during the two oil crises, has led Spain to prioritize diversification of the energy mix and invest in nuclear power, a predictable step for a country with such high energy import dependency. Historically nuclear power has therefore been a very important technology for the Spanish energy mix, having 7 running nuclear plants with a total capacity of 7 GW.

Interdependence Relations with Algeria

A high diversification of suppliers is kept in terms of gas, although the shares of Algeria exceeded 50 per cent in 2014. Algeria is linked with certain political risk, which might produce changes in the system that potentially could affect Spain. An example of the political risk related to the country was seen in January 2013 when a terrorist group besieged the In Amenas plant in the Sahara for 4 days killing 40 hostages, as a response to French involvement in Mali. The concern for the

domestic security is rising in effect of the political instability in its near abroad, not least related to ISIS (Solana: 2016). During the attack of In Amenas the plant was shut down, and although up and running almost immediately after the plant was not back at normal capacity until September of the same year. Such sudden disruptions are deemed to provoke sensitivity, as a production under the expected level will affect the supply-demand balance and consequently likely to affect prices.

The trade balance Spain-Algeria is in Algerian favor, which could indicate that Spain had the weaker position in the interdependence relation between. However, Spain is the third largest costumer to Algeria and its fourth largest supplier in the overall trade balance (La Razón: 2013). Due to the infrastructure on the non liquefied gas Algeria is dependent on Spain in terms of the revenues generated on the sales of this product to Spain. Redirecting pipes is costly and not something which can be done right away, making Algeria vulnerable in the longer term to changes in the system stemming from a change in the Spanish energy preferences. This could be an increased focus on RES on behalf of gas, such as predicted in the long term EU energy policy. Currently the RES in Spain are not producing to their maximum, thus by increasing their production and share of the electricity generation, dependency on gas could be brought down, and thus dependency on Algeria be decreased. This could further be done at a relatively low cost as the installations already exist in Spain. This is not to say that Spain could substitute the entire Algerian import this way but in the event of a crisis or disruption Spain has a domestic substitute, which brings down dependency notably. Furthermore the possibility of increasing the imports from the remaining suppliers, especially those who operate within system denoted with higher levels of flexibility is also an option for Spain facing such events. Consequently Spain will not be hampered by high levels of vulnerability giving Spain a good bargaining position, even if sensitivity is inevitable when concerning such an important supplier. Spain is thus not considered to be vulnerable to disruptions, which might explain why fuel switching is not prioritized in case of disruptions, however a few plants are able to run on diesel for a limited period.

Algeria, who has been affected by falling income due to falling prices on oil, wishes to increase its gas share on the European market. The country is relying on the Spanish connection as an entry port for new markets and especially the construction of the MIDCAT. The project is also interesting for Spain who can get an important role in the European energy security, in line with the

Commissions initiative to diversify suppliers. Even if Spain will have to run a deal with Algeria by the Commission, it is likely to be supported as the commission wishes to diversify away from Russian sources.

Although having a strong position, the government abilities, which is an important source of power for getting the most out of an interdependent relation and avoid being manipulated, might be questioned. Even if it to a large extend it is the same politicians who are operating as before the elections a significant difference is that they no longer have a majority supporting them, which might be used in their disfavor in negotiations. This is issue will however only persist until a government is created, and is thus a short term problem compared to the over all relation. In general terms it must though be assumed that Algeria will wish to preserve a cooperative relation, to not hamper their future exports plans.

- Sub-conclusion

Despite having significantly higher rates of import Spain is not the most vulnerable of Spain and Poland. This is not least due to a very diversified energy mix and supplier portfolio, which hardly provides vulnerability for the biggest supplier. Meanwhile in the polish case diversity of the energy mix is not as elaborated and the supplier portfolio is limited to very few actors, making the country vulnerable. The Spanish energy infrastructure is also more diverse than the Polish mirroring the time since transition.

3.2.4. National issues in European Energy Politics

- Poland

As seen the polish energy politics main concern is the dependence on Russia. The Polish solution to this issue provides for disagreements with the line in the EU energy politics, as in the polish energy politics the energy security is the most important issue, while in the EU energy security is equally prioritized with reduction of GHG emissions. That means the EU opts for RES, which in Poland is challenged by the strong mining industry. Before the gas disputes disagreements with the EU has been marked by different views on Russia (Roth: 2011). Poland's view on Russia is affected by its geopolitical situation, vulnerability and historic experience with the country (ibid.). Poland has therefore rather early called for energy solidarity among the member states, which in Polish politics was referred to as an "Energy Nato" that should create mutual assistance guarantee

(ibid.). Poland thus supports a common strategy on Russia and the Energy Union proposals to let the Commission survey agreements of the member states, as this provides control with the German-Russian relation and projects bypassing Poland.

- Spain

In terms of energy policy Spain is of the belief that the main elements of this policy should be set at EU level, as well concerning climate change, and only in second stage national strategies and policies will be set, just as the framework prescribes (IEA: 2015). In terms of the European long term strategies Spain is also one of the more ambitious countries forming part of the green growth group in council. How ambitions seems to have fallen as an effect of the financial crisis, and the country care first and foremost for economic recovery which has led to down prioritizing of the decarbonization of the economy bringing concerns that Spain might not meet its 2020 targets. Becoming the entry port for Algerian gas via the MIDCAT, this is very interesting for the EU as a whole, as it can help bring down the overall dependency on Russia. For Spain it means a central political role and economic potential.

- Sub- conclusions

It is seen here how the EU policies interplay with the national policies. In the Spanish case the national policies are created after and in line with the EU policies but the national concern on economy is invoking on carrying the EU policies out. Poland is less in line with the EU policies as there is a clear prioritizing of energy politics objectives due to experiences with Russia.

3.3. Challenges and Opportunities in the Energy Union

In this last sub-chapter I wish to examine the Spanish and Polish performance on the Energy targets and the possibilities that the Energy Union provides not least considering the investment possibilities provided by the Cohesion Policy. It should be noted that the Cohesion Policy investment are not meant to stand alone but to be backed by national public and private co-financing in order to reach optimal leverage.

3.3.1. Energy Efficiency

- Poland

Improving energy efficiency is a main priority in the Polish Energy Policy until 2030. The aim is to achieve economic development without increasing the primary energy demand and to get the energy intensity of the economy down at to EU level (EEA: 2016). The energy efficiency target set for Poland to be reached by 2020 is 96.4 Mtoe expressed in primary energy consumption and above current consumptions levels. This will permit for Poland to slightly increase its energy consume having in mind a forecasted economic growth a little over 3 per cent of GDP for both 2016 and 2017 (European Commission: 2015a). Meanwhile the household energy intensity is decreasing although slower than the EU average.

In terms of energy efficiency Poland can look forward to investments from the Cohesion Policy in energy efficiency improvements in public and residential buildings reaching 3290 Euros. The investments are expected to improve the energy classification of about 102 000 polish households and decrease the yearly primary energy consumption of public buildings with about 1.181.502.000 kWh (ibid.).

- Spain

Expressed in primary energy consumption the energy efficiency target set for Spain to be reached by 2020 is 119.9 Mtoe expressed in primary energy consumption. This means that the target is above the current consume, which as notes is at 113.6 Mtoe (European Commission: 2015b). As discussed earlier some of the tendencies observed in the Spanish energy situation are likely to have been caused by the economic crisis. That means that Spain most likely has not improved its energy efficiency, but only decreased their general consumption as an effect of the slow-down of the economy. As the Spanish economy has begun to grow again it will be important to take measures to decouple the economic growth from the energy consume impeding it from rising parallelly with the economy (ibid.). The economic situation in the country might as well be the reason for the decreased consumption of households, however significant measures have been taken in order to complete with energy efficiency especially in buildings.

The Cohesion Policy offers Spain investment opportunities in energy efficiency improvements in the public and residential sector reaching 1096 million Euros, which are expected to bring about improvements of the energy consumption classifications of about 85000 households and decrease the primary energy consumption of public buildings with about 1.629.176.000 kWh yearly (ibid).

3.3.2. Share of Renewable Energy Sources

- Poland

The State of the Energy Union declares for Poland to be on track with the national target for the share of RES in the final energy consumption, reaching 11.3 per cent in 2013 against a national target of 15 per cent (European Commission: 2015a). However this estimate is questioned elsewhere. In the a working paper from the Commission on the European semester issued three months after the state of the Energy Union, the Polish performance is described with uncertainties as to whether they will meet the target. It is appointed that Improvements should be made in terms of the share of RES in the electricity generation, and will be necessary towards 2020 in order to meet the targets (European Commission: 2016).

