Resilience of the European Union's Energy Security System towards External Threats

Bachelor Thesis

Management Society and Technology Program
University of Twente

03.07.2019

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Word count: 19903

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Abstract

Today, factors that force the European Union to adapt its energy security strategy include greater competition over energy resources in the global markets, which is further encouraged by the growing energy demand of emerging industries in the Asian region. Besides, the continuous instability in energy-producing regions, such as the Middle East, especially concerning Iran, and the lack of connectivity to important energy networks threatens the EU's security of energy supply. Since the EU internally faces an incomplete energy market and deals with the compatibility of energy security and climate policy, a new European energy security approach is needed to properly address the multi-faceted character of energy security, which influences the economic, environmental and societal sphere. In that respect, also the Union's role as a global actor, issuing the external dimension of energy security, will be addressed through a discussion of geopolitical and international relations paradigms.

The following paper first examines the state of the art of the current European energy security system along with the European Energy Security Strategy 2014, acknowledging also the internal struggle of the member states' different interests regarding energy security policymaking. Afterwards energy dependencies towards important supplier states especially regarding the EU's external energy relations with Russia, will be discussed. This analysis confines to resources the EU and its member states are most dependent on, namely natural gas and crude oil resources. Based on this knowledge, the paper aims to give some practical implications about the creation of a more resilient European energy security system. Since the research paper is embraced in the framework of a system and a policy analysis, it strives to offer practical implications based on Holling's resilience model. Additionally, the conducted research is scientifically relevant, as it addresses a new theoretical understanding of energy security and uses non-mainstream research traditions.

I. Introduction

The European Union (EU) and its member states are currently facing a widening gap between their energy production and consumption, which is leading to increased energy dependence on external suppliers especially concerning its crude oil and natural gas consumption (Söderbergh, Jakobsson, & Aleklett, 2010, p. 7827). Due to the natural resource disadvantage and the growing complexity and multi-faceted character of the energy security issues, the topic needs some closer elaboration.

From an economic point of view, the European single market depends on the reliable and efficient supply of energy sources (Martišauskas, Augutis, & Krikštolaitis, 2018, p. 106). Europe is perceived as the second largest energy market in the world right after the United States of America (USA). However, energy resources are consumed by different groups and sectors of the European economy, such as households, the general industry, the transport as well as by the agricultural and forest sector. While most of the energy is consumed by the transport sector, the agricultural and forest sector consumes the least of all (Eurostat: Shedding Light on Energy in the EU; A Guided Tour of Energy Statistics, 2018). As a net importer of energy products, EU can be identified as an energy resource dependent actor. This means that the Community needs to import more energy resources than it exports. The created trade deficit on energy products from external suppliers is higher for crude oil. The source of crude oil largely dominates the EU energy demand with an overall share of 70 percent in the first half of 2018, directly followed by natural gas with a share of 20 percent (Eurostat: EU Imports of Energy Products- Recent Developments, 2018).

The distinction between different energy products is increasingly important for the understanding of the energy resources' value to the economy. Primary energy products, such as crude oil, firewood, natural gas or coal, are extracted directly from natural resources and aggregate towards two-thirds of the total European energy consumption (Eurostat: Shedding Light on Energy in the EU; A Guided Tour of Energy Statistics, 2018). In contrast, secondary energy products, such as electricity, are produced through a transformation process utilizing the primary energy sources. Thus, approximately one-third of the energy resources are consumed during electricity generation and distribution, supporting the secondary energy production processes. Therefore, natural gas and crude oil are not only used as primary products, such as for heating and sanitary hot water, but increasingly important to produce secondary energy products (Eurostat: Shedding Light on Energy in the EU; A Guided Tour of Energy Statistics, 2018).

However, the created dependency on crude oil and natural gas does not affect the member states equally. According to recent Eurostat statistics, the EU's economy depends on 54 percent energy import regarding its total consumption. This rate ranges from over 90 percent in Malta, Luxembourg and Cyprus to below 20 percent in Estonia and Denmark. Especially states in the Baltics and Eastern Europe are heavily reliant on a single supplier, including some that rely entirely on Russian gas (Eurostat: EU Imports of Energy Products- Recent Developments, 2018).

Russia, the 'principal of Soviet gas industry', owns 23 percent of the global gas reserves and exports its major share of natural gas and crude oil to the European market (Söderbergh, Jakobsson, & Aleklett, 2010, p. 7828). Pipelines transporting natural gas to Europe were already built in the 60s, based on a resolution of the Soviet natural gas industry. Back then the Reagan administration (1981-1989) already challenged this connection, because of the fear that Europe could expose itself to Russian geopolitical pressure during political crisis. European officials replied that Norwegian and Algerian imported gas could provide an appropriate substitute in times of serious supply disruption. However, statistics reveal that today the share of EU-gas imports from Norway and Algeria ranges around 20 percent of the total energy consumption and are therefore rather limited (Söderbergh, Jakobsson, & Aleklett, 2010, p. 7828).

The main concerns about the energy dependence on Russia include the possibility that energy resources could be instrumentalized as 'energy weapons' in 'the international geopolitical game' (Söderbergh, Jakobsson, & Aleklett, 2010, p. 7828). On the one hand, mistrust between the EU and Russia increases anxiety about the utilization of energy trade as a foreign security policy tool, as it happened during the gas dispute between Russia and transit country Ukraine in 2009 and 2014 (Eurostat: EU Imports of Energy Products- Recent Developments, 2018). Besides the downsides in the EU-Russian energy trade relationship, the energy relations provide a paragon for the growing energy trade interdependence. However, concerning the Nord Stream project, the cooperation caused greater fragmentation between western member states and eastern member states, which fear the loss of their external policy leverage as energy transiting countries (Dunsch, 2018). Thus, energy supply issues are directly intertwined with the existence of appropriate supply infrastructure. Without infrastructure, the consumer cannot access the energy resources and in the absence of supply, the availability of infrastructure is useless (Crellijé & van der Linde, 2006, p. 2460). In that respect, coordination issues of energy supply across Europe put the member states to a test of solidarity.

However, the general supply issues of oil and gas resources are just a small piece of the bigger picture. The energy transition towards renewable and sustainable energy increases the complexity of energy security in the realm of global energy independencies between energy

producing and energy consuming states. Several problems, such as the wish to enhance energy security, the aim to strengthen the competitiveness of the EU-energy market and the concurrent transformation of energy technologies to combat climate change are mutually dependent (Meckling & Hughes, 2018, p. 467). In that respect, the European Council's (Council) decision to reduce greenhouse gas emissions (GHG) to 20 percent regarding the 2020 target plays an important role regarding the importance of natural gas in achieving energy sustainability and efficiency (Eurostat: Greenhouse Gas Emission Statistics- Emission Inventories, 2018). Since natural gas emits only half as much carbon dioxide as coal when generating power, it is potentially becoming a factor of reducing GHG-emissions. Also, intermittent power generation sources, such as wind power require supplementary regulating power sources. Therefore, natural gas is perceived as one of the most efficient and eligible sources compared to crude oil (Söderbergh, Jakobsson, & Aleklett, 2010, p. 7828). Accordingly, an appropriate European energy security policy needs to consider the transformation towards a low-carbon economy.

Compared to the period before the turn of the century, today the issue of energy security is more complex because it encompasses multiple dimensions (Cherp & Jewell, 2014). The general increase in the demand for energy, especially in Asian and Indian developing economies, created a greater power asymmetry between energy-dependent countries and energy producing states. It is widely recognized that as population grow and economies expand, the total energy use also increases. This relationship is more significant for developing countries, due to the greater urbanization and importance of energy resources for economic growth (IRENA: Renewable Energy Market Analysis of Southeast Asia, 2018, p. 28). Thus, based on the OECD Development Centre's Medium-Term Projection Framework (MPF-2019), the average economic growth in emerging Asia is estimated to increase by an annual 6.1 percent in 2019-23 (OECD: Economic Outlook for Southeast Asia, China and India 2019, 2018). The overall energy consumption composed of a diversified energy mix is expected to double by 2040. The total energy consumption in the region is estimated to increase by up to 140 percent (IRENA: Renewable Energy Market Analysis of Southeast Asia, 2018, p. 29). Today, this development already causes more competition in the field of resource availability and puts greater pressure on energy-dependent states (Eurostat: EU Imports of Energy Products- Recent Developments, 2018).

Therefore, energy security also became a playing field of geopolitics and a major determinant in external relations rather than just an economic, environmental and social factor. Accordingly, the EU might not only need to stress its regulatory power but also need to consider geopolitical factors regarding its external energy security policy (Cherp & Jewell, 2014, p. 415). According to Sreemati Ganguli, energy independence is just a small factor of geopolitics but is further developing towards a factor with a strategic character (Ganguli, 2016).

Since energy as a commodity equally impacts the economic, social, political and technical sphere of a state, the issue of energy security can be described as an 'all-encompassing human security' issue (Ganguli, 2016). Accordingly, an appropriate energy security framework needs to consider all the conditions mentioned before in order to create a sustainable and resilient energy security system. The wish to enhance the current energy security system has been expressed in several policy documents, such as the European Energy Security Strategy 2014 or the Framework for a Resilient Energy Union from 2015.

However, as the Commission criticizes a regular basis, there are several shortcomings concerning the security of energy supply to the EU. The critique applies especially to the incoherent internal energy market, the compatibility of energy security and renewable energy transition as well as the lack of solidarity between the member states. The Commission further

stresses the lack of an appropriate external energy security instrument as a major obstacle for the creation of a resilient energy security system (Communication of the European Commission on short-term Resilience (COM(2014) 654 final), 2014). Thus, the degree to which energy security should be integrated into the Common Foreign and Security Policy (CFSP) and organized at the supranational level is highly contested. The policy field of energy security typically remains a national matter, which, according to many critics, prevents the development of a resilient energy system.

Searching for practical solutions, the paper strives to answer the following research question: 'How can the European Union create a more resilient energy security system regarding its crude oil and natural gas import dependency on external actors?'. Answering the main research question properly requires the discussion of three sub-questions that contribute to the answer of the main research question.

First, the current European energy security framework needs to be elaborated on, including the objectives, competences and tools, determining the scope of action in the field of energy security policy. Thus, the answer to the first sub-question: 'What are the objectives, competences and tools with which the European Union shapes its energy and security policy or strategy?' allows to identify the strengths and weaknesses of the current energy security framework later.

However, the European energy security system's dependence is further determined by the EU's external energy partnerships and the Union's relation to third actors. Therefore, the second sub-question: 'Which external factors and actors influence the energy dependence of the European Union regarding the import of natural gas and crude oil?' adjusts the focus of this paper to the external dimension of energy security. Since the paper deals with crude oil and natural gas dependencies towards centers of energy supply, the Union's current and energy trade partnerships need to be discussed. Based on this knowledge the paper strives to answer the third sub-question: 'In which way can the European energy security policy framework already enhance the resilience of the European energy security system?'. The third sub-question is implying possible improvements to the European energy security system towards the creation of greater resilience. In that respect, Holling's systems-approach is used to analyze the current energy security system and to find a way to manage the resilience of the European energy security system. Thus, Holling's model will be applied to the EU for the first time and therefore provides practical and scientific contribution as well.

