

**ENERGY SECURITY OF LITHUANIA: CONCERNS,  
CHALLENGES AND POLICIES, 2004-2017**

*Dissertation submitted to the Jawaharlal Nehru University in partial  
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**MASTER OF PHILOSOPHY**

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## DECLARATION

I declare that the dissertation entitled "Energy Security of Lithuania: Concerns, Challenges and Policies, 2004-2017" submitted by me in partial fulfillment of the requirements for the award of the degree of Master of Philosophy in Jawaharlal Nehru University is my own work. The dissertation has not been submitted for any other degree of this University or any other University.

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## CERTIFICATE

We recommend that this dissertation be placed before the examiners for the evaluation.

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*Dedicated to*  
*My Loving*  
*Grandmother*

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## **Abbreviations**

AEA	Australian Energy Agency
BASREC	Baltic Sea Region Energy Cooperation
BEMIP	Baltic Energy Market Interconnector Plan
BRELL	Belarus, Russia, Estonia, Latvia and Lithuania
BSR	Baltic Sea Region
CEE	Central and East Europe
CIS	Commonwealth of Independent States
EC	European Commission
ECT	Energy Charter Treaty
EED	Energy Efficiency Directives
EIA	Energy Information Agency
ENP	European Neighborhood Policy
EU	European Union
EUSBSR	EU Strategy for Baltic Sea Region
FSRU	Floating Storage Re-gasification Unit
GHG	Green House Gas
GIPL	Gas Interconnection Poland-Lithuania
IAEA	International Atomic Energy Agency
IPS	Integrated Power System

LNG	Liquefied Natural Gas
NATO	North Atlantic Treaty Organization
NBA	New Base Agreement
ND	Northern Dimension
NES	National Energy Strategies
NEIS	National Energy Independence Strategy
NPP	Nuclear Power Plant
PCA	Partnership and Cooperation Agreement
RES	Renewal Energy Sources
TSO	Transmission System Operator
UN	United Nations
UPS	Unified Power System
USSR	Union of Soviet Socialists Republic
WTO	World Trade Organization



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## Chapter - 1

### **Introduction: A Theoretical Framework of Energy Security**

This study describes the concerns, challenges and policies between 2004 and 2017 related to energy security of Lithuania. Most importantly it analyses the issue of Lithuania's energy security and understands its nature of supply of energy. During the Soviet period, for Lithuania as a republic of the USSR energy security was not a concern and it enjoyed strong Soviet energy system. Strong Soviet energy system, abundant energy resources and infrastructure were sufficient to fulfill all the energy needs of the country. But after its independence (11 March 1990) Lithuania lost almost all Soviet energy facilities and several times it was threatened to block the energy supply by Russia and for the first time Lithuania realized the reality of its lack of possessing resources on its own land. Since its independence there have been many efforts in domestic and international level where Lithuania faced threats and challenges to its energy security which is still continue. These threats and challenges have not been completely resolved yet.

In order to reduce its energy dependence from Russia, achieve energy independency and improve its energy system Lithuania joined the European Union (EU) in 2004. Positive changes in its energy sector and supply of energy can be seen but there are still many unsettled problems which Lithuania is facing even after its accession to the EU. During 2004-2017, especially after more than one decade of its membership to the EU it becomes important to understand the nature of energy security of Lithuania, types of threats and challenges which Lithuania is facing to its supply of energy and emerging domestic and regional challenges to its energy system. Another significant point which this study looks

at is the implications of energy cooperation between EU countries and Russia for Lithuania's energy security. Briefly this study analyzes the impact of energy cooperation between the EU and Russia on Lithuania's energy security. Another important point to look at is policy and measures taken by Lithuania after 2004 and regional cooperation in the field of energy.

### **Statement of the Problem**

Energy security is an issue of great importance for Lithuania deeply related to its social, political, economic and diplomatic field of the country and that is why the issue is considered as national security of Lithuania. It is a matter of great concern for Lithuania which has been of course a central issue especially since its independence and the seriousness of Lithuania to secure supply of energy is seen after its entry into the EU in 2004. Since Lithuania doesn't possess required sufficient natural resources and it is almost dependent on neighboring countries especially on Russia to meet its energy demand. Lithuania's major parts of primary resources are imported from neighboring countries: Russia, Norway, Sweden, Poland and Belarus etc and among them it is Russia which has monopoly in energy supply to Lithuania.

According to the energy statistics 2017 of the EU Lithuanian imports more than 78 percent of its energy need and resources are imported from Russia which is taken threat by most of Lithuanian people, research scholars and policy makers (Eurostat 2017). Only small part of energy is imported from other countries: coal from Poland and Ukraine, Orimulsion [the Research and Development Affiliate of Petroleos de Venezuela SA (PDVSA)] from Venezuela and shale oil from Estonia (Ministry of Energy of the Republic of Lithuania 2007). Lithuania's status of 'Energy Island' in the EU and its huge energy supply dependence on Russia makes Lithuania vulnerable in its energy security. Lithuania's makes

continuous effort to secure its energy supply with the help of the EU. But Russia, being major supplier of energy to Europe tries to maintain its energy supply domination in EU countries. Strategic developments in neighboring countries of Lithuania like ongoing construction of Ostrovets NPP in Belarus is raising concerns for energy security of Lithuania wherein it seems Russia has huge strategic intentions using Ostrovets NPP especially against Lithuania (State Security Department of the Republic of Lithuania 2015).

Lithuania succeeded in reducing primary energy consumption by giving more focus on developing infrastructure, renewable energy resources and implementing the Third energy package mainly under Lithuanian National Energy Strategy 2007 and National Energy Independence Strategy 2012 between the years of 2004 and 2017. Although after the closure of the Ignalina Nuclear Power Plant (NPP) in 2009, mainly to implement the EU conditions Lithuania is compelled to import electricity from neighboring countries which has actually increased Lithuania's energy import. While before the closure of Ignalina NPP Lithuania used to meet its 50 percent of electricity needs and used to export electricity to neighboring countries (IAEA 2017). Since Lithuania is not fully interconnected with the EU power grids and Lithuania compel to continue synchronization with Russian power grids makes it more concerns to its energy security. Lithuania's synchronization with the EU power grids is still a great challenge especially when Russia is improving its power grids (Augustis et al. 2017).

Lithuanian started assessing its energy security level for the first time in 2007 when the energy security level was 55.5 percent in comparison to the maximum 100 percent. Since then the energy security level has been fluctuating in nature, for example: in 2012 energy security level was noted 52.5 percent while in 2015

it achieved highest level 62.6 percent. However an increase in energy security level has been observed since 2013 to 2017. The biggest impact on the increase of energy security level as the decrease of natural gas and increase of bio-fuel components weight in the country's fuel and energy balance, decrease of energy intensity as well as new LNG terminal (Augustis et al. 2017).

Since Lithuania was a Soviet Republic for many decades, its most of energy infrastructure is still eastward oriented and almost oil & natural gas pipelines travel from Russia through Belarus before they enter into Lithuanian territory. Reasons like: Russia's energy dominance in the region, its threat to block energy supply, Lithuania's ambition to improve its economy and security of supply led Lithuania to join the European Union (EU) in 2004 with the strong view to diversify its supply of energy and reduce its energy dependency from Russia (European Commission 2004). Lithuania and other two Baltic States' entry into the EU was a major regional development and it has huge economic and geopolitical implications for Russia. After few years Russia moved to build Nord Stream 1 and then Nord Stream 2 pipeline and intentionally avoided Lithuania. Nord Stream projects between Russia and the EU exposes lack of common voice against the project while Lithuania and other Baltic States have shown its concerns over its construction. In the present scenario Nord Stream 2 has become a major debated issue especially among scholars and politicians of the Baltic States (Fischer 2017: 1).

Because of the liberalization policy of the EU Lithuania experienced changes in its energy sector like: unbundling of companies, increase in the Renewable Energy Sources etc. Russia as a major energy player in the EU market also needs to follow the liberalization policy of the EU but it has been reluctant to follow the EU market policy avoiding several EU members' concerns. Such situation

has created suspicious among the EU members especially between the big and small economies. Lithuania as a small EU economy wants Russia to follow the EU market policy so that the role of Gazprom could be reduced but some big players (Germany, France, the Netherlands and Italy) feel the present Gazprom situation is in interest for their economies (Helen 2010: 2). Disagreements between the big and small economies of the EU members over the implementation of liberalization policy on third partner: Gazprom shows the differences between the big and small economies in the EU.

After the dissolution of the USSR, Lithuania inherited strong power industry with established energy network. Furthermore, its energy is connected with the common energy system of the Baltic States, Belarus and Russia. However, this sector was supervised by reform-shy and conservative administrators. Because of these reasons energy production has steadily decreased and the country was compelled importing more and more energy from Russia. Lithuania started facing energy crisis and its status changed from energy enriched country to energy consumer country. The situation also worsened due to lack of primary energy resources in Lithuania with the exception of insufficient amount of coal and the share of renewable energy in the last decade of 20<sup>th</sup> century was approximately 3 percent. To solve such problem the Lithuania government primarily aimed at ensuring stable power delivery for all consumers by introducing energy strategies. The first Lithuanian energy policy was designed and developed by the government in 1994 followed by second strategy in 1999, third energy strategy in 2003, fourth national energy strategy in 2007 and National Energy Independence Strategy 2012. Although these policies have shown positive results but the several major concerns still exist in and out of the energy system and that present situation helps in understanding Lithuanian

efforts in getting energy independence (Ministry of Environment of the Republic of Lithuania 2015).

Because of Lithuanian energy strategies and initiatives taken by the EU (Third Energy Package, BEMIP) Lithuania has been able to implement three major projects, LNG Klaipeda, LitPol and NordBalt, and increased its role in taking participation in regional cooperation. With the help of these strategies and policies Lithuania has been able to improve its energy system by diversifying energy supply and improving energy infrastructure. Even these initiatives and policies are helping Lithuania but it is still not enough and Lithuania still has 'energy island' status. In the present scenario the EU is working to diversify its energy supply (moving to North Africa, Middle-East and North Caucasus) while Russia is in search of new energy market in Turkey and East and North Asia (Shadrina and Bradshaw 2013: 463). In such a scenario the Lithuanian path to secure supply of energy and achieve the status of energy independence faces difficulties. This study discusses Lithuanian concerns, challenges and policies to its energy security and the implications of the EU-Russia energy cooperation on Lithuania.

### **Theoretical Framework**

Energy Security is a critical issue and being debated thoroughly among academic scholars, policy makers and business groups across the world. It is being debated because of its growing importance for scholars, policy makers and business groups. It is true that this issue has gained momentum over a period of time and now in the 21<sup>st</sup> century it has become a very concerned issue not only for countries but also for civil societies and society as well. Although the term 'energy security' is in center and being debated but we still don't have a common/widely accepted definition on energy security. There is no consensus on

the definition of energy security. Among research scholars, policy makers and business groups many similar problems, concerns and arguments related to energy security are there but still they are not agree on a common definition. Lack of fixed or common definition of the term shows/indicates that energy security is contextual, polysemic and multi-dimensional in nature. And because of such nature of energy security we find several definition comprising different aspects. A country's energy security is highly contextual and multi-dimensional as it depends on country's circumstances, level of economic development, risk perceptions, geopolitical situations and robustness of its energy system (Ang et al. 2014).

It is commonly accepted that there is no uniform definition of energy security as this concept means different things to different nations based on their states of development, geographical locations, their natural endowments, political system and international relations (Sovacool 2011). So defining 'Energy Security' is not an easy task. However there are some scholars who have tried their best and covered almost themes and dimensions of energy security. Energy Security is defined as "A condition in which a nation and all, or most, of its citizen and businesses have access to sufficient energy resources at reasonable price for the foreseeable future, free from risk of major disruption of sources" (Barton et al. 2004: 5).

Aspects or dimensions which are important in defining and understanding energy security are not in certain number and used by the understanding of the scholars, policy makers and individuals. There is not a single definition of energy security which includes all the existing aspects/dimensions. However, some aspects are used widely and those are: availability, affordability, reliability, sustainability,



social effects, environment, governance and energy efficiency (Ang 2014). These dimensions are known as key concepts in the study of energy security:

(a) Availability- Availability is the first and most important element and dimension for energy security. That means in simple word that energy resources are available for consumer country. The importance of availability lies in its support of welfare and economic growth. When availability is weaken it limits economic growth and lead to changes in technological and consumption patterns (Blum and Legey 2012: 1982-1989). In this sense it is discussed in relation to access to services and to sufficient supplies. Existence is the main principle of availability and according to Abdelrahman Azzuni and Christian Breyer there are three parameters of the existence of Availability. The first parameter is that energy resources have to be available, second parameter is the consumer (demand of resources) and the last parameter of the availability is access to these energy resources means transferring them to energy service for consumers (Azzuni and Breyer 2018: 6).

(b) Affordability- It is the second most important element of energy security and extends beyond availability mainly to include the basic affordability of energy resources. It is energy prices which determine the affordability of energy supply. Prices of energy supply has always been an issue between supplier and consumer countries so for economically poor countries affordability becomes problem to their energy supply (Bielecki 2002: 235-250). Major components of this dimension are: minimal price volatility, realistic expectations about future prices and transporting prices (Sovacool 2011: 10).

(c) Reliability: It means uninterrupted supply of energy resources and is the most important dimension for the sustained economic growth of the country. Reliability includes robust and diversified energy value chain, adequate reserve

capacity, protection from terrorist attack and political disruptions and adequate information about global energy market (Sovacool 2011, 10). Pascual and Elkind suggest how energy reliability could be increased by using supply chain element, diversified infrastructure and increased storage of energy. Increased reliability means lower risks for the county (Pascual and Elkind 2010).

(d) Sustainability: In the era of 21<sup>st</sup> century where climate change seems threat to all living creatures, in such situation sustainability becomes more important for energy security. Sustainability includes low emissions of Green House Gases (GHS), minimal contribution to regional, global and local forms of environmental pollutions and protection of energy system from climate change. Hartley and Medlock by understanding its growing significance suggest sustainability should be dealt independently and it has become one of major dimension of energy security in this 21<sup>st</sup> century (Hartley and Medlock 2008).

