

MASTER THESIS

EU Membership as a tool for a Sustainable Energy Security

A Case Study on the Republic of Lithuania

Merlan van Holten

Student number: 1159909

Supervisor: dr. Roos van der Haer

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INTRODUCTION

Since the industrial revolution, states have been growing more dependent on energy resources for their economic growth. Usually a disruption of energy supplies means a distorted economic growth and large social unrests (Newnham, 2011). Some countries have the availability of large amounts of natural resources on their national territory, while many other states are 'energy poor', thus are dependent on energy supplies from other states. Europe is a region that is considered relatively energy poor which makes that a lot of countries are dependent on supplies from Russia or the Middle East (Smith, Hadfield & Dunne, 2012: 445). A region within Europe which is most concerned regarding these problems, are the countries that were part of the former Soviet Union (Grigas, 2016). After the collapse of the Soviet Union, every newly formed republic followed its own path of development towards different objectives. Of these newly independent states, a group of states that is quite unique in its development, especially regarding energy politics, is the Baltic Region.

Many former Soviet republics have always been largely dependent on energy imports, mainly from Russia. In recent years, energy related policy-issues, which together are often referred to as energy security issues, gained more priority within the political arena in the former Soviet sphere (Maigre, 2010). The higher priority of energy related issues in this area is mainly caused by the fact that since the year 2000. Russia has actively used its position as the main energy-supplier of many former Soviet republics as a tool of economic sanctioning, to influence domestic politics in the targeted states (Newnham, 2011). In countries like Ukraine, Belarus and Moldova, Russia used energy prices and deliveries as a tool to punish or reward governments for their policies towards Russia (Simao, 2016). What makes The Baltic region unique in comparison to most other former Soviet countries is that despite their status as 'energy poor' countries is that they have not been as vulnerable to Russia's energy politics as the most other former Soviet republics. A possible explanation for this variance in vulnerability among the former Soviet republics is the EU membership of the Baltic States. In order to comply with EU standards, the Baltic States had to implement rigorous reforms in their domestic energy markets, a process that kept continuing even after 2004. These were often quite thorough and could sort a large effect on the energy sector and energy security of the Baltic States.

To explain this difference, I will conduct a single case study, and answer the question: How did EU membership affect the energy security of the Baltic States? Earlier research on this topic, both academic- and policy oriented, was merely focusing on specific elements of the development of the Baltic States' energy security after their EU membership. Yet no academic research has been dedicated to the effects of EU membership itself, but rather focused towards the effects of specific energy policies in the region, not specifically related to EU membership. Analyzing the effectiveness of different aspects of EU membership on energy security can contribute to how future energy-related policies are shaped. Knowing that many Central and Eastern European countries have a high dependency on energy imports (Newnham, 2012), these countries could learn from the (possible) mistakes or improvements that have been made in the Baltic States since 2004. In the first chapter of this thesis, an overview of scientific literature on the concept of energy security will be presented, followed by an introduction on EU policies regarding this subject. Thereafter I will shortly present my research methods. In the main part of this thesis my findings on the effects of EU membership on the different aspects of energy security will be analyzed and explained, which will be summarized and discussed in the last section

ENERGY SECURITY AND POLITICS

Controlling and securing energy resources have always been incentives for state- or non-state actors to engage in conflict with each other. In the last few decades, strong economic growth in numerous Asian and African countries has only intensified conflict and competition over energy resources, which is often referred to as the strive for 'energy security' (Bahgat, 2006; Lekka & Kyriazes, 2013). Energy security can be defined in various ways, but a common used definition comes from the International Energy Agency (IEA), which defines energy security as 'The uninterrupted availability of energy sources at an affordable price' (IEA, 2017). Energy security as defined by the IEA can be divided into two elements; 'stability of supply' and 'volatility of prices', two concepts that are strongly interrelated. The stability of supply can be negatively affected when an energy-exporting country experiences huge political instability, which harms its energy producing capability massively and also affecting its supplying capacity (Jewell, 2011: 11).