However, the paper further strives to make a scientific contribution to the analyzation of energy security. Concerning the methodological approaches of scientific work, the term is mainly conceptualized according to the parameters of methodological nationalism. This approach pictures the concept of energy security as an object to states' sovereignty. Therefore, the research tradition perceives the society necessarily as a nation-state and often equates it with the unit of analysis (Beck & Sznaider, 2010, p. 382). On the contrary, the idea of methodological cosmopolitanism, which emerged due to the shared critique to methodological nationalism, acknowledges the existence of diverse actors of global and local or national and international spheres. The research of methodological cosmopolitanism encourages 'plural interdependencies' and scientific multi-perspectives (Beck & Sznaider, 2010, p. 394). Following this research tradition, the research paper aims to extend the understanding of energy security towards a more inclusive comprehension, especially considering geopolitical and international relations perspectives on energy security.

II. Theory

In order to discuss the main research question and its sub-questions, existing models and theories need to be issued at first. The main research question implicitly contains the theoretical dimensions of energy security, resilience, geopolitics and touches upon the dimensions of International Relations theory (IR-Theory). Further, the choice for these theoretical assumptions is motivated by the fact, that the concepts complete each other and contribute to the answer of each sub-question. Thus, the different theoretical dimensions should not be regarded as separate theories, which will be later instrumentalized to evaluate the European energy security system. Instead, they should build one theoretical framework, stressing the multiple dimensions of energy security, which cannot be addressed by one existing theory. This applies especially to the contemporary demand of considering energy politics in the context of geopolitics, international relations and as a matter to resilience. In fact, the theories are also selected based on the methodological cosmopolitan approach, considering the EU as an entity which lacks a suitable management approach to energy security, because energy security theory is mainly directed towards the nation state as a respective actor.

1. Theory and Concepts of Energy Security

At first, the concept of energy security, the main constituting framework of the analysis, needs to be defined. It is later utilized to identify the objectives, competences and tools of the current European energy security system, revealing how the Union perceives its energy security matters.

The policy field emerged at the beginning of the 20th century, whereas the academic reflection on that specific policy area started in the 1950s/60s. The interest in energy security stood and fell with the stability of the oil price and the demand for energy resources from economically developing countries (Cherp & Jewell, 2014, p. 415). The classic understanding of energy security as the 'stable supply of cheap oil' modified since the gas demand increased, and gas disruption disputes deeply affected Europe. However, the concept of energy security still needs some re-examination (Cherp & Jewell, 2014, p. 415). Therefore, the four 'As'-definition of energy security provides us with a good first insight about the multifarious understanding of energy security dimensions.

a) The Four 'As' of Energy Security

The concept of energy security and energy supply is rather complex and includes not only the persistence of stable energy supply but recently also demands to address the question of modern energy (infra-)structure, the compatibility with climate policies, energy efficiency or strategic capacity building (Cherp & Jewell, 2014, p. 415). The International Energy Agency (IEA), an international organization committed to the goal of ensuring 'reliable, affordable and clean energy for its 30 member-countries and beyond', also acknowledges that energy security entails many aspects and is rather dynamic (International Energy Agency, 2019). Thus, the concept of energy security reaches beyond the mere interpretation of a 'stable supply of cheap oil' (Cherp & Jewell, 2014). A common definition of energy security, which addresses at least four dimensions, is framed by the aforementioned four 'As'. This conceptualization addresses the importance of energy availability, accessibility, affordability and acceptability. This division has first been phrased by the Asia Pacific Energy Research Centre (APERC) and emphasizes the multidimensional nature of energy security (Cherp & Jewell, 2014).

Nevertheless, Baldwin claims that energy security is 'an instance of security in general' (Baldwin, 1997, p. 415). According to him, any energy security concept should at least address three more general security questions. Baldwin subsumes that the four 'As' definition is not adequately addressing these questions.

b) Baldwin's Concept of Energy Security

According to Baldwin, the debate about the conceptualization of energy security is determined by different energy security problems. Every state possesses different capabilities and demands towards the energy sector, which is why no common definition to address them can be found (Cherp & Jewell, 2014, p. 416). Accordingly, in 'The concept of energy security' D. A. Baldwin (1997) claims that not each security area demands a different security concept. The concept of energy security should rather be based on the concept of security in general.

Therefore, Baldwin (1997) stresses that every concept to energy security should at least answer the following questions: 'Security for whom? Security for which values? Security from what threats?' (Baldwin, 1997).

The subject to security in this analysis are the EU-member states in their function as 'oil and natural gas-importing industrial nations' (Security for whom?). Values of the energy security system that need to be protected could include political and economic independence, territorial integrity or the wish of being a strong global actor in energy security fields (Security for which values?) (Cherp & Jewell, 2014, p. 418). The third feature of security asks whether the EU wants to maintain the status quo or even attain desired standards in the energy sector (Security from what threats?). There is a consensus in academic literature that energy security is related to already attained standards (Fath, Dean, & Katzmair, 2015). Accordingly, energy security policy did not emerge because of growth and changes to the organization, but because of threats to the equilibrium of an energy system.

Thus, the third question is shifting the focus from the causes of disruptions to the ability to actively respond to hybrid threats. Therefore, the idea of the energy system's resilience, which pre-assumes an active role in managing security threats, will be introduced.

2. Theory and Concepts of Resilience

Generally, the elaboration on the concept of resilience contributes to the answer of all three sub-questions and therefore the main research question. It provides the reader with an insight explanation why the EU developed the will to be more actively engaged in energy security politics, as part of its organizational objectives (first sub-question). In that regard, resilience is also used to analyze the EU's role as a global actor including its external energy security partnerships (second sub-question). Consequently, the organizational environment and its dynamics play an essential role when discussing the resilience approach to the European energy security system. Therefore, the European energy security system will be later analyzed based on Holling's system-approach, which considers the dynamic exchange of the system with its environment (third sub-question).

a) Development of Resilience in diverse Scientific Disciplines

Generally, the concept of resilience cannot be regarded as a new term, as it emerged already in the 1960s, first in the physical science and later in the ecological sciences. Thus, several

conceptualizations evolved in different academic disciplines over time (Davoudi & Shaw, 2012, p. 299).

In that respect, Crawford Stanley Holling mainly contributed to the framing of the term in 1973, comparing engineering resilience and ecological resilience. He claimed that besides the disciplinary differences of applying resilience, both perspectives 'believe in the existence of the equilibrium of systems' (Davoudi & Shaw, 2012, p. 301). According to the engineering perspective, the system tries to reach a state of compensation from disturbances. Accordingly, the faster the speed of returning to the initial state of the system (bouncing-back), the higher the system's resilience. In that respect, strategic planning follows the aim to create 'buffering capacity' for the preservation of the status quo (Davoudi & Shaw, 2012, p. 302). The resilience-building literature is generally dominated by this view and the understanding of resilience as preventative action based on emergency planning in crisis (Davoudi & Shaw, 2012, p. 302).

In comparison to the engineering perspective, the idea of ecological resilience recognizes not only the speed of rebuilding the system but also identifies the degree to which disturbances can be absorbed before the system's structure changes an important feature (Davoudi & Shaw, 2012, p. 300). Like the ecological view, the evolutionary resilience approach generally challenges the idea of a state of equilibrium and acknowledges that the nature of the system is changing over time regardless of external disturbances. Beyond the mere understanding of rebuilding capacity, which is enabling the return to normality, the evolutionary approach emphasizes the change of the socio-ecological system and the chance of transforming the system's structure. Following this understanding, systems are perceived as a complex, non-linear and self-regulatory organism that constantly face uncertainty and discontinuation (Davoudi & Shaw, 2012, p. 302).

The idea of evolutionary resilience reflects scientific thinking about the world and issues a paradigm shift in science. Instead of perceiving the world as a rigid and 'orderly predictable construct' (Newtonian mechanical science), the evolutionary approach accentuates the transformative and unpredictable nature of systems (Davoudi & Shaw, 2012). The approach recognizes that transformation is not necessarily the outcome of a crisis or a disturbance but can also be the consequence of an internal process, where the relationship between cause and effect cannot be exactly predicted (Davoudi & Shaw, 2012, p. 302). In that sense, resilience does not only focus on the things that need to be attained in order to construct a stable system but also refers to the response to future risks (O'Brian & Hope, 2010, p. 7551).

b) The Adaptive Cycle of Resilience

The socio-ecological character of resilience has been embodied in the 'Panarchy Model of the Adaptive Cycle' by Holling. The model is referring to changes in the system's structure and originally had been used to determine the evolution of systems in ecological sciences. Holling (2004) describes resilience as an interactive process of 'consecutive phases' including the mutually dependent stages of growth, equilibrium, destruction and reorganization (O'Brian & Hope, 2010, p. 7550).

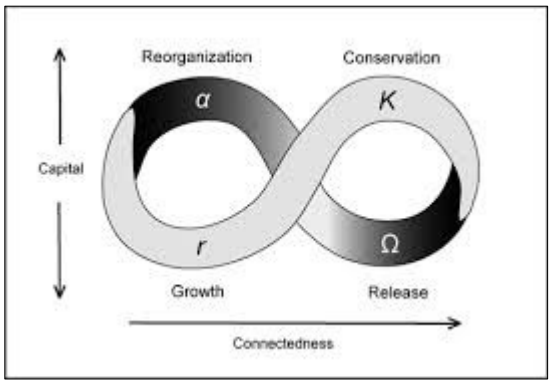
First, the stage of growth (*r-phase*) is characterized by the aggregation of resources, increased competition and a rising level of diversity (fig.1). This phase aims at the prevention of a 'poverty trap', understood as the lack of resources hampering the system to aggregate positive feedback to enter the growth phase. A system that is trapped in the *r*-phase has already 'successfully reorientated post-crisis' and further strives to utilize resources for rapid growth (Fath, Dean, & Katzmair, 2015, p. 2).

Secondly, in the stage of equilibrium (*k-phase*) resources are stored and mainly used to stabilize the system (fig.1). This phase emphasizes the quality rather than the quantity of the system and is therefore also called equilibrium-phase (Fath, Dean, & Katzmair, 2015, p. 2). The period is marked by stability and little complexity. Nevertheless, the *k*-phase is determined by the risk of maintaining the status quo and the threat of entering the rigidity trap, which refers to the system's inability to improvise (Fath, Dean, & Katzmair, 2015, p. 4).

The third stage of deconstruction (*Ω-phase*) deals with a 'chaotic collapse' of the system and the release of capital (fig.1). Thus, systems emphasize the capacity-building for survival and the maintenance of vital functions of the system throughout crisis. Thus, emergency plans are enacted, indicating whether the organization accumulated enough adaptive capacity in the *r*-phase (Fath, Dean, & Katzmair, 2015, p. 3). Failure to survive this stage results in the complete demolition of the system, which also refers to the 'dissolution trap'.