In addition of above aspects there are some other aspects, like: energy poverty, security of demand, geopolitical positions, risk perceptions etc. which is also used in defining energy security by different scholars. Uses of these themes or dimensions depend on the nature of countries, for example ‘energy poverty’ as a dimension, is not taken into consideration when developed countries try to define their energy security while it becomes important for developing and poor countries. So because of the shifting themes and sources of energy security this study finds many different definitions lacking a common definition. In the 21<sup>st</sup> century many new themes (environment, societal) are being explored by research scholars with different nature of energy security. Quantifying energy security is an important task to gauge energy security performance (Spreng, D. and Kemmler, A. 2007).

However, it's quite difficult job to measure energy security using a single or ordinary indicator. Certain indicators or a basket of indicators with their certain weight are used to make an index to measure energy security performance. Again there is no consensus over selection of indicators and making indexes. And because of lack of consensus different organizations and national energy agencies have different energy indexes. The "Index of US Energy Security Risk" and "International Index of Energy Security Risk" proposed by the institute for the 21<sup>st</sup> century are example of such indexes (Spreng, D. and Kemmler, A. 2007). The construction of energy security index is full with subjectivity. The selection of indicators and the assigned weights in the construction of index depend upon the purpose of the different policy makers, scholars. However, energy security index is very sensitive to change in indicators. So to gauge energy security performance it is important to have energy security index although it is full with drawbacks and difficulties. It is a major question for those countries how and in which manner they use indexes to quantify major development, new energy sources, increase in international resource prices and energy efficiency improvement efforts.

One of major questions which I am dealing with in this research work is how Lithuania defines its energy security and what are the main elements in defining Lithuania's energy security? As it is known different countries define their energy security differently depending on their energy themes or dimensions and source of resources. The same this study finds in Lithuania's nature of energy security which is completely different from other nations. Lithuania defines its energy security in terms of 'Energy Independence' with this goal to ensure Lithuania's energy independence before the year 2020 by strengthening Lithuania's energy security and competitiveness (Ministry of Energy of the Republic of Lithuania 2012).

There are several dimensions: affordability, economic, technological, social, cultural, competitiveness and sustainability, which help in defining Lithuania's energy security. Among them few dimensions are in the center of the definition and those are: Security of energy supply, Competitiveness and sustainability of the energy sector (Ministry of Energy of the Republic of Lithuania 2012). Lithuania almost follows the definition of energy security given by Daniel Yergin. According to Yergin "energy security is reliable and affordable access to energy supplies, diversification, integration into energy markets, and the provision of information" (Yergin 2006).

The political dimension of energy security for Lithuania and other EU member states was reinforced by the 2006 and 2009 during Russian-Ukrainian gas crisis. It is within the context that Lithuania faces the complicated challenges of balancing national, regional and European interest in their energy policies, while exploring measures against dependence on Russia. Lithuania can avail energy resources by making strong political and economic commitment. Lithuania must take benefit of their proximity to Baltic Sea, Russia and major European powers. Lithuania needs to rethink their.

### **Review of Literature**

A large body of literature exists on energy security in general and also issues related to Lithuania. The available relevant literature is divided into three parts: Conceptualizing energy security, Concerns and challenges to Lithuania's energy security and Regional cooperation and energy policy. The concept energy security and various dimension of it is well documented in several books and articles. The scholars who have attempted to define the word energy security and their work are relevant for this study are: Closson (2013), Noronha and Sudarshan (2009), Yongus (2007), Cherp (2011), Egenhofer (2004), Sovacool

(2011), Yergin (2006), Hughes (2009) and IEA (2001). The dimensions and indexes of energy security which play important role in understanding energy security are also analyzed from several scholars: Kruyt et al. (2009), Ang et al. (2014), Johansson (2012), Narula (2011), Sovacool and Brown (2010).

Regarding Lithuania's energy issues a large body of literature is available. Energy security as national security, securitization of energy, impact of identity in Lithuania's relation with Russia and EU are discussed and analyzed by several scholars and have attempted to understand Lithuania's energy system and supply of energy from their perspective. Scholars like: Grigas (2013), Jakniunaite (2015), Baran (2006), Dudzinska (2013), Augustis et al. (2016), Augustis et al. (2017), Maigre (2010) provide insights on Lithuania's energy security, national security and Lithuania's relation with the EU and Russia. These scholars contribution also deal with Lithuanian peoples' opinion over strategic projects in and out of the country.

Ample literature is available on the Russia-EU energy cooperation and its implications on the Lithuanian energy security. The scholars who have contributed to this field attempted to understand how major economies of the EU and Russia behave to small countries of the EU and non-EU countries. These scholars are: Balmaceda (2013), Molis (2011), Pakalkaite (2016), Grigas (2013), Kuznetsov (2013), Hadfield (2008), and Khruscheva (2016). Hadfield explains RU-Russia energy ties as aggregation and aggravation.

There is abundant literature is available in the form of books and articles on energy policies of Lithuania and regional cooperation in the Baltic Sea Region (BSR). Katinas (2014), Aidukiene (2013), Vasauskaite (2014), Marauskaite (2011) and European Commission (2007) try to highlights the problems in

Lithuanian energy system and propose possible ways to achieve energy independence of Lithuania. Pakalkaite (2016), Kuznetsov (2013), Sattish (2016) and Makarychev (2017) explain about prospects and challenges of regional cooperation in the Baltic Sea Region (BSR) and examine Lithuania's energy security improvement.

What makes this study different from other existing studies is its special focus on explaining Lithuania's energy security between the years of 2004- 2017 with a view to explaining problems to the Lithuania's way in achieving its energy independence through several strategic energy policies and projects.

### **Research Questions**

1. What is meant by energy security and how Lithuania defines energy security?
2. What are major threats and challenges to Lithuania's energy security?
3. How does EU-Russia energy cooperation impact Lithuania's energy security?
4. What are the policies and measures taken by Lithuania towards achieving energy independence and meeting energy security challenges?

### **Hypotheses**

1. Lithuania's energy security is negatively impacted by regional instability, dependence on single supplier Russia, isolation from EU energy system and the status of "Energy Island" within EU.
2. EU-Russia cooperation and bilateral projects bypassing Lithuania as a transit have strategic, economic and environmental implementation for Lithuania.

## **Research Method**

The study is analytical and qualitative in nature. The study will employ interdisciplinary approach, drawn from different disciplines such as Political Science, International Relations, Geopolitics, and Energy Studies etc. This work is based on primary and secondary sources. Primary sources include government reports, official speeches, foreign policy documents, energy policy documents, company reports and news reports. Secondary sources include books, journal, articles etc. The deductive method has been used during the course of study. Field work has been done in Lithuania, visited energy project sites, held interview with experts and conversation with local people.

## **Structure of the Study**

The study is structured into five chapters. Chapter one introduces the main subject of the research. It includes review of literature and explains rationale and scope of the study. In addition to that, this chapter emphasis on the issue of “energy security” and examines nature of Lithuania’s energy security. The chapter includes research questions and arguments which will be dealt in succeeding chapters.

The second chapter sheds light on the ongoing energy security concerns, threats and challenges of Lithuania. An attempt has been made to understand nature of Lithuania’s energy security. An important part of this chapter is highlighting major societal perspective on the threats and challenges on energy security. This chapter talks about the reason behind Lithuania’s energy security.

Chapter three highlights EU-Russia energy cooperation and its implications for Lithuania’s energy issues. An attempt has been made to understand that energy cooperation between EU and Russia has both positive and negative implications

for Lithuania. A crucial part of this chapter is highlighting the impact of Nordstream-1 and Nordstream-2 on Lithuania's energy policy makers. This chapter also analyzes how Lithuanian energy policy has changed after its accession to EU.

The fourth chapter analyses that energy independence is one of important goal of 'National Energy Independence Strategy 2012'. An important part of this chapter is the understanding regional cooperation in the Baltic Sea region where central focus is given to Lithuania. A detailed analysis of energy policy and strategy since 2004 (Lithuania's membership of EU and NATO) has been done in this chapter. The final chapter five is the summary and conclusions of the entire research work and findings drawn from the study. This chapter highlights the observations with regard to Energy Security of Lithuania. It also validates the hypotheses identified.



## **Chapter- 2**

### **Lithuania's Energy Security Concerns and Challenges**

This chapter sheds light on the world wide ongoing debate challenges to energy security. It studies the concept of energy security challenges and how the threats are perceived by a country. The chapter then attempts to highlight the major concerns and challenges to Lithuania's energy security from 2004 to 2017 and provides the reason behind such concerns and challenges. Challenges and concerns are divided into two parts: one is from 2004 to 2016 and the part two is from 2016 to present. The nature of concerns and challenges have been changing in Lithuania between the specified period and it might be happening from domestic and external factors. This chapter also discusses energy sector issues and some major projects Lithuania has implemented for attaining energy security. It ends with analyzing the Lithuania's energy security level between 2004 and 2017.

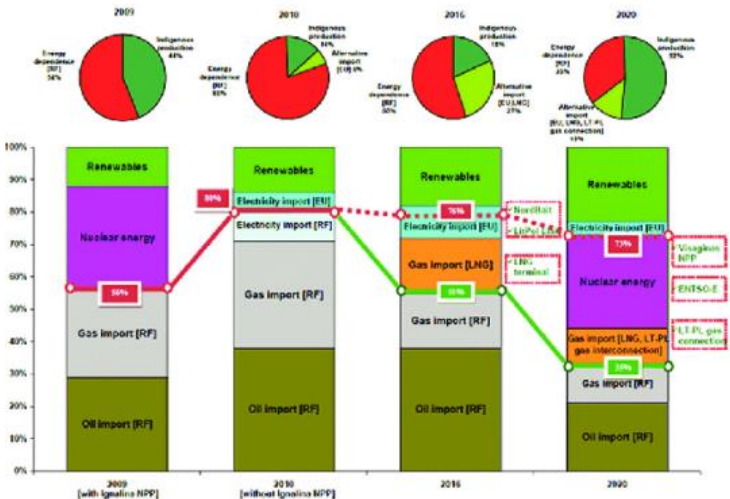
#### **Energy Sector of Lithuania: A Brief Overview**

Lithuania as one of three Baltic States is not an energy secure country and it was termed by European Commission in its Green Paper as an 'Energy Island country'. It was termed 'Energy Island' because it is not well connected with European Energy Market and energy system (Commission of European Communities 2006). The concept of 'Energy Island' again embedded in the documents of the EU in 2013 dealing with security of supply (European Council 2013). Lithuania got a strong energy system after its independence as a legacy of Soviet Union which was mostly east-oriented as a part of Integrated Power System (IPS) controlled by Moscow. Such energy system could not help Lithuania to achieve energy independence status and energy efficiency because

indirectly it was a kind of Lithuania dependence on Russia over regulation and control of the power industry. Because of such energy system in Lithuania the energy intensity rate increased and energy efficiency rate reduced. Dependence on Russian imported energy resources (oil, gas and nuclear fuel) and intentionally blockage of energy supply forced Lithuania to seek an alternative way to secure its energy security. Lithuania's membership of European Union (EU) was an effort of Lithuania to diversify its energy supplies, synchronization with continental European energy system and proceed towards energy independence.

According to the Australian Energy Agency (AEA), 2016 the primary energy supply balance by 2008 was dominated by oil, natural gas and electricity. And all these resources were subject of import from Russia. Picture- 1 clearly shows Lithuanian energy sector started change after 2009 as the role of electricity was almost replaced by Renewable Energy Sources (RES).

Picture 1: Lithuania's Primary Energy Mix: Reducing Energy Dependence on a Single External Supplier



Source: National Energy Independence Strategy, Vilnius, 2012

Lithuania's entry into European Union (EU) with many bounded conditions brought several changes in Lithuania's energy system between 2004 and 2017. Closure of Ignalina Nuclear Power Plant (NPP), investment in renewable energy resources, reduction in oil and gas consumption etc. were some of important conditions before its membership to the EU. But, in order to follow the conditions energy system of Lithuania changed suddenly, like: closure of Ignalina forced Lithuania to import electricity (earlier it shares more than 70 percent of electricity needs).

However, such change in energy system was dealt by new energy projects and policies being supported by EU. Electricity grid-extension projects: NordBalt Sea power cable (Sweden- Lithuania, 700 megawatts [MW] of carrying capacity), The LitPol link (Lithuania-Poland, 500 megawatts [MW] of carrying capacities), and Klaipeda LNG terminal (Paceviciute 2017, 09). EU membership allowed the country to catch up its economy, secure energy supply by using opportunities provided by European Union (EU). This membership also allowed Lithuania to feel more confident in asserting its interest with Eastern neighborhood to become regional player and in dealing issues with major energy supplier Russia. The choice of Lithuania to diversify its energy resource, like: gas import from Norway for Klaipeda LNG terminal, electricity grid interconnection to Poland and Sweden are example of Lithuania's effort to be confident in dealing with major energy supply in the Baltic Sea region.

Lithuania imported 79 percent of its total energy after the closure of Ignalina Nuclear Power Plant (NPP) (Cesnakas 2013: 108). Before its closure of Ignalina NPP, Lithuania used to enjoy of its own electric production but after decommissioning of the NPP Lithuania is compelled to import electricity from

Russia as a single electric supplier for few years. Lithuania's electric grid extension to Poland and Sweden in 2015 diversified its energy import and reduced dependence from Russia as a single supplier of electricity.

According to Lithuania energy market report 2017, like other Baltic States, Lithuania has not ample energy resources. Oil reserves estimated at 1.7 Metric Ton (Mt) in the end of 2016. Shale gas resources according to US energy administration estimated at 113 billion cubic meters (bcm). Apart from such marginal production Lithuania imports all of its crude oil (9.1 metric ton in 2016) mainly from single energy supplier Russia at that time. All these imported oil refined at Mazeikiai refinery which has 15 Mt/year of total capacity. Overall Lithuanian oil consumption has been remained stable at around 2.5 Mt since 2000. However 14 percent fall in consumption was reported because of reduction in demand of energy in 2009. Consumption of oil product rose by 6.7 percent to 2.6 Mt in 2016 (Ministry of Energy of the Republic of Lithuania 2017).