A recent example of this phenomenon is the uprising in 2011 in Libya and the following civil war. Because of the political instability Libya's oil production and exports decreased enormously (El Katiri et al. 2014: 10-11). This will result in political instability and unrest on international markets, leading to highly volatile energy prices (Ratner, 2011: 2-3). Political unrests are not the only events that could affect a state's energy security. Winzer (2012) conceptualizes energy security as a factor of numerous risk dimensions. The first risk dimension are the 'technical risk sources' and relate to the failure of energy infrastructure, like transmission lines or power plants due to technical failures or unintended human errors (Winzer, 2012: 37). 'Natural risk' events, the second category, are events like the exhaustion of fossil energy resources, or natural disasters that harm the production or supplying capacity of a state (Winzer, 2012: 37). The third, and most researched dimension of energy security in the political science as defined by Winzer, is the 'human risk dimension'. The human risk dimension is very closely related to the concept 'stability of supply' as defined by the IEA (Winzer, 2012). Intentional and unintentional events, like political unrests or a boycott, that influence energy markets are the two main elements of the human risk dimension. A boycott on certain natural resources can be a very effective tool of exploiting the human risk dimension in an actors' benefit in order to achieve political goals (Smith, Hadfield & Dunne, 2012: 446). One reason why exploiting the human risk dimension by using energy resources can be a very effective strategy in harming another state's energy security and economy, is the overall lack of alternative energy resources or suppliers (Smith, Hadfield & Dunne, 2012: 447). Oil and natural gas, the main energy resources for export markets, are only supplied by a limited number of countries. In the case of natural gas an extra factor increases its effectiveness as a tool of coercion, since in order to transport gas, a very intensive infrastructure of pipeline is necessary (Newnham, 2011: 135-136). Constructing this infrastructure is very costly and time consuming, which makes energy dependent countries very vulnerable for abrupt supply interruptions. Additionally, no alternative product is available on the short-term which can replace oil and gas if necessary (Newnham, 2011: 135).

In most cases, economic sanctioning as described earlier is a two-sided coin; it harms the state that is targeted, but it also can harm the state that is using economic coercion. However, if the total export market of the 'sender' of economic sanctions is

larger than the import market of the 'receiver', the effectiveness of economic sanctions is likely to be higher, since the economic damage will be bigger for an energy importing state that loses its main energy supplier, than for an energy exporting state which loses just a minor export market (Hufbauer et al.1990: 89-90). In a relationship between an energy demanding state and an energy supplying state, this imbalance is often present, and will heavily favor the position of energy supplying states, since supplying countries can rely on a broad scale of customers for their income (Grigas, 2017: 18-19).

For many European countries, this imbalance between supplying and demanding countries is a challenge since a lot of European countries are not self-sufficient in its energy provision (World Bank, 2017). In the last few decades, European countries have been threatened and affected with economic sanctions through the use of energy resources both directly and indirectly (Grigas, 2017: 22). The first major case in which energy resources were being used as a tool to influence political behavior was in 1973. In this year, numerous oil exporting states in the Middle-East boycotted the United States and some of its allies because of their support for Israel during the Yom Kippur war against Egypt. Oil prices increased with 400 percent, and many western leaders feared an oil shortage in their countries (Rustow, 1975: 72). While the effectiveness of this oil embargo is debatable, the threats of 1973 changed the way governments think about energy security. Oil importing countries were looking for opportunities to diversify their suppliers and also were seeking alternative sources of energy (Rustow, 1975). However, that the process of diversification in Europe was not very successful was proven in 2006, when Europe was confronted with a conflict between Ukraine and Russia. An ongoing dispute between the Russian state-led company Gazprom and the Ukrainian government about debts and gas prices led to a shutdown of gas deliveries to Ukraine during the first days of 2006, This conflict did not only affect the Ukrainian gas market, but also those of numerous EU member states which were almost fully dependent on Russian gas, reporting a decrease in gas deliveries (Lee, 2013: 588). Lower gas deliveries to these countries were caused because Ukraine is a so called 'transit state' which means that the pipeline infrastructure in its territory is needed to transfer natural gas to other parts of Europe. Ukraine and Russia both accused each other for sabotaging the sgas deliveries to Europe, but it never became clear who was responsible (Lee, 2013: 588-589) It is

argued that there was a strong political dimension in this conflict, and that Russia tried to influence domestic politics by undermining Ukraine's energy security (Newnham, 2013). While this was the first time that Europe was affected by a conflict between Russia and a former Soviet republic, it was certainly not the first time that Russia used natural gas to achieve political goals. Since 2000, Russia raised gas prices several times for 'western oriented' former Soviet republics, while 'Russia oriented' countries were rewarded with huge discounts (Newnham, 2011: 137)

EU ENERGY SECURITY POLICIES

The gas dispute between Russia and Ukraine more or less forced the EU to come up with a strategy regarding its energy security (Maigre, 2010: 2). In formulating an European strategy regarding energy security, the European Commission distinguishes between energy security in 'short term security' and 'long term security'. Short term security is a concept that is used when talked about the risk of abrupt disruptions of gas or oil deliveries from the EU's main suppliers, and what effect it has on the economies of the EU member states. Long term security regards the overall structure of the EU's energy market, covering elements such as: energy production, energy efficiency, diversification and infrastructure for the redirection of energy resources (European Commission, 2017). In order to achieve a higher degree of energy security, the EU has set a couple of priorities in their 2020 Energy Strategy Plan:

- Making Europe more energy efficient through investments into efficient buildings, products, and transport.
- Building a pan-European energy market by constructing transmission lines, pipelines, LNG terminals, and other infrastructure.
- Accelerate the development and deployment of low carbon technologies
- Pursuing good relations with the EU's external energy suppliers and energy transit countries. (2020 Energy Strategy, 2010).