The Cohesion policy will invest around 939 million Euros in the Polish renewable energy, expected to contribute with an additional capacity of 960 MW. As mentioned the share of renewable energy source can be a way to bring down dependency on Russia. Should the increase of renewable energy source meanwhile be on behalf of the coal industry, this is likely to meet great political resistance (European Commission: 2015a)

- Spain

The country has been on track with this goal for some time. But after not installing any new wind power in 2015 and concluding an auction of doubtful quality the Commission has remarked that Spain will have to make an effort to meet its national 2020 target of 20 per cent (EWEA:2016b). This critique is supported by the Spanish Wind Energy Association (AEE), which estimates that the government will need to provide auctions of an additional 5.9 GW by the summer of this year in order to meet the 2020 target (ibid.). The much critiqued auction, which accounted for only 500MW wind power, was part of the new support scheme for RES, taking over for the old deficit resulting feed-in-tariff scheme.

The Cohesion Policy will contribute with investments to RES of 650 million Euros in Spain, estimated to bring around 1051 MW additional production capacity (European Commission: 2015b) – about one fifth of the AEE recommendation.

3.3.3. Limiting Green House Gas Emissions

- Poland

In terms of non-ETS, ESD, GHG emissions Poland has a positive target allowing them to increase emissions in these sectors by 14 per cent. So far Poland is over achieving this target, and is expected to only increase emissions by 6 per cent by 2020. Should Poland succeed to complete the two nuclear power plants as planned they will as well be contributing to decreasing of GHG emissions towards the 2030 target. This is not to say the results are positive as Poland still holds one of the highest carbon intensities in the EU, which affects the air quality significantly (European Commission: 2016). However, as especially the households and thus buildings becomes more energy efficient and thus demands less electricity and heating, the demand for coal will fall giving its participation in the electricity generation, which consequently will help bring down GHG emissions.

Poland is set to receive significant investments from the Cohesion policy on Research and Innovation reaching 453 million Euros. These shall be invested according to the national strategy, which focuses on the development of a sustainable energy sector including smart and energy efficient construction and highly-efficient, low-emission and integrated circuits of manufacturing, storage, transmission and distribution of energy.

- Spain

GHG emissions target under the ESD obligates Spain to decrease its emissions with 10 per cent by 2020. Projections from the state of Energy Union estimate that Spain will meet this target with 2 percentage point margin. This not least thanks to a attention paid to renewable energies, but to some extend also to the general fall in consumption, once again bringing about the role of the economic crisis on the overall Spanish energy consume.

Investments from the Cohesion Policy to research and innovation in low carbon technologies in Spain are set to at least 8 million Euros. This sum might increase in line with the development of smart specialization strategies.

3.3.4. Interconnectivity and Internal Energy Market

- Poland

According to the European Commission the Polish level of interconnectivity reached only 2 per cent in 2014. Although this evaluation is from before the inauguration of the LitPol Link, it is still unlikely that Poland will meet the 2020 target of minimum 10 per cent with business as usual, as

the LitPol Link in its full capacity adds to a total Polish interconnectivity level of only 4 per cent. Other infrastructural projects are denoted as important to Poland including connections to Slovakia and the GIPL, also a connection between Poland and Lithuania set to be finished by 2019. Lastly the Stork 2, connecting Poland with Czech Republic will allow Poland increased access to Western European gas market. These interconnections are along with the Świnoujście LNG port crucial to the Polish energy security, and their prospects of lowering dependence on Russia and vulnerability to their energy politics.

While the gas prices are below EU average, further interconnectedness provides for greater flexibility and less vulnerability, assuming that it will bring about a more diversified supplier portfolio as well. Electricity prices in Poland are among some of the higher in the EU when concerning wholesale, while consumer prices are below. An additional 543 000 users are expected to be connected to smart grids thanks to Cohesion Policy investments in Poland of 1300 million Euros in the smart energy storage, and transmission systems, and another 100 million Euros in electricity distribution grids .

- Spain

Spain constitutes an energy Island, reaching only a 2.8 per cent electricity interconnection with France in 2015 and is not likely to meet the target of 10 per cent by 2020. The European Energy Security Strategy has listed the submarine cable in the Biscayan gulf between France and Spain as a key infrastructural project, estimated to make the interconnectivity level of Spain reach 5 per cent. Priority is as well given to the construction of two electricity connections through the Pyrenees. Another priority project is the previous mentioned MIDCAT connection, a 190km pipeline running along the Mediterranean coast further connecting Spain with the rest of Europe and permitting not least Algerian gas to enter Europe to a larger extend. MIDCAT has a capacity of 7.4 billion cubic meter pr year, exceeding thus the capacity of Larrau and Biriatou together.

A more integrated market would further help raise competition and bring down prices on electricity which in Spain are among the most elevated in Europe. An inflation rate above EU average was noted on electricity prices between 2008 and 2012 in Spain. About 217 million Euros will be invested by the Cohesion Policy in Spain in the smart electricity storage, transmission

systems, and another 18 million in smart distribution grids. This way an estimated 621000 additional users will be connected to smart grids.

- Sub-conclusion:

Both Spain and Poland has a lot to gain from the Energy Union, not least concerning investments, Poland set to receive means well higher than Spain. However they both meet some short term challenges in terms of complying with the targets, which might create incentives for action on these dimensions in the near future. The possibility of better interconnections with the rest of the EU facilitated by infrastructural investments is as well of strategic importance to both in terms of future energy security. The interconnectivity also brings about a more open market and thus eventually further competition on energy prices to the benefit of the business sector and consequently the private consumers.

3.4. Sub-conclusion

The energy situations in Poland and Spain differ significantly, and are the product of their history and to an even larger extend a product of the available natural resources. A natural scarcity of resources has taught Spain to develop alternative energy sources such as renewable energy and nuclear energy. Poland on the other hand is benefitted with a great presence of coal providing them with less import dependency than the EU average. However this import dependency is on very few suppliers, which consequently makes Poland vulnerable to changes in the system. Whereas Spain although more dependent is less sensitive due to high levels of diversification in both energy mix and the supplier protocol. In Poland the driver energy political preferences is the mining industry and the wish to decrease dependency on Russia, while in Spain the economy is decisive.

4. Market level:

In this chapter I will consider the factors that invoke on the macro environment in Poland and Spain, and if they favour the market penetration in terms of green energy solution using the PESTEL analysis. An example of a market of green energy solution is the market for RES, which shall be considered continuously with Porter's five forces.

4.1. PESTEL

4.1.1. Political factors

- Poland

The change of government last year is producing several uncertainties in terms of the political environment. Currently there is a dispute between the majority government and the Constitutional Court. The PiS government appointed new judges for the court, which by the Court has been claimed to be an illegitimate act referring to the Polish constitution. The PiS response to this claim is that they are elected directly by the people – further more with majority – and that the court as well should reflect the opinion of the people, thus the opinion of PiS. This situation has paralyzed the functions of the Court and the constitutional balance of the government. Since PiS resumed power several anti-government demonstrations has been carried out in the larger Polish cities, but the party still enjoys 33 per cent support, bigger than any other party in the opposition (Szary and Iglewski: 2016). So far the demonstrations have been peaceful although numerous, but should not be subject to concern for the state of law. As a result the political environment of Poland seem less stable and less predictable

The recent political events has raised concerns in Brussels and triggered the Commission to initiate the rule of law procedure, which can lead to a suspension of the Polish voting rights in the EU. This adds to the already tense relations between the EU and Poland since PiS resumed to power after the elections last year. Poland who continuously enjoys high support from the EU funds is however not likely to drive it as far as to leave the union, the nation is furthermore considered to be overall EU positive (Adamczewski: 2015) despite the government opposing of the common energy policy and especially the green house gas emissions target, as shown as well in the previous chapter.

PiS Party leader Jaroslaw Kaszynski has expressed that Poland wishes to issue a new investigation of the Smolensk plane crash in 2006, where 96 people died (Smith:2016). Onboard were most of the polish political elite, including the president Lech Kaszynski; twin brother of the current party leader. Jaroslaw Kaszynski and PiS claims that Russia is hiding evidence and has been hampering the investigation (ibid.). This has added further tension to the relation between Moscow and Warsaw. Depending on the accusation Poland comes up with after the new investigation, there is a chance that the relation will further deteriorate. In the light of previous Russia-Gazprom

behavior, the possibility of a response in the shape of energy politics cannot be excluded, bringing the polish energy security in danger. In this light the expansion of the North Stream can be seen as a political tool permitting Russia to increase gas input to Europe around Poland. However, national safety in general is not regarded to be in danger over this issue.

In EU politics Poland has in many cases let their voice be heard alongside Slovakia, Czech Republic and Hungary via the so called Visegrad group; V4. It should be noted that Poland is the largest V4 member, and also larger than the three other members together. While the V4 is a forum for political coordination, it can also be seen as a tool for Poland to promote its own politics over smaller nations which might not have the same political resources as Poland in all fields, and thus support Poland in return for Polish support in other fields. Even if the other three countries also challenge some of the EU policies it can be questioned for how long they will stand by Poland should the country be blacked further.

