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„Understanding Energy Security in the EU: a comparative case study of Germany and Poland“

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ABSTRACT

English:

The literature on energy security has seen a lot of expansion in recent years, the debates on this concept varying from the theoretical to its practical application. This research looks at different conceptualisations of energy security, and will focus on its three major dimensions: security of supply, affordability, and sustainability. Firstly, this energy theoretical "trifecta" will be used to understand the way in which the European Union has chosen and implemented its energy security policies and the potential for EU energy cooperation. Furthermore, a comparative case study will be carried out to provide a deeper understanding on these issues. As a result, Germany and Poland were chosen for this analysis as they have held strong opposite views during their ongoing debate for energy security in the European Union.

Deutsch:

Die Literatur zur Energiesicherheit hat sich in den letzten Jahren stark erweitert, wobei die Debatten über dieses Konzept von der theoretischen bis zur praktischen Anwendung reichen. Die vorliegende Masterarbeit befasst sich mit verschiedenen Konzeptualisierungen der Energiesicherheit und konzentriert sich auf ihre drei Hauptdimensionen: Versorgungssicherheit, Erschwinglichkeit und Nachhaltigkeit. Diese dreifaltige energietheoretische Konzeptualisierung wird verwendet, um einerseits zu verstehen, wie die Europäische Union ihre Energiesicherheitspolitik gewählt und umgesetzt hat, sowie andererseits, um das Potenzial für eine EU-Energiekooperation zu verdeutlichen. Darüber hinaus wird eine vergleichende Fallstudie durchgeführt, um ein tieferes Verständnis dieser Probleme zu vermitteln. Für die Analyse wurden Deutschland und Polen ausgewählt, da sie während der laufenden Debatte über Energiesicherheit in der Europäischen Union stark gegensätzliche Ansichten vertreten haben.

On my honour as a student of the Diplomatische Akademie Wien, I submit this work in good faith and pledge that I have neither given nor received unauthorised assistance on it.

Maria Augusta Barsan-Moigradean

TABLE OF CONTENTS

Introduction

Energy security represents one of the main global issues that the modern world has to deal with. The significance of energy security may vary across time and global regions, but neither states nor inter-governmental organisations (IGOs) can deny the sparking interest that has re-emerged as of late, and which could only be compared to the period of the 1970s when the entire world was shaken by the oil crisis. Therefore, a great number of states from all over the world have shifted their fundamental energy policies towards security, this area of expertise having also received special interest from organisations, whether they are at a regional or international level. An exact definition for energy security has proven to be rather difficult to create, as the concept of energy security encompasses a variety of aspects within itself. Moreover, when looking into the concept of energy security, one ought to realise that it holds a core function in the modern collective life worldwide. Thus, energy holds a crucial role, regardless if it is being looked at form an economic, political or social standpoint, especially since no economy can function without energy inputs[1].

Moreover, from a theoretical standpoint, there are three main concepts that re-emerge in the majority of the definitions encompassing energy security: security of supply, affordability and costs, and sustainability. Security of supply usually applies for countries or conglomerates that are dependent on importing energy from external sources. This is also the case for the majority of the countries in the European Union. It also means that the energy security of these countries is threatened as their well-functioning relies on imports. The second dimension of affordability can either be interpreted as giving producers in the industries advantageous business deals, can focus on fair costs towards consumers, or can look at the costs for building new infrastructure in various energy sectors. Lastly, sustainability takes into account the level of resources attainable for future generations, the impact the use of energy has on the environment and climate, and tends to look at renewable forms of energy in order to ensure an inter and intra generational availability.

Therefore, the theoretical framework of this research is based upon these three conceptualisations of energy security. They are firstly looked at theoretically in order to be then applied on the analysis of policy documents implemented at the European Union level. EU energy security, considered only during a supply disruption, has become an integral part of the EU's energy policy and has become firmly embedded in the EU's energy strategy. It became an enduring priority - these strategies need to be developed, taken into account and monitored. Considering a rapidly changing global environment in the energy sector, energy security is continuous and a dynamic process that must be rigorously pursued under the EU's energy policy. Moreover, looking at it form a historical perspective, it is rather clear that the priority of EU policies diversify and will encompass more domains - especially those of affordability and sustainability. Despite this diversification, security of supply will have always remained a core policy to be pursued in achieving energy security of the

[1] Löschel, A.; Moslener, U.; Rübbelke, D. (2010) 'Energy security – concepts and indicators', *Energy Policy 38* (2010) 1607-8.

European Union. The case studies chosen have not been analysed through this energy security trifecta before, and thus the research will add to the literature on the topic.

Thus, the research question for this study is as follows:
How do understandings of 'energy security' differ between EU member states? How do these affect national energy policy strategies and the potential for EU-level energy cooperation?

The governments of the EU member states achieve a stable energy situation by treating the energy policy in a special way in relation to other sectoral policies, as it is the foundation of national and EU security. Serious intermittent disruptions to natural gas supplies during the winter seasons of 2006 and 2009 in some eastern European EU Member States have demonstrated the need for a common energy policy. Despite significant progress in the development of infrastructure and import diversification, as well as activities increasing the certainty of natural gas transmission and reducing dependence on only one supplier, the EU was still vulnerable to external energy crises. Ensuring secure energy supplies was the most important issue in the energy policy of EU Member States, although the scale of problems to be solved varied, taking into account the degree of regional integration, the number and capacity of inter-connectors. The biggest risk was the dependence on one external energy supplier, especially in relation to natural gas as well as electricity.

As mentioned before, it is clear that the EU follows to achieve energy security by pursuing three main targets simultaneously: ensuring security of supply at affordable costs, whilst maintaining high sustainable standards. However, different member states (MS) have different priorities when it comes to following and implementing policies for their own energy security. This is due in part to their geographical location (access to internal energy resources, as well as interconnectivity - i.e. being a landlocked country or not), economic development (countries with a high GDP are more willing to invest in long-term infrastructure plans), as well as their current and past relations to other countries or suppliers. This last point allowed for an easy choice between the case studies analysed - Germany and Poland.

Even though they are neighbouring states, the policies they pursue to achieve their energy security could not be more different. Being one of the oldest members of the European Union, Germany has historically enjoyed good relations and communication with Russia, and due to their large economy their actions carried more weight when influencing the decisions taken at the EU-level. Despite the fact that their policies focus on security of supply - in the form of importing Russian gas, and even distributing towards Western Europe - Germany's high level of economic development has allowed them to invest in the clean energy sector, and thus create the infrastructure needed for renewable sources of energy that will come to sustain their economy in the long term. This country's energy mix is very diverse, almost half of the energy used coming from renewable sectors. This follows rather logically the EU's need to move away from depending on Russian energy.

On the other side of the spectrum, Poland does not see the investment in renewable sources of energy as a way to achieve their energy security, arguing that it is too costly, and it will again make them dependent on imports (in this case, technologies from Germany needed to develop such an infrastructure), the same way they depended on Russian imports for oil. Being one of the most self-sufficient and energy secure countries in the EU, one could understand their reluctance to invest in green energy, when their internal production of energy from fossil fuels makes up approximately two thirds of its energy mix. In this sense, Poland is more interested in their security of supply policies, not wanting to be dependent on imports or other economies, not only not prioritising renewable energies, but turning towards nuclear as an alternative.

To sum up, through their geographical proximity, but by having different perspectives towards energy security , Germany and Poland allow for an interesting comparison when looking into distinct energy policies within the European Union and their impact on the potential for energy cooperation between member states.

The methodology used in this research is qualitative, being based on primary and secondary sources, and document analysis. Also, the cases have been selected on the basis of the method of difference, illustrating two member states with similar energy security challenges but adopting distinct understandings for ‘energy security’. The document analysis will be used to capture the challenges facing energy policy, based on the evidence underlying its construction and the realities of Europe today. At the theoretical level, the analysis will be used in terms of liberal theory that captures the most important aspects of collaboration between actors at several levels of action, with competencies shared between the supranational level of action and the intergovernmental level. The way in which Member States are currently cooperating or not with each other in terms of ensuring the necessary resources will be captured, as well as the way in which the parties involved act to support cooperation. Moreover, the timeframe of this research covers the period between the early 2000’s when energy security became an issue of concern for the EU and extends until before the start of the Russian invasion of Ukraine, in order to avoid the study of a ‘moving target’ (that is, the current debates over energy policy within the EU).

Chapter 1 - Understanding energy security: Definitions and Conceptualisations

There is an underlying assumption, that a common definition for the concept of energy security exists, even more so, that it puts together all the areas that come associated with it, from civil society, to politics, and even the industries. The importance of energy security has been outlined throughout history, starting back in the 20th century when the main energy concerns had to do with access to oil, the primary source at the time. On the other hand, when looking at the notion of energy security in the current global context, one could be referring to anything, as there is a vast number of issues that arise from either the diverse range of resources available, or the ways in which energy is produced and utilised. To make it more clear, all systems of energy production are inter connected, regardless of them being based on electricity, fossil fuels, or even renewable resources, and thus we are faced with a complexity that is only growing at an exponential rate. Even more so, the theories and concepts related to this topic are in a continuous development, as more and more analysts have chosen to focus on it during the past few decades. Acknowledging this process of expansion is vital towards addressing energy security through all of its angles. Nevertheless, it can create the possibility of making this concept be perceived as way too dispersed and non-cohesive. In a handbook developed in 2011, there were at least 45 distinct definitions presented that could be used when addressing energy security, created by experts in the field of energy policy alone[2].

The catalog of energy security definitions presented in the literature on the subject is wide. So far, no unified position has been developed in this regard, and the multitude of issues, approaches, elements and opinions discussed within the ongoing debate leads to the conclusion that in the near future this debate will not end and will continue until energy security ceases to be a priority for countries, organisations or globally. An attempt to present a full definition of energy security - in order to approximate various positions - should therefore be preceded by the definition of the term "security". It is derived from the words "without custody," that is, without defence, without care. The related Latin term "securitas" comes from "sine cura" which also means "carelessly". It is therefore a non-threatening situation; a state of peace, security and certainty that nothing is threatening. Hence, security has traditionally been understood as not having to pay attention to a certain phenomenon or person, and not being afraid of it. Currently, such a definition is more and more often supplemented with activities covering both the prevention of threats and the creation by a given entity of the capacity to do so and minimising the threats by influencing other entities. However, it should be emphasised that in the literature on the subject, safety is defined in various ways. Moreover, it seems right to define security as a multidimensional state in which the interests of a given entity are not threatened, and active, multiple actions are taken to ensure such a state. Additionally, since energy security is a “branch” of security in itself, it follows logically that the

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[2] Sovacool, B. (2011) *The Routledge Handbook of Energy Security*. London and New York: Routledge.

Kuzemko, Caroline, Michael F. Keating, and Andreas Goldthau. The global energy challenge: Environment, development and security. Macmillan International Higher Education, 2015. Ch. 7 - Energy Security.

concepts that are valid for studies of security will also have a significant relevance for the studies of energy security[3].

The approach to security in the political dimension overlaps with the dimension also defined as subjective and referring to participants in international relations - such as individuals, organisations or nations. Accordingly, national and international security are distinguished. Security in the social dimension is also included in the socio-cultural security and is defined in the subject dimension. It assumes cultural stability and ecological safety. From the point of view of the discussed considerations, the economic dimension is particularly important, taking into account the need to guarantee energy security, and the ecological dimension, characterised by the desire to ensure environmental protection and the elimination or reduction of threats caused by potential contamination. Due to the growing function and importance of energy in the economic structure of individual states, the need to insure energy security is more and more often considered as a factor of the economic security of the country, also known as economic security, and thus - national security.

1.1. Defining energy security

The issues of energy security and attempts to define it were undertaken after World War II - as a response to the difficult economic situation of European countries, problems with the import of energy resources as a result of oil crises or the desire to equalise the level of economic development between countries[4]. Today, the interest in the issues of energy security is widespread, which closely coincides with the problems on the raw material markets related to significant changes in the prices of energy resources on the world markets. In order to understand the role energy plays within the politics of countries today, one ought to understand the partition between its economic side and political and strategic one. Thus, economists believe that energy security as such does not really exist and that possible threats are related to fuel shortages and supply disruptions. Therefore, the market is treated as being the main regulator of these points in question. Using the simplest definition of security, energy security can be defined as a state in which energy supplies face no external threats. In addition, as stated in a paper published by the IEA, energy security is highly dependent on the type of market structure it finds itself in, and is based on two main factors: whether it is substantially available in nature and the relative price it holds in the market[5]. The constant flow of a tangible supply is often characterised by whether or not it is available and ready for use, or through its opposite concept which looks at the relative size in the deficit or interruption of supply.