While the 2020 Energy Strategy Plan concerns all EU members, energy security interests differ greatly among them. When looking at dependency on energy imports there are large differences within the EU (European Commission, 2016). A region that is traditionally very dependent on energy imports and whose energy infrastructure was not connected with the rest of Europe for a long time which

prevented the region to import energy from other EU countries, is the Baltic region (Balmaceda, 2013: 209). Since their independence, and even more after EU accession the Baltic States have developed a very unstable relationship with Russia, which is also their main energy supplier. (Hanson, 2013: 2-3). At the same time, many reforms were needed in the Baltic States in order to comply with EU standards. All these domestic and international elements that are affected by EU membership should not be seen separately from each other. As showed in the literature review, domestic events could have drastic effects on multilateral relations between energy supplying and energy demanding countries. Most academic research on energy security focuses on explaining how specific events can cause a decrease in a states' energy security, but very few focuses on how energy security can be increased. While energy security in many former Soviet republics has been negatively challenged by external forces way in recent years, it has been relatively stable in the Baltic States. EU strategy on energy markets is very ambitious. As energy poor states with a low developed internal energy market prior to their EU membership, the Baltic region is an interesting region to test if EU policies on energy security are any effective. Therefore, I will test the following hypothesis; EU membership has a positive effect on the energy security of the Baltic States.

This research also differs from existing literature, in that energy security is not analyzed as just a factor of just external factors, but also takes internal economic and political factors into consideration. These internal and external elements of energy security altogether form the level of energy security in a country. Based on the existing literature and the EU 2020 strategy, I defined four elements of energy security; energy efficiency, domestic diversification and production, import diversification and production and the relationship with Russia. For the Baltic States, these elements represent the most important aspects of energy security, and together form the four key pillars of the hypothesized causal mechanism in which EU membership leads to changes in one or more of the elements of energy security, influencing the energy security of the Baltic States, either positive or negative

CASE SELECTION, CONCEPTUALIZATION AND METHODS

In order to test the hypothesis of this thesis, a qualitative case study will be conducted in the form of process tracing. The reason that a qualitative study is chosen instead of a quantitative, is that a qualitative study is more suitable to explain

a possible casual mechanism. In this thesis, I chose to conduct a single case study on the Republic of Lithuania. While basic characteristics of the Baltic States regarding energy security are relatively similar, Lithuania differs from the other Baltic States in relation to energy security in a number of aspects. Lithuania, contrary to Estonia, doesn't have large oil reserves in its territory which makes it more dependent on oil imports. (Maigre, 2010: 3). Latvia, on the other hand has the availability over a large gas storage facility, built during the Soviet era, which forms an important element of its energy security. (Maigre, 2010: 4). However, the most important difference between the Lithuania vis a vis Estonia and Latvia, is that since their EU accession in 2004, net energy import dependency in Estonia and Latvia decreased, while in the same period Lithuania's import dependency increased (Eurostat, 2017). Based on these facts, Lithuania is the least likely case to confirm the hypothesis for this thesis, and therefore the most relevant case in order to analyze the relationship between EU membership and energy security.

EU membership has two main policy dimensions for Lithuania. In order to join the EU, Lithuania had to comply with EU regulations regarding environmental issues and regulations of domestic energy markets. On the other hand, EU membership gives the opportunity to operate within the EU legal framework, but also to apply for EU funds which are meant to develop energy-related projects. Based on the definitions as used by the IEA, EU, and numerous models provided in the academic literature (see Sovacool & Mukherjee, 2011, Chalvatzis & Ionnadis, 2017, Zeng et al. 2017), I defined four elements in order to measure the energy security of Lithuania. The first element is 'production diversification and capacity'. Production diversification and capacity means the amount of energy a country is able to produce, and how the production is diversified among different sources. The second element is 'energy efficiency'. To measure energy efficiency, I will analyze how Lithuania has managed its energy consumption after it became an EU member, and what measures the government has undertaken in order to decrease the domestic energy consumption. 'Import dependency and diversification' is the third element, related to which extend foreign energy supplies are available. Import diversification is measured by looking at the energy suppliers that are available for Lithuania, but also the infrastructure for energy imports is relevant in determining this variable. The fourth and last variable is defined as 'relationship with Russia. To determine this element, I

will analyze the impact of Lithuania's EU membership on bilateral relations with Russia, and if any incentives were created to use energy as a foreign policy tool for Russia. As the literature showed, harming a state's energy security can be a very effective way of economic coercion. The reason that only the relationship with Russia will be analyzed is based on the literature review that showed that relations with Russia have been one of the most dominant factors in the energy security for the ex-Soviet countries. Data for this research will be retrieved from different sources. Policy reports of both the EU and the Lithuanian government, combined with data from organizations as the World Bank and the International Energy Agency, will be the main sources for this thesis