The membership of EU is making it harder for the government to save its bleeding child; the mining industry which enjoys important political power but is under a huge economic pressure to restructure. Due to harm they put on the environment, EU legislation impedes the government support to the coal mines which are going to operate continuously after 2018. The PiS government, who wishes to promote a carbon based economy, thus has to find other ways to sustain the challenged mining industry. This political mission results in resistance towards the EU climate goals, especially the EU ETS which will increase the economic pressure on the coal mines due to their GHG emissions. An increased use of renewable energies, which are competing with the coal industry, also meets political resistance.

This resistance is reflected in a resent draft from the government proposing that wind turbines should be installed with a distance to the surrounding buildings of ten times the high of the wind turbine. According to EWEA this means that no wind farm can be installed within a radius of 1.5 kilometers to any urban, residential or protected natural area (EWEA:2016a), thus hampering the possibilities of this source of power. However, President Duda has said to be in favor of smaller renewable installations as an alternative to the larger wind farms. The micro installations are in line herewith benefited in the system of renewable energy support (Derski: 2015).

- Spain

As mentioned the current composition of the Spanish parliament is very colorful not least thanks to the entrance of the two new parties Ciudadanos and Podemos. The two parties are not a part of the EU skeptical right turn tendency which is seen in other member states however they are not keen on everything coming from Brussels. Especially the centre-right party Ciudadanos criticizes the economic demands put on Spain from Brussels as a result of the economic crisis. The issue of the economic recovery and further autonomy to the regions are the main issues which keeps the parties from forming a new government. This consequently triggers new elections on 26th of June. Opinion polls however show that the coming election not is likely to bring about a political scene much different from the current situation, where neither the Ciudadanos-PP coalition nor the PSOE-Podemos coalition enjoys a majority (El País: 2016). That means that the parties will have to find a solution to the regional question, in particular that of Cataluña, which already splits the two parties on the left. The third biggest party the centre-left Podemos favors a referendum on Catalan independence. This is directly rejected by the parties on the right; Ciudadanos and Rajoy's PP. The socialist party PSOE has traditionally supported the strengthening of the regional governments but is opposing the independence of Cataluña impeding a government coalition with Podemos. The only way to avoid the Catalan question seems to be for PSOE and PP to join forces possibly supported by Ciudadanos, a scenario which has brought Podemos to demand and answer from PSOE; whether they will negotiate with PP or them after June's elections (Manetto and Gorospe: 2016). This political scene creates a lot of uncertainties about the future politics of the country, as they are likely to be the product of political bargaining between several parties in new constellations. Lasse Bagge Hansen advisor at the Danish Chamber of Commerce in Madrid, notes that the political leaders might say one thing now, but another thing after 26th of June, as they want to win (Appendix: 1). This makes it very hard to foresee the political scene after the elections.

The current situation has brought about an institutional conflict, where the rest of the parties are appointing the governing of the PP caretaker government. Rajoy and his caretaker ministers are constantly balancing as the current situation does not provide them with any actual power, as they no longer have a majority supporting them. The caretaker government has to serve the entire parliament and not just the interest of their own party, which the rest parties in the parliament claim PP is doing. This has led to a conflict where the government and the parliament accuse each

other for exceeding their respective power, as the parliament brought the caretaker government before the court saying that they are not being heard by PP, thus PP is not respecting the elected parliament (Garea: 2016). How the conflict is solved by the court it is likely to serve as a base guideline should June's election produce a situation equal to the current political scene (Garea: 2016b).

Spain entered the European Community in 1986, and has as a result here of had to adopt its legislation to the already existing community legislation. The membership has supported the democratic development in the country, and also directed significant amount of funding to Spain. Spain has in general been known as a country with a high performance when it comes to implementing directives. However, the membership of the EU has also meant that some issues of the issues that was not considered by Spanish legislation before hand has not been treated in the national debate but adopted directly because they came from the EU (Morata: 1998). This is also linked to the fact that Spaniards in general has shown to trust the EU institutions more than their own national institutions (ibid.). In terms of the European energy and climate policies Spain is part of the 13 member states big Green Growth Group in the Council, which is the direct opposition to the V4 on these questions.

Although not as progressive as the previous PSOE government in terms of renewable energy sources, Spain's Ministry of Industry says it will support the installation of around 8.5GW of renewable energy capacity between 2015 and 2020, comprising mainly wind power (EY: 2015). EWEA concludes on the first government auction of Spain that it can hardly be determined as a success, as to many buyers where bidding on too little an offer the result being rather a lottery than an auction (EWEA: 2016b). The work of the ministry in charge of energy policy has as well been affected Panama Papers, resulting in the caretaker minister departure and the vice president having to take over. Lasse Bagge Hansen, however do not see this as the main problem for the energy politics in Spain. It is rather the fact that caretaker government has a majority against them, why several decisions and reforms are currently blocked, including new Energy Efficiency directive. Considering the number of initiatives and revisions of directives the Commission has promised to bring about in this year alone, the Spanish situation is problematic.

Together with its regional partners Portugal and France, Spain is promoting the construction of the MIDCAT and in general increased interconnections between the countries. As seen in the previous chapter the relation with Algeria is also a relation of mutual benefit. Thereby none of these central regional partners pose any treats to neither the energy nor the national security.

- Sub-conclusion

In both Spain and Poland the current situations provides for concern about the political stability of the country. The current crisis in the Spanish politics is the product of a very unusual political situation with a care taker government in charge, uncommon to all the actors and providing for blurred lines. The situation is however likely to be resolved with the new elections in June. In terms of the political crisis in Poland, it has more persistent, as the government is newly elected and further more is supported by a majority in the parliament.

In none of the countries does the situation provide the beneficial prospects for the green energy solutions: In the Spanish case because of the focus of on energy, in the Polish case because of the favoring of the mining sector. Despite the common energy policy framework the scenarios in the near future seem unpredictable: in Spain due to the blocking of the government, and in Poland due to the blocking of the court and the preferences of the governing party. Further Poland might delay or thin out directives as a way of posing their EU critique; this is though unlikely to happen in Spain.

In terms of foreign relations the situation is quite different in the two countries. Poland's relation with Russia is subject for concern, while Spain enjoys a more peaceful geopolitical situation.

4.1.2. Economic factors

- Poland

The communist past has meant that Poland has had a lot of caching up to do with the rest of the EU, including a thorough market transition. In this process the country has enjoyed support from several programs of the EU, both before and after accession in 2004, as several macroeconomic issues remain to be solved. Despite these difficulties the country avoided the worst effects of the economic crisis (Rae: 2013). Throughout the crisis the Polish economy did not seize to grow in comparison the GDP of the EU shrank with 4.5 per cent. From 1987 to 2007 the Polish economy has grown with 177 per cent. This economic growth was not only significant for Poland but among

all of the CEE countries (Faris: 2013). The Polish economy is estimated to continue the growth in both 2016 and 2017. The expected rate for 2016 has recently been adjusted from 3.5 per cent to 3.7 per cent of GDP, while they amount to 3.6 per cent for 2017. This means the Poland will enjoy growth rates well above the EU average, placing the country fourth highest in the EU after Malta, Romania, and Ireland (Mørch: 2016).

One of the main reasons for the strong Polish performance during the crisis is the low level of interconnectedness with other European economies. The growth was mainly driven by internal demand and throughout the crisis the Polish government further increased its public investments (Rae: 2013). Actions funded partly by the EU structural and cohesion funds not least in relation with the euro2012 provided much needed renovations for infrastructure.

The private consumption is foreseen to remain solid to the benefit of the internal demand which is foreseen to continuously be the main driver for growth in Poland. The positive tendency in the private consumption is due to not least wage growth and increased employment rates. The government has further launched a universal child benefit; coming into force as of the second quarter of 2016 it will increase the disposable income of the polish families hoping to provoke an in increase in their spending.

Another legacy from the transition is the state of the polish banking sector which although considered to be healthy still is isolated from that of the rest of the EU (Rae: 2013). The banking sector is dominant in the financial market, like the trend in most CEE countries, and accounted for 70 per cent of the total assets in 2013 (IMF-World Bank: 2014) No significant collapses has taken place with the need for expensive government interventions affecting the public balance. Recently a new taxation law was adopted, designating the bill to the banking sector in the event of a collapse (Polennu.dk: 2016).

It is also worth noticing that Poland still has not tied the Złoty to the Euro, although obliged to do so eventually and as well join the Eurozone. The untied currency provides Poland with a competitive advantage against the euro. The inflation rate is as well low and under the 2.5per cent target set by the Polish National Bank.

The government dept remain below the crucial 60per cent principle in 2015, the continuous growth has as well helped to balance this. The deficit remains currently under 3per cent of GDP, the limit expressed in the Stability and Growth package. But new laws on personal taxes and lower retirement age might provoke an increase exceeding the 3per cent limit. Should this sustain, the country risk meeting fines as part of the sanctions provided by the fiscal pact which Poland, although neither member of the Eurozone nor the ERM2, has ratified.