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[3] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.

[4] Chester, Lynne. "Conceptualising energy security and making explicit its polysemic nature." *Energy policy* 38, no. 2 (2010): 887-895.

[5] International Energy Agency (IEA), 2007. Energy Security and Climate Policy: Assessing Interactions. OECD/ IEA, Paris (March). p. 32.

A differentiation has to be made when looking at the literature and studies of energy security between what is considered “classic” and contemporary issues. The “classic” studies have their attention on the late period of the 20th century when the focus was on oil as a primary source of energy, and the contemporary studies tend to be more holistic in nature and broaden their scope to to areas such as climate change, and access to the market and the respective resources[6]. Another interpretation describes energy security as "a dynamic process which involves global and regional trends, and specific activities in the field of energy policy "[7]. Hence, energy security can be defined as ensuring the continuity of energy supply in response to the reported demand. There are also descriptions of energy security interpreting it as "multidirectional activity (policy) of the state and enterprises in the global and regional dimension, aimed at providing the national economy with adequate amounts of energy resources, mainly oil and gas"[8]. Defining energy security is also done taking into consideration the energy mix of its respective user (be it a country or a larger supranational entity; i.e. the European Union), its intrinsic resources and the level of dependency with regard to imports. Most of the “classic” literature on energy security has its focus on oil and gas, considered to be the primary resources for energy. Moreover, the concept of energy security and its ramifications cannot be so easily transferred form one market to another, as it will acquire, for example, different meanings for the oil industry as compared to electricity energy in terms of supply chains, infrastructure, and storage[9]. The inter-connectedness of the energy markets has brought along also increased risks with regard to the supply chains. Oil refining industries, as well as natural gas manufacturing, both rely on electricity as a primary source of power, and thus are now more susceptible to any threats varying from natural meteorological phenomena, accidents or system malfunctions, to markets or political instabilities. Also, where electricity is concerned, there is an increase in the promotion of nuclear energy over other types of fuel, under the premise that it has lower emissions of greenhouse gases, a consideration which has stirred the climate change debate[10]. A rather important point to be made is that energy security is not an administrative procedure, but rather a concept based upon which policies are drawn and implemented, whilst also taking into consideration the specific definition of this concept given the context that it finds itself in. Even though energy security can acquire different meanings with respect to the area of policy it finds itself in, this does not necessarily translate that it becomes a whole different concept all-together[11]. Considering a laissez-faire approach, governments should aim at having both price and

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[6] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014), p. 415.

[7] Pronińska, Kamila. "Bezpieczeństwo energetyczne Unii Europejskiej w warunkach kryzysu finansowego." *Bezpieczeństwo ekonomiczne w perspektywie politologicznej: wybrane problemy. Warszawa: Elipsa* (2012).

[8] Chmielewski, Adam. Bezpieczeństwo energetyczne państwa: geopolityczne uwarunkowania. Wydawnictwo MM, 2009.

[9] International Energy Agency (IEA), 1995. The IEA Natural Gas Security Study. OECD/ IEA, Paris.

[10] Chester, Lynne. "Conceptualising energy security and making explicit its polysemic nature." *Energy policy* 38, no. 2 (2010): 887-895.

[11] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014), p. 416.

quantity determined by the market, so they maintain their competitive nature, and therefore still be affordable and sustainable as a by product of non-intervention[12]. However, this perspective lacks in considering a disruption in the supply chain which could cause major increase in the prices of energy supplies, and thus not making them affordable, nor sustainable in this scenario.

Moreover, Cherp and Jewell provide a critical analysis for looking at energy security through the lens of "the four As" that were proposed by the Asia Pacific Energy Research: "availability, accessibility, affordability and acceptability"[13]. They analyse these four concepts with regard to three questions proposed by Baldwin that answer the main issues defining energy security: "Security for whom?, Security for which values?, From what threats?"[14]. Cherp and Jewell also draw attention to differentiating between the types of energy systems in terms of their importance for a functioning society and thus present us with "vital energy systems" - systems without which certain functions in society would not be possible to operate, and also underline that having such differentiation allows for better implementations of energy policies at government levels[15].

However, it should be emphasised that many elements of the presented definitions are common. It is also correct to conclude that energy security is determined by changing factual circumstances. In combination with the individual approach of many authors in defining this concept, it is not possible to determine whether, in a given actual state, we are dealing with an optimal state of energy security or not. Moreover, taking into account the ongoing global economic processes and the numerous group of determinants shaping energy security, the approaches treating this phenomenon as a dynamic process and in the context of the policy pursued by economic entities are gaining importance.

1.1.1. Energy Security & Environmental Concerns

With more and more concerning numbers towards climate change and global warming, international organisations and governments have taken the first few necessary steps in insuring that the energy sector is progressively becoming more low-carbon. Even though energy transitions are to be desired for the future, all actors involved have learned from practice that such large transitions in infrastructure usually require the short-term use of even more energy, being thus faced with other constraints and the uncertainty of how to proceed in certain scenarios, as perhaps such transitions have never been attempted before. In terms of defining energy security in a way that takes into account these factors, the European Commission's Green Paper "Towards a European strategy for

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[12] Ibidem.

[13] APERC, APERC. "Quest for energy security in the 21st Century: resources and constraints." *Asia Pacific Energy Research Centre, Tokyo, Japan* (2007).

[14] Baldwin, David A. "The concept of security." *Review of international studies* 23, no. 1 (1997): 5-26.

[15] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.

the security of energy supply" emphasises the need for, both the economies and the inhabitants of its member states, that energy resources must be provided at an affordable rate and accessible for everyone on the market, whilst also making sure that it does not overlook the environmental implications and a sustainable development so that it guarantees both intra and inter-generational access[16]. What is needed is "a flow of energy supply to meet demand in a manner and at a price level that does not disrupt the course of the economy in an environmental sustainable manner"[17].

Energy and environmental issues can also be looked at from a broader perspective, and thus, three main issues will appear to surface at the same time: "energy security, reducing energy poverty, and climate mitigation"[18]. Even though the relationship between climate policies and the energy sector seems to be rather entangled, there is a clear willingness from governments to reduce their dependency on imports of fossil fuels, and thus shift their focus towards growing their renewable energy sectors. Through the framework of the four As, the concept of acceptability was determined to be perceived through the lens of the environmental impacts[19]. However, it should still be considered that what is considered as "environmentally acceptable" will have different meanings for different groups involved; i.e. the energy industries, governments, environmental organisations.

1.1.2. Energy Security in terms of Price & Affordability

On the one hand, the concept of energy security has been defined as providing an "adequate supply of energy at a reasonable cost"[20]. On the other hand, energy insecurity has been seen "as the loss of economic welfare that may occur as a result of a change in the price or availability of energy"[21]. Shifting the focus from viewing energy security as a public good, and more as a product of the market, has given leeway to the analysis of the concept more so from an economic perspective rather than a political one, and thus, given a central stage role to questions regarding its price and affordability[22]. The framework offered by the four As does not identify an absolute object in terms of who energy security is for. Whereas for "classic" energy security studies this was rather clear - oil-importing countries, the contemporary studies in this field expand to far broader fields in terms

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[16] European Commission (EC), 2000. Green paper: towards a European strategy for the security of energy supply. Commission of the European Communities, COM/2000/0769 Final, Brussels, p. 1-2.

[17] Chevalier, J.M., 2006. Security of Energy Supply for the European Union. European Review of Energy Markets, p. 2.

[18] Kuzemko, Caroline, Michael F. Keating, and Andreas Goldthau (2015). The global energy challenge: Environment, development and security. Macmillan International Higher Education, p. 111.

[19] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.

[20] International Energy Agency (IEA), 1985. Energy Technology Policy. OECD/ IEA, Paris., p. 29.

[21] Bohi, D.R., Toman, M.A., 1996. The Economics of Energy Security. Kluwer Academic Publishers, Boston., p. 1. Chester, Lynne. "Conceptualising energy security and making explicit its polysemic nature." *Energy policy* 38, no. 2 (2010): 887-895.

[22] Cherp, Aleh, and Jessica Jewell. "The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration." *Current Opinion in Environmental Sustainability* 3, no. 4 (2011): 202-212.

of both the type of energy markets (oil/ gas/ electricity/ renewables) and the actors that are involved in such markets (global producers/ countries/ consumers/ supra-national entities)[23]. This in turn, leaves room for interpretation as to whom energy security should be affordable or acceptable - high profitability for the energy industries or do the consumers come first into mind here? In terms of governments and International organisations, it is rather evident that they prefer defining energy security through more "absolute" concepts such as those of market prices and market supply, as in other terms "affordability" may be subject to too much interpretation[24].

1.1.3. Energy Security & Risks

As everything else that came to be, energy security studies are shaped by the experiences of the past, especially where risks and disruptions in supply chains are concerns. The "classic" literature also came to be as a result of such disruptions, and not because the world was looking to expand or grow its energy industries into something else. It is also important to identify certain risks that are evident within industries, but also how these industries or markets are prepared to respond to any energy security threats. What is more, when defining the concept of energy security, it would seem to be rather practical to have a working framework that would determine the type and extent of risk and/ or vulnerabilities posed by an external factor. In this sense, vulnerabilities seem to be determined by two factors: their liability to risks and the extent of their resilience[25]. A relevant example of a considerable disruption in the supply chain is the Russian-Ukrainian gas conflicts, whose effects trickled down and were felt by countries of the European Union, the most vulnerable being the countries of Eastern Europe who have a historical connection to Russia as their main energy (gas) supplier, and who are also limited in terms of diversifying their types of energy supplies (in part due to their geographical location and also their level of economic development in pursuing alternative forms of energy). Moreover, it has been argued that due to the nature of the risks and complexity of technologies that comprise the energy industries, it is quite a challenge to contain them, and thus, the best solution is to hold a rather diverse energy mix and not allow one single type of energy to be used in a larger proportion than others[26]. However, this cannot be achieved without a strong government intervention in the market.

Cherp and Jewell have also come up with a classification of energy security which is achieved by looking at the types of threats and the way in which these threats are answered or withhold. Firstly, the "sovereignty perspective" focuses on threats that come from outside parties; i.e. countries,

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[23] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.

[24] Chester, Lynne. "Conceptualising energy security and making explicit its polysemic nature." *Energy policy* 38, no. 2 (2010): 887-895.

[25] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.

[26] Stirling, Andrew. "Diversity and ignorance in electricity supply investment: addressing the solution rather than the problem." *Energy policy* 22, no. 3 (1994): 195-216.

organisations, energy companies. The second “robustness perspective” focuses on threats that are perceived to be either from natural or technical causes; i.e. natural disasters, failure of technology or infrastructure components, a decrease in the availability of resources. Lastly, the “resilience perspective” focuses on the uncertainty that the future brings, due to the complexity and various sizes of different types of energy markets[27].

1.2. Security of Supply & Security of Demand

The process of agreeing upon a common definition of energy security, by agents that faced rather similar energy issues, has been attempted on quite a few occasions, a very relevant example being that of the International Energy Agency (IEA) which presents the image of various buyers for fossil fuels. During the period of the 1970s, the same agency aforementioned above had strongly underlined two vital needs in the energy sector: the increasing need to diversify energy supplies, and to ensure that there are satisfactory technologies for storage facilities. Moving towards the period of the 1990s, the Agency’s concerns had shifted over towards making sure that energy goods and its derivatives were enjoying free trade within the global markets, and even more that such trade was regulated and monitored by means of agreements and other institutions. Going further along the timeline, the G8 summit that was held in St Petersburg in 2006 had acknowledged for the first time the utter importance of energy security at a global scale, and was further “defined at this summit as: reliability of supply, diversity of supply and source, and crucially, the *terms* of access to supply (i.e. affordable prices). The latter has in fact been a common aspect of the definitions produced by countries that tend to import much of their energy needs.”[28]

The approach of security of supply can be perceived as basically being in complete antithesis with the approach of security of demand, in the sense that the first one requires lower prices for its security, where as the latter conceptualises it via higher prices. What can be said with certainty is that ever since the 1956 Suez Crisis, certain issues raised with regard to energy security have facilitated the importer states towards both diplomatic and military efforts to ensure these supplies on more beneficial circumstances. Moreover, a deeper insight into the issue of security demand might also lead to a better comprehension of energy security as a whole.