However, if a system resisted a crisis, it can enter the reorganization stage (*α-phase*). The last phase of the cycle issues the reconstruction of the system through structural changes. Thus, the system is confronted with a high degree of uncertainty, but the phase also offers the chance to regain greater resilience (fig.1). Thus, the transition from the *α*-phase to the *r*-phase represents the evolution of a new or the maintenance of the same old regime. Therefore, the creation of new resilience capability is marked by the ability to transit from the *α*-phase to the *r*-phase. The inability to reorientate and improve is called the 'vagabond trap' (Fath, Dean, & Katzmair, 2015, p. 4). The Panarchy Model by Hollling sequences the four phases in an order, which enables the development of a management approach of resilience. Additionally, the cyclic nature of the model stresses that repetition of the phases increase the chance to create greater resilience.

The '*Panarchy'*, which refers to an interacting set of hierarchically structured scales, reveals that the cycle can be applied to a range of stages, such as the local and regional or the national and international level (Weeks, Rodriguez, & Blakeslee, 2004, p. 1). More precisely, it helps to understand the complexity of systems and their resilience at lower and higher levels (fig 2). Thus, the adaptive cycle also implies that as systems mature, the degree of resilience decreases (fig.2). Additionally, there is a potential risk that the sub-system's resilience strategies impede the resilience measures of the larger system (Fath, Dean, & Katzmair, 2015, p. 4).



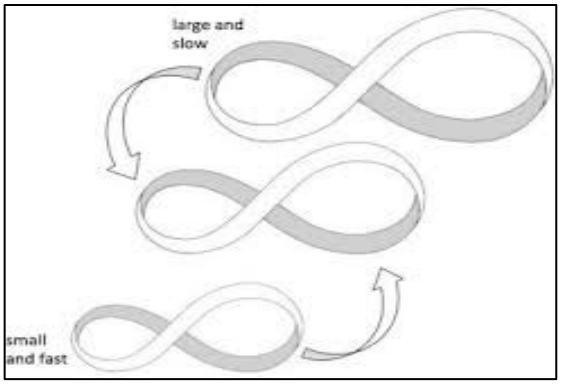


Figure 1 **Figure 2**

The Panarchy Model of Adaptive Cycles. Source: Berkers, F., & Ross, H. (2016). Panarchy and community resilience: Sustainability science and policy implications. Environmental Science & Policy (ELSEVIER), pp. 185-193.

Accordingly, Holling's model and the evolutionary approach to resilience provide a useful tool for a system's analysis. Since the theoretical concept can be perceived as abstract, it can be translated into other scientific disciplines (Davoudi & Shaw, 2012, p. 305). Thus, the following research paper aims to investigate the resilience concept in the context of the European Union's energy securitry system. In that respect, the analysis will also more closely discuss, the Union's approach to resilience. Generally, there are two types of discourses, which address the resilience term differently. The 'survival discourse' of resilience stresses the fear of possible uncertainty, vulnerability and recovery. In that respect, resilience can concern short-term disruptions (shocks) and long-term disruptions (stresses) (Davoudi & Shaw, 2012). The second discourse of 'life' stresses transformation and renewal instead of prevention. In that sense, resilience is perceived as a rather dynamic process of both bouncing forward (adaptation) and reinvention (creativity). The 'life-approach' wants to create a system that is more sustainable with regard to its specific and vivid environment including both planning and practice. Thus, 'resilience enshrines a radical challenge to the status quo' and prevents blue-print thinking (Davoudi & Shaw, 2012, p. 311). In that respect, another key determinant of a resilient system is the degree of autonomy. When the degree of the system's autonomy or scope of action is rather limited, the risks of being vulnerable to external factors increases. Accordingly, with respect to Holling's model, the greater the flexibility and autonomy of a system the greater the managerial capacity of resilience.

3. Theory and Concepts of Geopolitics and International Relations Theory

This section acknowledges the fact that energy security is understood not just as an economic but also as a geopolitical and IR-issue. In that respect, the theories of geopolitics and IR will be explained in order to answer the second sub-question, which deals with the Union's energy dependency towards specific energy partners. Thus, the theoretical tools of geopolitics and IR-theory will be used to analyze more generally the international actors' interests and intentions and the Union's position as a global actor in the field of energy security.

a) Energy Security and Geopolitics

Geopolitics is more broadly defined as 'the analysis of geographic influences on power relationships' (Bradshaw, 2009, p. 1920). The concept of geopolitics in energy security is referring to the influence of geographical factors, such as the distribution of centers of supply and demand across regions (Bradshaw, 2009, p. 1920). Geopolitical power in the energy sector can be perceived as 'the capability of the state to acquire control of national energy resources and transportation infrastructure and to use or adjust them in the pursuit of foreign and security policy goals' (Siddi, 2018, p. 1553). New emerging energy demanding markets, such as China and India and new developing energy production centers in the Middle East or Africa, affect the geopolitical balance, which results in a global shift. The global shift is driven by different rates of population growth, urbanization and economic development and increases competition over energy supply partnerships (Bradshaw, 2009, p. 1921).

In that respect, the EU's position to attain secure energy supply emerged through internal and external developments of geopolitical and economic origin (Crellijé & van der Linde, 2006, p. 532). In that respect, the internal development concerns 'the process of dual integration', referring to the enlargement process and deepening of the Single Market. Instead, the external development considers the policymaking being influenced by IR and power politics. Along with this distinction, there exist two storylines according to which the geopolitical actors can be characterized. First, global actors can be characterized according to the markets and institutions storyline. It assumes the actor to strive for the continuation and intensification of

the international system based on multilateral relations and the globalization of markets. In terms of the future oil and gas industry, the market and institutional storyline reveals the influence of liberalization and market forces issued by the World Trade Organization (WTO), the International Energy Agency (IEA), the Organization for Petroleum exporting Nations (OPEC), as well as regional free trade organizations, such as the EU, the North Atlantic Free Trade Agreement (AFTA). It appears to be the most profitable storyline for the EU.

The second storyline is about 'Regions and Empires' and stresses a more pessimistic view on international politics (Crellijé & van der Linde, 2006, p. 534). Accordingly, the international system is split up into competing blocks that engage in rivalry and competition about energy resources and energy markets. Furthermore, the approach pre-assumes a division into countries and regions based on ideology. Consequently, the storyline stresses a realist understanding of world politics (Crellijé & van der Linde, 2006, p. 536).

b) Energy Security and International Relations

As already indicated above, energy security plays an essential role in the relations between states. According to Enno Harks (2006), competition over the remaining resources led to the politicization of energy as a commodity and the power struggle in the international system. Power is defined as 'the capability to attract or persuade other international actors' (Siddi, 2018, p. 1552). While the realist school understands power presumably as military power, liberalists associate power with the relative strength of the internal market and regulatory instruments. A third approach of the constructivist school understands power as a socially constructed concept and emphasizes also soft power as means of imposition.

In the case of the EU, it can be asked whether the Union pursues a market-orientated and liberal policy or increasingly shifts its focus towards 'Realpolitik' in the context of external energy policy (Siddi, 2018, p. 1552). In that respect, IR-theory cannot be excluded when explaining the relation between states. Realism, liberalism and constructivism can be identified as the major components of this classical theory (Jackson & Sørensen, 2016). These perspectives are further distinguished based on their view on human beings, states and the sources of conflict.

Realists acknowledge the relevance of the balance of power between states that are perceived as the main actors. This approach emphasizes the power struggle of states, which aim to survive during a state of anarchy (Jackson & Sørensen, 2016, p. 62). Liberalism provides a more positive view on human nature and claims that international relations are not determined by a state of anarchy and conflict, but ruled through interdependencies (Jackson & Sørensen, 2016, p. 96). The constructivist approach emphasizes the 'human's awareness or consciousness and its place in world affairs'. The system that surrounds people is socially constructed and consists of thoughts and ideas (Jackson & Sørensen, 2016, p. 206).

III. Methodology

The following part provides a justification for the choice of method and further explains in which way the methodology addresses the research question. Moreover, this part relates to the methodology used to gather, analyze and process research relevant information regarding the choice of theory and academic literature.

1. The Research Process

The choice of an appropriate research method generally depends on the dimensions of the question that is addressed by the research paper.

The research question: 'How can the European Union create a more resilient energy security system regarding its crude oil and natural gas import dependency on external actor?', addresses the issue of the EU's member states dealing with import dependency regarding their overall energy consumption. The fact that the Union cannot produce the total amount of energy it consumes, creates dependence on external suppliers and makes the EU vulnerable to supply disruptions. This phenomenon especially counts for critical resources, such as crude oil and natural gas. The EU has already taken several steps to prevent supply disruptions. Nevertheless, incidents for example the Ukraine-Russia gas dispute, revealed that the external relations tools in the context of energy security are rather limited.

Therefore, this paper aims to indirectly provide evidence for the degree to which the EU energy security policy can achieve its intended objectives and the degree to which the current energy security system can be created more resilient. Thus, the research paper strives to derive some measures from the analysis of the current energy security system, which allow the EU to successfully navigate through the stages of resilience. In that respect, the EU's energy security system is partly examined in the context of a system analysis, considering structural characteristics of the EU as an organization (systems analysis) but also the way policies as instruments of organizational management can be used as a tool to create greater resilience (policy analysis).

However, in order to derive a meaningful conclusion, the elaborated research question will be answered step-by-step, based on three sub-questions. The information gathered through the analysis of each sub-question will be used to address the main research question.

2. Sub-Questions and Literature Selection

The first sub-question: 'What are the objectives, competences and tools with which the European Union shapes its energy and security policy or strategy?' concerns the status quo of the European Union's energy security framework. The information for the analysis of the objectives and competences regarding the EU's perception of energy security derive from the Treaties of the Union and provide some explanation about the EU's capacity to take an active role in this field. The tools which shape the European energy security framework correspond to policy documents, communications, directives and regulations regarding the security of energy supply. In that respect, the European Energy Security Strategy 2014 and its eight pillars are used as the main reference for the analysis regarding its contribution towards greater resilience. The strategy has been enacted in the aftermath of the Ukraine 2014 and laid out the fundament for the development of the current European energy security system. However, the analysis also considers the Energy Union Strategy 2015 (Energy Package). This paper predominantly stresses the transformation of the Union into a low-carbon economy and a resilience approach, which emphasizes the efficient utilization of energy. In that respect, the 2030 Framework for Climate and Energy and the European Energy Security Strategy COM (2014)330 will also be addressed. Besides, also the 'Clean Energy Package For All Europeans' (COM(2016)860) is mentioned, due to its importance as tool which also focuses on the inclusion of the consumer perspective when discussing energy security matters.

Amongst other things, the communication on the short-term resilience of the European gas system will be analyzed, indicating the current capacity building initiatives, which are meant to expand the natural gas reserves. Besides, also the Mid-term evaluation of Council Directive 2009/119/EC (SWD (2017) 438 final is referred to in order to assess the current short-term actions regarding the storage capacities for crude oil. Concerning the moderation of energy demands as already enacted tool to reduce the EU's energy dependency, the efforts of the Energy Efficiency Directive (EFD) and Energy Performance for Buildings Directive (EPBD) will be explored.