Lithuania doesn't possess natural gas resource of its own and historically has been dependent almost on Russia. In 2012 Natural gas had 37 percent share in the final energy consumption which later reduced after the commissioning of the LNG terminal at Klaipeda, diversification of imported natural gas and increased role of renewable resources in final energy consumption (National Commission for Energy Control and Prices 2017). A proposed Gas Interconnector Poland-Lithuania (GIPL) pipeline under the Baltic Energy Market Interconnection Plan (BEMIP) will probably come into force in 2019 which would help in diversifying natural gas import of Lithuania. Energy sector of Lithuania is facing many concerns and challenges from domestic and international side.

## **Energy Security: Concerns and Challenges**

For Lithuania, Russia is both external and internal threats to its energy security. In domestic level Russia uses propaganda using its loyalists on the land of Lithuania. In the case of Visaginas NPP and Shale gas project it was Russia behind of closure of the construction of both the projects. According to 'National Threat Assessment 2018, 'Russia's capabilities, hostile intentions, and actions remain the main source of threats to Lithuania's national and energy security (State Security Department the Republic of Lithuania 2018:57). Regarding Lithuanian Perception on Russia and EU is completely different. Lithuania finds themselves as a European identity and because of this identity it is more West oriented in terms of values, economy, energy and culture. Because of bad memory of history between Lithuania and Russia relations are not amicable and Lithuania peoples' perception is almost anti-Russia since they take Russia as a major threat (Jakniunaite 2015: 72).

Lithuania's perception on energy security threats is clear as they believe Russia is the main source of threats to its energy security in domestic and regional level. Since Lithuania is still under Soviet energy system and dependent mostly on Russian imported natural resources Russia has become a daily basis debate among Lithuanian people discussing Russia's action in regional and international level. Such concerns show the Lithuania fear of Russian actions (Brunals 2017: 38).

Regional issues like: pipeline politics, environmental damages, threat to underwater heritage, threat to fish folk and Lithuania's lack of interconnectivity with the European energy market and power grids are other major threats to Lithuania's energy security which Lithuanian people perceive. All these issues are existed because of lack of solid regional cooperation and mutual trust

(Langlet 2014). Energy security of a country is surrounded by numbers of challenges, concerns and threats. Here challenges and threats can be used synonymously. A challenge could be defined as a probable obstacle that exists outside or within the energy system. It has potential to bring damage to the energy system. There are various sources of challenges with different nature. These challenges depend on the country's energy system, geographical location, socio-political context and its relation with neighboring nations and major energy supplier.

There is no certain point of time period which can be claimed as starting period of challenges to energy security. Energy security challenges began first and foremost as separate policy problems (Cherp and Jewell 2011, 03). Post- Second World War was the period where many scholars agreed to be initial period of challenges to energy security which actually were felt among scholars and policy makers. Oil crisis of 1973 was an extreme example and probably was the first clear threat and challenge to energy security in global level. This crisis is taken as an important incident in the field of energy security and challenges to the energy security. The best known and the most common challenges caused infrastructure and reliability of the energy system itself. Many different accidents occur due to technical reason and cause grave disruptions to the energy system or sometime the absolute cut off the energy supply. Other most common challenges are natural disasters: draughts, floods, earthquake, storms, frosts etc.

However, such challenges depend upon the local climate, seismic and other geographical conditions. Stability of prices of energy and fuel is one of the important challenges to the energy security of a country. It includes, economic crisis, domination of a particular source of fuel, and isolation of the system. Fluctuating nature of prices of resources is taken as a serious challenge from the

view of the resource import countries and most of time it is used as ‘resource weapon’ by resource exporting countries.

Socio-Political and geopolitics are the other major challenges to the energy security of a Lithuania. It is very difficult to define such challenges and there are hardly any measures to evaluate the possibilities of the existence of such challenges. The existence of such challenges has an adequate impact on decision making with regard to several energy development projects. Instability and tensions in regional and global level are also a kind of challenges to energy security of a country.

In order to deal with such challenges and concerns and to protect energy system states make barriers. Such barriers reduce the probability of their manifestation and diminish their outcome. Different states have different level of barriers depending on their nature of concerns and challenges. However barriers are grouped into three levels: technological level barrier, economic barrier and socio-political barrier (Augustis et al. 2013: 8). Technological barriers include reliability of infrastructure, geographical diversification of resources and energy effectiveness. Socio-political barriers include social, political and external relations of the state. And economic barriers incorporate financial stability, economic development and character of prevailing projects.

The overall energy security challenges facing Lithuania are more than just an inconvenience and show a sizeable barrier to the prosperity of Lithuania. Energy insecurity in Lithuania caused by many different elements is dynamic in nature and has been changing over a period of time. It led to disruptions of supply of energy resources, higher transportation cost of resources, households into poverty, high energy intensity etc. Assessing concerns and challenges of a

country has always been difficult as it depends on various dimensions used in a country's definition of energy security (Sovacool 2012, 52). The same is the situation which could be found in Lithuania where many different dimensions have used in understanding its energy security. For the better understanding of Lithuania's energy security challenges and concerns can be classified into two periods: Between 2004 and 2016, and from 2016 to present. The reason behind categorization of energy security challenges into two periods is that challenges in the first period (2004-2016) seem to be getting solved. While challenges in the later period is more under debate among policy makers and scholars and its impact can be seen easily on energy security of Lithuania.

### ***Challenges Occurred between 2004 and 2017***

Lithuania experience several threats and challenges to its supply of energy resources between the years of 2004 and 2017. Since given period faced lots of changes in its energy and foreign policy as a consequence it influenced both the sector primarily. Followings challenges and concerns emerged because of reasons: The EU conditions to Lithuania for its membership, Lithuania's effort to diversify its energy supply, Lithuania's increasing dependence on Russian imported energy resources, Russia's effort to keep Lithuania away from the EU energy system and non-implementation of full liberalization policy by Lithuania (State Security Department of the Republic of Lithuania 2018).

#### **(a) Closure of Ignalina NPP**

One of the major challenges which Lithuania faced to its energy security was in the form of decommissioning of the Ignalina Nuclear Power Plant (NPP) IN 2009, just five years later its entry into European Union (EU). Closure of Lithuania's NPP surprisingly shifted its energy landscape significantly after 2009. It was the country's single Nuclear Power Plant (NPP) situated few



kilometers (km) Northward from the capital city Vilnius. Ignalina used to provide around 77% of local electricity demands at cheap price and around 58% of its total electricity production used to export to neighboring countries (EIA 2013). Following the closure the Ignalina NPP a huge gap occurred in energy supply which was managed by increased energy import which accounts around two third of its electricity needs. Such challenges (closure of Ignalina NPP) increased Lithuania's dependence on single energy supplier issue as Russia used to provide almost all of the country's 2.4 bcm (billion cubic meters) of annual gas needs and a significant part of its electricity imports (EIA 2013).

Such increasing import is considered dangerous for Lithuania through the view of EU Energy Security Strategy (2014) as the strategy aims to reduce the energy dependence and diversification of energy supply. Because of closure of Ignalina NPP Lithuania was not seen in achieving aims of EU Energy Strategy. In addition energy system is plagued by low energy efficiency rates and reduction in personal incomes. Because of imported electricity the cost of electricity has increased and around one third of the population of Lithuania is facing economic problem to keep their homes warm (European Commission 2018). Ignalina NPP really had major influence on the future of Lithuania's energy system. The impacts of such challenge are visible but because of some major energy projects the impact of this challenge is being managed. The challenge is still there and extension of electricity grid to import energy is not going to bring the same situation which Lithuania had before decommissioning the Ignalina NPP.

#### (b) Societal Resistance to Strategic Energy Projects & Shale Gas

Societal resistance to strategic projects is one major challenge which Lithuania is facing these days. Lithuanian people present a negative approach to new strategic projects which has been seen in the case of building of Visaginas Nuclear Power

Plant (NPP). After the closure of Ignalina NPP, Lithuanian government planned to build a new nuclear power plant at Visaginas (1350MW) by 2020-2022. This project was aimed to develop together with Latvia, Estonia and the Japanese company Hitachi. Lithuania would own 38% of the plant, Latvia 20%, Estonia 22% and Hitachi 20% (World Nuclear Association 2017). This project was viewed by the strategists and policy makers as a milestone as it would not only produce electricity but also it would strengthen supply of energy resources and energy cooperation among Baltic Sea States. It would be useful in the long run perspective and increase the gross energy security level of Lithuania.

But Lithuania people raised concern over the building of Visaginas NPP by this claim that it is not secure in terms of safety and environment unfriendly. Having watched such protests from the society the then Lithuanian government held a referendum on 14<sup>th</sup> October 2012. 67.70% of the electorate expressed was against the project, 34.07% was in favor. While only 52.52% of the electorate expressed the opinion (Ministry of Energy of the Republic of Lithuania 2015). Considering the result of the referendum the plan to build the Visaginas NPP was taken back.

Another societal resistance was seen against the exploration of shale gas production. An US energy Company (Chevron) was given license in 2013 to explore, dig the Lithuanian gas deposits and produce the shale gas which would increase Lithuania's energy independence (Bogdanas 2018). It was meant to reduce the dependence on imported gas, mainly from Russia. This project also could not run mainly because of the resistance from the society. People from towns and villages (especially farmers) nearby shale gas exploration believed that shale gas is a curse that could not release from the earth and it would contaminate drinking water and force people out of their land. Finally

government decided not to go with the project and Chevron was told to cancel the license.

#### (c) Market Monopoly and Russia as a Major Energy Supplier

Lithuania has witnessed being a country with high monopoly both in domestic and external markets where Russia has major roles and stakeholder. Since Independence and even after Lithuania's entry into EU in 2002 the Russia position in the market monopoly is still there. Such position of Russia poses challenge to the stable supply energy at reasonable for Lithuania. The involvement of two major energy giants: Gazprom (Russia) and E.ON (Germany) with share of 38.9% and 37.1% is enough to say how strong domestic market of Lithuania has been monopolized. Such monopoly directly and directly influences the energy security policy of the country. However many efforts are being done by Lithuania by importing gas from Norway and electricity-grid extension to reduce such monopoly. Russia is still a major energy supplier with high monopoly so challenges is still these but it Lithuania is getting success slowly in reducing Russia's monopoly.

#### (d) Low Energy Efficiency

Energy efficiency is also called efficient energy aims to reduce the amount of energy required and cost in providing products and services. Since its independence Lithuania is continuous with its lower energy efficiency which poses a great challenge to its energy security. Because of Low energy efficiency Lithuania spends more money and energy to run its economic, transportation activities, industry and heating households which directly affecting the energy system of the country. Lithuania adopted the 2012 EU Energy Efficiency Directive (EED), Two National Energy Efficiency Action Plan in 2007 and 2011. It aims reduction in the final

energy consumption by renovating buildings, modernizing energy system, increasing district heating sectors and using renewable and waste energy resources to make the country less dependent on primary energy(imported) sources (Ministry of Environment Republic of Lithuania 2014).

Lithuania succeeded in improving its energy efficiency but it could not reached the 2012 EU Energy Efficiency Directive (EEU) target in which member states of EU has to end-use energy saving of 1.5 % each year from 2014 to 2020 (Vasaukaite and Dalia 2014, 629). The main reason of failure in achieving EU target and improving energy efficiency was lack of regulation or implementation of the policies, financing and lack of awareness in residential sector (Energy Efficiency Watch 2013). Lithuania needs to tackle this challenge without which it would be very difficult to get status of energy independence and reduce of energy dependence.

### ***Concerns and Challenges in Post-2016***

#### **(a) Ostrovets NPP in Belarus**

One of the major challenge (being thoroughly discussed among policy makers) of Lithuania comes from the Ostrovets Nuclear Power Plant (NPP) which is being built in the West part of Belarus. It is multi-reactor nuclear power plant in nature and located only 45 km away from the capital city Vilnius. The first unit is expected to be completed in 2020 and the second in 2021 (Ministry of Foreign Affairs of the Republic of Lithuania 2011). This project doesn't comply with United Nations (UN) Aarhus and Espoo conventions and its negligent construction raises appropriate concerns about nuclear safety. Because of its doubtful construction it is often estimated security challenge not only for Lithuania but also for the whole Baltic Sea Region (BSR). Such project can serve as an instrument for promoting disagreement among BSR.

Ostrovets NPP is a Russian instrument on the land of Belarus and it will be used as a tool for pressurizing its neighbors. There is also belief among policy makers that such project is brought intentionally by Russia in order to challenge the EU's Baltic Energy Market Interconnection Plan (BEMIP) which aims to improve infrastructural integration among Baltic Sea Regions (BSR). This construction of the plant started almost in the same period when Visaginas NPP project was being discussed and it was Russian efforts to persuade Lithuania people that Visaginas NPP is uncompetitive and much costly. Ostrovets will be used by Russia against Lithuania as geopolitical tool which would obviously create disruptions in the energy independence of Lithuania. Ostrovets NPP is financed by Russia around 90% of its cost and supported in terms of nuclear reactor technology, expertise and contractor (Schinder and Antony 2016). Lithuania fears that this plant would be used to keep Russian hegemony intact in the BSR which actually is being challenged in the same region. The construction of this plant on the doorstep of Euro-Atlantic area gives Russia an opportunity to station its military and anti-air defenses on the name of securing its strategic plant. For Lithuania such situation would create direct national threats to its national security.

(b) Synchronization of Electricity with Continental Europe

The electricity grids of the all three Baltic States, Belarus and Russia are currently interconnected by BRELL (Belarus, Russia, Estonia, Latvia and Lithuania) electricity rings. All these grids are under control and supervision of Russia. Lithuania here again faces electricity dependence on Russia and paying high price for electricity which is vulnerable to its reliable and continuous supply of electricity. In case of crisis Lithuania may face power blockage by Russia.

In order to reduce such dependence Lithuania has moved to the synchronization of electricity with continental Europe by inter-connecting power grids with Sweden (NordBalt) and Poland (LitPol) with the help of European Union (EU) under BEMIC (Baltic Energy Market Interconnection Plan) (Paceviciute 2017). Lithuania wanted to build more grid-interconnection with Poland but it was refused by Poland saying it is not actually beneficial for it. Lithuania even is not getting support from Estonia which actually prefers to connect its grid with Finland. Lack of cooperation and lack of sufficient finance is affecting synchronization process which ultimately poses threat to Lithuania's energy security. Russia as a major electricity supplier opposes this synchronous process for three main reasons. The first, such synchronization means that Belarus and Lithuania (also other two Baltic States) would operate in different zones, consequently reducing the possibility of exporting electricity from Ostrovets NPP to Baltic Sea Region (BSR). Second, Synchronous will diminish Russian hegemony in electricity field and the lastly, it will force Russia to opt between synchronizing Kaliningrad with continental European Network or ensuring its island operation (Cesnakas and Justinas 2017, 10).