The area of “demand security” has not received as much consideration as that of “supply security”, when looking into the realm of defining or conceptualising energy security. However, certain states are far more concerned with the security of demand towards their energy security of their internal market, as opposed to their supply security, if that state relies, for example, on revenues coming from hydrocarbon exports. Making sure that the medium and long run demand is stable and constant is a high priority for the majority of states exporting energy, whilst also taking into account

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[27] Cherp, Aleh, and Jessica Jewell. "The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration." *Current Opinion in Environmental Sustainability* 3, no. 4 (2011): 202-212.

[28] Kuzemko, Caroline, Michael F. Keating, and Andreas Goldthau (2015). The global energy challenge: Environment, development and security. Macmillan International Higher Education. Chapter 7 - Energy Security.

the impact upon the GDP that revenue from fossil fuel exports can have. Therefore, the security of demand means playing the long term game, being able to speculate the prices for the long run, having a means of entry into the market for either imports or exports, and most importantly the actual stability of resources and geographical regions, in order to make sure that planning for new investments in productions can be achieved. What is more, for a number of exporters, energy security is also stretching to include the need to protect their national economies from the risks associated with the fluctuations of international markets and their potential harmful influences that come as part of the global speculative movements.

In addition, security of demand and managing the oversight over entry into markets, has hold a strong influence over the way in which the foreign policies of exporting countries are shaped, and respectively the way in which their energy institutions have evolved and even developed. The apprehensions that come with relying on demand are directly proportionate to the same apprehensions for making sure that prices are able to cover the costs of investment (these costs are rather substantial and require to be paid up-front) in the manufacturing and transportation processes of fossil fuels. To underline this point even more, the mission statement of the Organisation of Petroleum Exporting Countries' (OPEC) makes this rather clear:
"*to coordinate and unify the petroleum policies of its Member Countries and ensure the stabilisation of oil markets in order to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry"*[29].

On the other hand, looking at energy security from the lens of security of demand will eventually chart its ways into the waters of the repercussions it has on climate issues. The possible transition to a low carbon future will not be successful without leaving its mark on the economies of the countries that are heavily dependent on revenues coming from fossil fuel exports. The burdens of changing the structures, in the environment, of the energy systems must be taken into consideration by such states, as it will influence massively not only their demand security, but also their GDP and revenues from exports respectively. The response towards change of such countries will be of high importance, especially of those as wealthy exporters as Saudi Arabia, who are yet to have a concrete plan for adapting to such a future[30]. The progress and expansion of energy security studies has given room for the emergence of diverse and multi-faceted interpretations in the literature on the subject. Regardless, these should not come as an obstacle towards the development of a commonly-accepted framework for analysis and evaluation[31]. Even though such a framework would possibly have a

[29] "OPEC : Our Mission". 2022. *Opec.Org*. https://www.opec.org/opec_web/en/about_us/23.htm.

[30] Bahgat, G. (2013) *Alternative Energy in the Middle East*. Basingstoke and New York: Palgrave Macmillan

[31] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.

limited functionality in practice, as concerns of energy security fluctuate from one country or industry to another[32].

1. 3. Ways to achieve Energy Security

A question arises towards how one can quantify the risks that are brought along with energy security. The British government has developed several reports since the aughts of the twenty -first century, and found the main indexes as being: the way in which the market reacts, and the projections for supply and demand[33]. Additionally, there is an increasing challenge in ensuring greater cooperation, and collaborations on the world energy market and even interdependence that benefits the parties. Moreover, the lack of adequate measures to ensure energy security can gradually lead to insecurity regarding the constant supply, and supply of hydrocarbons of economic activities. The scenario of materialising a complete, perfect energy security belongs to the realm of the unreal. As a result, other scenarios could be considered, such as: ensuring energy security through UN means and creating a global "dispatcher" and appropriate international legislation; ensuring energy security in "regional economic, political and military blocs", which would be able to balance in the dynamics of international trade; ensuring energy security in favour of a group of highly advanced economies ("global directorate") and at the expense of exploring new sources of energy that are secondary to the issue of hydrocarbons; the most viable way to achieve energy security is the spectrum of exhaustible resources which cannot be renewed (oil, gas, coal) as low as possible and, above all, non-polluting.

Achieving sustainable development, based on clean energy and technology, requires economic redefining of global and social goals: stabilising population growth (a larger population at a higher level of industrialisation will lead to more pollution and more resource consumption), resizing economic growth to production and consumption trends, creating an appropriate international institutional and legislative framework, and substantially improving the situation in developing countries. Although most industrialised and post-industrialised countries agree with these goals, the abandonment of fossil fuels and the shift to renewable and clean resources cannot be achieved too soon and without high costs. Energy sources, including solar, wind, biofuels, hydrogen, etc., as well as increasing the storage capacity of oil and gas, are looked at in order to alleviate possible temporary crises. Moreover, the maintenance of a (nuclear) reactor is quite expensive and accidents so far, such as the one at the Chernobyl plant, have forced the competent international fora to impose stricter measures. Thus, after a period of rejection and even technological restructuring there is a clear need that much will need to change in the field of energy security. What is more, with the

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[32] Cherp, Aleh, and Jessica Jewell. "The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration." *Current Opinion in Environmental Sustainability* 3, no. 4 (2011): 202-212.

[33] Joint Energy Security of Supply Working Group (JESS), 2002. First Report, June, London, Department of Trade and Industry.
Joint Energy Security of Supply Working Group (JESS), 2006. Long-term security of energy supply, December, London, Department of Trade and Industry.

abandonment of nuclear energy, the world's major economies are increasingly considering reactivating and building new nuclear reactors (which seem to be the newest and most popular version of green energy), an option also generated by rising oil prices and improved technology and safety measures.

Chapter 2 - Energy Security in the European Union

2.1. The evolution of Energy Security in the European Union

Among the documents considered to be the first attempts to define a common policy on energy and environmental security are: the Treaty of Paris (1951), the Treaty of Rome (1957), the Protocol of Understanding between Member States on Energy Issues (1964) , Single European Act (1987), Maastricht Treaty (1992), Amsterdam Treaty (1995) and the Kyoto Protocol (1998). The 2007 Lisbon Treaty is the document behind the development of European energy and environmental security policy. Title XX of the document, respectively art. 176 A of the Lisbon Treaty, which refers to energy, provided that the policy of the Energy Union is to maintain the operations of the energy market; establish a constant security of energy supply in the Union; to encourage energy saving and efficiency, as well as the expansion of new types of energy and renewables[34]. This perspective suggests that the Lisbon Treaty is the fundamental document through which the European Commission receives the necessary powers to deal with energy policy, putting it at the top of the agenda. Therefore, this document outlines the main lines of action that the Commission will pursue in developing a viable energy strategy, thus formulating the objectives that it aims to achieve. The Commission will pay particular attention to this European sector, namely energy, and will draw up two working documents to this end, namely the Green Paper and the White Paper on Energy. The European Energy Charter is also being drafted following the Lisbon Treaty.

The European Energy Charter is the document that strengthens cooperation between states on energy and has been implemented through the Energy Charter Treaty. It was elaborated in the context of the exit of the states from Central and Eastern Europe under the curtain of communism, in order to provide a formal framework for a lasting collaboration of the states of Western and Eastern Europe in the field of energy. The Energy Charter was drafted for four years, only to be completed in 1994 in Lisbon, when the treaty was signed. Among the most important articles in this document, are those related to competition, the transparency of decisions taken in the field of energy, the sovereignty of states in this process, the conditions of taxation and those on environmental safety, but also on the transit of energy between states and scenarios regarding the settlement of disputes and conflicts that arise between states[35]. The European Commission is the most important player in the implementation of a common state policy on energy and environmental security, and is the strong point of this document. The instruments by which the European Commission involves civil society in the process of drawing up common European policies are the so-called White Papers and Green Papers of the Commission. They aim to consult European

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[34] Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007.

[35] Energycharter.org. 2016. *THE INTERNATIONAL ENERGY CHARTER CONSOLIDATED ENERGY CHARTER TREATY*. [online] Available at: <https://www.energycharter.org/fileadmin/DocumentsMedia/Legal/ECTC-en.pdf> [Accessed 18 May 2022].

citizens on the decisions that the European Commission wants to implement, through sustainable strategies.

Traditionally, European integration was initially based on economic aspects. Along with its development, the importance of non-economic aspects, including ensuring energy security, grew. Depending on the international situation, the directions of undertaken activities were various. The occurrence of the first and second oil crises have made it imperative to insure the security of crude oil supplies and to search for other sources of energy, preferably cheaper ones. The first struggles between the Russian Federation and Ukraine have highlighted the need for a debate on the security of gas imports. At this point it should also be noted that energy security was not a priority on the agenda of the institutions of the European Union up until the Ukrainian gas crises of 2006 and 2009, and later in 2014 after the annexation of the Crimean peninsula by Russia. However, even though the EU has imposed sanctions on Russia they had little to almost no implications towards the gas sector, and the increase in the pipeline networks for gas only meant a gradual increase on the dependency the European Union will have on Russian gas[36]. On the other hand, the Chernobyl and then Fukushima reactor failures have lead to a discussion on the safety of nuclear power plants. Therefore, energy security has become a vital component of the security policy implemented by the Member States and the European Union. The activities currently undertaken by the European Union are primarily aimed at ensuring energy security through security of supply, increased competitiveness and sustainable development, which was specified in the so-called climate and energy package (a set of six acts in total adopted by the European Commission in 2007 and 2008), and then in the Europe 2020 strategy[37].

Moving further, the many advancements in energy and environment security policies within the EU have led to the development of the Energy Union for its member states. Due to an urgent need of Poland, Donald Tusk had put forth the idea of the Energy Union and turned it into a project whose purpose was to ensure the energy security for all European Union Member States.The supply of natural gas has been the main actor in the Polish energy security debate for a rather lengthy amount of time, and this has meant that in 2009, gas production as a primary energy only accounted for a considerably small percentage of total supply - the internal industry and market being responsible for supplying a third of said amount[38]. Since the majority of its gas supplies were imported from Russia, many economists, politicians and policy-makers considered this to be “unsafe”, as being at the mercy of Russian gas companies has historically proven to be a rather risky move in terms of

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[36] De Micco, P., 2014. *A cold winter to come? The EU seeks alternatives to Russian gas*. [online] europarl.europa.eu. Available at: <https://www.europarl.europa.eu/RegData/etudes/STUD/2014/536413/EXPO_STU(2014)536413_EN.pdf> [Accessed 18 May 2022].

[37] "2020 Climate & Energy Package". 2022. *Climate Action*. https://ec.europa.eu/clima/eu-action/climate-strategies-targets/2020-climate-energy-package_en.

[38] Szulecki, Kacper, Severin Fischer, Anne Therese Gullberg, and Oliver Sartor. "Giving shape to the Energy Union: Evolution, national expectations and implications for EU energy and climate governance." *National Expectations and Implications for EU Energy and Climate Governance (June 17, 2015)* (2015).

supply disruptions and having the same political agenda as the Russian government[39]. Similarly to the security of supply element, the Energy Union aims to integrate energy policy with the environment, so as to reach an appropriate level of sustainability. Thus, it is the European Union's intention to have its' Member States as global leaders in promoting such goals by pursuing the expansion of alternative energy technologies in their infrastructures. It is therefore a shared accountability of European states to care for the environment and pledge themselves to an agreement to reduce emissions globally. It was concretised at the legislative level by the Paris Agreement[40], act which through its nature obliged the states to transpose it immediately into the national legislation and to modify the internal laws of the states in accordance with its regulations. When looking at the Energy Union strategy, it can be said that it is a unitary one because it proposes concrete measures for all the member states of the European Union, but it has instruments specific to each region of Europe. The instruments used and the measures imposed on states differ from one region of Europe to another precisely in terms of the needs they face.