Secondly, it is important to look after the EU's dependency rate on energy suppliers to assess their strategic value to the EU (second sub-question). In order to answer the second sub-question: 'Which external factors and actors influence the energy dependence of the European Union regarding the import of natural gas and crude oil?' policy documents, referring to external energy relations, such as the 'Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy' will be examined. In addition, statistical data provided by Eurostat statistics are used to determine the degree of dependency, illustrated by the import and export relationship between the EU and external actors (Russia, Arabia, Middle East). The dependency rate of a state, showing the degree to which the state's economy is relying on imports to meet its needs, is measured by the share of net imports in gross inland energy consumption.

The aggregated knowledge functions as a basis to give practical implications about the way the EU can adapt to today's energy security challenges (third sub-question). Therefore, the third sub-question: 'In which way can the European energy security policy framework already enhance the resilience of the European energy security system?' is accommodating the demand of a management strategy to resilience. In that respect, the paper applies Hollings Adaptive Cycle to the European energy security system for the first time and therefore strives to fill the gap of an appropriate management approach to resilience at the EU-level. Thus, the paper theoretically and methodologically follows the research tradition of methodological cosmopolitanism.

3. Methodological Cosmopolitanism and Methodological Nationalism

Methodological nationalism and methodological cosmopolitanism are referring to intellectual orientations and scientific schemes of conducting research. Generally, methodological nationalism perceives science to be determined by national scientific history and traditions of doing research. Thus, methodological nationalism in political and social science perceives the nation as the primary actor and unity of analysis (Beck & Sznaider, 2010). While the nation is the object of investigation, other actors in the globalized world are ignored. Therefore, a parallel between nationalistic thinking and the conceptualization of a term can be detected. In that respect, methodological nationalism is shaping mainstream social science. The nationalist orientation of science makes the success of scientific work intertwined with the nationality of the scientist, who is representing the cognitive capacity and innovative strength of a society. Therefore, methodological nationalism is competitive and poses pressure on the scientist to make a major contribution in order to support the narrative of the national intellectual superiority.

On the contrary, the idea of methodological cosmopolitanism has been extensively shaped by Ulrich Beck and his contribution to how the current academic discourse is theorizing about the organization and of social and academic life within a global framework. In that respect, the tradition of cosmopolitanism in science emerged due to the shared critique of methodological

nationalism and the fact that society is necessarily perceived as a nation-state and often equated with the unit of analysis (Beck & Sznaider, 2010, p. 382). The idea of cosmopolitanism acknowledges the existence of diverse spheres of global and local or national and international, which are increasingly blurring. This thought is explained closer by Ossewaarde and his reference to the 'Society of Strangers'. In this case, a cosmopolite tradition is transcending local and national boundaries and does not take the nation as a reference point (Ossewaarde, 2007, p. 373). Therefore, methodological cosmopolitanism forces the scientist to take the wider world as a reference and a diversity of actors into account. In a cosmopolite world, scientists are encouraged to be more open to 'plural interdependencies' and scientific multi-perspectives (Beck & Sznaider, 2010, p. 394). Methodological cosmopolitanism emphasizes scientific reorientation and poses no boundaries to scientific research. The reference to so-called 'open horizons' connects the topic of methodological cosmopolitanism with phenomenology. This related research tradition, which has been framed by Edmund Husserl (1935), assumes that scientific knowledge equates the experience of the 'lifeworld' (Harrington, Lifeworld, 2006, p. 341). In accordance with this research tradition, the following paper aims to extend the understanding of energy security towards a more inclusive comprehension, especially considering geopolitical and international relations perspectives on energy security.

The dichotomy between methodological nationalism and methodological cosmopolitanism can be applied to my research proposal with respect to the conceptualization and choice of the unit of analysis of essential research dimensions. In accordance with prior research, methodological nationalism has been mainly used in the field of energy security research. The academic literature always uses the nation or EU-member states as reference for the development of an energy security strategy. Therefore, also the conceptualization of energy security is determined by nationalistic ideals because the concept of energy security is mainly understood as an object to states' sovereignty. However, a power shift from national to supranational level leads to the consideration of other dimensions of energy security. Generally, the shift from methodological nationalism to cosmopolitanism is understood as a 'positive shift of problem', due to the broadening of the thematically and methodological scope of science (Beck & Sznaider, 2010, p. 385). Consequently, the research paper aims to extend the scientific and practical understanding of energy security towards a more inclusive comprehension especially considering a variety of actors. In that respect, a resilience approach for the Union, a supranational organization which transcends national boundaries will be more closely investigated. Thus, the research paper follows the scientific tradition of methodological cosmopolitanism to fill the scientific gap of an energy security concept that can be applied at the European level.

IV. The European Energy Security Framework

At first, the European Energy and Security Policy Framework will be analyzed, as it constructs the ground for the energy security system's analysis. In that respect, the first section aims to answer the first sub-question: 'What are the objectives, competences and tools with which the European Union shapes its energy and security policy or strategy?' Therefore, Baldwin's security concept will be used in order to illustrate the way energy security is perceived by the Union.

1. Competences and Objectives of the European Energy Security Framework

The following part focuses on the analysis of the EU as an international organization 'sui generis'. Generally, the Union cannot be perceived as a state nor as a typical institution, since it owns regulatory power, which directly impacts the national law. However, the Union is not

fully sovereign, since the taxing power, main executive competences and external relations tools remain within the member states. This phenomenon can be observed especially regarding the competence distribution between the organizational bodies. In that respect, the relationship between the member states and the Union is determined by supranational as well as intergovernmental terms.

According to Baldwin, each state possesses different objectives and demands towards the energy sector, responding to individual energy security problems (Cherp & Jewell, 2014, p. 416). Therefore, a more general security concept will be applied, corresponding to the impossibility to address all the 28 members' interests and demands towards energy security equally.

Thus, following Baldwins conceptualization of 'general security', there must always be a subject to security. In this case, the EU-member states as 'oil and natural gas-importing industrial nations' function as subject to security (Security for whom?). Although the 28 member states follow different nationalistic interests, given their strategic and natural advantages and disadvantages, the Union shares common values regarding energy security policy. Therefore, special attention will be paid towards the common denominator. Especially concerning the internal development of the energy market, the member states are fully aware of the importance of natural gas and crude oil for Europe's economic growth. Additionally, there is a social factor concerning the secure supply of the energy consumer. More generally, addressing energy security is necessary in order to compete with third states in the global energy market. As observed later on, the Union increasingly strives to strengthen its position as a global actor in the energy security sector (Security for which values?) (Cherp & Jewell, 2014, p. 418).

Accordingly, the Union accentuates the importance of the energy supply security under Junker's Commission, envisioning energy accessibility, affordability and a secure, competitive and sustainable energy market for all Europeans. Since the current policy framework recognizes that energy security is closely connected with the plan of the energy transition, the implementation of an energy security system is directly intertwined with climate policies and the realization of the Energy Union Strategy (European Commission Press Release: The Energy Union: From Vision to Reality, 2019). As Art. 11 Treaty of the Functioning of the EU (TFEU) states, 'environmental protection requirements must be integrated into the definition and implementation of the Union's policies. The Union believes in the potential of renewable energy 'for the reduction of greenhouse gas emissions, the diversification of energy supplies and a reduced dependency on fossil fuel markets (in particular, oil and gas)' (Eurostat: Renewable Energy Statistics, 2019).

However, the energy policy and energy security policy objectives are more generally defined in the treaties of the Union. Regarding the field of energy policy, Art. 194 (1) TFEU defines the relevant objectives. In that respect, the objectives determine future legislative and include the improvement of the functioning of the energy market, ensuring energy supply, enhancing the promotion of energy efficiency and developing renewable energy sources and promoting energy cooperation. In that respect, the Commission is an important player and manager of the constitutive legal frameworks. Although the political agenda is determined by the European Council, the Commission is actively engaged in the legislative process by initiating new proposals and determining the draft agenda (Art. 17 (2) Treaty on the European Union (TEU)). However, when it comes to the external dimension of energy security policy, the power to decide on the respective objectives and values of energy security is controlled by the member states. Thus, the competence dispute between the member states and the Union sometimes

overshadows real progress regarding the implementation of external and internal energy policies.

Legally the Union can be perceived as a 'single person, but it is not based on a single constructive document' (Van Vooren & Wessel, 2014, p. 7). Moreover, the constitutional basis of the EU is composed of two legal frameworks of equal value, since the adoption of the Lisbon Treaty in 2009 (Art. 1 TEU). While the TEU concerns the general priorities and objectives of the Union, the TFEU issues the competence distribution and principles of law. The competence distribution is managed according to the principle of conferral, which states that competences not explicitly conferred upon the Union, remain with the member states (Art. 4 (1) TEU). However, the principle of conferral is determined by the principals of subsidiarity and proportionality (Art. 5 (1) TEU). Thus, the 'content and form of Union action', which 'shall not exceed what is necessary to achieve the objectives of the Treaties' (principle of proportionality) (Art. 5 (4) TEU). Accordingly, Art. 5 (3) TEU states further that 'areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States' (principle of subsidiarity).

Regarding the field of energy policy, the Union and the member states share competences (Art. 4 (2) i) TFEU), which means that legally binding acts are issued by the member states and the Union (Art. 2 (2) TFEU). Art. 194 (2) TFEU further states, that the EU-Parliament and the Council are involved as decision-making bodies and should follow the ordinary legislative procedure, except that the treaties provide otherwise. If the treaties provide special provisions, then the Council will decide unanimously after consultation of the Parliament (Art. 194 (3) TFEU). Special provision exists regarding external energy policies (Art. 216, Art. 218 TFEU), involving agreements with third states. The specific provisions can according to 'lex specialis', limit the competences of the Commission to represent the Unions interests externally (Van Vooren & Wessel, 2014, p. 27). Although the Treaties provide the Union with the general competence to act in the field of foreign security affairs policy (Art. 2 (2) TFEU), the member states should not be prevented from exercising their power. A paragon provides the willingness of the member states to maintain their special energy-mix, which as a result creates greater division of the internal energy market.

The third feature of Baldwin's security term asks from which threats the Union needs to protect itself (Security from what threats?) (Cherp & Jewell, 2014, p. 418). The Union became increasingly aware of the threats to its energy security system in 2014 when the supply disruption dispute between Ukraine and Russia deeply affected the Union. In this breath, the Union identified the issue of supply disruption, and lack of strategic infrastructure as major issue, especially regarding is increasing energy dependence and the lack of an appropriate energy relations network. Thus, the Union further strives to not only maintain their desired standards but also actively engage in the global energy market to push back its competitors. However, the issue of energy security became more complex and deals not only with commercial aspects of energy supply and demand balances. Instead, many aspects need to be considered establishing a more resilient energy security system. In that respect, the following part will depict blow-by-blow the available tools and instruments of the current European energy security framework.