### (c) Nord Stream- 2 Gas Pipeline

Picture 2: The route map of Nord Stream 1 and 2



Source: PJSC Gazprom, 2017

One of challenges which Lithuania is facing currently is Nord Stream-2 Gas Pipeline. It is an offshore gas pipeline runs under the Baltic Sea from Vyborg (Russia) to Griefswald (Germany) with 1,222 km length (Baran 2006, 12). Lithuania doesn't play any role in transit of natural gas and oil to any European countries and actually is not more concerned of this pipeline. But the problem for Lithuania is if Russia connects Nord stream-2 pipeline to Kaliningrad then Russia could manipulate the resources inflow into Lithuania without affecting supply to the Kaliningrad. If it happens Russia would eliminate any probable leverage Lithuania. This is a great matter of concern for Lithuanian energy security.

#### (d) Utilization of LNG Klaipeda Terminal

Based on floating storage and re-gasification unit (FSRU) terminology, LNG terminal, Klaipeda is significant and strategic mechanism of re-gasification not only in Lithuania but also in the all three Baltic States. The terminal started operating on 3 March 2014 (Paceviciute 2017, 10). The main goals of the terminal are: to diversify the supply of imported energy in Lithuania and improving national energy security.

Since its operation (March 2014), the utilization of the terminal has always been a concern for Lithuania. And this concern is caused by followings: terminal is completely based on imported gas (Norway and Russia), what is the need of the terminal based on ship-imported gas (costlier than pipeline gas) while pipeline imported gas is cheaper and increasing use of the terminal even more than its capacity. All these above mentioned elements create problems in the utilization of LNG terminal which is a visible challenge and concern to Lithuania energy security. No doubt the LNG terminal is of huge strategic importance for

Lithuania but still has some issues which should be dealt by keeping in the view of the aim to achieve energy security independence.

In order to deal with concerns and challenges to its energy security, Lithuania has taken many steps and initiatives since its independence. In Post-2004 period steps taken by Lithuania has been supported by European Union (EU) and its institutions to deal with existing challenges. Followings are the steps and initiatives:

(e) Liberalization of Lithuanian Energy Sector

Liberalization of the energy sector of the member states is one of important conditions of European Union (EU). The first liberalization directive was adopted in EU in 1996, second in 2003 and third in 2009. All three directives are aimed at: Market opening, third party access and the system operator (Streimikiene and Cibinskiene 2015)). In Lithuanian energy sector, market liberalization started just after Third Energy Package of the European Union (EU) came into force in 2009. In the process of liberalization, electricity sector was started unbundling in 2010 where operator AB Litgrid was separated from UAB Lietuvos Energija. It allowed AB Litgrid to function as the transmission system operator (TSO). A similar process started in the gas sector in 2013 where the AB Amber Grid was established as transmission system operator (TSO) from AB Lietuvos Dujos (Paceviciute 2017, 9). Such steps taken by Lithuania are considered consistent with European Union (EU) liberalization conditions. Liberalization in the sector of electricity and gas provides Lithuania to choose independent suppliers of electricity and gas and helps in diversifying energy supply. It has in some extent, reduced Lithuania dependence on Russia for electricity and gas supply. The price of electricity has been reduced since the inception of liberalization in Lithuania.



(f) Baltic Energy Market Integration Plan BEMIP

Baltic Energy Market Integration Plan (EMIP) was established in 2009 by the European Commission (EU) for all three Baltic States and the member of Baltic Sea Region (BSR): Germany, Denmark, Latvia, Estonia, Lithuania, Poland, Finland and Sweden. The major aims of BEMIP are to security of supply, increase regional market integration, foster energy trade among the member states and improving the regional market integration into continental Europe energy network. European Union brings this plan with this view that the region's energy interconnection level is limited which raises concerns over the energy security of the Baltic States.

A number of projects related to energy infrastructure have been initiated by BEMIP in Lithuania. Two significant electricity grid extension projects under BEMIP were successfully completed in 2016. One grid extension is NordBalt subsea power cable between Sweden and Lithuania with the 700Mw carrying capacity and second is the LitPol link between Lithuania and Poland with 500 Mw of carrying capacity. Both grid extensions helped Lithuania linking with energy market of Nordic and Continental European electricity networks and provided an alternative energy supply option. Such grid interconnections also provide Lithuania the facility to import cheaper electricity from Nordic countries. Since the initiation of NordBalt link in 2016 the Lithuanian electricity price has reduced (Nordpool 2016).

Within the framework of the Baltic Energy Market Integration Plan (BEMIP), LNG terminal in the coastal city of Klaipeda is built and opened in March in 2014. It has a re-gasification capacity of 3.8 bcm per year. The terminal gets imported gas from Norway and Russia. It is the single alternative to the country's limited gas network system. LNG Klaipeda terminal helped in diversifying

Lithuania's energy supply. The Gas Interconnector Poland-Lithuania (GIPL) is a proposed natural gas pipeline interconnecting Poland and Lithuania which is expected to be finished in 2019. It also comes under Baltic Energy Market Integration Plan (BEMIP) which would help Lithuania in dealing with challenges to its energy security. This BEMIP with many projects has helped Lithuania to decrease its dependence on Russian energy supplies. It has also improved regional energy cooperation among member states. However Lithuania's energy independence remains unaddressed as its gas and electricity imports have only been redistributed and not decreased (Paceviciuten 2017:15).

#### (g) Renewable Energy Sources

Renewable energy sources (RES) is considered an important pillar and steps of Lithuanian energy policy aimed at reducing the reliance on imported energy sources. It aims to achieve the renewable energy sources (RES) share in the final energy consumption up to 23% by 2020 (Ministry of Energy of the Republic of Lithuania 2017). According to the Department of Statistics of Lithuania it has already achieved the 23% target in 2014. Renewable energy sources in Lithuania includes: Solar plants, wind plants, solid bio-mass plants, bio-gas plants and hydro-electric plants. Wind plants contributes large share in the production of renewable energy sources.

Promotion of renewable energy sources by the Lithuanian government has strengthened its confidence in achieving energy independence. By doing so Lithuania has successfully been able to reduce its energy import from neighboring countries. It is also environmental friendly. Extracting energy from RES requires advanced technology and financing which may increase price of energy resources in Lithuania. All it depends how policy makers perceive RES and its long lasting impact on society.

### **Energy Security Level of Lithuania in post 2004**

A country's energy security level can only be analyzed with regard to the factors influencing energy security. Energy security is difficult to analyzed using simple indicators as indicators vary country to country (Ang and Choong 2014). According to the Energy Security Research Centre, Kaunas around 60 indicators has been used and which are into three blocks: technical and socio-political and economic. All the factors and blocks block have their certain value in the total estimate that constitutes the influence of all indicators for energy security. Such estimate is called energy security level (Augustis et al. 2017: 23).

In 2007 Lithuanian energy security level assessment has started for the first time and since then it is being assessed annually. When it was first assessed the energy security level of the country had increased 55.5 Percent in proportion to 100 Percent. Between the years of 2007 and 2015 it was the year of 2015 where the highest energy security level was achieved with 62.6 Percent and the minimum energy security level has seen in 2012 with 52.5 Percent. Because of the shutdown of the Ignalina NPP in 2009 Lithuanian energy system experienced changes especially in the field of electricity. In such changed situation the major production of electricity was ensure by other power plants which were fuelled with gas and electricity imports were increased.

Energy security level was 56.9 Percent in 2008, 55.9 Percent in 2009, 53.7 Percent in 2010, 53.0 Percent in 2011, 52.5 Percent in 2012, 54.4 Percent in 2013, 56.3 Percent in 2014 and 62.6 Percent in 2015. The overall estimate of the energy security level of Lithuania shows a positive trend and demonstrates a positive development in energy security level especially after 2013 (Augustis 2017). Till 2010 energy security level showed a negative development. It

happened mainly because of disruptions in the energy supply and shutdown of the Ignalina NPP. The implementation of Baltic Energy Market Integration Plan (BEMIP) with many projects has helped Lithuania in strengthening its total energy security level. Energy security level of all three blocks has been varying in nature in the given period.

It is technical area which is considered to be the strongest section of the Lithuania energy sector. It has well improved surplus energy output capacities, well designed and developed infrastructure for energy distribution and transmission. In the period of 2007- 2015 the energy security level of technical block varies from 63.0 Percent to 65.1 Percent (Augustis et al. 2017:26). Period between 2009 and 2014 has shown negative energy security level of the block comparing previous energy security level. In 2009 it was 61.4 Percent, in 2010 it was assessed 61.9 Percent, in 2011 energy security level was 61.1 Percent while in 2012, 2013 and 2013 it was 61.3 Percent, 61.1 Percent and 62.2 Percent respectively (Augustis et al. 2017, 27). The development of the energy security level in this block has been slow and it is mainly because use of aged technologies and small technologies in energy production and concentration equipments. Energy security level of the block can be well improved with the introduction of new technologies and facilities.

The economic block has showed a great rise, with more than 25 percent in its energy security level in the given period (2007-2015). This happened with the implementation of new LNG terminal, district heating, electric-grid & gas pipeline extensions and free market in energy sector of Lithuania. In 2004 energy security level of the block was assessed 42.6 Percent while it reached 67.7 Percent in 2015. The biggest increase was seen from 2014 to 2015. The rise of the level of technical block of energy security has helped Lithuania in improving

its overall energy security level when other blocks were not performing well (Augustis et al. 2017: 25).

Energy security level of the block of socio-political in the given period (2007-15) was characterized by clear negative tendencies. In 2007 and 2008 the energy security level of the socio-political block was measured 60.6 percent and in 2012 it reduced to 50.3 Percent. Situation has slightly improved after 2013 as in 2015 it was assessed 55 Percent (Augustis et al. 2016). The decrease of energy security level of the socio-political block is mainly due to the import of energy resources, increasing share of the income of the population devoted to heating and electricity. Surprisingly slight increase was found in the energy security level between 2013 and 2015 mainly due to obligations of energy savings. In total, overall energy security level of Lithuania has increased mainly because of implementation of new projects and from the help of European Union (EU) and its institutions. Such positive trend in the overall energy security level demonstrates Lithuania is on the way to achieving energy security independence status.

### **Conclusion**

It is true that since its Independence the issue of energy security has always been in the center of debate among policy makers, research scholars and politicians in Lithuania and considered as national security. Concerns and challenges to the energy security of the country especially in the given period (2004-2017) have been changing. Challenges existed between 2004 and 2016 had negative impact on the energy security of the country but it was managed to some extent by implementing major projects.

Societal resistance to the strategic projects and shale gas was an unfortunate incidents for Lithuania as such protest forced politicians to leave Visaginas NPP and Shale gas exploration which could be beneficial for the Lithuania energy security. The ongoing building of Ostrovets NPP in the Western part of Belarus is indeed of great concerns and challenge to Lithuania's energy and national security. Lithuania has openly protested to the construction of the NPP which is mainly Russian energy project as it is mostly financed and equipped by Russia with the intention to maintain its hegemony in energy supply. Russia is still a major threat to Lithuania's energy security but its monopoly is reducing after diversification of energy supply by Lithuania. Nord Stream poses a great threat to its energy security and if the pipeline connected to the Kaliningrad then Lithuania will lost it leverage and Russia will get a huge geostrategic benefit. It is a clear challenge which Lithuania should take seriously.

Projects like: LNG terminal at Klaipeda, NordBalt and LitPol have indeed improved Lithuania's energy security but it also has some lacks like, the utilization of LNG terminal, Poland is not willing to work over another grid extension. If these problems meet the solution then it would help Lithuania in its improving energy system. Gas Interconnector Poland-Lithuania (GIPL) will be very useful in diversifying its gas supplies. Overall Lithuania has managed to curb its status 'energy island' given by EU but still it is not well connected. And Lithuania is yet to achieve its energy independence.

## **Chapter-3**

### **EU-Russia Energy Cooperation and Its Implication for Lithuanian Energy Security**

Analyzing the energy cooperation and relations between the EU and Russia is essential in understanding Lithuania's energy security. Both the EU and Russia are inter-dependent on the energy issue. For the EU, Russia is the major energy exporter while Russia, the EU is a big energy consumer market. Since 1970s energy cooperation between has been continue with some geo-political problems. Practically such cooperation from the EU doesn't seem to be a collective effort and avoids many countries' concerns.

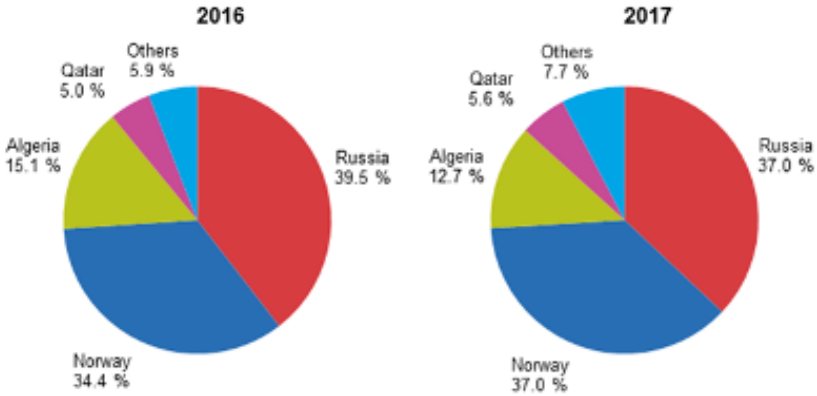
Despite energy relation and cooperation between the EU and Russia I see many EU Member States (MS) feel neglected among them Lithuania is important one. Lithuania has inclination towards the Western Europe in terms of economic, value, culture and energy but the process of integration with European market faces challenge by such cooperation. Such cooperation has immense impact on Lithuania's energy security, such as: Nord Stream- 2 project where Lithuanian voice was neglected by both the EU and Russia. In this chapter an attempt has been made to analyze the energy cooperation between the EU and Russia and especially what are its implications for Lithuania's energy security. An attempt has been made to understand what Lithuania want from the EU-Russia energy co-operations.