Moreover, the European Union's energy policy is focused on providing the tools necessary so that the energy market can function as a well oiled machine, as well as maintaining the security of energy supply in the Union. The fundamental provisions contained in the Treaty on the Functioning of the European Union indicate the priorities which the Union should follow when creating its own approach to energy policy[41]. The internal EU market must be based on the existing energy market and is to be a component of ensuring the security of energy supplies for the member states. The responsibilities of the Union do not end in this area, but are one of the main drivers of action within the framework of the Union. An intensive process of liberalisation has recently been noticeable in the energy markets in the European Union. The main goal of this process is to improve the conditions (price and handling) of energy supplies to end consumers. The above goal can be achieved by introducing free market competition, and the most important entity in the field of the proposed changes should be the customer who ultimately decides from whom, on what terms and at what price to buy energy. Therefore, the regulated area should only cover network activities, and both production activities and trade in types f energy should take place under the conditions of market competition. It is assumed that properly implemented competitive mechanisms will enable the implementation of the provisions contained in EU directives. However, it is necessary to maintain a sufficient number of entities participating in the energies markets.

Nowadays, in the energy markets, there is a strong pressure to expand the area of operation. This is due to the constant striving for the aforementioned high level of competitiveness and the effectiveness of functioning. The process of regionalisation is taking place, i.e. the creation of

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[39] Ibidem.

[40] Unfccc.int. 2022. *The Paris Agreement*. [online] Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> [Accessed 23 April 2022].

[41] Consolidated version of the Treaty on the Functioning of the European Union. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12012E/TXT&from=EN [Accessed April 2022]

regions in which individual countries undertake joint activities aimed at the development of energy markets. Regionalisation is, therefore, a specific form of regional integration, serving to satisfy both common and individual needs of individual countries. In creating close and intensive regional cooperation, individual countries look for opportunities to implement their own market development strategies, minimise energy, economic and political risks, or achieve a competitive advantage over other regions. Regionalist tendencies are a remedy for the simultaneous process of globalisation, although others say they are a step on the way to the full liberalisation of energy markets. The formation of regional groupings brings significant benefits to individual states. On the one hand, they gain a greater ability to oppose those countries that are more competitive in energy production. On the other hand, states belonging to regional groupings have a chance to improve the quality of services and lower prices by expanding the scale of operations and increasing access to new energy sources.

2.2. The perspectives of the EU on Energy Security

Despite the fact that energy security is one of the most important objectives of energy policy, there is no commonly accepted definition of this phenomenon in the literature on the subject. It is an interdisciplinary concept that is of interest to political scientists, sociologists, lawyers and economists. Hence, it is important to present the essence of the energy security, as perceived at the level of the European Union. What is more, the attempt to create the foundations of theoretical knowledge on energy security will make it possible to explain the essence of the phenomena and processes that constitute it. Theoretical considerations outlined in this way may be the basis for conscious and responsible shaping of the climate and energy policy of the European Union.

As outlined in the previous section of this chapter, there are three main links between general energy security definitions and EU energy security understandings. Looking at them chronologically they are: security of supply, affordability and sustainability (in terms of climate and environmental targets); all three concepts being mentioned as early as 1995 with the publishing of the White Paper by the European Commission, with the first two taking priority over the latter issue[42]. Even though energy has been one of the founding concepts for EU integration, its role in the Treaties has declined gradually up until the Treaty of Lisbon. This inconsistency on energy issues in the Treaties had created a rather inconsistent legislature when looking at its common capabilities for an internal market and sustainability (concerning the environment and in particular decarbonisation). Even though being the core concern for the European Union's energy security, the concept of security of supply was delayed to take a centre stage role, the main reason being the fact that all Member States hold sovereignty and autonomy over their decisions regarding their energy mix, energy security, and national security respectively. Thus, it cannot come as a surprise the hesitancy of the Member States to give up their sovereignty in this context, even if it would lead to

[42] Christou, Odysseas. "Energy security in turbulent times towards the European Green Deal." *Politics and Governance* 9, no. 3 (2021): 360-369.

the ability of the EU to create some forms of regional blocks that would then path the road to the desired Energy Union[43].

Making an analysis from a historical perspective, it can be concluded that all the significant policy changes and legislations have been drawn and implemented as a response towards a crisis that threatened the security of supply in the European energy markets. As such situations and changes in policy occurred after the Ukrainian crises of 2006, 2009 and 2014, and even more so lead to a change in the relationship between the EU and the Russian Federation, raising an even bigger red flag in terms of EU's security of supply and its dependency on Russian gas. As its title would suggest, one of the Green Papers presented by the Commission would underline exactly the need to focus on these three main issues of energy security: "A European Strategy for Sustainable, Competitive and Secure Energy"[44]. The European Council has also reacted to this said Green Paper, and encouraged for "fulfilling in a balanced way the three objectives of security of supply, competitiveness and environmental sustainability"[45]. The further reaction of the Commission will have materialised in the first "Energy and Climate Package" of 2007[46]. The evolutions in energy policies have happened at a rather rapid pace as compared to the previous decades, which only comes to show that the issues on energy and climate are recognised to carry a heavy weight, fact which is mutually agreed upon by the Member States[47]. The planning for European Union's Energy Union came to be as a side effect of the Ukrainian crisis in 2014 which called for a more unified energy policy. It should also be noted at this point that the Green Papers provide within themselves the definitions that will contour energy security from an environmental perspective, the literature also being supported in this sense by the definition provided by Chevalier[48] (see section 1.1.1).

Moreover, the concept of "affordability" relating to defining energy security, that can be found in the "Framework of the four As", can be encountered in official EU policy as early as the "First Energy Package" of 1996[49]. This package focused on merging the energy markets of individual Member States into a complex and undivided market which functions under liberal characteristics that would apply to the electricity and gas industries[50]. The open choice of suppliers of electricity

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[43] Tagliapietra, Simone. "Towards a European Energy Union. The Need to Focus on Security of Energy Supply." (2014).

[44] "A European Strategy for Sustainable, Competitive and Secure Energy", Green Paper of the European Commission, COM(2006) 105 final.

[45] European Council of 23/24 March 2006, Presidency Conclusions No 7775/1/06 REV1, Brussels, 18 May 2006.

[46] Tagliapietra, Simone. "Towards a European Energy Union. The Need to Focus on Security of Energy Supply." (2014).

[47] Ibidem.

[48] Chevalier, J.M., 2006. Security of Energy Supply for the European Union. European Review of Energy Markets, p. 2.

[49] APERC, APERC. "Quest for energy security in the 21st Century: resources and constraints." *Asia Pacific Energy Research Centre, Tokyo, Japan* (2007).
European Commission. (1997). "An overall view of energy policy and actions" (COM(97) 167 final)

[50] Christou, Odysseas. "Energy security in turbulent times towards the European Green Deal." *Politics and Governance* 9, no. 3 (2021): 360-369.

and gas was also further emphasised as a positive laissez-faire approach in the "Second Energy Package". In addition to this, the concept of "availability" also taken from the "four As" framework can be found in one of the communications put forward by the European Commission regarding the oil supply for the EU[51]. Here, the concept of availability was reinforced as being a vital component for strategic policies of energy security. In addition, through their critical analysis of "the four As", Cherp and Jewell define energy security by answering to three fundamental questions proposed by Baldwin "Security for whom?, Security for which values?, From what threats?"[52]. Through their analysis the two authors also draw attention to certain parts of energy systems that are vital to the functioning of societies as opposed to others. Transferring this to the realm of policy implementation at the level of the EU, one could conclude that security of supply policies become the "vital" component in this context. Regardless of other types of policies pursued depending on the geopolitical and economic environment (affordability or sustainability) in and outside of the EU, security of supply policies regarding energy will always remain at the core of EU legislation, as there is a large discrepancy between the level of energy that can be internally produced and the demand on the European markets.

One rather interesting idea to think about would be the way in which the EU proposes and implements its policies in the field of energy security. Do they come as a response to a crisis or are they formulated to achieve some long term goals[53]? The answer here could be that they are doing both. While a crisis that shakes the market in terms of security of supply is the driving force behind these policy changes, it is rather clear from the EU's policies that no such changes are being made without the other two factors being taken into consideration for the long term: affordability - and thus creating a liberal competitive market, and of course, sustainability - which comes with climate policies and decarbonisation targets for the future. The broadened theoretical perspective of energy security shows that by pursuing areas of policy (other than the three main ones) as proposed in the European Green Deal, will eventually lead to a decrease in the level of risks associated with energy insecurity[54]. This in turn relates to the conceptualisation of energy security as proposed by Cherp and Jewell, more specifically through the "sovereignty, robustness, and resilience perspectives" which gives us a categorisation of threats to energy security[55]. This policy expansion will guard against threats that relate to natural disasters or the industry's infrastructure, the actions of countries and/or organisations, and even uncertainty and instability of the future. Moreover, the broadened principles found in the European Green Deal (EGD) also fall in line with the theoretical appraisals

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[51] European Commission. (2000b). The European Union's oil supply (COM(2000) 631).

[52] Cherp, Aleh, and Jessica Jewell. "The concept of energy security: Beyond the four As." *Energy policy* 75 (2014): 415-421.
Baldwin, David A. "The concept of security." *Review of international studies* 23, no. 1 (1997): 5-26.

[53] Christou, Odysseas. "Energy security in turbulent times towards the European Green Deal." *Politics and Governance* 9, no. 3 (2021): 360-369.

[54] European Commission. (2019). *The European Green Deal* (COM(2019) 640 final)

[55] Cherp, Aleh, and Jessica Jewell. "The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration." *Current Opinion in Environmental Sustainability* 3, no. 4 (2011): 202-212.

made by Chester, who, when attempting to define energy security concluded that the concept is rather multi-faceted and cannot simply be defined through one single area of expertise[56]. Thus, the EGD presents this conceptualisation rather neatly, especially when looking at the area of clean energy. Here, the focus is made on renewable sources of energy, the stability of the supply and also its related affordability, whilst also introducing the new concept of digitalisation in the energy market, whilst holding its integrations and connections at a steady level[57].

Moreover, from the inferences made so far from analysing policy documents and literature, and when considering the "classical" vs "contemporary" theories of energy security, it is rather clear that the EU focuses on having its policy based on the issues it faces at certain moments in time, and therefore allowing for the development of the "contemporary" literature from its practices.

[56] Chester, Lynne. "Conceptualising energy security and making explicit its polysemic nature." *Energy policy* 38, no. 2 (2010): 887-895.

[57] European Commission. (2019). *The European Green Deal* (COM(2019) 640 final)

Chapter 3 - Case Study 1

3.1. Energy Security in Germany

Germany's perspectives on developing policies for its energy security are focusing on its geopolitical and economic aspects, whilst still implementing the fundamental theoretical trifecta: ensuring its security of supply, focusing on renewable energies that are not damaging the environment (sustainability), and allowing for fair competition in the markets (costs and affordability). Moreover, Germany's energy security strategy consists of the following elements: internal actions, strategic partnerships with Russia and parallel cooperation with other producers, consumers and transit countries (often taking the form of an energy partnership) and activity within the EU. Activities to ensure the security of Germany's energy supplies are also treated in terms of foreign policy and, which is worth emphasising, with the use of various forms of cooperation on the bilateral and multilateral level. The energy transition in Europe has led to the dichotomy of its member states countries into two main categories, the classification factor being their policy priorities regarding energy security. Firstly, there are the countries that focus on renewable energies to ensure their energy security, and by doing so they lower their dependency on imports and create business opportunities on their internal markets. On the other side of the line, there are countries who focus on having a strong security of supply, being heavily reliant on fossil fuels, and considering renewable sources of energy to be not only too costly, but also not stable[58]. It will be made clear from the analysis of Germany's economy and the policies they pursue to achieve energy security that they fall into the first category of this dichotomy. Germany aims to introduce a new industrial policy by decentralising the energy system. Germany has been transforming its energy system for several years. They decided to slowly withdraw from nuclear energy production and coal mining, they strongly promote renewable energy sources and manage energy more and more efficiently. With their attitude, they strive to ensure energy security for both their country and the European Union.