2. Available Tools of the European Energy Security Framework

As already mentioned above, EU-institutions are obliged to implement the energy policy objectives according to their mandate, which is set out more specifically in the Treaties. In that

respect, policy documents and directives can be understood as a tool for change regarding the transition of the current energy security system towards greater resilience. The vision of creating a unified, interconnected, secure and sustainable energy security system has been first set up by the European Energy Security Strategy in 2014 (European Commission Press Release: The Energy Union: From Vision to Reality, 2019). The executive strategy enacted by the Commission and the Council in 28 May 2014 still represents the canon of the agenda for a more resilient energy system. The energy security strategy has been created in the aftermath of the Ukraine crisis in 2014 and responds to the threat of possible energy supply disruptions resulting from political disputes in immediate vicinity (LSE, 2019). Since this policy document still can be understood as an embossing paper, which builds the ground for the development of the current European energy security system, it will be analyzed more closely. Other influential directives and regulation, which followed up on the agenda of European Energy Security Strategy, will be discussed in the realm of the strategic goals, proposed by the eight pillars of the European Energy Security Strategy. This procedure allows the identification of follow up measures the Union has been taken based on this policy document.

The strategy presents eight pillars, which can be categorized based on their timely purpose (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 2). Thus, the EU perceives certain measures especially urgent to realize a more resilient energy security system. The short-term measures include first extended capacity building, establishing an extensive infrastructure, as well as increasing energy relations with neighboring countries (short-term measures). The short-term measures are of preventative nature and meant to help the Union to maintain its economic, social and political standards. However, other priorities, such as moderating the energy demand, the development of a better integrated single market, the goal of energy self-reliance, the development of new energy technology, the reduction of dependency through diversification, the energy transition to low carbon economy and speaking externally with a unified voice, are perceive as long-term projects (mid to long-term measures) (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 20). Generally, the measures are supposed to increase the overall flexibility of the system and to reduce the relative supply dependence. Consequently, the eight pillars mirror the priorities and strategic aspects of the Union perceives most important in order to create greater resilience against possible energy threats.

a) Capacity Building

Generally, the Union strives to cope with possible energy shocks in the short run. Therefore, the focus of the energy security strategy lies in the adaptation to the fast-changing environment (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 4). Thus, the possibility of immediate response requires the EU to enhance its storage capacity. Additionally, the EU strives to enhance the development of bi-directional gas flow pipelines, enhancing the interconnection of the member states. Further, the EU-Energy Security Strategy stresses the launch of energy security stress tests (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 4).

The strategy also advises the Commission and the member states to cooperate more intensively with the Gas Cooperation Group (GCG), which plays an important role in managing the security of gas supply measures between the member states. The GCG has been installed in the breath of the Security of Gas Supply Regulation (994/2010). The group is composed of national authorities, such as the Agency for the Cooperation of Energy Regulators (ACER), The

European Network of Transmission System Operators for Gas (ENTSOG), the Energy Community and representatives of industry and consumer associations and coordinates gas supply disruption measures (European Commission). According to the Energy Security Strategy the GCG-network should be extended, due to its important function as a platform to exchange expertise and coordinate relevant information about supply issues among the member states (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014).

In that respect, the Directive 2009/119/EC has been enacted and contributes to short-term capacity building. Based on the directive, the member states are committed to maintain a minimum of crude oil reserves and petroleum products to withstand sudden shocks. Accordingly, a minimum requirement of 90 days consumption is identified as critical buffer in emergency situations (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 4). These preventative measures have intensively been issued by the Commission's Communication on short-term resilience of the European gas system in October 2014 in response to the supply disruption issues with Russia and the Ukraine and the annexation of Crimea. In that respect, the ability of the European member states to react to short-term disruptions has also been emphasized by the Preventive Action Plans and Emergency Plans (Regulation 994/2010). The emergency planning is further based on the cooperation between the EU and ENTSOG, which exerts an advisory function.

b) Protecting the Strategic Infrastructure and Establishing a Support System

However, the strategy also emphasizes the prevention and preparation to sudden disruptions, including the protection of strategic infrastructure and the collective support of the most vulnerable member states.
First, the EU wants to address the 'physical protection of critical infrastructure' (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 6). The protection focuses especially on energy transmission systems. The EU notably discusses here the interference of non-EU actors, such as state-lead companies, national banks and key suppliers (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 5). In that respect, ENTSOG has been established in order to facilitate the exchange and cooperation between national gas transmission system operators (TSOs) across Europe. According to the new Security of Gas Supply Regulation, ENTSOG is also deemed to perform EU-wide gas supply and infrastructure disruption simulation in order to alert for serious shortcomings (EUR-Lex: Regulation (Eu) 2017/1938 of the European Parliament and of the Council, 2017). However, creating a strategic infrastructure network is essential in order to guarantee cross border supply, but without a proper solidarity mechanism the internal energy security structure is deemed to fail.

Thus, secondly, the goal of creating more solidarity between the member states has been stressed by the European Energy Security Strategy and Art. 194 TFEU. Accordingly, the solidarity mechanism refers to a distribution mechanism of energy, which guarantees a minimum level of intra-EU deliveries of energy supply. The principle is essentially contributing to the stability of the internal energy system (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 6). In that respect, the coordination via the GCG-network is increasingly considered and advised also by the European Energy Security Strategy.

c) Moderating the Energy Demand

Furthermore, the EU strives to moderate the energy demand, which is perceived as the most efficient tool to reduce external energy dependence in the long-term. Considering the Energy Efficiency Directive (EFD) and Energy Performance for Buildings Directive (EPBD) significant energy should be saved. However, the savings depend on the priority sectors as well as the mobilization of capital. According to the European Energy Security Strategy, the industry and building sector possess great energy efficiency potential. This mechanism acknowledges further the inclusion of the private sector, which is still perceived as an important investor for the energy sector. However, low-carbon investments are also supported by the European Structural and Innovation Funds (ESI).

Nevertheless, the achievement of the 2020 energy efficiency target, which focusses on heating and insulation in the building and industry sector has been particularly emphasized by the EU-Energy Security Strategy (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 7).

Furthermore, the moderating of energy demand is closely connected with the implementation of the European Energy Union strategy, which has been set out in the Commission's Communication on a Framework Strategy on a Resilient Energy Union in February 2015. The Communication on the Energy Union emphasizes the 'energy efficiency first' principle (EUR-Lex: Regulation (Eu) 2017/1938 of the European Parliament and of the Council, 2017). The Communication recognizes that climate and environmental policy can never be entangled from energy security matters. In that respect, the temporary policy agenda is also influenced by the 2030 policy framework for climate change and energy framework, adopted by the European Council on 24 October 2014. The policy strives to get rid of at least 40 percent in greenhouse gas emissions, increase the share of renewable energies in energy consumption, improve energy efficiency and develop greater electricity connection (Gouardères, 2018). Another tool includes the 'Clean Energy Package For All Europeans' (COM(2016)860), which aims to keep the EU competitive when the clean energy transition affects the global energy markets. Generally, this package is encompassed by eight legislative proposals that cover 'governance, electricity market design (the Electricity Directive, Electricity Regulation, and Risk-Preparedness Regulation), energy efficiency, energy performance in buildings, renewable energy and rules for the regulator ACER (Gouardères, 2018).

d) Integrated Energy Market

The fourth pillar encourages the development of a fully integrated internal energy market in the long-run (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 8). In that respect, national policy decisions regarding bilateral energy agreements, the investment in infrastructure projects, such as the Nord Stream I and II projects greatly affect the internal cohesion of the market. Furthermore, there is still a high market segmentation regarding the natural gas sector (Johnson & Derrick, 2012, p. 488). Therefore, this pillar also issues the risks of unilateral energy security measures jeopardizing the proper function of the internal energy market (EUR-Lex: Regulation (Eu) 2017/1938 of the European Parliament and of the Council, 2017, p. 2). Thus, strategic decisions need to be coherent and exerted at the EU level, not at the national level. Accordingly, the Union aims to stick to a regional approach for the integration of the European energy market. In that respect, integration projects, such as the North West (Pentalateral-Forum) should be further enhanced. Moreover, the ENTSOG-network is meant to complete the internal market for gas and stimulate cross-border trade (Gouardères, 2018).

The Energy Security Strategy nevertheless recognizes a lack of well-integrated markets in the Baltics. A common energy market may not only need a shared regulatory framework but also an energy transport infrastructure. In that respect, the regulation on the guidelines for the trans-European energy network and the Connecting European Facility (CEF) should be extended (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 9). Since the European oil market is increasingly dependent on Russian crude oil for the refinery industry and transport sector, the Energy Security Strategy asks the member states to reduce their oil dependencies to Russia especially in the transport sector (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 10). Thus, alternative measures, such as the reduction of greenhouse gas emission and consumption of transport fuels will be supported. With respect to the fourth pillar, the EU aims to strengthen the regional cooperation, complete the transportation of internal energy market legislation and the development of alternative fuels infrastructure (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 11). The Third Energy Package, the Regulation on Guidelines for Trans-European Energy Infrastructure (Regulation (EU) No 347/2013), the Regulation on Wholesale Energy Market Integrity and Transparency (Regulation (EU) No 1227/2011), the Electricity Directive (COM(2016) 0864), the Electricity Regulation (COM(2016) 0861) and the Risk-Preparedness Regulation (COM(2016) 0862) are some of the main legislative instruments meant to contribute to the better functioning of the internal energy market (Gouardères, 2018).

e) Increasing European Energy Production

The fifth pillar encourages a more active role of the EU when addressing the discussion on the production of energy by the member states themselves (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 12). The pillar focuses on measures which can be achieved in the medium or long-term and include the investment in renewable energy, nuclear energy as well as sustainable energy production.

Accordingly, renewable electricity and heating can already reduce natural gas consumption in several sectors. These measures should profit from the national and ESI- Funds under the coordination of the EIB and international financial institutions support (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 12). The exploitation of conventional resources in European production areas, such as the North Sea, Mediterranean Sea and Black Sea will be developed in compliance with the environmental legislation (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 13). The security strategy admits that a more detailed revision of EU unconventional reserves (economically recoverable resources) need to be done. In that respect, the development of the European Energy Union plays a crucial role and cannot be disregarded when enhancing energy efficiency and self-reliance to reduce external energy dependency. However, increasing European energy production is strongly related to the development of new energy technology encouraging the transformation of the Union towards a renewable energy Union.

f) Development of Energy Technology

The sixth pillar emphasizes the development of new energy technologies (Communication of the European Commission to the Council and the European Parliament: The European Energy

Security Strategy, 2014, p. 14). Without the investment in energy technologies, energy dependency cannot be reduced in the medium and the long-term. New technologies are needed to reduce the primary energy demand and can offer efficient and cost-effective solutions (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 15). Therefore, the EU and its member states are deemed to invest in research and innovation allowing for the diversification of energy resources.