#### **Overview of the EU-Russia Energy Cooperation**

Energy is known as an important field in describing relation between the EU and Russia and its role is increasing even in present time. Both the EU and Russia is

strategically important and a beneficial for each other. The EU has a huge consumer energy market where almost more than 50% of primary resources are imported from other countries (Eurostat 2017). And Russia which is the home of abundant energy resources makes it a major regional and global energy exporter. Both the EU and Russia understands each other's strategic importance as for the EU, Russia is a major supplier of primary energy resources while the EU for Russia is a large energy market and consumer of its energy.

Figure 3: EU-28 imports of natural gas and Russian share in 2016 & 2017



Source: Eurostat database (comex) and Eurostat estimates

According to the data of European Commission (EU), Russia is the major supplier of the EU-28 Crude oil, gas, solid fuels and uranium. The EU imported 30.5 percent of its total oil import from Russia in 2005, 32.8 percent in 2011 and 27.7 percent in 2015. It has been seen that oil import has reduced from Russia. Coming to gas Russia shares a major part of European Union (EU-28) imports of natural gas. It was 34.6 percent in 2005 which decreased to 26.8 percent in 2010.



Between this period, decreased in gas import to EU was experienced. Import of energy resources increased to 32.4% in 2013 (Eurostat 2018).

All these co-operations and energy ties between the EU and Russia are based on three main concepts: Integration, Liberalization and diversification and both parties defines and use these concepts accordingly. Russia uses these concepts to search energy market and improve its influence in Eastern and Northern Europe while for the European Union these concepts mean expanding its democratic values and security of energy supply. In the last decade of the 20<sup>th</sup> Century the EU tried to persuade Russia by helping to recover from its economic crisis. Such economic help from the side of the EU was to mainly bring Russia under Western values and economic model. The EU's effort worked only till the Yeltsin regime. After Putin's period all kind of ties (energy, foreign policy, institutional etc ) between the two parties started getting difficulties It was the period Russia started improving its economy mainly from its export of natural resources to the EU and other energy markets. (Kratochvil 2013).

Figure 4: EU-28 import of Crude Oil from partners in total percentage (%), 2016



Source: Eurostat

In the field of solid fuels Russia's role as an exporting country has increased and become principle supplier overtaking South Africa in 2006 (Eurostat 2018). Russia contributed 20.2% in the share of EU solid fuel import which increased 26.2% in 2009 and 25.8% in 2015. All these development have come to light because of the continuous efforts from the both parties through several initiatives.

### **Major Initiatives for Energy Co-operations**

#### **(a) Partnership and Cooperation Agreement (PCA)**

Strategic partnership between the EU and Russia is based on the EU-Russia agreement on partnership and cooperation (PCA). It provides a better framework for improved energy cooperation and establishes a legal pattern for cooperation between the European Union (EU) and Russia which also provides statutory basis for energy dialogue (European Commission 1997). The PCA agreement was signed in 1994 and entered into force in 1 December 1997. It worked for only ten years and expired in 2007. Since its inception, more than 20 years it has provided major efforts and created conditions for continuous the EU-Russia convergence with a view establishing space for economic cooperation. In the process it formed a multilevel architecture for energy cooperation and provided institutional framework for dialogue. To face the changing realities in changing environment after the 1<sup>st</sup> Ukraine gas crisis PCA was replaced by New Base Agreement (NBA) in 2008. It is known one of the major platforms where energy cooperation related discussion could be happened between the EU and Russia.

One of major initiatives taken by the EU and Russia in the first decade of the 21<sup>st</sup> century was the 'Roadmap for the EU-Russia Common Spaces' in 2005 in Moscow. It aims to intensify the cooperation in the energy sector with special emphasis on addressing issue like: sustainability and reliability, of the

production, fair distribution, transportation and energy efficiency. Another effort to strengthen energy cooperation started in 2010 by launching the EU-Russia Partnership for Modernization which aims to bring the both concerned parties closer together within a mutually beneficial relationship (Judge, Maltby and Sharples 2016, 751).

#### (b) Northern Dimensions

After two years of the implementation of PCA a major agreement was signed, called 'Northern Dimensions (ND) between four parties in 1999 between four parties: the EU, Iceland, Norway and Russia. It aims at providing a common framework for the upgrade of dialogue and cooperation in the field of economic and energy, strengthening stability and promotion of economic integration and competitiveness among member parties. Energy cooperation has been one of major priority of ND and able to bring the EU and Russia on a common platform. It contributed a major role in building further institutional agreement for cooperation not only in energy sector but also in other sectors like- agriculture, forestry, transport etc (Aalto et al. 2008, 18). Both PCA and ND as an important initiative made way for the energy dialogue which is considered a milestone in the energy cooperation between the EU and Russia in 21<sup>st</sup> century. Both programs were meant to facilitate the transition to market economy, democracy and many EU values (human rights, rules of law). It was the Yeltsin presidency which witnessed initiation of such cooperation and made the way for further institutional agreements among them the EU-Russia Energy Dialogue is considered as a milestone.

#### (c) Energy Dialogue

In October 2000 at the 6<sup>th</sup> EU-Russia summit in Paris, the EU-Russia energy dialogue was launched and provides the comprehensive structure of energy

cooperation between the concerned parties (European Commission 2011). The dialogue recognizes that both the EU and Russia is natural partner in the energy sector and have several reciprocal interests in increasing energy security. Main objectives of such dialogue are to provide a platform to bind the EU and Russia into a friendly relationship, debate questions of common interests, contributes to security of energy demand and supply. It also aims to develop cooperation on energy saving measurements, transport infrastructures, facilitate investments and strengthen relationship between consumer and producer (Monaghan and Jankovski 2006). Its importance can be understood in the welcome address by Paul Magnette (Belgian Ministry for Climate and Energy) at the 10<sup>th</sup> anniversary conference of EU-Russia energy dialogue: relations between both the EU and Russia is solid, a lot has been achieved in the last 10 years to improve cooperation and transparency between the both sides (European Commission 2011, 24).

#### (d) Roadmap 2050

The EU-Russia Energy Roadmap to 2050 is considered one of the major steps in the field of energy co-operations between the EU and Russia. It was signed in March 2013 by understanding the growing importance of each other, existing challenges, issues and viewing geopolitical developments. The roadmap was signed few years after the Ukrainian gas crisis 2006 and 2009 which highlighted many existing issues which needs to be sorted out. This roadmap to 2050 seeks solutions to the problems existed during the crisis and improve cooperation between concerned parties. Both the EU and Russia agreed to build a long term perspective to their energy cooperation. It provides the potential for long term cooperation as one of the major priorities of their energy policies and aims to achieve a level of certainty in the context of mutually profitable future development of the EU-Russia energy relations (European Commission 2013).

However, differences and problems are still there. It is mainly because both Russia and the EU have their different interpretation and interests of this energy co-operation. Above mentioned initiatives, especially in the last decade of 20<sup>th</sup> century were perceived from the EU side to bring Russia under their influence which actually could not happen. The EU wants Russia to reform and liberalize its energy market by improving an ideal business climate, while Russia wants support to modernize its energy sector and keep under maximum state control.

### **EU-Russia Energy Co-operation: Major Disputes and Concerns**

Indeed above mentioned initiatives have created path to improve energy cooperation between both the EU and Russia and has been facilitated the opportunities to both. Besides these cooperative initiatives EU-Russia energy relations has some disputed concerns which is making stone to their energy relations. In 2016 Amelia Hadfield in her relevant article talks about three major disputed concerns. These concerns are: Energy Charter Treaty (ECT), The European Neighborhood Policy and the European internal energy market reform with successive liberalization packages (Hadfield 2016, 779-798).

#### **(a) Energy Charter Treaty**

The Energy Charter Treaty (ECT) is a notable multilateral international agreement created to provide cooperation between the Eastern and Western Europe in the field of energy sector. In other words it is understood as one of the best instruments for strengthening energy security across the world. It is also seen the integration and opening of post-communist energy market making the most fruitful area of cooperation. The ECT root goes back to December 1991 when Energy Charter Declaration was signed in The Hague providing political platform to discuss and create Energy Charter Treaty. The ECT was signed and

created in 1994 in Lisbon together with protocol on energy efficiency. Both came into effect in April 1998 (Konoplyanik and Walde 2006).

As of 1 January 2018 it has 54 members which has signed and acceded to the treaty. Except Norway, Belarus, Australia and Russian Federation (RF) all members have rectified the treaty. One of the main efforts of the Energy Charter Treaty (ECT) is the protection and promotion of investment in energy sector. It also deals with several other energy related matters like: Transit, trade, third party access, energy efficiency, environmental aspects and dispute settlement mechanisms (Lars-Christian U. Talseth 2017, 213). The ECT with the initiation of 21<sup>st</sup> century seemed failed in keeping its provisions where especially Russia felt avoided by such treaty.

The ECT seemed failing mainly on four major issues. Among them failure in generating large scale investment in Russia is important one which actually raises questions over relevance of ECT. Secondly third party access to Russian monopolized pipeline network which undermines Russian hegemony and creates challenges to its energy security. The EU has been advocated third party access in Russian monopolized pipeline which has created problems to their energy cooperation activities. Transit regime is another issue where both the EU and Russia have different view. The EU takes the whole Europe as a single entity so believes there should be no transit regime under European border which Russia doesn't support.

It has been seen that EU has violated regulations of the ECT especially during the Ukrainian gas crisis. The EU didn't criticize the violations made by Ukraine and took stand in favor of Ukraine. Both the EU and Russia have problems with the ECT provisions of regulatory framework. Keeping all these issues in mind

Russia left its membership and proposed to build a new international legal basis for energy cooperation. The idea behind developing a new international legally document is to offer an alternative to ECT (Kaveshnikov 2010, 601). By proposing an alternative to the ECT it has made clear its concerns over the ECT and gave hint that energy cooperation between the EU and Russia is not on good path. It has develop a regressive culture in the field of energy co-operation between the EU and Russia and the present situation is the ECT is taken as a free agent completely undermined by Russian withdraw and the continuous opposition of the EU.

(b) The European Neighborhood Policy

According to European Commission (EC) European Neighborhood Policy (ENP) is one of major elements of the EU foreign policy. It governs the EU's relations with sixteen of the EU's Eastern and Southern neighbors. It was launched in 2004 with the objective of avoiding the new dividing lines between EU and its neighbors, improving the prosperity, stability and security of all. ENP is based on the values of rules of laws, democracy and respect of human rights (European Commission 2015). However because of its different interpretations by neighboring states and its difficulties in providing a transition and stable development in Eastern Europe it couldn't get ample success (Kempe and Grotzky 2007, 11).

Russia being a major energy player is not a member of ENP but takes participation in cross border cooperation activities under the European Neighborhood Policy. For Russia, the ENP is regarded as an instrument of European expansion, along with NATO and EU enlargement. The membership of Georgia, Ukraine, Belarus and Azerbaijan to the ENP is categorized by Russia as a sphere of influence rather than field of shared preferences. Russia has clearly

opposed the ENP by calling it a regionally provocative policy rather than transformative project. Such perceptions of neighboring states on the ENP have become problematic and divide neighboring states between the economic and political polarities of Moscow and Brussels. The ENP has strengthened the biasness between both the EU and Russia and both became more suspicious to others policy then earlier which is not good for their future energy relations.

#### (c) EU internal Market Reforms with Successive Liberalization Packages

European Union (EU) has been engaged in reforming its internal energy market since 1990s by using various policies and mechanism. The internal market reform started in 1995 by publishing the ‘Green Paper’ for the EU energy policy insisted that making of energy market rules and regulations (European Commission 1995). Green paper followed by several market reform policies like: first liberalization directives in electricity (1996) and gas (1998), second liberalization directives (2003) and lastly it is third energy package proposed by EC in 2007 and entered into force on 3<sup>rd</sup> September 2009. The main purposes of these liberalization packages are: to make a more competitive, flexible, unbundling the ownerships, consumer-centric and non-discriminatory EU gas and electricity market with market based supply prices.

These liberalization packages advocate cross-border trades and diversification of energy supplies and believe the rules and regulations of EU internal energy market must be followed by external states. Because of such market reforms with liberalization packages the EU and some member states (MS) has harden their stance on the energy exporting states like: Russia. It also questions the presence of Russian company- Gazprom and its affiliates in European energy market (Harriman 2008, 38).



It is found a significant shift in the nature of energy cooperation between both Russia and the EU from the 1990s to the 2000s which reflected the scale of concern in the EU over energy security. During the period of 1990s the EU proposed Russia with a kind and indulgent way, considering Russia would follow the same path of the other Central and Eastern Europe (CEE) and accept Western political and economic values. In the Given period, energy cooperation and relations were viewed as a major agent for such convergence (Dannreuther 2016, 915). Such efforts from the side of EU were seemed working under Yeltsin period but after his period EU efforts started failing especially under Putin's presidential period and changed geopolitical situations. Energy relations between the both parties have had both positive and negative sides since 2000 to 2017. Negative aspects of the relation always come from political perspective while commercial and energy trade activities have been continues. How geopolitics is in the center of energy relations between both parties and how do both of parties deal with it is an important area to look after.

### **EU-Russia Energy Ties: Geopolitical Context and Pipeline Politics**

Energy relations between the EU and Russia have been strongly framed in terms of geopolitics. Geopolitics is seen as an important element in the EU-Russia energy relations and increasingly viewed the same by many scholars like- Roland Dannreuther. Geopolitics is defined according to Cohen, as a theory of the state as a geographical organism or phenomenon in state (Cohen 2003). In this definition two elements are crucial: power (influence, politics) and space (territory, soil). It is the elements which always plays major role in understanding geopolitics.

One of the important pictures of the both concerned parties the EU and Russia is following and encouraging two different paradigms and models for energy

security. The European Union (EU) is produced as a champion and promoter of model of classical liberal, where security of energy supply is ensured through deregulation, liberalization, promotion of transnational market and regulation. In contrast, Russia is presented as a promoter of a realist and geopolitical approach, seeking to increase its power and influence through the EU's energy dependence on Russia (Dannreuther 2016: 915).

Instead of these differences in political and geopolitical level both parties are interdependent to each other but these differences are significant in understanding their energy ties. There are many available literatures focusing especially on geopolitical element between the EU and Russia leaving many important elements. Focusing on only geopolitics is not good in understanding well of the energy ties between the EU and Russia as geopolitics is not the single element in their ties. There are many other elements like- private companies' interest, individual interest etc which helps in understanding energy ties between the concerned parties.