Having the largest economy in Europe, Germany is also one of the biggest energy consumers world-wide. The country's approach to energy security has traditionally been marked based, and of course tending to prefer their dealings with Russia over anything else. Germany's long term strategy was divided between two main aspects. Encouraging and offering support for their national companies to be able to compete in international markets, as well as investing in infrastructure and technologies that would generate clean energy. Moreover, it should be noted that even though Germany is a key importer of energy into Europe, it also plays the role of a transit country, facilitating the supply towards western European markets. It is very important to mention that from a sustainability standpoint, Germany remains the global leader in investments and research carried out for clean and renewable energies (i.e. wind-powered technologies, biofuels). At this point,

[58] Pérez, María de la Esperanza Mata, Daniel Scholten, and Karen Smith Stegen. "The multi-speed energy transition in Europe: Opportunities and challenges for EU energy security." *Energy Strategy Reviews* 26 (2019): 100415.

Germany's economy is still very much reliant on external energy suppliers. However, this might change according to the level of technological advances made in the green energy sector which aims to decrease the country's dependence on external suppliers for the future. A specific feature of the German energy policy is the ability to use internal factors to build its international position, as well as opportunities resulting from its geographic location and political alliances. German business, strongly focused on the export of its products and services, plays a particularly important role in this field. It influences the political centres of the state so that it conducts a foreign policy that would facilitate its sale to absorptive markets. The literature on the subject emphasises that the German model of the economy (trade power, geo-economic power) achieves the best results in conditions of stability and world peace, because then there are optimal opportunities to export technologies, standards, norms, goods and services as well as related models and solutions that have applications in industry[59].

In Germany, energy has always had an economic and ecological dimension attached to itself, especially since the country's oil industry never took off. The German energy economy has always had solid emergency mechanisms set in place, as protective mechanism against disruptions in supply. At the beginning of the 2000s, the government had started to focus on security of supply policies that would provide stability in the long-run, as their dependence on external suppliers grew - having imported more than half of its consumed energy at one point in time[60].

During the debates on the proposals for the EU climate and energy package, Germany presented the position that too restrictive CO2 limits meant, inter alia, huge financial burdens and weakening their position as an exporter due to lower competitiveness of production. With the publication of the Green and White Papers on energy, the attitude of many member states seemed to reflect that having a highly fragmented market for the energy sector was limiting the ability of the EU to respond to crisis and limited their capabilities for policy development. This carried and even more significant value, since the early stages of energy policy expansion were lacking to focus on the need for a European market, and instead allowing for nationalistic economic gains for the energy sectors. Berlin's focus was always one of holding "cooperative security" relations with the countries that supplied Germany with energy, whilst promoting solutions that were based on the trends of the markets. The connections of the electricity systems of the Member States are not without significance for the functioning of the internal energy market in the EU. In 2008, the power systems of Germany and Denmark were connected. The purpose of this connection is, inter alia, increasing the security of supply and lowering energy prices thanks to the possibility of satisfying domestic demand with imports from the neighbouring market. The connection of the network required the coordination of, among others energy exchanges, the German EEX and Nord Pool, which includes the Scandinavian countries. In turn, the decision of May 2008 on the merger of energy exchanges,

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[59] Kundnani, Hans. "Germany as a Geo-economic Power." *The Washington Quarterly* 34, no. 3 (2011): 31-45.

[60] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

EEX and the French Powernext was the introduction to the interconnection of the Benelux and French networks with the German one[61], which finally took place in 2010. In the opinion of the Minister of Economy Rainer Brüderle, the creation of one energy market is a milestone in the process of creating a single European electricity market; this is a condition for greater competitiveness and favourable electricity prices[62]. Moreover, due to its location and market size, Germany is a natural coordinator of the integration of the western and eastern part of the EU energy market.

The paper published by the European Commission in 2006 brought for the first time in the eye of the German government the need to ensure a stable security of supply, in addition to the economic and environmental dimensions that were already entangled in Germany's energy policies[63]. Moreover, in the context of developing specific policies, after the development of several summits and working groups, the German government had created individual departments that were to deal with each branch of energy security more thoroughly; these focused on energy efficiency, renewable sources of energy, and energy and the environment[64]. The conclusion reached after the summit in 2007 was that even though the three main pillars for energy security were very much the foundation for all policies developed, the government should shift its focus towards the fight on climate change and the implications it held for the energy sector, as this would allow for a better energy security in the long-term[65]. Within the field of internal measures, increased energy efficiency and renewables were highly promoted, in order to both reduce the level of greenhouse emissions and also decrease their dependency on energy imports. However, these were also considered valid polices for external measures, along with increasing diversification of energy sources and their transit routes[66].

In terms of cooperation for energy security, Steinmeier had expressed the need for an organisation similar to the OSCE (Organisation for Security and Cooperation in Europe), which would be vital for establishing mutual relationships of trust between the parties involved[67]. It was rather clear at the time, that any future conversations had to include all actors involved - the producers, consumers,

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[61] "Growth Through Security". 2008. *Eex.Com*. https://www.eex.com/fileadmin/EEX/Downloads/Newsroom/Publications/Annual_Reports/eex-gb-2008-en-pdf-data.pdf.

[62] Brüderle, Rainer. 2011. ""The Best Energy Is The Energy We Don't Consume"". *Security Of Energy Supply In Europe*. https://www.ab.gov.tr/files/ardb/evt/1_avrupa_birligi/1_6_raporlar/1_3_diger/security_of_energy_supply_in_europe.pdf.

[63] European Commission. (2006). Green Paper: A European Strategy for Sustainable, Competitive and Secure Energy. COM(2006) 105 Final (8 March), Brussels.

[64] Duffield, John S. "Germany and energy security in the 2000s: Rise and fall of a policy issue?." *Energy Policy* 37, no. 11 (2009): 4284-4292.

[65] Ergebnisse des dritten Energiegripfels: Grundlagen für ein integriertes Energie- und Klimaprogramm (3 July 2007) https://www.energie-chronik.de/070705d1.htm

[66] Duffield, John S. "Germany and energy security in the 2000s: Rise and fall of a policy issue?." *Energy Policy* 37, no. 11 (2009): 4284-4292.

[67] Steinmeier, F.-W. (2007). Transatlantic Relations in the 21st Century. Speech by Federal Foreign Minister Steinmeier at the 43rd Munich Conference on Security Policy, 11 February.

neighbours and transit countries. This idea was embraced by the German Foreign office who supported the need of a “single voice” when it came to the Union’s external actions. Moreover, minister Steinmeier also pushed for cooperation and dialogue between Russia and Germany, and Russia and the EU respectively, following the former party’s refusal to ratify the Energy Charter Treaty; a new partnership had to be negotiated with Russia despite their refusal[68]. It would seem that being held liable to a document that ensured a good-working relationship and cooperation was not on the Russian agenda. What is more, the issue of cooperation was raised by Germany in a more decisive manner than ever before, pushing for a common strategy and response plan in terms of disruptions of energy supplies. Furthermore, the Bundestag underlined the need for a common storage of ail and gas reserves so as to increase the level of solidarity among the Member States, and in this sense everybody be protected from such types of interruptions[69].

Germany's stance on the common external energy policy of the European Union differs in detail from the concepts of other member states. It results from the specific fuel situation and energy sectors of Germany, the interests and goals of the policy towards individual suppliers of energy resources, including, in particular, Russia. The aforementioned Russian-Ukrainian gas crisis at the beginning of 2006 had a significant impact on the perception of the problem of security of energy supplies in Germany. Mainly owing to the Minister of Foreign Affairs, Steinmeier, this issue became a subject of interest to German foreign policy and was forced on the forum of the European Union. In Steinmeier's opinion, the issue of energy security is not only an element of global economic and environmental policy, but above all of the world security and peace policy in the 21st century[70]. Steinmeier referred to EU relations with Russia in an article published in March 2007 in the renowned periodical "Internationale Politik"[71]. He reiterated that Russia is crucial a partner in the field of security of energy supplies, especially in the natural gas sector. He stressed the need to build energy links on a sustainable basis. These included access to the market on the basis of reciprocity, acceptance of competition rules by all enterprises active in the European Union and a stable legal framework. He assessed that the principles enshrined in the Energy Charter, which should be the basis for EU-Russia relations, are of particular importance.

In December 2008, i.e. a few days before the EU summit, Chancellor Merkel reiterated in her government statement that the EU energy and climate package must take into account the interests

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[68] Steinmeier, F.-W. (2006). Russia, Europe and the World - Prospects for Cooperation on Global Security Issues. Speech by Frank-Walter Steinmeier, Federal Minister for Foreign Affairs, at the 42nd Munich Conference on Security Policy, 5 February.

[69] Heinrich, Andreas. "Securitisation in the gas sector: Energy security debates concerning the example of the Nord Stream pipeline." In *Energy Security in Europe*, pp. 61-91. Palgrave Macmillan, Cham, 2018.

[70] Duffield, John S. "Germany and energy security in the 2000s: Rise and fall of a policy issue?." *Energy Policy* 37, no. 11 (2009): 4284-4292.

[71] Steinmeier, Frank-Walter. 2022. "Verflechtung Und Integration | Die Neue Phase Der Ostpolitik Der EU". *Internationalepolitik.De*. https://internationalepolitik.de/de/verflechtung-und-integration.

of German industry[72]. In addition, she drew attention to the issue of the so-called carbon leakage outside the EU, i.e. a possible process of relocating production and new investments to countries not covered by emission restrictions. The solution to this problem was important for Germany, the largest EU exporter of industrial goods, which would risk weakening its position as a result of lower production competitiveness. Does this mean that the interests of Germany should be prioritised over those of other Member States'? Or is it automatically implied that they are the one and the same with the EU's interests?

What is more, the energy conglomerates in this country have slowly taken a more important position within the European market, mostly due to the strategic position that Germany holds with regard to gas pipelines and also due to the fact that it became the biggest consumer of Russian gas and thus creating the pathway for its domination of the energy mix in Europe. Germany has always benefited from a special relationship with Russia and Gazprom, being the latter's greatest foreign consumer and/or investor, the only foreigners allowed to sit on its board being German nationals[73]. However, as a side-effect of the Ukraine conflicts in 2006, and by taking in 2007 the presidency of the EU, Berlin shifted its focus and thus Europe's focus on energy security policies that centred on the security of supply. The main policy the Berlin government followed didn't seem to have the need to look any further than Russia for securing their gas supplies. What is more, they didn't seem to be of much relevance even when planning for the Nord Stream project, which will only have increased Germany's and respectively the EU's dependency on Russian gas. Having had the approval from the European institutional bodies, Germany presented the project as one that would be highly beneficial for Europe, and not just its own interests. The perspective of having a unified front and approach, as a European community, for responding to Russian energy imports was only seen to emerge long after Germany had solidified its relationship with Russia, and its fundamental role in European gas trading[74]. There were increased levels of concern within German debates towards the country's growing dependency on Russian energy, and the latter's potential use of this relationship for political or economic gains. However, from a historical point of view, Germany and Russia have held good working relationships even during the Cold War, and it would be foolish to assume that the Russians could so easily replace the European buyers; there was no asymmetry in their relationship, but rather a mutual dependence. Moreover, despite the continuous issues between Russia and Ukraine, and disruptions of gas towards Europe, Russia had seen the need to diversify its supply routes to the European markets, so as to ensure a good working cooperation. It should also be noted that even though a good percentage of gas imported by the EU will now move through the Nord Stream pipeline, the dependency on Ukraine as a transit country will still be in place, as

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[72] "Regierungserklärung Von Bundeskanzlerin Dr. Angela Merkel Zum Europäischen Rat In Brüssel Am 11./12. Dezember 2008". 2008. *Budesregierung.De*. https://www.bundesregierung.de/breg-de/service/bulletin/regierungserklaerung-von-bundeskanzlerin-dr-angela-merkel-zum-europaeischen-rat-in-bruessel-am-11-12-dezember-2008-796120.

[73] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

[74] Ibidem.

more than half of the volume of gas imports will still transit this neighbouring country of the Union[75].