Therefore, the Commission will use the Horizon 2020 Framework Program for research and innovation (2014-2020) and push further the integrated Roadmap of the Strategic Technology Plan to be consistent with the Energy Security Policy. The European Strategic Energy Technology Plan (SET-Plan), which has been adopted by the Commission on 22 November in 2007 strives to drive the market introduction and integrate low-carbon and efficient energy technologies (Gouardères, 2018). However, the development of new energy sources generating technology can only be achieved in the long run. Nevertheless, this pillar is especially crucial regarding the shift of demand and supply of the global energy market. In that respect, the Union needs to remain an attractive out-led market for energy products. Encouraging a green energy transition can result in additional attractiveness of the market but might also lead to less competitiveness.

g) Diversification

The seventh pillar stresses the diversification approach regarding external suppliers and energy partnerships while maintaining significant volumes from reliable and secure external sources. The diversification of sources, suppliers and structure is perceived as a long-term project. In that respect, the diversification of gas suppliers through Liquified natural gas (LNG) agreements is encouraged by medium to long term measures. LNG is a form of methane that has been converted to liquid form for ease of storage or transport. 'As a liquid, LNG takes up around 600 times less volume than gas at standard atmospheric pressure' (European Commission: Liquefied Natural Gas). Thus, this transformation enables the transport of natural gas over long distances without the actual use of pipeline infrastructure (European Commission: Liquefied Natural Gas). In that respect, the strategy regards the LNG suppliers from Northern America, Australia, Qatar as a promising source. Besides the goal of strengthening the relationship with external suppliers, the EU will more open to new sources (southern Corridor gas delivery form Azerbaijan, identified projects of common interest). Thus, especially suppliers form the Caspian region are attached (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 16).

h) A Unified External Energy Position

The eighth pillar strives to improve the cooperation of national energy policies and to speak with a unified voice when it comes to an external energy policy decision (Communication of the European Commission to the Council and the European Parliament: The European Energy Security Strategy, 2014, p. 17). In that respect, the Union faces two issues. First, decisions on energy mix are a national prerogative. Secondly, the negotiation of energy related agreements with third states is a matter to the member states and their bilateral relation with energy partners. Due to the shared competences in the field of energy policy and the single competence of the member states regarding external energy security relations.

V. Energy Dependence and External Actors

The following part deals with the crude oil and natural gas dependence of the Union towards specific external suppliers. Statistical data which considers the overall energy trade dependency rate of the EU to external energy actors are used to reveal the natural import-export relationship regarding the sources of crude oil and natural gas. However, the answer to the second sub-question not only provides information about the actors the EU is naturally dependent on but also helps to understand the shift of power of energy centers and the Union's role in the global energy governance system. Therefore, the theories of IR and geopolitics will be used to analyze the external dimension of the Union's energy security relations to answer the following sub-question: 'Which external factors and actors influence the energy dependence of the European Union regarding the import of natural gas and crude oil?'. In that respect, a special focus is laid down on the EU-Russian energy trade relationship.

1. The Dependency Rate

In order to identify the most important energy suppliers, the instrument of the dependency rate helps to illustrate the degree to which the European economy is relying on imports from certain producer states in order to meet its production and consumption needs. The dependency rate is measured by the share of net imports in gross inland energy consumption.

As recent statistics show, the net imports are far higher than the overall European inland energy consumption. In 2016 more than 53,6 percent of the EU-energy gross consumption derived from imported sources (Eurostat: Energy Production and Imports, 2018, p. 1). Consequently, the primary energy production has been 14,7 percent lower in 2016 than in the decade before (Eurostat: Energy Production and Imports, 2018, p. 1). Thus, if the natural gas and crude oil dependency concentrates on a few suppliers, then the security of primary energy supplies is threatened. Furthermore, if the consumption exceeds primary energy production, which results in energy resource backlashes, the lack needs to be balanced through secondary, (derived) energy products (Eurostat: Energy Production and Imports, 2018, p. 8). In that respect, the extra-EU trade shows that crude oil imports are far the largest imported energy products right before natural gas imports, which accumulate to 20,1 percent (Eurostat: EU Imports of Energy Products - Recent Developments, 2019). This development might root in the greater internationalization of the oil market as of the natural gas market.

However, in order to fully grasp the Union's external energy relations and security problems, the trading partners of the EU need to be identified first. Therefore, the following part distinguishes between the EU's respective crude oil and natural gas dependence.

2. Crude Oil and Natural Gas Dependence towards non-European Actors

The external actors the EU is most dependent on changed over the recent years although Russia and Norway still can be identified as the most important crude oil and natural gas suppliers to the EU (Eurostat: Energy Production and Imports, 2018, p. 5). However, the sequence of the major four energy suppliers to the EU changed slightly. After an examination of previous trends in EU energy dependency, the following section compares the development of energy dependency rate of the EU towards external suppliers from 2017 to 2018.

a) Crude Oil Dependence

Before 2016 the shares of crude oil supply from Iraq, Azerbaijan and Nigeria increased rapidly. However, the majority of the crude oil supply to the EU derives from Russia, Norway and Iraq, which aggregated together 56 percent of EU's total energy imports in 2016 (Eurostat: Energy Production and Imports, 2018, p. 6). The overall dependency rate in 2016 were about 53,6 percent. Moreover, in 2017 Russia provided the EU with a share of 29,9 percent of crude oil, followed by Norway with 13 percent and Kazakhstan with 7,9 percent energy supply of the overall consumption (Eurostat: EU Imports of Energy Products- Recent Developments, 2018, p. 4). The fourth major crude oil supplier is Iraq with 6,8 percent, which is directly followed by Nigeria with 6,5 percent import strength. Besides, 5,7 percent of the crude oil consumption derived from Saudi Arabia in 2017. Compared to 2018, the EU imported less but still 28 percent of the total crude oil share from Russia and 11 percent from Norway. Instead, the crude oil import deriving from Kazakhstan rose up to 8,3 percent and concerning Nigeria to 7,7 percent. Additional 6,7 percent of the crude oil amount stem from the Libyan Arab Jamahiriya. Thus, the EU imported least of all from Iraq with 6,2 percent last year. The overall share of import of the top six suppliers, however, dropped from 69,2 percent in 2017 to 67,9 percent in 2018 (Eurostat: EU Imports of Energy Products- Recent Developments, 2018, p. 4).

b) Natural Gas Dependency

Comparing the years 2017 and 2018, the natural gas supply from Qatar to the EU, the share of natural gas decreased from 5,2 percent to 4,9 percent. Algeria, EU's third largest natural gas supplier, exported in 2017 11,9 percent and 2018 just 10,7 percent of the total EU-energy consumptions. However, the share of natural gas deriving from Norway increased in 2017 from 37,7 percent up to 38, 8 percent in 2018. Nevertheless, Russia remains one of the largest natural gas suppliers to the EU with a share of 38,5 percent in 2017 and 40,6 percent in 2018 (Eurostat: EU Imports of Energy Products- Recent Developments, 2018, p. 4).

Concluding on the natural gas and crude oil dependency of the EU, major suppliers to the EU concerning natural gas are Russia, Norway, Algeria and Qatar. However, regarding the crude oil supply, the EU is mostly dependent on Russia, Norway, Kazakhstan, Nigeria, the Arabian region and Iraq (Eurostat: EU Imports of Energy Products- Recent Developments, 2018, p. 4). However, the Eurostat figures also show, that the total value of extra-EU for natural gas values fell in the period between 2012 and 2018. The trend observed for natural gas is similarly mirrored by the petroleum oils values (Eurostat: EU Imports of Energy Products - Recent Developments, 2019, p. 5). However, one can observe that the energy dependence rate for natural gas grew faster by 11.1 percentage points compared to the crude oil dependencies in the period between 2006 and 2016 (Eurostat: Energy Production and Imports, 2018, p. 7). Consequently, there has been a gradual decline in the total crude oil and petroleum oil import by the EU in 2018 compared to 2017 (Energy Post: Europe increasingly Dependent on Oil Imports, above all from Russia, 2016). Although the Union's external energy policy relies to great extent on import-export ties, the bilateral and multilateral relations with the respective supplier states need to be analyzed in the context of the geopolitical and IR-perspectives.

3. EU-External Energy Relations: Geopolitical and IR-Perspectives

The Communication 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy' of 25 February 2015 and the European Council Conclusions of 19/20 March 2015 stresses the importance of the external dimension of the energy security framework. The 'Energy Package' acknowledges that external and internal energy policy needs

to be 'mutually reinforcing' (Council Conclusions on Energy Diplomacy, 2015, p. 2). This view is supported by a coherent EU foreign and energy policy action, which considers geopolitical and international relations factors. In that respect, the following part will mainly focus on the Union's relation with Russia, which has been already identified as the EU's major natural gas and crude oil supplier.

a) The EU and its Geopolitical Relations

Generally, this paper first and foremost perceives the distribution of centers of supply and demands and especially the connectivity of international actors to energy networks as the most relevant geopolitical factors (Bradshaw, 2009, p. 1920). The Council already identified several spheres as energy strongholds with which the Union strives to engage in economic and strategic relations in order to grant access to important energy networks. Due to the lack of natural resources on European territory, the EU relies on the connectedness to centers of supply. In that sense, geopolitics is less understood as the 'projection of military prowess' but more likely as the secured access and control over energy resources and infrastructure (Johnson & Derrick, 2012, p. 495). Thus, the connection towards infrastructure networks is a matter to geopolitics and mirrored by the attempt to establish supply routes to key energy production centers.

As already identified, the major suppliers to the EU concerning natural gas are Russia, Norway, Algeria and Qatar. However, with regard to the crude oil supply, the EU is mostly dependent on Russia, Norway, Kazakhstan, Nigeria, Arabian region and Iraq (Eurostat: EU Imports of Energy Products- Recent Developments, 2018, p. 4). Consequently, the Council further strives to re-establish the Union's energy partnership with Russia. As many scholars stress, the competition over the remaining resources through the establishment of pipeline routes intensified the politicization of the commodity of energy and the power struggle in the international system (Siddi, 2018, p. 1552). Russia owns Medvezh'ye, Urengoy and Yamburg, three super-giant gas fields for natural gas production. Additionally, Russian owns a huge infrastructure network, including pipelines passing the territory of Belarus, Moldova and the Ukraine and transporting about 80 percent of Russian gas exports to the EU (Johnson & Derrick, 2012). Accordingly, beyond the political aspects of energy supply, the 'relational and relative space dictates who profits from infrastructure projects' (Johnson & Derrick, 2012, p. 492). More precisely, the Union might not have a great choice in negotiating with Russia with respect to energy security, no matter what political discrepancies there might be.

However, the Union also strives to get access to other major energy networks in order to diversify its supply and reduce its dependence on Russia. Considering the external relations with Norway which is already a great trading partner to the EU as well as a member to the European Economic Area (EEA), the Union strives to fully integrate Norway in the single market (Council Conclusions on Energy Diplomacy, 2015, p. 4). The Norwegian and European relations are market by the liberal thought and a long history of trustful trade partnership.