ENERGY EFFICIENCY IN LITHUANIA

After the collapse of the Soviet Union, energy efficiency in Lithuania was at a very low level, both in the residential and the industrial sector (Balmaceda, 2013: 211). This low level was due to the highly subsidized energy prices. During the Soviet era Lithuania was very dependent on oil and gas imports from other Soviet Republics in fulfilling its domestic energy demand. Energy prices in the Soviet Union were highly subsidized and were sold for a fraction of the regular market price (Streimikiene et al. 2008: 775). Because of these low prices, incentives to increase energy efficiency were very low. After Lithuania's independency however, energy prices rose rapidly towards market levels, forcing the Lithuanian government to improve its energy efficiency in order to control government spending on energy imports (Streimikiene et al. 2008: 774-775). One important measure was the deregulation of prices for most oil-based products, but also the gas and electricity prices were deregulated (Balmaceda, 2013: 216). As a result, energy usage decreased sharply in Lithuania. While there was a slight increase in its first year of independence in 1991, energy usage in relation to Lithuania's GDP, referred to as 'energy intensity', decreased up to 50% until 2004 (World Bank, 2017). While this can be partly explained as a success of government policies, economic problems faced by almost all former Soviet republics also are likely to have influenced the decrease in energy intensity.

Lithuania was one of the former Soviet republics that was very committed to reforming its economy in order to be able to join the EU. One of the first major reforms based on EU regulations that was implied in Lithuania, was the EU directive 2002/91 on the Energy Performance of Buildings (Law on Energy, 2002: 33). The

goal of this directive was to promote the improvement of energy performance of buildings within the EU (Directive 2002/91: 67). For instance, the walls of buildings had to be constructed and isolated according to certain standards, so that the buildings became more energy efficient (Directive 2002/91: 68-69). Another measure from this directive was the labeling of buildings into categories based on their energy usage, which was meant to create more awareness about energy efficiency. The measures as described in Directive 2002/91 became part of a broader EU strategy to decrease energy consumption with 9% until 2014 (Directive 2006/32). While there was no legal mechanism to force EU members to decrease their energy use, Lithuania decreased its energy consumption with almost 25% from 2008 to 2015, higher than Directive 2006/32 threshold (European Commission, 2017).

One of Lithuania's first detailed policy documents on a broader energy efficiency strategy since its EU membership was the 'National Energy-Efficiency Program for 2006-2010' (NEEP). An important mean for Lithuania to achieve its energy efficiency goals as described in this plan. were the different EU structural funds (NEEP, 2007: 23). These funds are an important EU instrument to help new member-states restructure their economy (Streimikiene et al. 2005: 1172). Total energy savings until 2010, resulting from the measures taken by the Lithuanian government were 0.067 Mtoe, almost 1% of the yearly energy consumption in Lithuania according to the Lithuanian Energy Efficiency Action Plan (EEAP, 2014: 12). Measures as described in the NEEP to improve energy efficiency can be divided into two categories: horizontal measures (measures concerning all sectors), and sector specific measures. The main difference between these two categories is the amount of energy saved because of measures taken for this category. Almost 70% of the total energy savings were achieved by taking horizontal measures (EEAP, 2014: 12). A second difference between these two categories, are the financial underpinnings. Most of the sector-specific measures are taken with financial support of numerous EU funds, while the horizontal measures were in most of the cases an implementation of certain EU legislations and directives that did not require the allocation of specific financial resources (EEAP, 2014: 13, 34, 43).

When looking at the development of energy intensity in Lithuania since its EU membership, a relatively stable trend downwards is visible. However, the period 2009-2010, showed a rapid decline of more than 30% in one year (World Bank,

2017). This can be explained by the closing of the Ignalina Power Plant in 2009, which was agreed on by Lithuania and the EU in their negotiations over EU membership (Balmaceda, 2013: 223-224). The Ignalina nuclear plant was very energy inefficient, and closing this plant had positive effects on Lithuania's energy intensity. Also, by closing this nuclear plant Lithuania lost its biggest domestic source of energy production (Maigre, 2010: 5), which could have implications for its domestic energy production capacity and import dependency. This will be analyzed more detailed in a the next chapter.