Due to various environmental concerns and a strong opposition coming from the public, nuclear energy was not and option Germany could turn to, and thus limited its options. This Central European country's position not to pursue nuclear energy was always made clear; their policies have instead focused on renewable sources of energy - the decision came to be implemented even easier after the Fukushima disaster, the last nuclear plants having been programmed to be completely taken out of use by 2022[76]. Furthermore, as opposed to Poland who lies to the east of Germany, the latter views that renewable sources of energy are not a threat to its economy, even more so, they are seen as the pathway to achieving energy security in the long-term[77]. In this context, cultural reinforcement might also play a role in the country's attitude towards renewables, as their positive aspects are often portrayed in the German media outlets.

To sum up, the changes in Germany's energy policy over the past half-century have led to significant changes in the country's energy balance. The high dynamics of these changes recorded in the last decade and their basis on the decisions of the ruling coalition indicate that in the coming years, work will be continued to increase the importance of renewable energy sources while limiting the role of traditional energy sources. Increasing the importance of renewable energy sources will also contribute to the maintenance of the high importance of natural gas, the use of which in power plants helps to reduce the emission of air pollutants and, at the same time, is an element necessary to increase the capacity of wind farms. In Germany, there is also an increase in the importance of hard coal in the country's energy balance, which is associated with the desire to replace nuclear power plants and at the same time taking advantage of the decline in coal prices on the global markets for this fuel. According to the author, the role of hard coal and natural gas in Germany will be determined by the price competitiveness of these energy sources and the issue of the certainty of supply of these fuels. The changes taking place in Germany's energy balance reduce the country's energy security as a result of increasing dependence on supplies of imported energy resources. A significant threat to Germany's energy security is also the instability of supplies from wind and solar farms. In order to increase the security of supply of energy raw materials, actions are taken in Germany to adapt the structure of the energy balance to the current market needs, related to, inter alia, with support for coal-fired installations.

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[75] Heinrich, Andreas. "Securitisation in the gas sector: Energy security debates concerning the example of the Nord Stream pipeline." In *Energy Security in Europe*, pp. 61-91. Palgrave Macmillan, Cham, 2018.

[76] Heinrich, A., J. Kusznir, A. Lis, H. Pleines, K. Smith Stegen, and K. Szulecki. "Towards a common EU energy policy? Debates on energy security in Poland and Germany. ESPRi Policy Paper, No. 2, September." (2016).

[77] Ibidem.

3. 2. Germany's perspective on the Nord Stream Conundrum

To begin with, it should be remembered that the factors influencing the state's energy policy include the perception of the issue of energy security, which comes as a result of the components of the energy mix, the degree of dependence on imported energy resources, and the level of diversification of energy suppliers. In this section it will be shown that even though a country as Germany claims to be so environmentally orientated, they changed their position and discourse to support the Nord Stream project(s) as a measure of security of supply.

Ever since the end of the Cold War, there has not been a more controversial issue between the relationship of Germany and Poland, other than the case of the Nord Stream pipeline. The construction of this pipeline meant that Poland, Ukraine and Belarus will no longer be transit countries for the Russian gas infrastructure, the new pipeline connecting Germany directly to Russia via the Baltic Sea. Many politicians and economists alike agree that ever since the construction of this pipeline the energy relations have changed the way we look at political alliances in Europe. Moreover, following the principle that "you don't bite the hand that feeds you", Germany has clearly been a supporter of the Russian agenda within Europe, going as far as having interfered with transactions that would not be in favour of Gazprom's actions within the Union.

Even though Europe increased its dependency on Russian energy, one cannot consider this as being one-sided. Since the global balance of power changed, Russia has shifted its focus after the collapse of the Soviet Union in becoming a superpower in terms of energy, but this means that it relies heavily on the money coming in from its energy exports to make up for their federal funds (at times, taxation from energy sales in Europe accounted for more than half of the entire budget)[78]. Thus, it is clear that there is a mutually dependent relationship between the European states importing Russian energy and Russia itself. One can only assume, that putting an end to this relationship will have catastrophic events for both parties involved. Moreover, since Germany is considered to be the largest importer of Russian energy in the European market, it would make sense that the relationship between these two countries will dictate the relationship that the EU will have with Russia[79]. This privileged relationship between Russia and Germany allowed the former to hold some form of leverage when it came to negotiating deals with the EU. In addition, the classical war strategy of "divide and conquer" was also applied by the Russians, who took advantage of this situation with Germany, and therefore were able to hold more bargaining chips when dealing with other European consumer states.

The implementation of the northern gas pipeline project aroused a number of controversies in Poland and the Baltic States, as well as in Finland, Sweden and Denmark. Retractable were, inter

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[78] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

[79] Ibidem.

alia, the following caveats: Germany's actions violate the foundations of the functioning of the European Union, in particular consideration of mutual interests and solidarity; running a gas pipeline along the bottom of the Baltic Sea is much more expensive than if it were to run through the territory of the Baltic states and Poland; the construction of the gas pipeline is a threat to the natural environment of the Baltic Sea because of the 300,000 tons of WWII explosives containing toxic substances lying at its bottom[80]. Poland and the Baltic states hoped for a change in the German attitude towards the gas pipeline project after the formation of the German coalition government in autumn 2005. However, a meeting between Putin and Chancellor Merkel in Moscow in January 2006 deprived these hopes. The new federal government of Angela Merkel was critical of the way in which Chancellor Schröder was pushing for cooperation with Russia without consulting Germany's eastern neighbours, but it did not withdraw its political support for the northern gas pipeline. Moreover, Merkel continued the campaign to support this project, presenting the northern gas pipeline as an important instrument for ensuring the energy security of Germany and Europe.

In addition, when Gazprom submitted its proposal for the Nord Stream II pipeline, the German government was adamant that this extension should be seen as an economic project rather than a political one. Taking into account the position of its eastern neighbour, it is rather clear that Germany and Poland do not share the same views when it comes to the Nord Stream projects and even more so, the bilateral relationship between the former state and the Russian Federation[81]. From a strategic perspective, the Nord Stream 2 gas pipeline contributes to greater control of the Russian Federation and Germany over the natural gas transmission routes between the two countries. Russian gas increases the stability of Germany's energy system, which is why they perceive the subsequent sections of the Nord Stream gas pipeline as a security factor in this sector. Unstable renewable energy sources play an important role in the German energy balance, and in the context of discussions on the future of coal and nuclear energy, gas will be of key importance. Therefore, Berlin aims to increase the security of fuel supplies by eliminating the political risk resulting from transit through third countries.

Due to the fact that the assumptions of the EU energy and climate policy favour certain fuels (including natural gas), and the prices of carbon dioxide emission allowances are rising as a result of speculation, competition between countries will become tougher. The ability to create and maintain jobs in an economy in which automation and robotisation will play an increasingly important role will become an area of competition. That is why it is so important to build competitive advantages, and cheap access to energy resources gives such advantages. The Russian Federation will use this situation to create divisions in the EU and encourage the member states to enter into alliances with it in certain political initiatives.

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[80] Whist, Bendik Solum. "Nord Stream: Not Just a Pipeline. An analysis of the political debates in the Baltic Sea region regarding the planned gas pipeline from Russia to Germany." (2008).

[81] Heinrich, A., J. Kusznir, A. Lis, H. Pleines, K. Smith Stegen, and K. Szulecki. "Towards a common EU energy policy? Debates on energy security in Poland and Germany. ESPRi Policy Paper, No. 2, September." (2016).

The energy policy of the Federal Republic of Germany is influenced by internal and external factors, with the former playing a key role. German business centres, oriented to the export of their goods and services, strive to maintain appropriate energy alliances and create conditions that increase the country's competitive advantage on the common EU energy market. Therefore, Germany participates in the implementation of the political Nord Stream 2 project in order to strengthen its position by directly controlling the natural gas transmission routes from the Russian Federation. From their perspective, this will be to strengthen the security of gas supplies at the expense of reducing the role of Ukraine and Slovakia as transit countries. As a result, both of these countries will become more susceptible to political pressure from the Russian Federation and will increase their dependence on German supplies. Nord Stream 2 would have contributed to the saturation of Central and Eastern Europe with Russian gas and weaken the will to implement EU diversification projects. The architecture of the transmission infrastructure already contributes to the dependence of the countries in the region on raw materials from Russia or Western Europe supplied by Germany. By building a new gas pipeline, Germany was trying to implement its strategic goals at the expense of the political trust of its partners, as it promoted a project that was in opposition to the EU's energy security strategy and contributed to market monopolisation against the assumptions of competitiveness. Will the European Commission remain credible by agreeing to subordinate the EU energy policy to German-Russian relations? Are anti-monopoly regulations to serve all EU states, or only selected ones? Should competition law in the energy market be enforced everywhere? The basis for building a common EU energy market was to be the enforcement of EU law. These are all relevant questions to consider even though the Nord Stream 2 project has been suspended in lieu of the Russian invasion in Ukraine in 2022.

The Nord Stream 2 project will have had contributed to the construction of a distribution center for Russian natural gas in Germany, which, thanks to its good partnership with the Russian Federation, would have bought gas at a lower cost than other countries in the region. The achievement of this goal was to be facilitated by further expansion of the German energy infrastructure and interconnections. Therefore, Germany will have achieved the most important position in the market, in line with the concept of “center-periphery”.

Chapter 4 - Case Study 2

4.1. Energy Security in Poland

The issue of energy security is taken up in many publications and debated by specialists from many fields of science. Experts in the field varying from law and the economy, towards energy policy and the environment, try to indicate which factors are vital when considering the implications for energy security. For several years, steps have also been taken to define a model of a new energy mix that will ensure sustainable energy supplies for all consumers, and at the same time will ensure that this energy will be cheap and produced in a way that respects the protection of the environment. An important aspect taken into account in the matter of energy security is energy efficiency. Improving the efficiency of energy use can significantly reduce the need to build new energy sources. In Poland, the improvement of energy efficiency is more and more clearly perceived as a source of potential savings. This is of particular importance in the perspective of the next few years, and is related to the fact that generating units that do not meet environmental protection requirements and those that are heavily used up will be withdrawn from the national power system.

Poland still has a large energy independence based on the primary fuel, which is coal. The national energy system based mainly on this fuel gives a great sense of stability and sovereignty. In the Polish energy mix, which is due to change in the coming years, the role of coal will gradually decrease. The current structure has a historical source in which access to hard coal and lignite meant that almost all of the domestic energy was based on it. For the foreseeable future (short term and medium term), coal will continue to be the primary source of fuel for the country's energy sector. However, the consumption of hard coal is expected to remain at the current level, due to the improvement of the efficiency of the new generating units[82]. The specificity of the country's system and network means that it cannot be converted into a system with a large share of distributed sources in a short time. Their share in the energy sector will increase, but even in the long-run, there will be no significant changes in the source structure of the Polish system. With the present condition of the grid and real possibilities of their reconstruction, commercial power plants with large generation sources must maintain their share in energy production at a level similar to the present one. Therefore, the energy system requires that old coal-fired units be replaced with new high-efficiency units. At the same time, these modern coal blocks will serve to achieve the climate goal of reducing CO2 emissions. However, due to the entry into force of European regulations on stricter emission standards, it will be necessary to exclude from operation production units which, due to technical reasons, will not be able to meet them[83]. In addition, extending the life of old units is necessary for maintaining a constant level of energy reserves, at least until other types of energy

[82] Brauers, Hanna, and Pao-Yu Oei. "The political economy of coal in Poland: Drivers and barriers for a shift away from fossil fuels." *Energy Policy* 144 (2020): 111621.

[83] Ibidem.

will enter the market. In other words, they will constitute the so-called cold reserve and will be put into operation in emergency situations.

Moreover, efforts to date in the area of increasing energy efficiency have focused mainly on energy consumers, while the potential to reduce significant losses in the process of energy production and distribution is largely neglected. Studies on improving energy efficiency and reducing CO2 emissions assume the replacement of coal-based energy generation with gas-based generation in combined systems. It is an indisputable fact that the efficiency of electricity generation in gas systems is exponentially much higher than the average efficiency of coal-fired power plants. Moreover, natural gas is a very clean energy carrier, because power plants based on this fuel emit insignificant amounts of harmful substances. Unfortunately, a significant disadvantage of these units, often overlooked in the studies, is the cost of gas, or rather its share in the total cost of production. Even slight increases in the prices of this fuel mean a much higher increase in the costs of electricity production compared to coal-fired power plants.