The government has committed to policies facilitating increase in the investment rate in order to further boost the polish economy. In this context also EU funds will continue to play an important role. Poland is being destined significant amounts from not least the Cohesion Policy as seen in the previous chapter, which together with the European Regional Development Fund destines a total of 28.5 billion Euros to the country. Between 2014 and 2020 Poland is set to receive 86 billion Euros from the ESIF, equivalent to 2.7per cent of GDP. Additionally, Poland has after the first round of the projects under the Connecting Europe Facility agreements in the energy field for 251 million Euros.

Poland has no independent fiscal council nor plans to create one, as the only one of the 28 member states. Companies have to pay 7 different kinds of taxes in Poland, introducing electronic payment systems are supposed to make it easier. Taxes in Poland amount 40.3per cent of profit, and the ease of paying taxes provides Poland with rank 58 of 189 economies examined by doing business. This is a better result than both Germany and the other V4 members. It should be noted that no direct Environmental tax exist for companies.

- Spain

Although with a little delay compared to the rest of Europe, the economic crisis hit Spain particularly hard. Spain found itself in an economic boom supported not least by foreign investments in the construction sector, which accounted for an important share of the Spanish economy when the crisis hit and the bubble burst. The collapse affected the entire economy and revealed macroeconomic imbalances, not least on the labor market which had not received much attention during the bonanza years. After three years of recession, Spain finally saw economic growth in 2014 and prospects for 2016 indicate growth rates of 2.6per cent of GDP and 2.5per cent for 2017 according to the estimates from the Commission.

The recovering of the Spanish economy stems not least from a growing private consumption and low oil prices. On this background the growth rate reached 3.2 per cent of GDP in 2015 and is in general terms expected to remain steady although foreseen a little decline in the future. This has to do with a slow-down over the expected in some of the economies of the emerging countries, which is likely to affect the Spanish growth negatively to some extent. Private consumption and investments are deemed to be most important drivers for the Spanish growth(European Commission: 2016b).

The growth helps bring down the government deficit which is expected to rest at 3.6 per cent for 2016, although requested to be brought down to 2.8 cent line and thus comply with the limits of the Stability and Growth Pact. In Spain the fear is that further economic adjustment, will have negative effect on the growth, which is seen as more important than decimals of the deficit (Valero: 2016). The public debt is expected to continue its increase also in 2016, estimated to reach 101.2per cent, and then decrease, however still far from the 60per cent line denoted in the previous mentioned pact. Should Spain not meet the targets they will be fined by the EU, Rajoy has asked the Commission to have in mind the political situation in the country and spare the country in exchange for additional effort to cut the budget (euroEFE: 2016)

The burst of the real estate bubble related to the financial crisis had severe consequences for the banks' assets. The financial assistance program was introduced in order to stabilize the situation and was successfully ended in 2014. The banks still have high rates of non-performing loans, but the quality of the assets was in generally increased. Credit conditions have improved and borrowing costs are now at historically low levels and lending is taken on again, as confidence in both the economy and the financial sector is restored (European Commission: 2016b).

While the private dept remains high the corporate sector operates with a surplus of savings over investments to ensure the reducing of their dept. That means that the corporate sector has become a net-saver rater than a net-investor, decreasing the indebtedness of non-financial corporations (ibid.). The monetary policy of the euro area has as well helped to break the link between the financial sector and the Spanish sovereign debt. The Spanish rate of non financial corporation investments is among the highest in the EU. The low energy prices in combination with monetary policy of the euro area have further provoked negative inflation (ibid.).

The sudden burst of the construction sector was by large the catalyst of the crisis in Spain. The construction investments have now been stabilized and are starting to rise again, especially in non-residential projects. Between 2014 and 2020, Spain is set to receive 37.4 billion Euros from the European Structural and Investment Funds (ESIF), equivalent 0.5 per cent of GDP. The first round of projects under the Connecting Europe Facility provides Spain with agreements in the energy field for 2 million Euros.

Companies in Spain are paying 9 different taxes, including environmental taxes. The total amount of taxes amounts to 50 per cent of profit, but reductions are planned for 2016. The two largest taxes can be paid online as well as the VAT. That provides Spain with rank 60 of 189 economies examined by Doing Business. This is a better result than Germany, France, Italy and Portugal.

- Sub-conclusion

The countries were affected very differently by the economic crisis, while the Polish economy continued to grow Spain was hit particularly hard. Although the Spanish economy has started to expand again, Poland still has higher growth projections for both 2016 and 2017 ranking fourth highest among the EU member states. Furthermore the Polish projections seem more stabile as the economy is less likely than the Spanish to be affected by events in foreign economies.

In terms of monetary policy, Poland still has full control over the tools that this policy provides and the economy enjoys beneficial exchange rates to the euro. Spain cannot with its own hands use exchange rates as a tool for growth. The country is further under pressure to comply with the limits of the stability and growth pact, in order to not face fines. Poland on the other hand is performing within those frames, but concerns are it will difficult to sustain also in the coming year. Such a situation is likely to affect government investments negatively.

Both countries have gone through extensive economic transitions, their initiation differing with about a decade. On this basis they have both enjoyed significant funding from the EU. Poland who is the last of those two to enter of those two can still look forward to enjoy great amounts, well exceeding the Spanish. Spain however enjoys some of the highest participation rates in the EU concerning investment by non-financial corporations, while the polish financial sector is largely dominated by the banks. In both countries provide stable banking sector situations.

4.1.3. Social factors

- Poland

The polish labor market is marked by limited flexibility and wide use of temporary contracts, holding the highest concentration of temporary contracts in the EU. The many temporary contracts make for limited bargaining power of workers and labor costs remains although increasing remains low. Political measures of which the first stepped into force in February have been taken in order to address this issue and limit the amount temporary contracts (European Commission: 2016).

Labor market participation is under EU average, this not least due to the lower participation of women, who often leave the labor market earlier and due to lack of childcare opportunities also often disconnects from the labor market when having children (ibid.). According to the data of the World Bank women's participation rate in the labor force was 61 per cent in 2014.

While the overall youth unemployment is dropping reaching 20.5per cent in the third quarter of 2015, unemployment rates for the young generation with medium skills are still high. This mirrors the general mismatch in the polish economy between the demand of the labor market and the skills of the work force. The migration from especially Ukraine is in this context important for the functioning of the polish labor market (European Commission: 2016).

In relation with the economic growth the amount of people at risk of poverty has decreased, and Poland has already met its Europe2020 target on this dimension. However the purchasing power of the Polish population, which account for 38.5 million, is still well under the EU average. According to Eurostat index GDP per capita in PPS, Poland lie 32 per cent under EU average. In terms of energy Polish households pay less than the EU average, and consume more.

The general support for the Energy Union among Poles lies just under the European average of 72 per cent. The environmental awareness of the Poles is also very much align with the EU average, as 86 per cent believe that environmental protection is an important issue (Deloitte: 2016). The difference is though that the Poles are not willing to undertake the increased expenditure, which mirrors their lower income and purchase power. According to data PWEA, the Poles prefer renewable energy over energy reductions and nuclear power as a mean to address security of supply, including voters who support PiS (PWEA:2016).

- Spain

Despite a continuously strong job creation in 2015 the unemployment rate continues to be one of the highest in the EU reaching 21 per cent of the workforce in the last quarter of 2015. The picture is even worse for those between 15 and 24 where 50 per cent of the active people are unemployed. The high unemployment rate is suggested to be caused by mismatch between the skills of the workers and the demand of the labor market. The market is as well dominated by temporal contracts, although their share is decreasing. The high unemployment rate is not projected to fall notably, raising concerns that it will become part of Spain's structural unemployment (White: 2016).

Growth in the Spanish economy has previously been driven by capital accumulation and beneficial labor markets dynamics, such as the female workforce entering the market. However lack of adequate child care continuous to be a challenge for the female participation in the labor market, in this context the care provided by other family members is very important. According to the World Bank 69per cent of women between 15 and 64 years participate in the labor force. (European Commission: 2016b)

The consumption of energy by the households is below EU average and decreasing faster than the EU average this might be due to a combination of improvements of energy efficiency and the economic situation in the country, which includes high electricity prices. As a direct effect of the crisis the share of the population at the risk of poverty increased sharply with more than 1.3 million between 2010 and 2014 of total population of 46.7 million, likewise the Purchase power has fallen. According to Eurostat index GDP per capita in PPS, Spain is 9 per cent under the EU average and decreasing.

The environmental taxes and the high share of renewable energies in the Spanish energy mix, provides for the conclusion that Environmental issues are important in this country. Lasse Bagge Hansen notes an increasing awareness in Spain for the necessity of becoming greener, but concludes that the Spanish are more concern about the economy (appendix: 1). This is sustain by data from the Commission evaluating Spain to be more supportive than the EU average of the Energy union.