Certain admission requirements like the closing of the nuclear plant and requirements regarding the energy efficiency of buildings had a great impact on Lithuania's energy efficiency. Nevertheless, when comparing the period between 1990 and 2004, and 2000 until 2017, Lithuania's energy efficiency increased strong on a more structural basis before 2004, while after 2004, the increase was less strong. This difference between the period prior, and after 2004, can be mainly explained by the strong increase in energy prices in the 90s, forming a strong incentive to minimize energy use. EU structural funds seem to resort little effects on Lithuania's energy efficiency, but EU legislation and admission requirements had a much stronger effect.

Concluding, it can be argued that EU membership had a positive effect on Lithuania's energy efficiency, although its energy intensity is still above the European average (Vasaukaite & Streimikiene, 2014: 638). Effects of EU membership on an increased energy efficiency and Lithuania's energy security are positive, but rather limited when compared with the effects of the other three factors that will be analyzed in the following chapters.

DOMESTIC PRODUCTION AND DIVERSIFICATION

Before independence, issues regarding production, transmission and diversification of energy resources were never a priority for the Lithuanian government because domestic energy infrastructures were mainly financed and operated by the central Soviet government (Balmaceda, 2007: 2). As already briefly discussed in the last section, Lithuania's main source of domestic energy production until 2009 was the Ignalina nuclear power plant. During the Soviet era this plant was mainly operated by Russian engineers, but most of them left after the collapse of the Soviet Union (Augutis et al, 2011: 6). After declaring independency, an important goal of the Lithuanian government was to become independent from the Russian personnel and

knowledge, and to operate the plant without Russian help (Balmaceda, 2013: 218). In the following years Lithuania managed to decrease its dependency on Russian support structures for the Ignalina power plant, mainly with technical support from Sweden. Nevertheless, the power plant was still not fully independent from Russian support since the fuel that was necessary to keep the plant operational was only produced in Russia (Balmaceda, 2013: 217).

Closing the Ignalina power plant was a non-negotiable condition for Lithuania's accession to the EU. While the Lithuanian government agreed to close this nuclear plant, starting in 2005, it continued to voice its concerns about the increasing dependency on Russian gas and oil imports when it loses 70% of its energy producing capacity, the total share of this plant in Lithuania's total energy production at that time (Augustis et al. 2011: 8). Looking at the data of Lithuanian energy imports after the closing of the nuclear power plant, the Lithuanian government was correct in claiming that Lithuania would be more dependent on energy imports, energy imports increased with almost 30% (World Bank, 2017). However, since the power plant was operating on fuel that was only produced in Russia, technically Lithuania's energy dependency did not change as drastically as the government pictured it. In relation to domestic energy policies, it can even be stated that closing the inefficient Ignalina power forced the Lithuanian government to think about its energy diversification.

Lithuania has been quite successful in diversifying its energy production, mainly achieved by its renewable energy strategy in accordance with the EU20/20/20 goals, aiming for a 20% share of renewable energies of the total energy consumption in the EU in 2020 (European Environment Agency, 2017). Acquiring different forms of renewable energy brought a number of obstacles along for Lithuania. The main obstacle for Lithuania was the high investment costs and a relatively long period before the investments are earned back. Similar as for improving energy efficiency, the EU provides numerous funds for the stimulation of the use of renewable energy. The main financial instrument of the EU has been the 'feed-in tariff' mechanism, which is a guaranteed and fixed energy price that is paid to producers of renewable energy, in order to cover short-term financial losses or low profits caused by high investment costs (Gaigalis et al, 2014: 424).

Lithuania's strategy on reaching the EU 20/20/20 goals is documented in the National Renewable Energy Action Plan (NREAP). Like in Lithuania's action plan regarding energy efficiency, EU funds and regulations play a very important role in the NREAP (NREAP, 2010: 3). The main goals of the EU funds that were being provided to Lithuania from 2007 to 2013 were to modernize the energy transmission and distribution systems, and to stimulate the use of energy renewables (European Commission, 2008). These funds covered up to 50% of the total project costs. Since its EU membership Lithuania received numerous grants to finance projects to stimulate renewable energy use in both the commercial and the public sector. Most EU funds were being used to invest in sustainable infrastructure for the heat and power generation, or to grant fiscal benefits to producers of renewable energy. For example, feed-in tariffs were used to stimulate hydro-power, wind energy, different biofuels and solar energy (Gaigalis et al. 2013: 429-430, 433).