Considering the enormity of investments related to the need to modernise the energy sector, i.e. the need to increase the production capacity of electricity, as well as the introduction of a significant share of renewable energy sources in electricity generation, it can be stated that the demand for energy investment funds will be high a challenge. Therefore, it can be concluded that electricity prices will continue to increase in the coming years, as the energy industry will be forced to seek funds for the necessary investments. It is predicted that the average annual increase in electricity prices will be at the level of several percent annually. The dynamics of price growth, unfortunately, will continue. There is also a tendency to align Polish energy prices with those in force in the European Union. Moreover, the Act on Energy Efficiency - as an incentive for investors promoting activities related to energy efficiency - introduces white certificates[84]. They constitute a kind of tax added to the price of energy. Suppliers of energy carriers must prove that recipients in a given year have reduced their energy consumption by a certain percentage, specified in the act. Suppliers who fail to meet this requirement will pay a financial penalty in the form of a substitution fee. It follows that energy suppliers will have to pay for reducing energy consumption and they will certainly pass the resulting costs onto consumers, compensating themselves for expenses in electricity or heat prices. If you add to this the share of the costs of the renewable energy support system and the purchase of CO2 emission allowances in the price of electricity, it turns out that various support systems have quite a share in the price of energy.

Since it seems that Poland's energy sector is for a large part self-sufficient, one might come to question the government's choice to put the dependency on Russian gas as number one on their agenda of energy security. The answer here is given by two of the basic energy security concepts: availability and affordability. When looking at Poland's import of Russian oil, there are a few reasons that determined this choice: it came at a lower price compared to its competitors - also due its pipeline transport, and most importantly, Poland's oil refining industry was equipped with

[84] "White Certificates – Policies - IEA". 2022. *Iea.Org*. https://www.iea.org/policies/551-white-certificates.

technologies and infrastructure that could process the heavy crude oil - any change in this industry would come at substantial costs and also prolonged delays in usage (as one cannot change the infrastructure over night)[85]. In terms of affordability, using gas as an energy resource came with the cold reality of having very high costs. In addition, it has been argued that Poland did not make the most of its geographical location, especially its entire northern shore access to sea - which could have easily facilitated the imports of gas in the shape of LNGs (liquefied natural gas)[86]. The construction of its first LNG terminal having seen many delays until it was successfully completed. What is more, Poland's sentiment towards the potential of shale gas as a substitute for Russian imports was rather positive, as it would diminish its dependence on external suppliers, and thus follow their security of supply priority[87]. However, it seemed that pursuing the shale gas narrative came with its own sustainability problems.

Ever since becoming a part of the EU, Poland has made clear their desire for solutions to to the internal energy markets of member states to be taken into consideration at a European level, rather than just individual nationalistic ones. Poland's main concerns look at securing their energy supplies and push for a somewhat shared external energy policy within the Union. Moreover, having a united front in terms of policies that deal with Russian energy suppliers is something that has been emphasised numerous times by Polish policymakers. Their wish was that European countries would create a form of partnership and be seen as a unified unit of consumption in the eyes of Russian suppliers. As an individual country, Poland had been subjected to disruptions of energy supplies from Russia far earlier than other Western European countries, leaving a bitter taste when it came to trust and their dependency on an external energy supplier. Moreover, Poland failed to plan for any disruptions in the supply on energy for the short term. During the early 2000s, energy companies in Poland did not have any legal requirements to hold reserves that would meet the minimum necessary for the fundamental sectors of the economy[88]. This, at the time, could be blamed on the country's weak economy and highly bureaucratic institutions, or rather as a general oversight - based on its confidence and self-reliance on national energy producers.

The goals of the Polish government have been to merge the country into the energy grid of the EU, and at the same time to decrease the levels of Russian gas imports. Poland's unwillingness to be reliant on Russian energy also came as a side-effect of Russia's preferential relations with some of the member states of the EU (i.e. Germany). To begin with, it should be emphasised that the costs of implementing the EU energy and climate policy for Poland are difficult to estimate due to a number of unknowns; their type and size differs depending on the adopted analysis models. Undoubtedly, the achievement of the adopted goal of increasing the proportion of renewable sources of energy in

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[85] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

[86] Ibidem.

[87] Heinrich, A., J. Kusznir, A. Lis, H. Pleines, K. Smith Stegen, and K. Szulecki. "Towards a common EU energy policy? Debates on energy security in Poland and Germany. ESPRi Policy Paper, No. 2, September." (2016).

[88] Ibidem.

the structure of consumption of primary energy carriers is a difficult task. The Ministry of Economy assures, however, that Poland will meet its obligations to increase the share of renewable sources[89]. The Polish energy industry focused on the use of its internal coal production, and thus promoted the development of CCS (carbon capture and storage) capabilities, in order to extent the lifespan of its sickening coal industry. Using coal for the production of electricity it seems to have created more problems for this country than it actually solved. Due to increasing pressures from the EU to decrease the level of carbon emissions (that resulted from burning coal), gas seemed to be next in line to take over in the electricity-producing sector[90].

Considered to be one of Europe's most resilient members in terms of energy security, Poland has had rather low levels of dependence on external energy suppliers. The year of 2010 showed that more than half of the energy needs of the entire country were supported by its internal production of coal, this also accounting for almost the entirety of electricity and heat production, showing just how self-sufficient it was relative to other EU members[91]. Along this same period of time, it is worthy to mention that Poland was not at all concerned with any sustainability issues of its energy security, renewables having a rather small percentage in its energy mix. The negative effects of the EU energy and climate policy for Poland include, first of all, an increase in the costs of electricity production. Experts emphasise, however, that the solutions existing in Poland are insufficient to achieve such ambitious goals. And one of the core impediments to the expansion of the renewable energy sector are economic conditions. In order to level the competition, including the improvement of economic relations of renewable energy sources in relation to the entire energy sector, it is necessary to financially support investments in renewable energy. Poland's skepticism towards renewable sources of energy is also stemmed into its reluctance of forming a new relationship within which they would depend on another foreign actor. The country is reluctant to switch to such technologically advanced industries, as they would need to import these technologies from Germany, and therefore, many consider that they would just switch from being dependent on Russian gas, to being dependent on German technology for renewable energies[92]. Thus, here one might stay and ponder whether energy security is really a matter of sustainability, or at the end of the day, it all just comes down to affordability and costs. Moreover, it is no secret that Polish government officials have asked for financial and structural support from the EU for the development of power grids for renewables, outlining the social and economic conditions that prevent them from achieving this on their own. So if Eastern European countries are to switch their energy security policies to focus on climate action and renewables, Western European Member

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[89] "Polish And Lithuanian Ministers Of Economy: We Increase Our Energy Security And Invest In Renewable Energy Sources - Ministry Of Economic Development And Technology - Gov.Pl Website". 2022. *Gov.Pl*. https://www.gov.pl/web/development-technology/polish-and-lithuanian-ministers-of-economy-we-increase-our-energy-security-and-invest-in-renewable-energy-sources.

[90] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

[91] Ibidem.

[92] Heinrich, A., J. Kusznir, A. Lis, H. Pleines, K. Smith Stegen, and K. Szulecki. "Towards a common EU energy policy? Debates on energy security in Poland and Germany. ESPRi Policy Paper, No. 2, September." (2016).

States could be seen as a “core” to this perceived “periphery” developmental issue, and thus, grant these countries (who are yet to develop their renewable energy industries) advantageous loans or aids for building infrastructure through the institutions of the EU. On this same note, even though the EU sets certain goals with regards to energy and its side-effects for the environment, the actions they can take towards any Member State is limited by the Article 194 of the Lisbon Treaty and ratified in 2017, stating that any action taken “shall not affect a Member State’s right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply”[93].

The development of nuclear energy in the world involves not only high-power units, but also an attempt to build small modular units of low power. In the longer term, such blocks could replace worn-out coal-fired power plants. Therefore, it should not come as a surprise that Poland is willing to turn to nuclear energy for ensuring its energy security in the future. However, the plans for the development of nuclear energy in Poland were protested mainly by environmental non-governmental organisations and residents of border federal states. Undoubtedly, the plans for the development of nuclear energy in Poland require the federal government to take a firm stance. Currently, on the one hand, the federal government declares that the country has the right to develop nuclear energy, and on the other, it offers the exchange of experiences and support for “alternatives to nuclear energy”. If the federal government unequivocally supported the Polish plans, it would risk being criticised by the opposition and the public for the lack of consistent action in the context of the decision taken to gradually abandon the use of nuclear energy by Germany. Moreover, despite the fact that nuclear energy is not a substitute for gas, the Polish media has often portrayed nuclear energy as their solution to being dependent on Russian imports[94].

4. 2. Poland’s perspective on the Nord Stream Conundrum

The ratification of the treaty confirming the border between Poland and Germany was a ground-breaking moment in the development of creating a mutual harmonious relation and the emergence of sturdy core values that would be applied for cooperation in various fields between the united, democratic Germany and democratic Poland. Moreover, the research proposed by Marczuk shows the effects, successes and failures of the 25-year-long process of reconciliation and cooperation in various areas of life and the building of a "Polish-German community of interests”[95]. The more so as the process of Polish-German reconciliation is not over yet, it is still ongoing and requires social

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[93] European Commission, Proposal for a Directive of the EP and of the Council Amending Directive 2009/73/EC Concerning Common Rules for the Internal Market in Natural Gas, European Commission, Brussels, 2017.
Pérez, María de la Esperanza Mata, Daniel Scholten, and Karen Smith Stegen. "The multi-speed energy transition in Europe: Opportunities and challenges for EU energy security." *Energy Strategy Reviews* 26 (2019): 100415.

[94] Heinrich, A., J. Kusznir, A. Lis, H. Pleines, K. Smith Stegen, and K. Szulecki. "Towards a common EU energy policy? Debates on energy security in Poland and Germany. ESPRi Policy Paper, No. 2, September." (2016).

[95] Marczuk, Karina Paulina. "Reconciliation–Partnership–Security: Cooperation Between Poland and Germany 1991–2016." *Reconciliation–Partnership–Security: Cooperation Between Poland and Germany* 2016 (1991).

legitimisation. Especially now, when in Europe, including Germany and Poland, there is a growing wave of populism and growing tendencies towards re-nationalisation of foreign policy.

The agreement on Nord Stream between the Russians and the Germans effectively knocked the Poles down, as for a vast period of time, Polish politicians and economists believed that this project was essentially a bluff whose purpose was to pressure the Poles into negotiations on the costs they charged for being a transit country. They have clearly underestimated Russia's agenda, which not only affected their security of supply policies, but they had to suffer the consequences of no longer having a special status as a transit country[96]. In the context of Russian conflicts and their use of cutting gas supplies as a response, Poland had rather valid reasons to worry, as with the Nord Stream pipeline being active, gas deliveries to Germany and Western Europe would no longer bypass its territory, which meant that Russia could halt supplies to Poland without ever having any repercussions in the countries lying to the west[97]. The mistrust between Poland and Russia has been portrayed by media outlets in both countries, each one making its mission to antagonise the other[98]. The Polish government was forced to accept the pipeline as a done deal, but nobody could have foreseen the division that would follow between Poland and Germany as a result of the Nord Stream project. After the end of the Cold War, energy issues were not even in question for the Polish government. However, this quickly came to an end when Schröder's administration failed to take into consideration the position of Poland with regard to this project, and further leaving Poles to question the unity and solidarity of the community.

In terms of the construction of the Nord Stream pipeline and cooperation with neighbouring parties, most Scandinavian countries had given their approval towards the project as long as they got the reassurance of there being no environmental obstacles. Moreover, an analysis into Polish government documents and media statements have brought to the surface the fact that even though cooperation and the strive towards a common energy market is needed at the EU level, this was not to be perceived as a replacement of the Nord Stream project[99]. Also, the concept of cooperation in the discourse seems to be skewed only in conversations opposing the Nord Stream development, its presence lacking from any dialogue involving Germany or other countries that will gain an advantage from this endeavour.