- Sub-conclusion

In both cases there is an increasing job creation and participation, however experiencing trouble with the participation of the female work force and the younger workforce. In the Spanish case the unemployment rates are some of the highest in the EU and alarming as they might turn into a structural unemployment, while Poland experiences levels well lower and less alarming although high. Both countries are struggling with the mismatch between the skills of the workforce and the demand.

Much in line with how the two countries were differently affected by the financial crisis, they also perform differently in terms of poverty. Poland has already met their 2020 target, while Spain sees an increase of poverty. The overall purchase power of the Polish is low, while the Spanish purchase power is just under the EU average.

Both populations are in favor of the Energy Union and concerned with environmental issues. However their actions seem to be determined economically first and foremost. In terms of energy prices the Spanish households are paying more than the EU average and consuming less, while the Polish pay less but consume more than the EU average.

4.1.4. Technological factors

- Poland

The polish economy is as seen previously energy intensive, and although the energy consume is falling this area provides a base for improvements. As explained in the previous chapter the intensity of the industry has been falling and reaches EU levels, but the intensity of the households still remains high. In terms of the ease of connecting to electricity Poland is ranked 49 among 189 economies by Doing Business, Germany has third place and Slovakia and Czech Republic just surpasses Poland ranking 42 and 48 respectively, however with scores very close to the Polish. The electricity market in Poland is dominated by PGE, who is the clear market leader with 37.9 per cent. Tauron, the second largest company in terms of share, holds 10.8 per cent, and no other company has shares exceeding 9 per cent of the market. Doing Business as well provides an example of the cost; for a company operating in Warsaw and connected to RWE Stoen, the cost of electricity is 15 US cent per kWh (Doing Business: 2016).

The subsidies which the mining industry has enjoyed has provided for added cost on electricity generation. New EU directives make it possible to only subsidies the mines that are not going to

operate after 2018, which only create competitive disadvantage for the remaining mines in the a sector where the restructuring process already is slow.

The spending in Research and development are increasing but is still one of the lowest in the EU, reaching only 0.9 per cent of GDP in 2014 compared to an EU average of 2 per cent. R+D rely mainly on public and EU funding. Thus as in most of the CEE countries the variation over investments remains limited. Poland's performance on the Innovation Union scoreboard of 2015 is below EU average on all dimensions (European Commission: 2016).

The younger generations enjoys high education levels for both men and women. A 42.1 percent of the Polish people between 30 and 34 have a tertiary education, which is above the EU average by 5.2 percentage points. The education system is despite improvements being criticized for its methods, which lacks support for development of the students independent problem solving and creativity, skills which are demanded by the labor market. Thus the link between higher education institutions and the labor market can be enforced. Furthermore the country is lagging behind when it comes to lifelong learning, which lacks political coordination (ibid.).

The use of digitalization is very limited in the public administration compared to the rest of the EU member states, but high use in relation to tax procurement. Fixed broadband coverage is performing low covering only 85 per cent of households, which is the lowest rate in the EU. Contrary mobile broadband demand is at a boom, and Poland is one of the best performing member states (ibid).

- Spain

During the crisis a rise was seen in energy prices, which in combination with the crisis as a whole provided for an increase of households suffering from energy poverty. The energy prices are as well marked by the lack of interconnectivity, and thus competition, with other member states with the exception of Portugal. The Spanish electricity market is dominated by two bigger companies; Ibedrola who holds 24.3 per cent and Acciona, who holds 18.6 per cent of the market share, all other actors holds shares under 10 per cent. Doing Business ranks Spain 74 of 189 economies on the ease of getting electricity, this shows well some of the challenges that Spain is facing, being surpassed by regional peers: France, Portugal and Italy. Doing Business further provides an example of cost for a business in Madrid connected to Ibedrolas net, which amounts to 25 US cent

per kWh (Doing Business: 2016b). The high energy prices are not least the result of the deficit created by the tariffs. It is in this context estimated that paying off this debt to the electricity companies constitute 8 per cent of consumer prices (Deloitte:2015).

Three of the bigger electricity producers – Iberdrola, Gas Natural Fenosa and Endesa – have promoted auto-consumer metering, permitting promusers, who with their micro installations are producing more than they need, to send their energy surplus to the net. Unfortunately still without the possibility of retrieving it should they later experience a surplus (Appendix: 1).

Spain has a limited innovation capacity which hampers the generation of new technologies and the absorption of existing ones. The R+D spending have been declining since the crisis and has not yet recovered and are furthermore subject to poor coordination between the central government and the regions, who have shared competencies in this field. Innovation support schemes thus differ from region to region, making it hard to get an over view (European Commission: 2016b).

The rate of people with a tertiary education is in Spain above the EU average, but the employment rate for these people is one of the lowest in the EU, reaching only 68.6 per cent. This is not least due to the continued challenge to improve the cooperation between universities and the corporate world. Spain is furthermore one of the member states to have the highest share of low skilled adults. The participation in lifelong learning of low skilled people is as well low and fell from 4.5 per cent in 2013 to only 3.8 per cent in 2014. For the rest of the population the rates are 9.8 per cent. Spain however constitute a wind hub, due to years of policies benefitting the development of this sector, meaning that the country enjoys highly skilled employers in this niche area (AEE:2015).

Access to fast broadband has recently been increased especially in the public sector. E-government is promoted and since October 2015 it is mandatory for firms to deal with public administration services electronically (European Commission: 2016b.).

- Sub-conclusion

Both countries have low rates of interconnections with their neighboring countries and a concentrated electricity market. In terms of getting electricity Poland is rated well, it is cheap and

relatively easy. Meanwhile in Spain it is more expensive and more bureaucratic, providing them with a poorer rank than the Poles.

Concerning R+D, Poland has some of the lowest rates although increasing, while Spain's R+D spending has not yet recovered from the crisis. Both countries are challenged in terms of innovation, not least dues to high shares of low skilled people and insufficient use of life long learning. Access to internet is widely available in both countries. Spain stands out with their focus on e-government, not promoted to the same extend in Poland. On the tax dimension however Poland is more digitalized than Spain.

4.1.5. Environmental factors

- Poland

The polish climate is temperate, differing a bit across the country winters are generally cold providing a significant raise in the energy demand compared to summers. The cold winter weather is often less windy, decreasing the use of wind farms and raising pressure on the remaining energy sources. The temperatures further affect the water levels inlands, creating problems for the energy production as well as the water is need for cooling the plants (ICIS: 2016)

Despite having received over the years extensive investments in the infrastructure, much still needs to be done in order to sustain future Polish growth especially in terms of transport, communications, and energy, here under electricity generation facilities. The polish managerial and administrative capacity is however valued to be limited to the harm of implementations of investment in the previous mentioned areas (European Commission: 2016).

The high coal intensity results in very poor air quality, the EEA estimate that 80 per cent of the Polish population is exposed to air pollution above the EU air quality standards due to the fueling of coal. No sufficient legislation exists for protecting the air quality. Environmental taxes have been introduced to create incentivizes for a more efficient and less polluting energy consume but are not successful. An improvement of waste management is noted; however recycling is still low especially due to inadequate infrastructure for waste segregation. It should be noted that Poland in terms of EU environmental standards still is in a transitional phase, and therefore not yet has to comply with all the EU standards.

- Spain

The country's geography provides for wide range of opportunities for different types of Renewable energy power. The coastline provides for both off-shore and on shore wind farm possibilities, the same features which would make wave power possible. Due to its location partly in the subtropical hemisphere also solar power has good opportunities.

The water demand in Spain is high, and linked with economic growth, thus efforts have been made to decouple these two. There is a general need to improve the efficiency of use of resources and reach the level of recycling which is only at 31 per cent compared to a 2020 target of 50 per cent. Environmental taxes are not widely used but apply to certain types of oil, gas and green house gas emissions. In the larger Spanish cities air pollution is noted from traffic, having both health and economic effects.

In the staff working paper on the EU country report no alarm is made on the Spanish infrastructure situation. However in terms of energy only few links exist to date, but progress is seen in this field not least with the MIDCAT, which helps ease the Spanish energy isolation.

- Sub-conclusion

Due to their geography the countries have very different climates, Poland has significantly cold winters while parts of Spain enjoy subtropical climate. However the conditions for renewable energies are well in both countries, not least at the coasts. The urbanization level in Spain is somewhat higher than in Poland, but in both countries it is stable despite global trends.

Both countries are performing poorly in terms of recycling. Spain is trying to pressure on the environment via taxes, while Poland has no direct environmental taxes. There is room for improvement of the air quality in both countries. In Spain the pollution stem from traffic, while in some Polish cities coal firing also bears responsibility.