After its accession to the EU in 2004, Lithuania experienced a stable increase of renewable energy consumption and production. From 2005 to 2014 the share of renewable energy in the total energy consumption increased from 17.8% to 28.1%. In the period from independence until 2004, a similar increase was achieved, but the trend was far less stable (World Bank, 2017). Interesting to note is that after the closing of the Ignalina power plant in 2009, there has been no significant increase in renewable energy production or consumption, which could be explained by an increase in energy imports. Because of this, accession to the EU was fairly ambiguous for Lithuania's domestic diversification and production. Lithuania lost their main domestic source of energy production because of their EU membership which accounted for the majority of its domestic energy production (IEA, 2017).

Nevertheless, due to EU agreements and funds Lithuania was able to improve its domestic energy production infrastructure, especially regarding renewable energy. Numerous projects were started and funded with EU funds to comply with the EU 20/20/20 agreement to improve the production and use of renewable energy, and with significant results. However, an increasing trend in the use of renewable energy in Lithuania, while less stable, was already present before Lithuania's EU membership (World Bank, 2017). When it comes to the net effect of EU membership on Lithuania's domestic energy production and diversification, the closing on of the Ignalina power plant had a notable larger effect on the domestic production than the

diversification programs on renewable energy. Lithuania lost 70% of its production capacity by closing the power plant, but the share of renewable energy in total production and consumption only increased about 10%. In general, EU membership has sorted a negative effect on the domestic production and diversification on the short term, negatively affecting Lithuania's energy security. However, this effect could possibly become less strong on the long term when EU goals on the share of renewable energy are likely to become more ambitious in the future

IMPORT DEPENDENCY AND DIVERSIFICATION

In 2014, around 75% of Lithuania's net energy was imported from other countries (World Bank, 2017). Nevertheless, net energy imports in Lithuania decreased steadily since its independence, simultaneously with the increasing energy efficiency. According to World Bank data, energy imports started to rise again since Lithuania's EU membership, from 43% in 2004 to more than 75% in 2014 (World Bank 2017). Looking only at these numbers, Lithuania's import dependency increased enormously since its accession to the EU, negatively affecting its energy security. Nevertheless, numerous attempts have been made to diversify Lithuania's energy imports in terms of suppliers, but also in its infrastructure. An important European project for improving diversification in Lithuania was the Baltic Energy Market Interconnection Plan (BEMIP). The main goal of the BEMIP was to integrate the energy markets of the Baltic States with the energy markets of the other EU members. According to the European Commission, connecting the Baltic energy market with the rest of the EU should be achieved by the development of (1) the internal market for electricity and gas (2) electricity interconnections (3) electricity generation capacity (4) gas diversification of suppliers and sources and (5) oil infrastructure (European Commission, 2009: 2). Especially regarding the interconnection of electricity networks and gas import diversification, significant progress has been made since the implementation of the BEMIP in 2009.

This progress was mainly achieved by financial assistance provided by the EU, worth 130 million euro, for the construction of an electricity interconnection between Sweden and Lithuania under the name of NordBalt. A similar project on the construction of an electricity connection between Poland and Lithuania called LitPol was funded with 27 million euro (European Commission, 2009: 6-7). Diversifying electricity infrastructure, as well as diversifying suppliers was an important step

towards a higher level of energy security for Lithuania, since two thirds of the consumed electricity in Lithuania had to be imported after the closing of the Ignalina power plant. After the completion of NordBalt and LitPol, these two connections provided around 32% of the total electricity imports in Lithuania (Vaida, 2017). Diversification also had an important indirect effect on Lithuania's energy security. In 2016, the year when the transmission systems NordBalt and LitPol started to operate, the average electricity price for industry decreased with 12%, and for households with almost 7% (Eurostat, 2017). A logical explanation for this decline, as argued by Daivis Virbickas, CEO of the Lithuanian electricity transmission company LitGrid, is the increased competition between different energy suppliers in Europe (Baltic Course, 2017).

Another ambitious project that affected Lithuania's energy security in a positive way has been realized shortly after the implementation of the BEMIP. Dependency on Russia as a single supplier of natural gas has always been problematic for Lithuania's energy security. Diversifying to other suppliers was considered very inefficient, since the infrastructure for the transmission of natural gas between Russian and Lithuania was already present. However, there was a strong incentive to diversify for the Lithuanian government, namely the high import prices of gas compared to neighboring countries. Since the radical liberalization of the domestic gas market, which took place to comply with new EU regulations, gas prices in Lithuania started rising rapidly (Slesareva, 2016: 233-234). Therefore, supported by the EU, Lithuania started to explore the opportunities for the construction of a Liquefied Natural Gas (LNG) terminal, allowing the country to import gas from overseas, instead of solely through the traditional pipeline system (Republic of Lithuania, 2012: 5).