Undoubtedly, the most controversial issue from the Polish perspective was the involvement of German companies in the implementation of the northern gas pipeline project. Poland was officially

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[96] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

[97] Heinrich, A., J. Kusznir, A. Lis, H. Pleines, K. Smith Stegen, and K. Szulecki. "Towards a common EU energy policy? Debates on energy security in Poland and Germany. ESPRi Policy Paper, No. 2, September." (2016).

[98] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

[99] Heinrich, Andreas. "Securitisation in the gas sector: Energy security debates concerning the example of the Nord Stream pipeline." In *Energy Security in Europe*, pp. 61-91. Palgrave Macmillan, Cham, 2018.

notified of the gas pipeline construction plan in mid-November 2006. On the initiative of the Energy Security Policy Team at the Ministry of Economy, the materials sent by the Nord Stream consortium were analysed. It showed that the planned gas pipeline runs through the Polish exclusive economic zone, or more precisely through the so-called the shadow economy (i.e. the contested zone between Denmark and Poland). In the context of the implementation of the northern gas pipeline project, Poland expressed concerns about the intersection of the pipeline with the shipping routes leading to the ports of Szczecin and Świnoujście in German waters. The Polish side feared that laying the northern gas pipeline at a depth of 17.5 m on the section where it intersects with the northern approach fairway to the port in Świnoujście would prevent access for ships with a draft above 13.5 meters and block the port's development[100]. The Szczecin and Świnoujście Seaports Authority demanded that the Nord Stream consortium should deepen the gas pipeline before it is put into operation. However, this claim was rejected by the consortium as unfounded. Also, in the opinion of the Federal Office for Maritime Shipping and Hydrography in Hamburg, possible difficulties in navigation may occur only in special cases, and digging a pipeline below 18.5 m would be ecologically risky[101]. In its decision, the Office reserved the possibility of its later change or supplementation after providing additional data on the expansion of Polish ports, especially the LNG terminal in Świnoujście. However, the Polish demands were partially implemented, as Nord Stream made a depression of the gas pipeline on a section of 23.6 km in the territorial sea area of Germany, at the intersection with the western fairway to Świnoujście[102].

What is more, Poland began to clearly protest in the international arena against the construction of the gas pipeline, recalling various arguments. The historical aspect, in which the Russian-German project was compared to the Ribbentrop-Molotov pact[103], was especially raised. It was emphasised that when preparing the project, Polish interests as a transit country and dependent on the import of natural gas from Russia were not taken into account. Poland’s skepticism to this project also came at a difficult moment, the country having a hard time with its import diversification strategies. Meanwhile, the EU became increasingly more dependent on Russian imports in order to satisfy its energy demands. Also, even though Poland’s energy security does not focus much on the sustainability aspects, they had attacked the Nord Stream project and demanded a stop to it due to its environmental implications in the Baltic Sea. The Nord Stream project has lead to a rather emotional debate from Poland’s side, thus moving this issue from being an economic infrastructure enterprise to one under the microscope of international politics. The Polish discourse towards the Nord Stream project was based on the sentiment that Russia was using it in order to get a foot in the door of Central Europe and the European Union. It was further emphasised that decision between

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[100] Bouzarovski, Stefan, and Marcin Konieczny. "Landscapes of paradox: Public discourses and policies in Poland's relationship with the Nord Stream pipeline." *Geopolitics* 15, no. 1 (2010): 1-21.

[101] Ibidem.

[102] Ibidem.

[103] Szwed, Stefan. "Power (Grid) Politics: Poland, Germany and European Energy Security." In *Poland, Germany and State Power in Post-Cold War Europe*, pp. 201-230. Palgrave Macmillan, London, 2019.

Berlin and Moscow had been take previously without the consideration of the consequences they would have upon the Polish economy[104]. It should also be underlined at this point that Poland's aversion towards Russia does not stem from anything other than Russia's historical moves that damaged the political and economic status of Poland, and more importantly the policies that Poland pursues in order to diversify its energy suppliers and thus maintain a high level of security of supply for its energy sector.

Last but not least, the Polish government had also made its attitude towards the Nord Stream II project very clear; the proceedings they carried out concerning the project's developers had prevented European companies from joining into the venture of the Nord Stream II enterprise[105]. Despite its best attempts, the Nord Stream II pipeline project was still approved, but suspended in 2022 due to the current Russian-Ukrainian conflict.

[104] Heinrich, Andreas. "Securitisation in the gas sector: Energy security debates concerning the example of the Nord Stream pipeline." In *Energy Security in Europe*, pp. 61-91. Palgrave Macmillan, Cham, 2018.

[105] Ibidem.

Discussion & Conclusion

Energy is one of the key factors shaping the economy's ability to develop. Therefore, it is important to maintain the stability of the functioning of this sector. At the same time, it is a sector whose development directions have been determined by Community regulations. Increasing energy efficiency, reducing the level of carbon dioxide emissions and expanding the share of renewable energy sources in the energy balances of countries are goals that respond to contemporary climate challenges. In the countries of Central and Eastern Europe, where the quality criterion has been met at a low level, the implementation of these goals will be associated with the necessity to incur very high investment expenditures. Moreover, energy security can be interpreted as an economic category or an element of a political strategy. Regardless of the optics, however, the key features of energy security are the continuity of supply of energy at stable and acceptable prices. Ensuring energy security is understood as the goal of energy policy, because its lack results in losses in welfare, or in the condition of the natural environment. Proper shaping of energy balances should lead to the diversification of energy supplies or the full use of domestic energy resources.

Going back to the research questions for this study, one ought to consider how do understandings of ‘energy security’ differ between Germany and Poland. The very sensitive debate on the Nord Stream Pipeline has been perceived by Poland through a risks and threats dimension in rapport with the relationship established between Germany and Russia. However, one might raise the issue of the lack of solutions offered in the governmental debates, and whether or not politicians use populist strategies in order to shift the blame across the field. Within the discourses on the Nord Stream issues, there is a clear ramification in how they are perceived in both German and Polish governments. Whilst the latter seems to focus on matters of security when looking at the development of the pipeline, the former country’s government mentions matters of “risk” more than anything else. The main argument in favour of the pipeline within Germany was always that it will safeguard against disruption issues when considering the Russian-Ukraine conflicts. However self-centred this argument might be, it does put Germany’s national and energy security as a priority over anything else. On the other end of the spectrum, Poland holds Russia’s position over the conflicts in Ukraine as one that seeks to dominate and influence its foothold with the European Union, and especially in the countries of Central and Eastern Europe. Thus, from Poland’s perspective, Russia would only gain more bargaining power with the transit countries once such pipeline were to be in operation. The Russian Federation is taking advantage of the opportunities of capitalist relations in implementing its policy of returning to playing the role of a superpower on the globe. The creation of a de facto gas monopoly in the form of the Gazprom company, stimulation of its development, and then its entry into the European market, introduced a new economic quality. Gazprom is currently the largest user of natural gas deposits in the world and the most economically powerful company in this economic segment of the energy sector. Expansion into the European capital market, consisting in taking over existing companies and their infrastructure, or purchasing part of shares and thus obtaining a monopoly on the use of their infrastructure, is a very effective

and quick way of making customers dependent on one another. This procedure is particularly visible in the case of Germany. This state, which is a key country in the EU's structures, is the "entry gate" to the European Union for Russian economic expansion. Poland cannot ignore the role of Gazprom in the world, and regardless of the need to search for other sources of methane necessary for the economy and society, it must cooperate with this economic entity. Any boycott of Gazprom may cause irreversible consequences for the Polish economy, unless it has alternative sources of gas. Therefore, it is inappropriate from the point of view of Polish energy policy.

The second part of the research question focuses on how these differences affect the national energy policy strategies of the two countries. A thorough analysis of documents from both the Polish and German government, as well as the respective media outlets for each country has shown the emergence of risks in four major categories with regard to the Nord Stream project: political, economic, environmental, and technical. The high technological advancement in the use of renewable energy sources results from Germany's desire to reduce its dependence on exports and to introduce new forms of unconventional energy. Moreover, the departure from nuclear energy forces its western neighbours to obtain alternative energy sources that will be able to satisfy the constantly growing demand for energy. For this reason, a huge amount of funds is allocated to the development of new technologies and the modernisation of existing units. Germany is the country most similar to Poland in terms of the abundance of energy resources. The policy pursued by this country, especially in the renewable energy sub-sector, should be an example, first of all, for the Polish government. Time will show whether the concept chosen by Germany, based on the total abandonment of nuclear energy and investing in unconventional energy, is correct. Certainly, the development of clean energy technologies will significantly reduce environmental pollution and make it economically available to a wider group of people interested in it.

What is more, in terms of developing a "common European energy policy" that would serve as a means to facilitate cooperation, the countries in question have yet again opposing views. Those who disapprove of the pipeline project in Germany ask for more transparency, less bilateral decisions, and more cooperation at the EU level. On the other hand, this argument does not seem to have a strong position in the Polish dialogues, the perception in this country being that EU cooperation is limited to "the big countries", the position of other states not being take as a priority by the EU[106]. Additionally, the construction of the pipeline in the Baltic Sea had brought to surface the lack of a common foreign policy and/or a common security policy of the EU, the interests of both Poland and the Baltic states being left out of the economic pact signed between Germany and the Russian Federation. Since Germany has chosen to leave out any and all protest coming from Poland regarding their partnership with Russia to build in the Baltic Sea, it is very unlikely that their desire

[106] Bouzarovski, Stefan, and Marcin Konieczny. "Landscapes of paradox: Public discourses and policies in Poland's relationship with the Nord Stream pipeline." *Geopolitics* 15, no. 1 (2010): 1-21.

for a common EU energy policy platform will become feasible, as national interests seem to supersede the will for a common action[107].

In all countries in the world, energy is one of the most vital good, which implies that there is a direct proportionality between the level of its consumption, or the quantity of resources needed, and the economic development of the respective country. Therefore, guaranteeing its production is one of the priority tasks of the government of each country. The energy sector is therefore the basis on which modern industry and economy are based. The Federal Republic of Germany is part of the set of countries with contemporary European energy systems, and even though both Germany and Poland have a similar size of domestic energy resources, Germany presents itself as a country with a highly developed energy industry. In addition, some of the largest enterprises in this sector operate there, and the power of operating power plants is among the highest in the European Union.

European countries traditionally buy energy resources at a lower price than other countries, and from here it can be inferred that energy policy revolves around a set of financial and geopolitical interests of key players. The problems are not just about the purchase price, but also at the political level, when we talk about the relations that European states have with each other in terms of cooperation and solidarity, or at the level of bilateral relations between them and Russia - the key player in this equation.

Energy policy is being reinvented through the new legislative framework, new rules on security of gas supply, a series of cooperation measures to prevent the risks of gas outages or lack of electricity. The European Commission is working to ensure new sources of energy diversification by finding alternative energy sources from renewable energy industries. At the European Commission level, funding has been allocated to Member States for a number of programs to support the environment and green energy production. The complexity and scope of energy policy leaves room for new legislative corrections in this area, leaving it to the actors involved to discover new effective tools for action. The responsibility for a clean environment lies with both states and citizens, whose duty it is to ensure that it leaves future generations a cleaner environment, their own natural resources and energy to keep the flame of energy security burning for more than a century. It is at this point where the question can be raised on how the current war in Ukraine is likely to change energy security definitions, energy policy strategies and create new incentives for EU member states to cooperate. Energy is important in this conflict considering the issue of cutting of energy either through sanctions from the European Union, or as a response from the Russian side. In this sense, the EU will be more vulnerable in the short-term, the main consequence being that of increased energy prices, as the supply of gas will now have to come from other exporters. However, this might incentivise the governments to turn form fossil fuels towards renewable sources of energy. In terms of cooperation, there has never been a more unified European response as it was seen towards

[107] Fischer, Manfred. 2007. "Europa Hängt An Der Pipeline". *Welt.De*. https://www.welt.de/print-wams/article144767/Europa-haengt-an-der-Pipeline.html.

the crisis in Ukraine. It is still unclear at this stage what the next steps regarding the EU's common external security and energy policy will be. However, what emerges very clearly from this situation is that the security of supply is the main concern of energy security, and that the EU ought to encourage a wider diversification of energy resources in order to decrease its dependency on one major external actor, should such a situation ever re-occur.

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