However, geopolitics has always been a major element in understanding the energy ties between the concerned parties. The role of geopolitics becomes clear especially after the Ukrainian gas crisis as both concerned parties started talking about diversification of their supply and market. Russia takes China as a huge energy market while the EU also started talking about other energy suppliers (Norway's role has improved in gas supply). Ukrainian gas crisis is a geopolitical example of the EU-Russia energy relations. In this geopolitical approach between the EU-Russia energy relations Ukraine has become an epicenter in post-2006 period.

Picture 5: Major natural gas transit pipelines flowing through Ukraine, 2014



Sources: U.S. Energy Information Administration, HISEDIN, and International Energy Agency

Since 2006 Ukraine gas dispute has been in the centre of understanding geopolitics between the EU and Russia. As a major transit country for Russian oil and gas and European energy market Ukraine is geopolitically significant for both the EU and Russia. According to data of Energy Information Agency (EIA) 16% (3.0 tcf) of natural gas consumed by the European countries flows through Ukraine (Energy Information Agency 2014). Since Ukraine has such strong geopolitical position it has always influenced by the politics of both the EU and Russia. Since the fall of the Soviet Union there has been an attempt by both the EU and Russia to bring Ukraine under their influence and it is gas spat in 2006, 2009 and 2014 between both parties which made clear their intentions. These gas crisis and debt issue between Ukraine and Russia put Russia and the EU an

opposite in political environment. As Russia doesn't follow the ECT here again both parties and Ukraine faced problem in dealing with the issue in the absence of any legal International institution.

The Ukrainian crisis has a political significance especially for Eastern and Northern European countries. This crisis brought attention of the big economies of the EU to the real concerns of the Northern and Eastern European. These concerns come from the Russian monopoly over the supply of the energy resource. Before the Ukrainian gas crisis the Western European countries didn't use to take seriously the concerns of the Eastern and Northern European countries. Lithuania being a Northern country of the Europe could get an opportunity to strong its voice to the European Community against the threat coming from the Russia monopoly of energy supply.

### **Implications for Lithuania's Energy Security**

Lithuania being a member of the European Union (EU) has been influenced by all the developments occurred within the EU or outside the EU and regional level as well. It has enormous implications especially developments happened outside of the EU which is the EU-Russia energy cooperation. Talking about the EU-Russia energy cooperation Lithuania has its both positive and negative implications.

Since Russia left its membership from Energy Charter Treaty (ECT) in 2009, a legal agreement regulating transit in energy sector and investment protection in especially in Commonwealth of Independent States (CIS) and Europe, it is not a member of any international legal institution. The current situation is that Russia is neither a member of World Trade Organization (WTO) nor a signatory to any international economic agreement (Dreyer et al. 2010, 1). It means Russia is

absolutely free as there is no binding legal institution to regulate or deal with it. Keeping in view of energy relations between the EU and Russia (the EU imports more than 30% of natural resources) such situation where Russia is not binding to any legal institutions is not good for the security of supply of the EU, especially small European countries like- Lithuania which is facing challenges to its energy security from Russia.

Lithuania being a member of the EU Lithuania has an opportunity and platform to convince other EU member especially big players (Germany, France, The Netherland etc) to take an initiative to promote a legal institution which must be binding to both the EU and Russia. Lithuania can also pressurize the EU member to bring Russia again under ECT regime. Convincing and bringing other EU member states is not going to be an easy task for Lithuania as the EU is internally divided both institutionally and structurally (Graetz 2009). Talking about Russia its strategic interests are presented mostly at the highest political level which is completely different from the EU. Here problem is that both parties the EU and Russia are limited in their ability to make compromises on their market views. Lithuania being a small EU member and importer of huge Russian natural resources can be more victim of the absence of any legal binding for Russia. In order to secure its supply or resources Lithuania along with other small states must use the EU-Russia energy cooperation as a platform to promote a legal institutional mechanism which can be followed by all concerned parties.

In spite of several internal mechanisms in the EU like- European Energy Union, Energy Community etc the EU neither have single voice nor solidarity yet. And without internal coherence, an effective engagement with any exporting countries is practically impossible. The major problem comes from the different perceptions with the EU members on energy security issue. Countries with big

economies of the EU like- Germany, France, The Netherland, Italy etc continue to see energy security as a national issue and willing to deal bilaterally and non-institutionalized with external suppliers especially with Russia while countries with small economies including Lithuania view it as a collective issue. In such an environment where small countries have limited influence in bilateral talks and absence of means to manage energy security crisis it has been seen many times that voice of small countries like Lithuania and Eastern European states have been unheard. In such energy cooperation between the EU and Russia Lithuania has an opportunity to argue for the construction and strengthening for the solidarity with the EU (Vaicunas 2009).

Lithuania's huge energy import dependence on mainly Russia needs a legal binding which can help in securing its supply of energy. And the same time it would be in Lithuania, Eastern European states and other small states favor to ensure single European voice which still lacks. Besides of these positive implications of the EU-Russia energy cooperation for Lithuania, there is some major negative implications which have enormous impact on its energy security.

One of major negative implication for Lithuania of such energy cooperation between the EU and Russia is the different views of the EU members on Russia. Both big and small players of the EU have different perspective which is actually problematic for small economies. Since these big players have large economies and well developed infrastructure they prefer to deal with Russia bilaterally. They take Russia as an additional source of diversification while other member states remain wary of the dominant position of Russian energy supply (Molis 2011: 28). It seems that the big players avoid the concerns facing other EU members especially Northern and Eastern European countries. The meaning of the real collective concerns on collective energy security within the EU is absent.

It is mainly the big EU players who has upper hand and are more influence in taking decisions in the EU-Russia energy cooperation. Lithuania being a small economy is not in the position to deal bilaterally with major energy supplier Russia especially in the absence of any legal international institution. It has indeed negative implication of such energy cooperation as it directly avoids Lithuania's energy security concerns.

Nord Stream-2 pipeline connecting Russia and Germany through the Baltic Sea is another example of disagreement among the EU member over the project as it brings threat to the EU solidarity (The Baltic Times 2018). It also has negative implication for Lithuania and other two Baltic States. Lithuania has openly opposed this project along with other Baltic States but the voice of these countries was heard by neither the EU nor Russia. Such project is the direct threat to the energy security of Lithuania if in future the pipeline will be added to Kaliningrad. By doing so Russia can seize Lithuania's leverage on Kaliningrad and would get an opportunity to use its energy resources as political weapon.

There is also fear among Lithuanian policy makers that in future Russia may militarize Nord Stream- 2 area and if happens Lithuania would face severe strategic security challenge. Although Lithuania is not considered as a fully transit country as it only allows Russian resources to Kaliningrad but it could facilitate if Nord Stream would flow through its territory. So because of Nord Stream- 2 project Lithuania is losing its interest and could be used as a transit state. In the context of Nord Stream- 2 project Lithuanian and other Baltic States' have been clearly ignored from both Russia and other EU members.

## **Conclusion**

Energy cooperation between the EU and Russia is a necessity and mutual beneficial to both concerned parties. Since its inception (during cold war) the energy cooperation has been continued with many political differences and disagreements. This energy cooperation can be drawn into two phase: one phase between 1990 and 2000 wherein the energy cooperation initiatives were booming with major initiatives like- PCA, Northern Dimensions, Energy Dialogue etc while the second phase is post 2000 era where energy cooperation initiatives started facing problems. Mainly it was Ukrainian gas crisis which stood both parties opposite to each other politically and in its consequence both parties faced huge economic loss. Although energy relations continued even after the crisis but it put the geopolitical nature of the energy supply in the center and both parties started thinking over diversification of supply and diversification of market.

Analyzing implication of such cooperation for Lithuania makes it clear that it has both positive and negative implications. However it has mainly negative implication as Lithuania has been avoided by many big EU players and on many occasions its voice were not heard. Nord Stream- 2 is an example where it has been seen that its voice was neglected. Increasing Russia's role in the EU market on the one hand and Russia's effort to sideline Lithuania is considered direct threat to its energy security. Lithuania needs to raise its concern impressively to the EU and must convince the other EU member states to come with a single voice against any disruption or threat to energy supply to any member states.



## **Chapter - 4**

### **Quest for Energy Independence and Energy Policy of Lithuania**

It is necessary to analyze Lithuania's effort in achieving its 'energy independence' in the context of securing its energy supply. Since its independence energy independence has been one of the important aims of the energy policies of the country which indicates its importance and necessity. Given its high energy dependence on Russia and lack of fully interconnection with the EU energy system it becomes necessary to achieve energy independence for Lithuania. To achieve such independency Lithuania has implemented several energy related policies which has shown positive tendencies.

Besides energy independence this chapter tries to analyze major energy policies and strategies of Lithuania and for the better understanding it has been divided into two sections: 1991 to 2003 and between 2004 and 2017. First section has been discussed briefly while more focus is given to the policies initiated in the second section. Analyzing energy policies and strategies helps in understanding how these are helping Lithuania in achieving its energy independence goal. In the last, an effort has also been made in this chapter to understand regional cooperation on energy in the Baltic Sea Region (BSR) and how Lithuania has improved its energy security from such cooperation.

#### **Quest for Energy Independence**

In general energy independence of a country is defined as independence from the imports of energy resources or at least possibility to choose alternative energy supplies. However it has been defined in numerous ways. American president Richard Nixon in 1973 in his introduction of a "Project Independence" plan defined energy independence as a 'situation in which a country's domestic

energy production is adequate to meet its energy needs without depending on any foreign sources' (Moris and Nivola 2012: 7) So energy independence is one of important goals of any countries which is more dependent on energy imports. Dependence on energy supplies can never be good for a country's energy and national security and the same case is found with Lithuania which still has high energy dependence on neighboring countries especially Russia. Especially after closure of Ignalina NPP Lithuania became more dependent on imported electricity and fossil fuels. Lithuania's isolation from the EU energy system made Lithuania more vulnerable in its security of energy supplies. Such above mentioned lacks of Lithuania in the context of energy security was not good for the interest of the country. Understanding the situation political leaders of the Seimas and policy makers of the country started giving more attention to energy independence.

The importance of supplies of uninterrupted energy resources can be well understood to the health of national economy, social and political stability of a country so the issue of energy independence can be viewed as an issue of national security. In the case of Lithuania where more than 3/4<sup>th</sup> of energy imported from neighboring countries making it economically insecure and considered as threats to its national security. The importance of energy independence for Lithuania is vital and it defines its energy security in terms of energy independence (Ministry of Energy of Republic of Lithuania 2012). Without energy security it is very difficult to imagine national security of Lithuania so as without achieving energy independence it is difficult to secure its energy supplies. By understanding the necessity of the energy independence considering important for national security Lithuania had officially adopted a strategy titled 'National Energy Security Independence Strategy' in 2012 showing its importance of energy independence. The strategy was approved by

Resolution No. xI-2133 of the Seimas of the Republic of Lithuania on 26<sup>th</sup> June 2012 (Ministry of Energy of Republic of Lithuania 2012). The word independence has been added in this strategy mainly to show how necessary it is for Lithuanian perspective. It is considered one of important steps in achieving energy independence.

Lithuania by understanding the importance of needed energy independence has taken several steps before and after 2004 to achieve its energy independence. Among them followings are the major steps in achieving energy independence:

- (a) Start-up of the Lithuania-Poland (LitPol) link in 2016 and its extension of the link in 2020;
- (b) Completion of Lithuania-Swedish (NordBalt) power link in 2015;
- (c) Start-up of the integration into the European energy system;
- (d) Increase of electricity generation from renewable energy sources;
- (e) Develop of the regional Baltic States' electricity market and liberal electricity market;
- (f) Synchronous interconnection of the Lithuanian electricity transmission systems with the European continental network or ENTSO-E;
- (g) Successful completion of LNG Klaipeda (Ministry of Energy of Republic of the Lithuania 2016).

There have been positive responses which Lithuania experienced from these taken steps. The responses show Lithuania has been successful in diversifying energy supplies, reducing energy price, strengthening energy infrastructure which indicates things are in good direction. Such developments are crucial and necessary for the country but it's not free from obstacles. There are many obstacles before Lithuania's quest for energy independence which is clearly problems to Lithuania's energy security.

The ways of Lithuania to achieve its energy independence have many hurdles. One of major hurdle which has immense impact is the non-completion of the Visaginas NPP and shale gas extraction. Both projects were major strategic steps but because of the negative public reaction and public protest such projects could not take place. If these projects were implemented Lithuania could be able to reduce energy import and even could sell energy to neighboring countries would have improved the efforts to achieve energy independence. Both projects were considered as a milestone in achieving its energy independence and since it is not in operation the country have been compelled to continue huge quantity of energy import. Unfortunately it has no good news on savings and energy intensity. Its energy intensity is still 1.66 higher than the EU average, which Lithuania is expected to achieve by 2030 (Ministry of Energy of Republic of the Lithuania 2016).

Another stone in the way of achieving energy independence comes with Russia's control over Lithuanian electricity and it imports electricity power from old soviet time power grids. Russia has never Lithuania has never cut off electricity to Lithuania and other Baltic States, and has not even threatened to do so, but at the same time Lithuania takes its dependence on Russian power grids as one of its main national threats (LT News 2017).

Synchronization operation is another one of major hurdles to energy independence of Lithuania. Power grids of Lithuania and other two Baltic States are presently synchronized with BRELL (Belarus, Russia, Estonia, Latvia and Lithuania) electricity rings. BRELL is part of larger Integrated Power System (IPS/UPS) synchronized zone. It is designed under Soviet regime and centrally controlled by Moscow, Russia. The IPS/UPS power system is now perceived as a great risk to Lithuania energy security. (The Global Energiewende 2017).

In order to reduce its electricity power dependence from Russia, Lithuania is engaged in synchronous operation with power system of continental Europe. It is the only power system which can help Lithuania in reducing its power dependence from Russia. For Lithuania problem comes from the slow synchronous process and lack of solid agreement over synchronous operation. By 2017 Lithuania has been able to extend its power grid only to Sweden (NordBalt) and Poland (LitPol). Such slow synchronization operation creates hindrance to Lithuania's aim of achieving energy independence. In order to improve the pace of synchronization operation the Baltic States, Poland and the EC have been engaged in discussion for political agreement on the synchronization of the Baltic States' power networks with continental Europe with some disagreements on the number of links between Lithuania and Poland (The Baltic Times 2018).