Although Algeria still can be regarded as a major natural gas supplier to the EU, its increasing energy demand is putting downward pressure on gas volumes at the expense of its total energy production and foreign energy exports. Consequently, this development is threatening the internal economic stability of the country and might negatively impinge the Union's security and its Southern neighbourhood. Therefore, the Union intensively strives to develop energy cooperation with Algeria towards a green energy transition (Grigorjeva, 2016). However, the Union needs to be aware of the increasing instability of the region and its export impacts to the security of energy supply.

The EU's cooperation with Kazakhstan and Nigeria regarding the crude oil supply recently intensified further. In that respect, the Union and Kazakhstan agreed on the new Enhanced Partnership and Cooperation Agreement (EPCA) 2015, which replaced the Partnership and Cooperation Agreement from 1999 (EEAS: Kazakhastan and the EU, 2017). Nigeria extended its export of crude oil to the EU as an important trading partner to the Economic Community of Western African States (ECOWAS). Respectively, the Economic Partnership Agreement (EPA) intensified the economic and energy related cooperation between the EU and West Africa (EEAS: Nigeria and the EU, 2016).

Lastly, the European trade cooperation with Iran increased in the last decade. However, continuation is dependent on the level of stability in the region. This relative uncertainty poses a great threat to the European energy security because of the domestic political conflicts and lack of foreign investment in the Iranian energy economy. Thus, Iran can therefore be regarded as a declining energy partner to the Union.

However, also new demanding energy markets, such as China and India and major centers of energy production like the Middle East and Africa directly influence the geopolitical balance (Bradshaw, 2009, p. 1921). In that respect, the Union struggles with the economic growth of Asia which is about to gain weight in the energy dependent markets at the expense of the EU. However, exports to China would not compensate for the potential loss of Europe as outlet-market in the short to medium-term, since the construction of new pipelines connecting Asia with supply centers requires a great amount of time and resources (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 380).

The Council also strives to establish partnerships which grant access to important energy transportation routes. In that respect, the Commission initiated the project on a Southern Corridor for a natural gas supply route which connects the Caspian and Middle Eastern Region with Europe. The rout is meant to reduce the relatively high dependence on Russia. Additionally, it includes the Southern Caucasus Pipeline, connecting the Caspian See in the region of Azerbaijan to Turkey. The Trans-Adriatic Pipeline is further transporting natural gas from Turkey to Greece through Albania via the Adriatic See to Europe. Accordingly, the Council believes in the strategic potential of the Eastern-Mediterranean region and the Middle East, as well as Africa and Australia regarding the context of future external energy relations (Council Conclusions on Energy Diplomacy, 2015, p. 3). Thus, other partners the Council strives to intensify its cooperation are the United States, Norway, Canada, China, India and Brazil (Council Conclusions on Energy Diplomacy, 2015, p. 4). Accordingly, the Union follows a strategy of diversification in order to escape the issues of 'disruptive politics', understood as the 'ability of individual actors to control the movement of energy' through space (Johnson & Derrick, 2012, p. 494).

Considering the external action of the Union in the energy sector, the EU can be generally characterized under the markets and institutional storyline. The organization is orientated towards market liberalization and strives for the continuation and intensification of the international cooperation in the energy sector. Instead of encouraging bilateral agreements of their member states with third countries, the Union as supranational organization strives to establish a coherent internal and external energy security framework. Thus, the relative power of the Union is mainly of regulative nature. This feature can be observed regarding the renewable energy transition of the Union and the influence of the EU as a standard setter in the international energy market. Being an outlet market seems to be a disadvantage at first but can also be beneficial as supplier states wish to get loose of their energy products and need to

comply with certain standards in order to access the European market and gain the respective revenues.

However, since the Union fears the loss of connectivity to major energy networks, it's external action are increasingly featured by geopolitical realism. Thus, the EU's external action became much more rationalized. This phenomenon can be observed regarding the extensive pipeline infrastructure that has been built by the EU and its partners. The Union in companion with the US was exerting economic influence on the post-Soviet countries, such as Azerbaijan and Georgia in order to secure Western businesses direct access to the Caspian See. Thus, the Baku-Tbilisi-Ceyhan and Nabucco pipeline can be regarded as geopolitical (realist) external action. (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 376). Nevertheless, the Union is mainly orientated towards a market-based approach emphasizing economic cooperation.

Contrary to the Union, Russia is often depicted as the opposite gamer in the context of energy security. Thus, Russia is mainly characterized by the regional empire storyline, which encourages power maximation in the energy sector through the construction of extensive energy networks and the influence of state companies like Gazprom. Regarding the energy sector Russia reaches out for the hegemony or monopoly in energy supply which already derives from its geopolitical advantage of large resources and extensive infrastructure securing the exportation of energy.

Nevertheless, the mapped distribution of geopolitical factors cannot entirely explain the picture of the EU's external energy relations with major partners. Thus, the IR-perspectives are needed to be added into this context in order to explain the behavior of the Union and its partners in the field of external energy security as a matter to foreign affairs policy. Therefore, the following section will examine the external relations between the Union and Russia as its major external energy supplier for both crude oil and natural gas.

b) The EU's External Energy and International Relations Perspective

The main IR-theories of realism, liberalism and constructivism have already been introduced before (Jackson & Sørensen, 2016). These theories have significantly influenced the theory and practice of global politics. Especially realism has been a dominating IR-theory for a long time. Accordingly, this paper examines realist theory as geopolitical realism, defining energy security as a strategical measure during competition for political supremacy (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 369). In that respect, realists perceive the international order as defined by self-interested states, aiming to survive in a world of anarchy. Thus, their 'sovereignty signifies the existence of an independent political community' (Baylis, Smith, & Owens, 2017, p. 113). With respect to external energy policy, realists understand energy geopolitics as a tool in competition of the supremacy of the energy sector.

Instead, liberalism recognizes the importance of the international institutions and drives a market-orientated approach which emphasizes economic cooperation. Thus, the collective security and the possibility of a world government standing above the nation states is supposed to deliver peace to the world. In this regard, the Union follows a liberal market-orientated approach, which should contribute to a 'conflict free relationship' and the establishment of trust between states through coordination and information exchange (Baylis, Smith, & Owens, 2017, p. 123). Additionally, liberalism stresses 'fundamental liberal principles into regulatory rules and institutions of the international society' (Baylis, Smith, & Owens, 2017, p. 123). The construct of the Union builds entirely on classical liberal values also determining its external

action and its position as a global actor. Due to its supranational identity and regulatory power in global politics, the EU aims to spread liberal values, such as the rule of law, human right and democracy globally.

Nevertheless, one needs to keep in mind that these theories are blurry in practice. Accordingly, state's behavior can be realistic at one point and liberal or constructivist at another time. This rule also applies to the EU-Russian energy relationship.

The energy relationship between the Union and Russia has been marked by ups and downs but highlighted by interdependency (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 364). The manifestation of energy trade as an essential economic component of the relationship between Russia and the EU started already during the Cold War, as the European Community imported large amounts of natural gas and crude oil from the Soviet Union (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 365). During the Cold War period, the relationship between the eastern and western states has been characterized by the realist logic of two competing superpowers.

In that respect, the increased energy-related cooperation between eastern and western states was exceptional. In its early beginnings, energy cooperation between the EU and Russia challenged the political confrontational logic of the Cold War (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 373). However, stronger cooperation has been enabled by new diplomatic and economic ties and the great contribution of Willy Brandt's reconciliation policy towards the east (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 372). After the turn of the century, the energy trade has been perceived as strategic factor, influenced by a market-orientated approach of the Union towards the Russian Federation (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 366).

However, divergences between the US and Russian foreign policy led to greater competition over strategic influence in post-Soviet spheres, due to its large natural gas and crude oil reserves. Thus, between 2006 and 2009 this competition translated into the energy relations, expressed by the Russian conflicts with the Ukraine and Georgia concerning gas contracts. The conflict with Georgia 2008 even escalated into a military conflict. The claim that Russia attacked a country of strategic and economic importance to the EU's diversification plans has been raised. This debate led to the revitalization of the question whether Russia is using geopolitical realism to exert political pressure and constituting a security threat to the EU (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 367).

In the context of energy security, the realist approach assumes that energy resources are not endless and international energy politics is a zero-sum game among states which compete over the remaining resources. In that respect, theorists claimed that Russia is using its leverage to enforce political objectives (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 671). In turn, any energy dependence of the Union is perceived as a weakness or vulnerability (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 369).

Although the period at the beginning of the turn of the century has been questioning the applicability of the liberal paradigm regarding EU-Russian energy relations, despite the annexation of Crimea and supply disputes in 2014 economic trade cooperation continued (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 368).

In that respect, Siddi (2017) claims that there has been a transition from a realist to a liberal paradigm, which shifts the focus on cooperation and interdependence instead of conflict. Accordingly, Judge, Maltby & Sharples argue that the realist analysis fails to adequately grasp the interdependencies between the two actors, which leads to 'a narrow geopolitical reading of energy security' (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 368). Thus, despite the sharp conflicts in EU-Russia energy relations the cooperation continues to follow a 'commercial logic' (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 369).

This perspective categorizes Russia under the liberal paradigm as it seeks for cooperation in the energy economy with energy-dependent states. This assumption follows the prerequisite to agree on a shared sample of norms and as a result cooperate in the international sphere (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 372). With respect to energy cooperation, the relationship can correspond with a positive-sum game, providing everyone with a benefit. The cooperation between Russian-led state company of Gazprom and European energy business in 2005 for the construction of a Northern European Gas Pipeline (Nord Stream) provides a paragon (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 374). This example shows that 'energy-producing states and energy consuming states have mutual and compatible interests' (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 370).

Accordingly, Russia is increasingly reliant on the revenues that derive from the exported energy goods. Oil and natural gas sales account for 70 percent of Russia's total export revenues (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 480). Besides, Russia depends on the import of manufacturing goods (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 372). Therefore, the interruption of energy sales would risk retaliation in other business areas (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 370).

The independencies of import and export which tie the EU and Russia together, were further strengthened through the infrastructural bonds in form of pipelines that have been built already during the Cold War period (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 367). Additionally, trade flows between states include several commercial fields that tend to balance each other. Therefore one can generally conclude that 'commercial relations have a pacifying effect' and reduce the likelihood to enter interstate conflicts (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 371).

The third theory of the social constructivist approach, which emphasizes how the states' identities and experienced history shape energy policies, helps to grasp the full extent of energy relations between the EU and Russia. Since the EU-Russia energy relations are determined by 'mutual threat perceptions and identity-based narratives', there is little trust in the other sides (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 372). The diversification approach and wish to reduce the dependence on Russia practically reveals the lack of trust in the Union's most important energy partnership. This issue does not necessarily prohibit energy cooperation but makes it rather difficult to interpret the states' actions rightfully.