4.1.6. Legal factors

- Poland

The legal framework for renewable energy sources is based on the Directive 2009/28/EC. As a result of the RES directive annual auctions will be introduced in line with the European Commission's recommendations. The auctions will be replacing the former support scheme which

was based on green certificates. This means that the support will be lower but more predictable for the businesses. The competitive auctions will provide the polish economy with important savings but as well help investors adjust projects to market conditions (EY: 2015). The lowest price will be accepted first until the quota auctioned is used up. The auction scheme was supposed to step into force as of January 2016 but was delayed by the government to July 2016. The turn in the policies and the conduct of the government is heavily criticized by EWEA. spokes person Oliver Joy, says that the new law which restricts the distance from the wind farms to urban areas etc seems to only serve to bury the companies on the wind market bureaucracy further scaring them with prison should they not comply with the laws. He concludes that the government is simply trying to stop the development of wind power in the country (Nordiska Projekt: 2016)

In terms of energy efficiency Poland adopted in 2011 the New Energy Efficiency Act and the Second National Energy Efficiency Action Plan adopted which includes a description of measures addressed to improve energy efficiency with respect to end use of energy in the respective sectors of the economy. There are a number of other available schemes dedicated to financing energy efficiency projects taken up by various production companies in Poland, as well as by public entities. Local authorities have also been obligated to initiate projects contributing to increase energy efficiency (European Commission: 2016)

Discrepancies in the administrative capacity especially at local level are hampering the business environment especially the burden of obtaining construction permits is high. In terms of infrastructure it is mainly caused by high levels of bureaucracy where several different bodies are involved in the process. A new construction law stepping into force as of July 2015 has tried to address some of these issues, resulting in simplified administration when concerning residential buildings.

- Spain

Since the crisis the Spanish energy consume has dropped significantly as discussed earlier in this paper. That meant a review of the National Energy Efficiency Action Plan (NEEAP) was needed, adjusting to the new situation in the country. The Spanish implementation of the RES directive considers obligatory installation of calorimeters and depending on the type of building also automatic thermostats. This goes for the entire building stock, not only future buildings and those

under construction. There is furthermore a plan for energy efficient buildings called 2000ESE, under which the public sector is obliged to identify 2000 public buildings which qualifies for energy efficient renovation and which afterwards has to improve their energy efficiency by 20 per cent. These projects can be funded publicly by 20 per cent (Hansen: 2015)

Originally the national goal on the share of renewable energies was set to 22.7 per cent, but was in 2011 adjusted to 20.8 per cent. Furthermore reductions have been made in the incentives for renewable as an effect of the attempts to bring down the tariff deficit. The ambitious target in the Spanish renewable energy plans are in contrast to the legislative actions of the PP pre-election government, creating uncertainties for investors (Deloitte: 2015). Currently many important decisions on EU legislations are blocked due to the political situation, not least the adoption on energy efficiency directive (appendix: 1).

The public administration is dominated by the split between regional and central. In 2015 the ratio of regional laws pr. Adopted national law was 5.7.increasing further the differences among the Spanish regions. The administration all in all is highly decentralized, and benchmarking between the regions can be improved. Furthermore the Spanish administration has been known for its corruption, but the increased focus on the fight against it has resulted in progress.

- Sub-conclusion

Bothe countries have adopted auctions to the benefit of the transparency of the market for companies; however, no successful auction has yet been celebrated. It is seen how the political environment invokes on the legal environment, and further that both countries have challenges at more local administrative plan. Even if the directives supporting the Energy Union examined in chapter 2 have not yet been adopted, the countries has no way around these, since the EU law prevails the national law, thus their adoption is a matter of time.

4.1.7. Conclusion

Companies should expect anything from the political environment in the near future in terms of support schemes and such things. But countries are denoted with some political instability, which makes the environment unpredictable on the short term. The economic environment, however, looks more promising with beneficial growth rates in both countries. Government spending is,

nevertheless, under pressure as they are operating on the limit, and in the Spanish case past the limit, of the Stability and Growth pact. The financial sectors are in both cases sound and thus able to support the investments provided by the EU funds. The publics in both countries are by large supporting the Energy Union, and their concern for green issues can help bring about changes. However the financial means of the consumers are important, which in Poland are very low and in Spain higher, but eaten up by energy prices. In order to bring about some of the newest innovations infrastructural improvements will be needed especially in Poland, while both countries need to improve interconnectivity. For the vision of an innovative Energy Union the countries must further be concerned with the skills of their labour force in order to not lose the job creation generated from the Energy Union to other member states. The digitalization and the availability of broadband and internet though indicate that the society has a technical level which can serve as a base to build on. The overall environment in both countries is considered to be stable and further with large potential to benefit from the Energy Union.

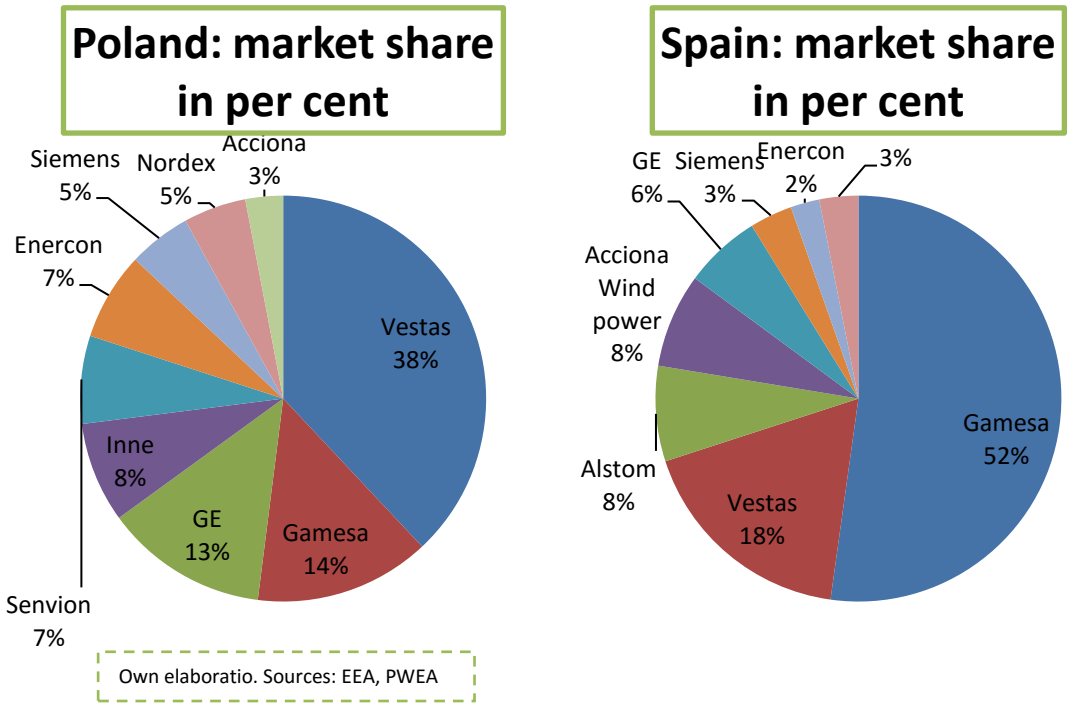
4.2. Five forces

In this part of the chapter I shall conduct an analysis of the sector for green energy solutions. The industry to be considered is that which can help bring about the goals of the European energy politics, which as seen earlier is to bring down the GHG emissions and the energy dependency. The solution would be bringing down the energy consume and shifting the consumption away from imported energy sources, which are often also contributing importantly to the GHG emissions. The market level will consider RES and wind particular. In the following I shall discuss the competitive forces for the RES and analyze their best position in Spain and Poland.

4.2.1. Market competitors

Considering the renewable energies, the leading source looking at both Spain and Poland is the wind energy, reflecting the overall trend in Europe where wind was the renewable energy with the highest installation rate in 2015 (EWEA:2016) As seen in Chapter 3, wind power is the most dominant of the RES in both Spain and Poland. Wind can thus be said to be the market leader among the RES although in Spain co-leading with hydro energy. A situation with a clear market leader will tend to bring less rivalry to a market, as in the Polish case of RES, while the case in

Spain brings for an increase of the rivalry. Zooming to the market for wind installations, the shares of the companies operating in Spain and Poland respectively can be seen below.



Own elaboratio. Sources: EEA, PWEA

In Spain the absolute leader is the domestic company Gamesa holding a 52.2 per cent market share, followed by Vestas with 17.8 per cent. All other existing companies hold shares under 10 per cent. The denomination *other* represents a group of producers who all has less than a one per cent share of the market. On the Polish market the lead is taken by Vestas with 38 per cent market share, while Gamesa has second place holding a share of 14 per cent, followed by GE Renewables with 13 per cent. None of the other actors hold a share over 10 per cent. This means that both markets have a clear market leader, but in none of the case the market leader has more than a 50 per cent gap to the next competitor; the guideline proposed by Porter to determine the effect on rivalry among competitors. This indicates high rivalry, but also other factors invoke hereon.