Indeed for Lithuania 'energy independence' has been an important strategic goal in terms of national security by understanding its dependence on energy imports. Lithuania's continuous efforts (diversification of supply, power grid extensions, infrastructure development, focus of renewable resources etc.) to achieve energy independence since its entry into the EU has helped it in reducing energy dependence but these steps are not enough and has not helped fully in achieving energy independence. Lithuania needs to produce energy on its own land which would reduce energy imports in large quantity. In order to produce energy on its own land Lithuania must consider building Visaginas NPP and Shale gas explorations which were abandoned because of Lithuanian peoples' opposition. Lithuania not only can meet its energy demand but also export energy to neighboring countries. In addition, Lithuania needs to finalize its pending synchronous operation with the continental Europe power system especially with Poland which is reluctant in extending second power grids. However LNG import terminal at Klaipeda as a major strategic and political instrument of

Lithuania has improved its security of supply and reduced its dependence on Russia but the terminal is facing problem with its low capacity of re-gasification. According to the Klaipeda Nafta 36% of drop in re-gasification was reported in the period January-July 2017 (LNG World News 2017).

### **Major Energy Policies in Post- 2004**

Lithuania since its independence has continuously been engaged in securing its energy supply by introducing several energy projects under many important strategic energy policies. All energy policies are made after thorough debate among research scholars, expertise and politicians and finally it is the Seimas of the country which is main responsible and authoritative body for the creation and implementation of the energy policies.

Till 2004 Lithuania has adopted three major national energy policies focusing on strengthening energy system and achieving energy independence. In the beginning of 1994 Lithuanian government designed and approved its first energy strategy. It enunciated diversification of energy supply, gradual de-monopolization of the energy strategy, and forecasted average increase in energy consumption. According to the provisions of this strategy, new power generating capacities would not be required before 2015 (Vilemas 2010). The first national energy strategy followed by the second national energy strategy adopted by the Lithuanian government in 1999 formulated the main ideas of privatization and restricting of the both gas and electricity supply industries. One of major specifications of the second national energy strategy was to the closure of unit 1 of Ignalina NPP till December 2004.

Energy policy of Lithuania was influenced by the preparation of the Lithuanian accession to the EU. The second national energy strategy didn't stipulate and

finalize any certain date of the closure of unit 2 of Ignalina NPP. Only because of the EU demand to settle the date of closure of unit 2 of Ignalina NPP, third national energy strategy was brought two years ago in 2002. This strategy specified the closure of unit 2 of Ignalina NPP in December 2009 (Elliott and Cook 2004).

The decisions taken regarding the closure of unit 2 of Ignalina NPP in 3<sup>rd</sup> national energy strategy had major influence on the future of the whole Lithuanian power industry. The formation of feasible and reliable energy strategy for the period following the closure of unit 2 of Ignalina NPP required a detailed modeling of the probable scenarios of the future energy industry development which would take into account not only the crisis after the closure of Ignalina NPP but also the plans and actions of the neighbors and forecast the development of the economy and the state of international energy markets. The third national energy strategy was followed by fourth national energy strategy of Lithuania which was prepared and adopted when Lithuania was experiencing some changes in its energy system and became member of the EU. The change of the global and regional environment has compelled energy specialists to prepare new national energy strategy based on thorough analysis of energy sector (Lithuanian Energy Institute and Ministry of Economy 2008). The fourth strategy was important for Lithuania dealing with many new existing and future challenges.

### **National Energy Strategy (NES) 2007**

The National Energy Strategy 2007 was approved by Resolution No. x-1046 of the *Seimas* (Parliament) of Lithuania in 2007, replacing the older one which was adopted in 2002 (International Energy Agency 2008). The demand for this strategy has risen after Lithuania's accession to the EU, closure of Ignalina NPP and increasing dependency on Russian imported energy resources. This National

Energy Strategy defines the main target set by the Lithuania state and directions for their implementation until 2025 by coordinating these targets and directions to growing state needs and the most recent requirements, having regards to the aspects of efficiency, energy security, environmental and management improvement (Ministry of Energy of Republic of Lithuania 2008).

Within the framework of the National Energy Strategy 2007 ensuring of energy independence and energy security is based on following provisions:

- (a) Energy security for Lithuania is an integral part of national security;
- (b) Ensuring of energy security requires a reliable, predictable, environmental friendly and economically acceptable energy supply;
- (c) Energy security covers the conditions ensuring the diversities of renewable and traditional primary source of energy, security and diversity of energy supply and independence from monopolistic supplier and availability of energy at reasonable prices in a competitive energy market;
- (d) Lithuania links its energy system to the EU energy system with an efficient national and the EU energy policy, which must ensure that energy security of Lithuania is on a par with that of other EU states;
- (e) This strategy must ensure a consistent implementation thereof that would be independent of democratic change of the government (Lithuanian Ministry of Energy National Energy Strategy 2007).

Lithuania could not implement all the short term objectives of the National Energy Strategy 2002 and after its membership to the EU and closure of Ignalina NPP Lithuania requires new objectives in such a changing environment. Seeing such changes in domestic and regional level according to the National Energy Strategy 2007, following major objectives has been set:



- (a) To diversify primary energy sources in Lithuania by reviving nuclear plants and rapid deployments of renewable energies;
- (b) To improve energy efficiency in all sectors. The aim is to save 9% of final energy in years 2008-17 in comparison to energy consumption levels in 2005;
- (c) To decrease energy consumption;
- (d) To connect Lithuania's electricity network with the network of Poland and Scandinavian countries by 2012;
- (e) To improve energy sector management;
- (f) To strengthen energy cooperation with other Baltic States (Lithuanian Ministry of Energy, National Energy Strategy 2007).

Strengthening renewable energy sector has always been major objects in the National Energy Strategies the same is found with energy strategy 2007. The results of the energy strategy 2002 related to renewable energy sector was positive and has been able to achieve its target set in 2002. Lithuania achieved 12% of renewable energy sources (RES) contribution to Lithuania's final energy consumption. In order to improve more this sector the national energy strategy 2007 sets overall target related to renewable energy sources (RES): to increase share of renewable energy sources in the national balance of primary energy by 1.5% per year to at least 20% by 2020, to increase the share of bio-fuels in the country's market of the fuel used in transportation up to 15% in 2020 and up to 20% in 2025 (International Energy Agency 2007). Lithuania has successfully achieved 23% share of renewable energy in total primary energy consumption which reached 25.86% in 2015 considered a major achievement to achieve energy independency (Ministry of Energy of the Republic of Lithuania 2015).

In order to improve the energy sector and protect it from damages the national energy strategy 2007 envisages that Lithuania economic and energy sector could

be threatened by several problems existing in economic and energy sector. Excessive dependence of Lithuania on strategic raw materials and energy supplies from a single neighboring country was identified major threat. Another threat is poor performance of energy and economic sectors that are strategically important and other threat is the takeover of assets for political purposes (Checchi et al. 2009: 3). By providing expected threats to energy and economic sectors this strategy has cautioned policy makers and expertise about the situations in these sectors. This strategy expired in 2012 and superseded by national energy independence strategy by understanding the need to achieve energy independence.

### **National Energy Independence Strategy (NEIS) 2012**

The National Energy Independence Strategy adopted by the Decree No x1- 2133 of the Seimas of the Republic of Lithuania on 26 June 2012 replacing National Energy Strategy 2007. The main purpose of the strategy is to ensure Lithuania's energy independence before the year 2020 by strengthening Lithuania's energy security and competitiveness (International Energy Agency 2012). Energy independence will provide Lithuania to choose source of supply and energy resources according to its national energy security needs and interests of its citizen to buy energy resources at the most reasonable prices. Other purpose of this strategy is to define the major objectives of the Lithuania in the energy sector setting its targets for the implementation of strategic initiatives until 2020. Some of these strategic initiatives includes: creation of the sources for renewable energy, construction of the nuclear power plant (NPP), integration into the European energy system, extension and interconnections of power grids, restructuring of the gas sector, etc.

In addition to strategic initiatives under this strategy several major plans and programs are prepared setting the particular measures for the implementation of energy sector targets. These plans and programs are: The Energy Efficiency Action Plan, District Heating Development Program and the National Renewable Energy Resource Development Strategy. All these plans and programs were prepared to achieve the goals of the National Energy Independence Strategy (International Energy Agency 2012).

According to the Ministry of Energy of the Republic of Lithuania, it has set energy sector development guidelines for 2030 and 2050 where more focus has been given to the Renewable Energy Sources (RES). One of important guideline is to increase energy efficiency by 1.3% per year in 2030 and the second is RES share will increase in the final energy balance (Ministry of Energy of the Republic of Lithuania 2016).

The NEIS sets many tasks and solutions in the field of heating, gas, electricity, renewable energy sources, oil, implementation of energy efficiency, reduction of green house gas emissions and environmental protection (Ministry of Energy of Republic of Lithuania 2012). During the period of the NEIS many strategic projects: LitPol (grid extension between Lithuania and Poland), NordBalt (grid extension between Sweden and Lithuania), LNG Klaipeda have been completed successfully which contributed and encouraged Lithuania in achieving energy independence of the country. Such completion of projects shows the Lithuania's commitment to its energy strategy and has implemented the strategy thoroughly.

The strategy states that Lithuania is confronted with many major challenges in especially three areas: security of energy supplies, competitiveness and sustainable development of energy sector. This strategy also notes that in order to

become energy independent state the country must deal with above mentioned challenges and follow the suggestions: Lithuania's energy sector should be fully integrated in the European energy systems, Lithuania itself should have sufficient local capacity for meeting its energy demand, competition and participation in the common EU energy markets, and the cooperation with other regional countries in the energy sector. The Seimas of Republic of Lithuania has approved a draft for new National Energy Independence Strategy 2017 with several new provisions and objectives which will replace the NEIS 2012 (Ministry of Energy of Republic of Lithuania 2017).

**National Renewable Energy Resource Development Strategy:** The strategy was adopted by Resolution No 789 of the Seimas of Republic of Lithuania on 21<sup>st</sup> June 2010 indicates that policy of Lithuanian energy gives an increasingly great importance on the development of Renewable Energy sources (International Energy Agency 2012). Renewable Energy Sources considered as one of the best priorities of the National Energy Policy of Lithuania.

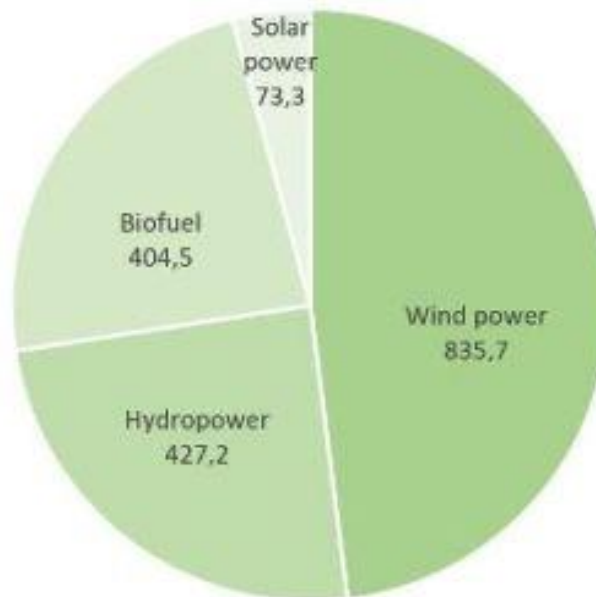
Lithuania doesn't possess sufficient reserve of fossil fuels (Oil, Peat) therefore it becomes extremely important to use RES as widely as possible. The development of RES ensures an alternative to traditional energy because fossil fuel sources substantially increases environmental pollution and accelerates climate warning which causes natural hazards more and more frequently. For Lithuania the use of RES not only helps to deal with problems related to climate change but also creates favorable conditions to combat problems of economic and energy exclusion, and poverty.

In this strategy Lithuania has set many major aims and tasks mainly to improve the condition of RES in the state and foresees the minimum share of RES

ensuring Lithuania meets the aim of 23% of RES in the final energy consumption (Jatautas and Stasiukynas 2016: 35). Followings are the aims and tasks:

- (a) To increase of share of RES in the final consumption of energy in transport sector at least by 10% in 2020;
- (b) To increase the share of electricity produced from RES to 21% in 2020 in the country's total electricity consumption;
- (c) To meet the demand for energy with local energy resources to the maximum extent possible;
- (d) To ban imported polluting fuels;
- (e) To improve the reliability of energy supply and energy independence
- (f) To create transport and favorable conditions for implementations of projects for RES by effectively developing thermal energy, electricity and gas infrastructure;

Picture 6: Production of electricity from RES, GWh



Source: Lithuanian Department of Statistics, 2015

In the last decade Lithuania has successfully employed Renewable Energy Sources and according to the Lithuanian statistics, 2016 it has already produced 25.64% of its gross final from (RES) and has achieved its 23% target of this strategy. In spite of such achievement Lithuania has still not exploited well wood fuel which could have significantly contribute in RES. Since it is not fully exploited this field must be exploited and by doing so the state can improve its energy supply and quest for energy independence.

### **Energy Efficiency Action Plan 2014**

In the simple terms energy efficiency refers to the amount of output that can be produced with a given input of energy. It is an important element in securing supply of energy that's why it becomes important for Lithuania to improve its energy efficiency. In order to improve energy efficiency Lithuania has adopted Energy Efficiency Action Plan in 2014. The Action Plan has been drawn up with the provisions of Directions 2012/27/EU establishing a pattern for National Energy Efficiency Action Plan under 2012/27/EU of the European Council (EC) and the European Parliament. It was later approved by order No 1-149 of the Ministry of the Republic of Lithuania on 30<sup>th</sup> May 2014 (Ministry of the Republic of Lithuania 2014).

In this Action Plan Lithuania has set target to increase energy efficiency by 1.5 percent from 2013 to by the year of 2020. The Energy Efficiency Action Plan 2014 describes important energy efficiency improvement measures, amount of energy savings including those in transmission, supply and distribution of energy with the view to achieve the Action Plan's target (European Commission 2014). It also describes energy efficiency improvement of policies.