In 2013 the European Investment Bank and the European Commission funded more than half of the total costs of the construction of the LNG terminal to Lithuania, as a part of the BEMIP. Currently the terminal is being leased for ten years, after which the Lithuanian government has the possibility to buy the terminal (European Investment Bank, 2013). The total capacity of this terminal is around 4 billion cubic meters on an annual basis. Since Lithuania consumed only 2.44 billion cubic meters of natural gas in 2014, this terminal could theoretically make Lithuania fully independent from Russian gas imports (Lithuanian Ministry of Energy, 2017).

However, gas imported through this LNG terminal is not only meant for the Lithuanian market, but was also re-exported to the other Baltic States. Since the opening of the terminal, Norway has been the most important LNG exporting country for Lithuania, which allowed the country to cut its gas imports from Russia in the first quarter of 2016 with 63.2% compared to 2015 (Baltic Course, 2016). With the delivery of LNG from Norway, the Russian company Gazprom lost its monopoly on the delivery of gas to Lithuania. While LNG prices have been higher on average than natural gas prices, Lithuania has used the availability of LNG as a tool to force Gazprom to lower their prices. As a result, consumer gas prices in Lithuania decreased with 30 % between 2014 and 2016 (Eurostat, 2017, Reuters, 2014). In June 2017, the Lithuanian gas trading company Lietuvos Duju Tiekimas signed another agreement with the US on the delivery of LNG, starting in August 2017 (Reuters, 2017). With a broader diversification of gas suppliers, prices of gas are likely to decrease even more in the future

Accession to the EU had both positive and negative implications for Lithuania's import dependency and diversification. First, their reliance on foreign energy suppliers increased rapidly after their accession to the EU as showed by the data from Eurostat. At the same time, Lithuania has been able to improve their energy import capacity, which led to decreasing energy prices. Large projects regarding import diversification were all negotiated within the framework of the EU, increasing the energy diversification of Lithuania and the Baltic region. While the overall import dependency increased since 2004, Lithuania has managed to decrease its dependency on Russia as the single gas supplier,

BILATERAL RELATION WITH RUSSIA

From all the former Soviet Republics, Lithuania was the first country that was confronted with Russia's willingness to use energy as a foreign policy tool. After declaring independence from the Soviet Union in 1990, Lithuania faced a three month oil boycott from Russia. While this boycott only led to the postponing of independence for six months, it had a deep impact on the future relationship between the two countries (Balmaceda, 2013: 214-215). By joining the EU, Lithuania would be able to counter Russian economic pressure more effectively, supported by different EU policy instruments. EU membership could possibly give Lithuania more leverage in dealing with Russia's pressure, but at the same time it could lead to a more

assertive stance and growing tensions. In this section I will analyze the development of the relationship between these countries since 2004.

Recently Lithuania has not experienced intensive conflicts regarding energy like some other former Soviet republics did. Nevertheless, there have been tensions between Russia and Lithuania on numerous occasions. The first incident occurred shortly after Lithuania's EU accession in 2004. As part of a national liberalization program, the Lithuanian government decided to sell the national oil-refining company to a Polish company, which led to a Russian shutdown of oil deliveries to this refinery (Maigre, 2010: 10-11). According to Transneft, one of the biggest state-owned oil companies of Russia, this was necessary because the pipeline network between Russia and Lithuania needed to be repaired (Baltic Times, 2006). However, Lithuanian politicians and foreign analysts consider this as an issue not just related to technicalities, but also as a geopolitical move (Grigas, 2016: 50-51). The acts of Transneft in this case can be linked to Lithuania's EU membership, since the privatization of domestic energy companies was part of a broader strategy to liberalize the Lithuanian energy market in order to comply with EU standards, possibly harming the company's market position.

Another key moment in the relation between Lithuania and Russia was the implementation of the Third Energy Package, a set of policy measures regarding the reform and regulation of the gas markets of EU members. The most thorough reforms of the Third Energy package, was the implementation of the EU directive concerning common rules for the internal gas market (Directive 2009/73). One of the main goals of this directive was the 'unbundling' of energy networks - i.e. ownership of the supplying and distribution networks for natural gas are separated from each other in order to prevent monopolistic market structures (Directive 2009/73 : 94). Several variations in the strictness of ownership unbundling were possible, but Lithuania chose to imply the strictest reforms. This significantly affected the monopolist position of the Russian company Gazprom in the Lithuanian market because the company would not be allowed to own both supplying and transmission systems anymore (Misik & Pracharova, 2016: 593), which led to numerous Russian politicians and Gazprom officials publicly expressing their disapproval of these reforms (Pakalkaite, 2016: 6). As a result, Gazprom started a lawsuit against Lithuania at the International Court of Arbitration, but after a short period agreed on the Lithuanian

terms of the unbundling of the energy market, pressured by several other EU members (Jankauskas, 2014: 49).