One of these factors is the growth rate of the market. The biggest markets are the national auctions for creation of new wind farms. During the auctions the companies compete to give the best bid and win the deal or deals. Leaving out the little Spanish auction in the beginning of this year of 500GW, no important auctions have yet been celebrated in any of the countries, and the government policies in neither of the countries provide for optimism on this regard. The general

slowdown in growth of this part of the marked is likely to increase rivalry. It should further be noted that the bigger competitors are likely to be the ones to fight over bigger projects on beneficial locations, because of the means they posses. This provides for concentration which increases rivalry. Auctions are also widely used in terms of other renewable energy forms, but as mentioned the wind energy is the most prominent in capacity.

Another factor which affects the rivalry is the degree of differentiation. Between the RES differentiation exist in terms of the natural phenomena they rely on. Windmills for the wind farms are, however, not subject to any greater differentiation. Wind mill producers are concerned with the creation of efficient machines that can deliver electricity at the lowest possible cost per kWh, and less concerned with how efficiently the mill uses the wind, as this is a free input (Vindmølleindustrien:2003). As an effect hereof most of these windmills are typically three bladed and variations over the Gedsermølle (ibid.). The general logic about free input and optimization according to cost per kWh, of course also applies to the rest of the RES. Differentiation is thus aimed rather at size and capacity in order supply specific segments of the market; private, corporation or public. In general differentiation must be concluded to be low, which invokes negatively on the rivalry.

In sum there is great rivalry among the competitors which is likely to be evident not least at the auctions; however after the installations and with no greater auctions in the horizon the rivalry is likely to be directed to other segments of the market, or to foreign markets.

4.2.2. Suppliers

The power of the suppliers could seem to be relatively limited compared to other industries, as they mainly enter once in the equation – during the construction of the energy center e.g. a wind farm. The supply hence forward is then provided by nature; e.g. the wind. Windmills constitute more than 8000 different components Spain which is a mature market can supply all of the components (AEE: 2015). The businesses are however not all exclusively dedicated to supplying the windmill producers, giving those who have a differentiated consumer portfolio a higher bargaining power.

Companies like Vestas and Gamesa have a high vertical integration, compared to a company like Acciona who has many external suppliers (ibid.). This means that a company like Acciona will

require more components with a high technical level, providing the suppliers with accumulated bargaining power. Companies like Vestas and Gamesa will focus more on material such as fiber glass, making price determinant, which has negative effect on the bargaining power of suppliers.

There is a tendency a general tendency of vertical integration (ibid.), meaning that the companies are presenting a treat to integrate backwards intensifying their bargaining power over the suppliers further.

4.2.3. Buyers

Although they differ in size there are many buyers in both the markets meaning that it is less concentrated and does not provide for a strengthening of the bargaining power of the buyers, rather the opposite. In the polish case 80 per cent of all wind farms are owned by independent power producers, among them Spanish Ibedrola and Acciona while the rest are owned by state owned companies (PWEA: 2016). PGE who dominates the electricity market with a 37.9 per cent share owns 529 MW of installed capacity. In Spain the company Iberdrola, which holds the largest of the electricity market with 24.3 per cent, owns the biggest share of the wind installations with a 24.3 per cent, followed by Acciona who owns an 18.6 per cent share and holds the second largest on the electricity market with 18.6 per cent share (AEE). It should be noted that as the prices on electricity in Spain are rather high, due to attempts to pay the tariff deficit, the incentive to push for even lower purchase cost might be higher as some of the main actors are also electricity generators.

Buyers of windmills can also be business and private consumers, who are denoted by smaller purchases compared to the previous examined buyers. The private consumers are also referred to as prosumers, as they via micro installations - under 40kW - produce to their own consume. In terms the business in Spain they are by large constituted by SMEs who possess smaller means in terms installations to become prosumers. These consumers do not produce a credible threat of integrating backwards, but the cooperative societies and business with important means does. This means that only in some segments of the market this threat will provide for accumulation of bargaining power of buyers.

Considering differentiation, the most obvious is again between sources and capacities. This means that price will be determinant for the choice of provider providing for significant bargaining power.

While to the private consumers, services, design and other factors might also invoke on the decision, price is the only factor to decide on auctions winners.

4.2.4. New entrants

New entrants can serve to increase the competition on the market. The importance of this threat to the existing actors depends on the barriers of entering the market. A barrier could for instance be loyalty to existing companies. The market shares of Gamesa and Vestas in Spain and Poland respectively could assume a case of loyalty, however knowing the importance of price especially for larger purchases it is not likely. With the auctions schemes loyalty becomes even less likely in this segment of the market. Loyalty can though be noted towards wind over the other RES, which is though likely to be because of its level of advancement.

In accordance with the frame for this analysis the new entrants could also be new energy source not yet present on the market. In the Polish case neither Solar nor wave power is represented in the energy mix. In Spain wave power is being investigated while solar energy already constitutes a mature market.

The auctions model which is used in both Spain and Poland brings about transparency making it easier for new entrants to access the market. This means that companies who may have experiences from other markets have the possibility of entering. These can enjoy some advantages of economy of scale, relying on existing sources for the designing of a plant. Although they might wait until the respective governments of Spain and Poland declare the commitment to auctioning bigger shares, before preparing market penetration.

4.2.5. Substitutes

The obvious substitutes for renewable energies are of course the traditional energy sources such as coal, oil, and gas, hereunder LNG and shale. They all have the advantage that their input is not dependent on the weather. However time is not paving to their advantage, as these resources are not indefinite and with time the natural stock will be emptied out. Nevertheless, on the short term they still poses a credible threat to renewable energies, especially if favored politically as in the case of coal in Poland, and to some extend in Spain considering LNG. It should be noted that in the competence between these substitutes and RES price is not the only determinant, as the European Energy politics consider environmental protection. Hence government subsidies for

power plants that are to operate after 2018 and are not environmentally sustainable is prohibited in the EU.

Support can though take many forms it can also be an example of hampering the conditions of the competitors, which is what is currently happening in Spain and Poland, where the government policies are making it harder for RES to compete. In the polish case it is done by limiting the areas where especially wind power can be installed. And in both countries the auctions for RES are down prioritized at the moment.

Another, maybe less direct, substitute product is any commodity which helps increase energy efficiency and thereby brings down the consumption and the GHG emissions. The most obvious area to invest in energy efficiency is in the heating and cooling of buildings and in the transport sector as these are some of the biggest consumers. As the transport sector is heavily relying on petroleum products, energy efficiency in this sector does not constitute a threat to RES demand. Concerning the building sector energy efficient renovation in terms of heat and isolation will not affect the RES market as much as that of gas, which is a larger contributor.

However, by bringing down the demand of fuels such as gas and coal and hence decrease their share of the energy mix, the RES percentage of the total mix will relatively be larger. That will mean approaching the targets of the strategies without further installations. It is not unlikely that private consumers or business will be considering between energy efficiency and a smaller/micro installation, as both can help them bring down their external energy demand.

The force of energy efficiency installations as a substitute will come down to the willingness of the buyer to purchase the products in question. Public consumers are forced to become more energy efficient by law as well as larger enterprises are encouraged to do the same. In terms of private consumer cost is however likely to be determinant for them to pursue energy efficiency products and appliances. As seen in 4.2 the purchase power of the polish is low and the willingness to pay extra for environmental protection is equally lower, while the Spanish as well are concerned with cost as they experience high prices on energy. Thereby for energy efficiency to be a serious force it must provide the consumer with clear savings against the cost of the acquiring.

4.2.6. Conclusion

The competition rivalry among RES is not very high due to the clear favoring of wind power. Among wind power supplies rivalry is, however, deemed to be intense due to low differentiation and a slowdown in the market growth rate in both countries. The companies serve many different buyers of which corporations possess the most credible threat of integrating backwards, which combined with a strong focus on prices and low rates makes them the buyer with the strongest bargaining power. The bargaining power of the suppliers depends on the technical levels they require of their producers, and will differ over among the companies according to their level of integration. In the case of new entrants is considered to be lower, while substitutes in the segment for smaller consumers can possess a serious force.

4.3. Sub-conclusion

Although Poland and Spain are far from top of the class upon examination of the macro environment, they remain interesting markets as many of the issues they deal with are directly or indirectly treated by the Energy Union. This means that they can look forward to investments from the EU funds. But it also means that the EU energy policy provide the countries with guidelines as to, how to solve some of their issues, e.g. bringing down import dependency by increasing RES. It is in seen how the political environment affects on the market for RES, and companies producing RES might want to look to different segments of the markets promoting micro installation, as the public remains positive towards RES despite government trends.

5. Discussion

Upon the previous finding I shall discuss the possibilities derived from the Energy Union in general terms for the two countries, followed by business recommendations.