- (a) Renovation of apartment buildings;
- (b) Increasing the energy efficiency of public buildings;

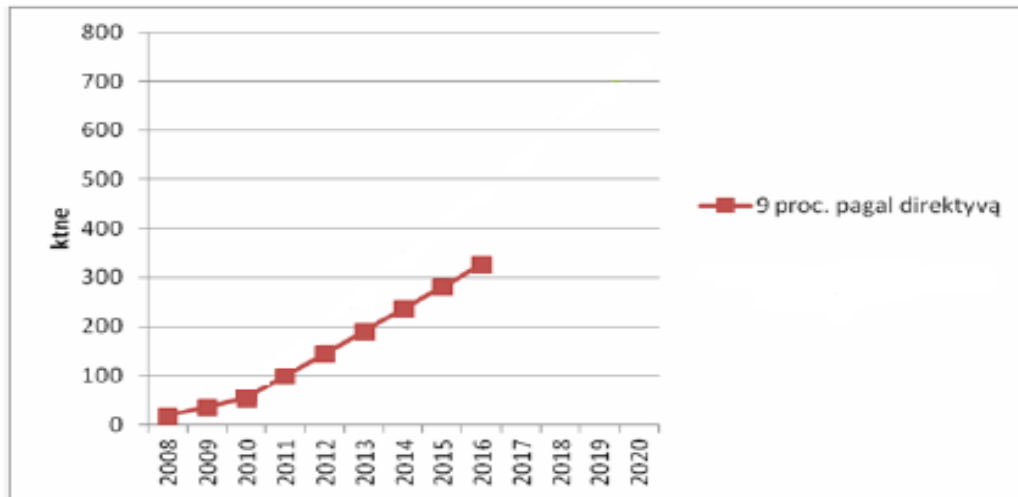
- (c) Energy audit in industries;
- (d) Agreements with energy companies on energy savings;
- (e) Agreements with energy suppliers on consumer education and counseling.

Energy efficiency is the best way to increase of energy supply, decrease Green House Gas (GHG) and other pollutant emissions. It is also taken as the basis for transition to a resource efficient economy. For Lithuania, the efficient use of energy resources has been one of its major strategic objectives in the energy sector. According to this plan, Lithuania has to ensure that the cumulative amount of 11.67 TWh of energy will be saved by 2020 (Ministry of Energy of the Republic of Lithuania 2014).

Lithuania has lots of inefficient buildings left over from the communist period and such buildings were built at a time when nobody was actually concerned about energy consumption. Because of the subsidy from the Soviet Union the prices were low but since the government has changed situation has changed dramatically. Now energy prices are equal to the world markets and this has created a change in the attitude towards energy efficiency.

According to the EC provisions and Directives 2006/32/EC the member state need to set a saving target of 9% by 2016. Following this directions Lithuania set a target of 3797 GWh (327000 toe). In the following picture the target and the schedule for implementation is shown implementation is shown (European Commission 2014):

Picture 7: Energy efficiency improvement target according to the requirements of the Directives 2006/32/EC



Source: Ministry of Energy of the Republic of Lithuania

### **Energy Cooperation in Baltic Sea Region**

Baltic Sea Region BSR (Germany, Denmark, Sweden, Estonia, Finland, Latvia, Lithuania and Poland) is highly heterogeneous area in environmental, cultural and economic terms, yet the concerned countries share several common elements and demonstrate considerable interdependence (European Commission 2009). In other words, the actions in one particular area have quick consequence in other part of the region. It is an area that is a model of co-operation in the field of economic, energy, innovation and security as well. The Baltic Sea Region is important in several ways and is the first region of the world which has adopted common regional goals for sustainable development. From the ancient era it played major role in navigation and trade across Europe and now has become a European laboratory of integration where different economic and cultures came together (Beconyte, G., Pilipaitis, A. and Lunden, T. 2008).



Countries of the BSR have for long time cooperated through organizations such as: Baltic gas, BASREC, Baltic 21, BALTREL and the Baltic Sea Parliamentary Committee. Baltic gas is an association for cooperation between the companies of natural gas transmission in the Baltic Sea Area. While Baltic Sea Parliamentary Committee is a forum for information exchange and debate between parliaments and other organizations in the BSR both on international and interregional levels (Baltic Development Forum 2009).

In a major development on 18 December 2014, Corina Cretu (the European Commissioner for Regional Policy) has approved the investment program for transnational cooperation in the Baltic Sea Region (BSR). Such development provided opportunity to BSR countries to improve cooperation. Main priorities of the investment program are: management of natural resources, sustainable transport, EUSBSR support, capacity for innovation and technical assistance (Interreg Baltic Sea Region 2014). The energy sector of all three Baltic States has its both strengths and weaknesses. All three states face several threats to their energy sector but in other words it also provides them an opportunity to come together and co-operate each other with efficient use of available opportunities.

Several efforts to improve regional co-operation among the Baltic States were started in the 1990s and some of agreements of mutual technical assistance and exchange of information were discussed and analyzed at the framework of Baltic Council of Ministers. Among them one of the major agreements on Co-operation in the energy sector was signed on 29<sup>th</sup> October 1998 in Riga between the all three Ministers of Economy and this agreement is called the Baltic Sea Region Energy Co-operation (BASREC). It represents a regional forum on dialogue related to energy and global climate issues with an aim at promoting energy efficiency and sustainable supply of source and use of renewable energy. In 2015

BASREC was revised with this provision that there is no meeting and it could be held only when needed by any member countries. Before the revised format it was a ministerial format with mandate for three year period (Ministry of Energy of the Republic of Lithuania 2015).

One year after in 1999 the Baltic Energy Strategy was formulated with its three major objectives: security of supply, competitiveness and environmental protection and safety. According to the Baltic Energy Strategy these objectives to be achieved by set of measures comprising price transparency, liberalization of markets, energy efficiency and interconnections. The European Union (EU) is playing a major role to improve and it is the first of macro-regional strategies energy co-operation between countries of BSR by approving the EU Strategy for the Baltic Sea Region (EUSBSR) in 2009 in the European Commission. It is the first of macro-regional strategies which provides an integrated framework for strengthening the environmental conditions of the sea, transport and energy interconnections and facilitating the development of competitive market across borders (European Commission 2017).

Picture- 8: Grid extensions in the Baltic Sea Region



Source: Springer 2017

The Baltic Energy Interconnection Plan (BEMIP) is one of the important initiatives taken by the EU in 2009 focusing to improve co-operation and interconnection among BSR countries. The major goals of this initiative are: full integration of the three Baltic States (Estonia, Latvia and Lithuania) into the EU energy market through the improving of interconnections with their EU neighboring countries (European Union 2016). With the help of this initiatives three major strategic projects have been completed till 2016 and these are especially beneficial for Lithuania in order to diversifying its supply of energy: NordBalt subsea power cable (Sweden-Lithuania), the LitPol grid extension link (Lithuania-Poland) and LNG terminal in Klaipeda. Gas Interconnector Poland-Lithuania (GIPL) is another important strategic project which probably will start working by 2019 (European Commission 2015).

### **Conclusion**

After implementing of several strategic projects and policies by Lithuania it can be said that Lithuania has smoothly strengthened its energy system and is on right way to get rid of 'energy island' status. Lithuania benefited from its all energy policies (since independence to 2017) which were aimed at mainly reduction of dependence from Russia and diversifying supply of energy. In post-2004 period because of the EU initiative (Third Energy Package, BEMIP, LNG terminal Klaipeda) Lithuania has been able to diversify supply of energy by interconnection power grids with Sweden and Poland. Because of people oppositions and protests Lithuania's decision not to go with some of the projects (Visaginas NPP, Shale gas exploration) slowed the Lithuanian effort to achieve energy independency.

Regional cooperation in the Baltic Sea Region (BSR) with the help of the European Union has helped Lithuania in reducing Russian influence on its energy system by synchronization of electricity with the EU energy market and extending gas pipeline to Poland. In spite of the cooperation among BSR countries disagreement is also there which impacts negatively mainly small countries like: Lithuania. In the case of Nord Stream Germany, Finland and Sweden being members of BSR didn't understand the concern of Lithuania. Lithuania needs to continue with its efforts to secure energy supply and must take part actively in regional cooperation activities.

## **Chapter - 5**

### **Conclusion**

The primary objective of this study is to understand the concept of energy security and the nature of energy security of Lithuania. Other objective of this study is to analyze concerns, challenges and policies of Lithuania in the years of 200-2017. The study tries to bring argument to the hypothesis: Lithuania's energy security is having risks from regional instability, dependency on single supplier Russia, Isolation from EU energy system and the status of 'energy Island' with EU and EU-Russia cooperation and bilateral projects bypassing Lithuania as a transit have strategic, economic and environmental implication for Lithuania.

After the explanatory analysis of energy security this study address the definition of energy security by going through several contemporary and 20<sup>th</sup> century old definition of energy security. I found in total more than 60 definition of energy security mainly because different definitions used different dimensions. In addressing the definition of energy security it was clear that many elements of definitions were similar in wider framework. However the study finds out of existing definitions that there is no consensus about certain dimensions of energy security and how to define energy security. This study finds definition of energy security given by Daniel Yergin is relevant in contemporary time and also seemed relevant in defining Lithuanian energy security. By analyzing the situations Lithuania's effort to define its energy security by taking Russia as a major threat to its energy security is seemed justifiable.

One of the questions which this study is addressing is the major existing challenges to its energy security. After analyzing the several literature and

government reports this study finds Russia as an energy giant seems challenge to Lithuanian energy and it will remain as a major source of threats to Lithuania's energy security. Because of such dependence Lithuania's energy sector was negatively during the years of 1991-2003. Except of dependence on Russia, between the years 1991-2003 the study finds Lithuania has faced many other challenges: high energy intensity, poor energy infrastructure etc. to its energy security. The interesting thing which has been found during the study is after many attempts by Lithuania it has not been able to reform its energy sector to a satisfactory level.

Lithuania left its two major projects (Shale gas and Visaginas NPP) mainly because of peoples' protest. It can be said after going through the literatures both the projects were of great strategic importance and Lithuania could improve its energy independence which actually didn't happen. In spite of these challenges Lithuania has successfully been improved its energy sector but it is not sufficient because Lithuania still has huge dependency on Russian energy.

The study finds in post-2004 Lithuania has improved its energy infrastructure, strengthened diversification of supply and interconnection of electricity but still it is isolated from the European energy system and power and gas market. Because of such isolation here one of hypothesis seems to be valid that Lithuania can still be called an 'energy island'. It was understood that the very first task to deal with existed energy security threats is about the abolishment of the energy isolation. That means an amicable regional cooperation and understanding not only the domestic needs but the needs of other neighbouring countries as well. Only few years back Lithuania along with Poland and Sweden have completed successfully major strategic projects and it showed that Lithuania is now on good track in securing its energy supply.

Major projects like: LNG terminal at Klaipeda, NordBalt and LitPol have indeed improved Lithuania's energy security but these projects are not free from lacks like: the utilization of LNG terminal, Poland's unwillingness to work over another grid extension. If these problems meet the solution then it would help Lithuania in its improving energy system. Gas Interconnector Poland-Lithuania (GIPL) will be very useful in diversifying its gas supplies. Overall Lithuania has managed to curb its status 'energy island' given by EU but still it is not well connected. And Lithuania is yet to achieve its energy independence. The study finds that Lithuania finds difficulties in implementing many policies of the EU and that is also hindering Lithuania's quest for energy independence.

Other important finding of this study is Russia is still a major threat to Lithuania's energy security and Russian energy monopoly in the Baltic Sea Region has created obstacles many times in the path of Lithuania's effort to diversify its energy supply. Construction of Ostrovets NPP in Belarus, Nord Stream- 2 pipeline and Russian propaganda against Lithuanian strategic projects has immensely negatively impacted to the energy security of Lithuania. Nord Stream-2 project's capability to sideline the Lithuanian interest were opposed by all the Baltic States especially by Lithuania only if it connected to the Kaliningrad then Lithuania will lost its leverage and Russia will get a huge geostrategic benefit. It is a clear challenge which Lithuania should take seriously. Russia has clear intension to sideline Lithuania from the rest of the EU.

One of important finding of this study is energy cooperation between the EU and Russia is a necessity and mutual beneficial to both concerned parties. Since its inception (during cold war) the energy cooperation has been continued with many political differences and disagreements. This energy cooperation can be drawn into two phase: one phase between 1990 and 2000 wherein the energy

cooperation initiatives were booming with major initiatives like- PCA, Northern Dimensions, Energy Dialogue etc while the second phase is post 2000 era where energy cooperation initiatives started facing problems. Mainly it was Ukrainian gas crisis which stood both parties opposite to each other politically and in its consequence both parties faced huge economic loss. Although energy relations continued even after the crisis but it put the geopolitical nature of the energy supply in the center and both parties started thinking over diversification of supply and diversification of market.

Analyzing implication of such cooperation for Lithuania makes it clear that it has both positive and negative implications. However it has mainly negative implication as Lithuania has been avoided by many big EU players and on many occasions its voice were not heard. Nord Stream- 2 is an example where it has been seen that its voice was neglected. Increasing Russia's role in the EU market on the one hand and Russia's effort to sideline Lithuania is considered direct threat to its energy security. Lithuania needs to raise its concern impressively to the EU and must convince the other EU member states to come with a single voice against any disruption or threat to energy supply to any member states

After implementing of several strategic projects and policies by Lithuania it can be said that Lithuania has smoothly strengthened its energy system and is on right way to get rid of 'energy island' status. Lithuania benefited from its all energy policies (since independence to 2017) which were aimed at mainly reduction of dependence from Russia and diversifying supply of energy. In post-2004 period because of the EU initiative (Third Energy Package, BEMIP, LNG terminal Klaipeda) Lithuania has been able to diversify supply of energy by interconnection power grids with Sweden and Poland. Because of people oppositions and protests Lithuania's decision not to go with some of the projects



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On the basis of all research findings the study's arguments seem to be true. The arguments that between the years of 2004-2017 Lithuania's energy security is challenged by Lithuania's dependence on Russian resources, non-connectivity with the EU energy system also seem correct. And Lithuania is still with its status of 'Energy Island' with positive improvement in its energy system.

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