While the unbundling process of the Lithuanian gas market may be considered successful, yet another dispute between Lithuania and Russia occurred. Since 2010, when the Lithuanian government started to discuss the possibility of the unbundling of the gas market, import prices for Lithuania started increasing significantly (Pakalkaite, 2016: 15-16). Compared to the prices that the other Baltic States paid, the difference was up to 20%. For a short period, Lithuania even paid the highest price for Russian gas of all the EU member states (Misik & Pracharova, 2016: 595). Valery Galubev, a senior Gazprom official, commented on the difference in pricing by saying that it was related to the implementation of the Third Energy Package in Lithuania (Kommersant, 2011). Following these events, the European Commission started an antitrust case against Gazprom to investigate the possible 'unfair prices' for several other Central and Eastern European countries that also filed complaints (European Commission, 2012). Currently this antitrust case is still pending, but gas prices for Lithuania have been cut by Gazprom with 20% in 2014 (Reuters, 2014). While this price cut can be explained by Lithuania's diversification to LNG in the same period, the antitrust case could be seen as an extra incentive for Gazprom to negotiate with Lithuania over gas prices.

EU membership gave Lithuania the opportunity to negotiate with, or put pressure on Gazprom in defending its interests. Nevertheless, after reforming the domestic gas market, the relationship between the Lithuanian government and the Russian state-company Gazprom became tense, embodied by the legal cases that were started and the increasing gas prices. Therefore, it can be argued that EU membership had a negative impact on the relationship between Lithuania and Russia. It must be noted that the reforms that the Lithuanian government imposed were a lot more thorough than was necessary according to EU standards. Moreover, since tensions started to rise in 2010, there never have been any threats of a shutdown of energy supplies to Lithuania. Negative effects on the relationship between Russian and Lithuania because of Lithuania's EU membership were present on the short term, but its effects on Lithuania's energy security on the long term should not be overestimated.

CONCLUSION AND DISCUSSION

In this thesis, the impact of Lithuania's EU membership on the different elements of energy security have been analyzed. The energy security of many former Soviet republics has been challenged since their independence, but Lithuania, as well as the other Baltic States, was an exception to this. To explain the variance among the vulnerability of energy security between them, I introduced EU membership as an explanatory factor. In order to answer the question whether EU membership had a positive effect on Lithuania's energy security, it is important to distinguish between long-term and short-term effects. In the short-term, Lithuania experienced minor problems regarding its energy security, directly or indirectly caused by its EU membership. These problems are mainly related to domestic production diversification or production capacity, and to a lesser extent to the bilateral relation with Russia. For the other two factors, import diversification and to a lesser extent energy efficiency, EU membership has been an important factor for their positive development. Because of EU supported investments in import infrastructures, Lithuania currently has access to a wide scale of foreign energy suppliers. Earlier scholarly work on energy security in the Baltic States was usually aimed at one specific aspect of energy-related policies. By combining these different elements of energy security in a qualitative research design, this research showed that there is a strong interdependence between these variables, all affecting Lithuania's energy security. Based on my findings, it can be concluded that EU membership has a positive effect on Lithuania's energy security. In terms of policy relevance and implications, these findings give important insights in which specific policy measures are effective in improving a state's energy security, and which are not.

Whether the results of this research are generalizable to the other Baltic States is debatable. Country-specific policy measures that were taken had a significant impact on Lithuania's energy security. Each individual case should be researched more extensively since decisions of governments or bilateral agreements between states may cause a variance between different cases. At the same time, many projects that influenced Lithuania's energy security in a positive way, most notably the BENIP plan and the construction of the LNG terminal, had positive effects on the energy security of the Baltic States as a whole. However, since most country specific measures were relating to the domestic production capacity of Lithuania, having a negative effect on

Lithuania's energy security, I expect that the conclusion of this research is generalizable, and that EU membership does have a positive effect on the energy security of the Baltic States.

A country's energy security can be measured by using either qualitative or quantitative methods. By using a qualitative method for my research, the dynamics between the four elements of energy security and how they affect each other became clearer than would be possible with a quantitative research design. Problematic for a qualitative design as used in this thesis, is that the different elements of energy security are valued equally, while it may be possible that some factors have a larger effect than others, which makes determining the concrete change in energy security in Lithuania more difficult. Defining a clear causal mechanism in which EU memberships positively affects the energy security of Lithuania is problematic; Strong interdependence between the four different elements of energy security makes it troublesome to identify the exact effects of each variable independently. Whether this problem could be solved by a different research design should be explored in future research.

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