5.1. Prospects created within the new framework

Both the countries can benefit in multiple ways from the Energy Union. The most obvious way is via the investments from the EU funds. These investments can help ease some infrastructural unbalances reminiscent from the time before admission to the EU. As seen Poland is set to receive amounts well larger than Spain, which of course also mirrors that they only recently went through transition, will Spain has a 10 years head start.

Spain however still deals with some structural imbalances which have not yet been alleviated. This is not least in terms of unemployment, in which case means for lifelong learning, and know-how from other member states can help. Poland is also challenged on this parameter, and must as well pay attention to lifelong learning. Since both countries as a result of historic preference for temporary contracts, enjoys low labour cost, they are interesting for manufacturing. However, attention should be paid so that not only low skilled job creation is produced by the Energy Union in the countries. This goes especially for Poland who industry for green energy solutions is younger and less developed compared to the Spanish.

Investments in Research and Innovation are benefitting Poland, while the amounts directed to Spain are more limited. The money directed to Spain can, though be used as a kick starter for resume of investments to levels before the crisis. In the Polish case the money shall rather be use to create a sector for research and innovation, and incentivise Poland to get closer to the other European member states. This will be important for the future as well in order to attract and maintain a labour force in the country.

A non investment benefit provided by the Energy Union is a vision for the future conduct of foreign energy politics. The Commission proposes to overlook bilateral energy agreements between member states and foreign is interesting. It provides Poland with an ally, in the fears of Germany and Russia settling agreements around Poland, which harms the countries energy situation. Although countries might relatively stand weaker in bargaining positions as they have to run deals by EU before signing, it might provide for at stronger bargaining position of the EU as whole. The Commission will via this manoeuvre be able to care for the common interest, and further make sure that states are not manipulated against each other as it will have immediate insight.

In terms of the Spanish deals with Algeria, Spain would also have to run them by the Commission, however, as both Spain and Algeria benefit from to a somewhat equal extend they are not as likely to use the situation to manipulate the relation, risking the entire balance. The connection with Algeria is with the right infrastructure on the mainland likely to invoke positively on the Spanish trade balance. Another measure that could do so is the planned rolled out of smart meters. They would permit Spain to produce to the maximum capacity of their RES installation, and exporting

the surplus to other parts of the region. Smart meters are also interesting for Poland; however, due to constrained domestic production it would rather be in the terms of receiving electricity facing short falls in their domestic production.

Although there is currently political resistance to further commitment to RES, in the long term these energy sources provides for decreasing energy import dependency. All though Spain is not vulnerable to any of its suppliers, the high levels of import provide for a significant post on the Budget. This means that, although costly, new RES installations could in the long term help the Spanish economy by easing the trade deficit. In the Polish case an increased focus on RES will also have positive effects on the trade balance, assuming they will replace gas imports. However, used in the electricity generation to replace coal they will rather have an effect on air quality and potentially public health. The Commissions commitment to investments in RES in Spain and Poland might however push for an auction, either exclusive in the country or as part of a regional RES power plant plan. The investments the Commission provides are however limited in terms of the general decarbonization as seen in chapter 3. This means that a turn is need in national politics order to continue this development.

In terms of the commissions wish to diverse the gas supply, Poland will have to change its supplier portfolio, which is already on the way with the new LNG port. Spain however already has a very diverse gas supply, thus the initiative will not bring about significant changes to the supplier portfolio. However, it might in the Polish case result in forcing Poland to diversify away from Russia, which is not like to have a positive effect on Moscow.

5.2. Recommendations

In terms of energy security Russian gas continues to be a sensitive subject in Poland, as high imports do in Spain, the countries are likely to on the long term look for substitutes for gas. In terms of the electricity demand, RES will be the clear choice. However, gas make for only little amounts of the electricity generation mix in the two countries as we have seen. It would thus make more sense to substitute gas in a sector where it is more significant. The obvious choice thus is buildings where gas is used for heating and cooling. Companies concerned with district heating thus might want to consider the Spanish and Polish market, promoting their positive impact on import dependency. Another way to bring down the gas consumption in the building are by

reducing the energy consume, thus make energy efficient installations. Companies dedicated to these tasks can further benefit from the significant funding provided by the EU.

Due to the climatically differences, energy efficiency renovations will also be different between Spain and Poland. In Spain the task will rather be to keep the heat out. That provides a base for energy efficient windows. It is also worth considering electric air condition, getting the power either from micro installations, or batteries charging at night. In Poland the concern will be about heat loss during the cold winters. In this regard energy efficient windows can also be a solution, as well as companies carrying out energy efficient isolations, these might also find a base in Spain isolating against the heat. Furthermore smart thermostats for regulating heat will also see a huge potential in Poland in terms of increasing energy efficiency of the buildings. Provided by the EU legislation, a market for zero-energy buildings will as well rise. This will create business opportunities not least for RES developers, who focus on on-site generation.

As seen the Spanish case provides good grounds for smart meters. They country already have large installation of RES, and the smart meters would provide for a more sufficient use of these. That provides business opportunity for the installation and operation of these. The Commission is providing funding for the installation and connection of more consumers to the smart grid. Once this infrastructure is in place the market for micro consumer have possibilities in Poland, provided that the economic benefit from the installation is clear against consuming as usual, considering the general low purchase power of the Polish. In the Spanish case consumers are also cost concerned, however as an effect of high energy prices. This creates solid ground for business producing any energy efficient appliance that can help bring down the total consumption of the household, a trend which must be considered to less present in Poland, due to the low energy prices. Those appliances could be households appliances with a automatic switch-off function and appliances which use batteries and can charge at night were electricity prices are lower.

The market for energy efficient infrastructure is bigger in Poland, due to its history and lack of modernization. Business, who wishes to carry out such projects can benefit from low labour cost and the possibility of EU funding. There is also a huge potential for energy efficiency infrastructure in energy intense industry, providing opportunities for smart installations to prevent not least overheating.

The low participation in lifelong learning, provides a base for companies concerned with training the labour force as the Energy Union has a vision to become innovative. Larger companies who are already operating in the countries might consider educating their staff, in order to assure the right local employer input.

In terms of the funding, the political situation in Spain might delay these and in Poland the same might happen for funding considered with RES. Business should thus not aim exclusively after the funding but consider the markets potential as such; it both cases large countries in growth. Furthermore establishing a division or exporting to Spain or Poland can be used as a stepping stone to other countries. In terms of Spain a company might consider some of the emerging markets in Latin America; such as Chile and Brazil. Companies operating in Poland might consider continuing their exports to the other V4 member, who although having smaller market share much of their resent history with Poland and are likely also to suffer some gaps in terms of energy to the remain EU members.

6. Final conclusion

The common energy politics have been long on the way, however they are a fact today. Their initial problems were related with the relation between energy and military power, which made member states reluctant to integrate. As the EU have become a net energy importer, the benefits of the cooperation is becoming clear. It permits for focussed strategies on not only energy but also environment which was the real kick starter together with the internal market for the integration of the energy politics. Although related less to warfare and hard power and now more to the welfare state, energy politics integration still provides reluctance among member states. This is because the European societies have become more dependent on energy and energy security becomes a concern in line with national security. This means that tendency of egoism in energy politics are still seen due to the crucial character of energy to the society and the economy. National differences such as presence of natural resources, history and political issues continuously provide for differences among the member states, and are likely to provide challenges for the Energy Union and the energy politics also in the future. In the case study of Spain and Poland this is clearly seen in their different energy mixes. The Spanish energy mix is diverse, due to few domestic fuels and bad experiences with high dependency on one source. This

provided sound interest for development of alternative energies of which Spain now is a hub. Poland has only recently started to diversify its energy mix as the main concern has been the transition. The country has tremendous experiences with supplier dependency on Russia, making them search for domestic alternatives, as infrastructure until recently didn't provide for using that many other suppliers. It is seen how the Energy Union provide a guideline for alleviating such situations, and further that Spain in this gets to play a crucial role by channelling Algerian gas into the continent, permitting other member states further diversification. Thus geography has a lot to say in energy politics both in terms of consume trend and favourability of renewable energy sources, the Energy Union tries to smooth out that these produce, in order to ensure the integration. Polish politicians are likely to prefer coal as long as available in order to protect the mining industry. They can do this by deciding on the shares of coal in the final energy mix, as provided by the Lisbon Treaty. However, increased levels of energy efficiency might bring about less demand of coal, thus decreasing the market of the mines, despite government preferences. The Energy Union can serve to help bring Spain definitely back on track economically and help bring down some of their structural unbalances, not least in terms of job creation, if the policies and investments are used efficiently. In the Polish case the Energy Union can help Poland reach EU level on wide range of parameters, where the country is still lacking behind due to its resent transition, an provide for a stable base for development of a sector for research and innovation in the future.

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