Therefore, the Union is interested in the securitization and stabilization of its immediate neighbourhood and wants to reduce its dependence on Russia. The fact, the Union and especially eastern-central Europe perceives Russia's willingness to use energy supply as a weapon, explains also the growing influence of geopolitical thinking in EU external energy policy. Thus, the crisis of Georgia and Ukraine had lasting impacts on the EU's perception of

Russia's external energy policy, including the enaction of the European Energy Security Strategy 2014 (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 378). Therefore, the Union strives to not only to diversify but also to extend its cooperation for example with Norway, with which the Union shares a long history of economic cooperation too. Other partners, such as Iraq and Azerbaijan became more influential as crude oil delivering states. In addition, natural gas imports from Qatar and Algeria became more important to tackle the Union's energy consumption. Theses energy dependencies are partly already mirrored by the Union's attempts to cooperate and negotiate with the rising energy metropoles. For example, a European-Iraqi Energy Centre has been established in order coordinate and facilitate business in the energy sector (Delegation of the European Union to Cuba: Establishment of the EU-Iraq Energy Centre, 2014). However, the political and economic instability of the Middle East perplexed the diversification plans as energy supply from this region remains relatively uncertain.

Besides the Union's attempt to diversify its energy suppliers, Russia remains one of the most important energy trade partners to the EU. Besides the ups and downs in the EU-Russia energy relations, the energy trade interdependence has allowed the EU and Russia to navigate through the crisis and get over the major disputes (Siddi, EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?, 2017, p. 379). Additionally, the created interdependence cannot be regarded as isolated incidents but depend on other aspects of the relationship and other sectors of cooperation increasing, making actual use of an 'energy weapon' unlikely.

VI. A Resilient European Energy Security System

To answer the final sub-question 'In which way can the European energy security policy framework already enhance the resilience of the European energy security system?', the following section will more closely analyze to what extent the energy security system can already be described as resilient. Therefore, Holling's model of adaptive cycles will be applied.

1. The Resilience of the European Energy Security Framework

The European energy security system can be analyzed regarding Holling's adaptive cycle of change since also the Union as an institution can be perceived as system. Accordingly, the Union processes input and creates output which in turn feeds back into the system (McNamera, 2006). Consequently, Holling's approach indirectly refers to the system theory (Environment and Ecology: What is Systems Theory?, 2019).

Concerning the different stages of the adpative cylce, a resilient system can be regarded as resilient if it 'successfully navigates through the stages of growth, equilibrium, collapse and reorientation (Fath, Dean, & Katzmair, 2015, p. 1). In that respect, the following part establishes a connection between the eight pillars and respective measures of the European Energy Security Strategy 2014 and the different stages of the cycle.

a) The Growth Phase

The *r*-phase correlates mainly with the European Energy Security Strategy's short-term measures which focus on general capacity building, the protection of the strategic infrastructure and the estbalishment of a solidary mechanism which disrtibutes energy across Europe (Fath, Dean, & Katzmair, 2015, p. 2).

In that respect, especially in the aftermath of the gas dispute between Georgia, the Ukraine and Russian, the Union focused on the accumulation of natural gas and crude oil storage capacity to resist serious supply disruptions. Respectively, stress tests can simulate and indicate whether there are enough resources available. The Communication from the Commission to the European Parliament and the Council on the Short-Term Resilience of the European Gas System reported about the energy supply stress test in 2014 and revealed that the Union is capable to resist short-term energy shocks. However, 'Finland, Estonia, the Former Yugoslav Republic of Macedonia (FYROM), Bosnia and Herzegovina, and Serbia would miss at least 60 per cent of the gas they need' (European Commission Pressrelease: Gas stress test: Cooperation is key to cope with supply interruption, 2014). Tthe communication critically emphasizes that even households would be left without energy. Besides, long term energy supply disruptions which exceed a 90 days consumption will negatively affect the system's stability (Communication of the European Commission on short-term Resilience (COM(2014) 654 final), 2014).

Therefore, the Security of Gas Supply Regulation (EU) 2017/1938 from 2017 introduced further measures to step up the resource availability concerning the EU's natural gas reserves. The inequal energy dependence across Europe further asked for capacity building initiatives within Europe and an appropriate distribution or solidarity mechanism. In that respect, today ENTSOG already facilitates the exchange of information about energy supply disruption issues and enables cooperation between national gas transmission system operators (TSOs). In that respect, also the GCG-network offers a platform for cross-border cooperation, which monitors 'the adequacy and appropriateness of measures to be taken under the Regulation (EU) No 994/2010 and exchange all information relevant for security of gas supply at national, regional and Union levels' (Register of Commission Expert Groups and Other Similar Entities, 2018). In that respect, the growth phase also corresponds to the protection of the strategic infrastructure.

Regarding the EU's crude oil reserves, the Council's Directive 2009/119/EC (Oil Directive) committed the member states to storage a minimum of crude oil reserves and petroleum products of 90 days consumption in order to resist sudden shocks. Evaluating, the Council's Directive 2009/119/EC along with its effectiveness, efficiency, relevance and coherence, the Commission recognized the importance of crude oil as 'a vital source of energy in the short-term' (Commission Staff Working Document: Mid-term evaluation of Council Directive 2009/119/EC, 2017, p. 2). According to the Commission Staff working Document from 24 November 2017, the goals of the oil directive have been successfully implemented and the means were proportionate to the benefits. Consequently, the Union is not directly threatened by a poverty trap as long as the Union does not face long supply disruption. This implies a lack of awareness about the long-term disruption effects on the EU which are not sufficiently assessed at the EU level and consequently negatively affect the growth phase.

b) The Equilibrium Phase

During the equilibrium stage, the rigidity trap is threatening the adaptation of the system towards the changing environment since the phase is market by stabilization and little flexibility. Thus, the rigidity trap corresponds mainly to the long to mid-term measures of the European Energy Security Strategy 2014. More precisely, there is a risk to forgo the chance of adapting towards a low-carbon economy, such as the implementation of mutually dependent measures of moderating the energy demand, enhancing the own energy production and developing new energy technologies.

Accordingly, today enhancing the Union's energy production correlates with the implementation of the Energy Union. Since the EU does not possess great natural gas and crude oil reserves, it strives to enhance the diversification of energy sources. Therefore, the Union recently emphasized the production of green energy within the single market. However, increasing the European energy production is strongly related to the development of new energy technology, which drives the transformation of the Union towards a climate-friendly energy market. Accordingly, the Union revised the renewables energy directive (2018/2001) in December 2018, which implied a stricter renewable energy target for 2030 of at least 32 percent. Unfortunately, green energy generation provides not yet an appropriate substitute for natural gas and crude oil import. Until the total transformation towards a low-carbon economy an energy mix-approach is applied by the Union. However, this incident correlates with the member states' demand to maintain their energy strategy for specific sources. Thus, also the long-term measure of an integrated energy market is difficult to realize, when there is no common framework and member states actions are decoupled from the center.

Thus, the rigidity trap does not directly concern the lack of creative solutions to energy supply issues. Instead, the rigidity trap is created through the organizational structure and difficulty to make quick and robust decisions including all the 28-member states. Thus, the lack of organizational autonomy prevents the organization to innovate. Accordingly, the efficient implementation of a low-carbon economy is either slow in progress or not at all happening. As already stated above, the negotiation of bilateral trade agreements with third states jeopardizes the real management of resilience from the supranational level. In that respect, mainly the lack of conferred competences in the field of external energy security policy causes the threat of entering a rigidity trap.

c) The Deconstruction Phase

The deconstruction stage deals with a 'chaotic collapse' of the system and the release of capital. Similarly to the first two phases, this phase requires great amounts of resources. Thus, organizational leaders emphasize the capacity to survive and need to maintain vital functions of the system throughout crisis (Fath, Dean, & Katzmair, 2015, p. 6). During this phase, the organization is confronted with the challenge to improvise. In that respect, crisis and emergency plans, which provide automated responses to crisis might avert collapse in the first place (Fath, Dean, & Katzmair, 2015, p. 1). The EU already performs stress tests to examine the level of resistance against external shocks. Accordingly, an institutional setting composed of ENTSOG, the GCG-network and the IEA strictly mointor supply issues and adjusts emergency planning. However, as for example the mid-term evaluation on the 'Oil Directive' revealed, there is little coherence between the organizational measures, since some member states do not even participate in this cooperation (Commission Staff Working Document: Mid-term evaluation of Council Directive 2009/119/EC, 2017). Consequently, the Union can be perveived as lethargic to crisis response, due to the divergences between the member states which cannot agree on a single determinant.

Thus, the lack of clear competence distribution given in the treaties, the system is often paralyzed when immediate reaction is required. This issue appears to be problematic due to the two-dimensional character of the energy security, deriving from its economic and external foreign security policy features and diverse procedures deriving from it. Consequently, the Union is predestinated to fall into a dissolution trap. Thus, the greatest danger to the energy security system is the lack of adequate crisis response mechanisms and respectively a coherent institutional framework as well as a lack of centralized and clear distributed competences to implement efficient structures.

d) The Reorganization Phase

The reorganization phase emphasizes transformation and innovation, acknowledging that an adaptive system can never return to the precise structural state as before. Consequently, resilience refers to the ability to transit from the *α*-phase to the *r*-phase. The inability to reorientate is called 'vagabond trap' and threatens the current European energy security system (Fath, Dean, & Katzmair, 2015, p. 4). The measures of the European Energy Security Srategy 2014 are mainly preventative. Due to the complex and bureaucractic nature of the structure of the organization, the Union is simply hampered to introduce new solutions to energy supply disruption issues. Accordingly, the vagabond trap also stresses the EU's organizational autonomy, which directly determines the resilience of the system. For example, although the Energy Package is a milestone of cooperation between the European member states, they still scatter against these relatively low climate targets. In that respect, the transition form the *α*-phase to the *r*-phase also touches upon the idea of systems identity (Fath, Dean, & Katzmair, 2015, p. 4). The Union has set out clear objectives. However, in practice the member states do not confirm with these goals, as they fear interference in national energy interests. Additionally, it is rather difficult to agree when there are more parties involved. In that respect, the 'Panarchy' of the adaptive cycle also implies that as systems mature, the degree of resilience decreases. This incident refers to the fact that the Union is composed of 28 member states. Consequently, as the Union matured it became less flexible in the decision-making process and the member states self-organization of energy security made the management of a resilient energy security system nearly impossible.

2. How to increase the Resilience of the European Energy Security System

As Holling's adaptive cycle at the example of the EU implied, each phase of the adaptive cycle possesses a certain capacity to build and trap to overcome (Fath, Dean, & Katzmair, 2015, p. 4). As already analyzed above, the Union is literally in danger of slipping into a poverty-, rigidity-, dissolution-, or a vagabond trap. Therefore, the following part will suggest some countermeasures concerning the different phases of the cycle.

a) Avoidance of the Poverty Trap in the Growth Phase

As already stated above, the Union is not directly threatened by a poverty trap as long as it is not confronted with continuous supply disruptions. However, since there is a lack of awareness about the impact of long-term disruption effects on the European economy and society, the long term resources availability for both crude oil and natural gas to equal value need to be assessed more strictly on an annual basis. This measure aims to committ the member states to disclose their resource capacities through an bottom up approach for strategic planning purposes.

Although the Union is on the right way, it should further stress the diversification of energy supply, sources and infrastructure. In that respect, the Union should foster cooperation with its current major energy suppliers, such as Russia, Norway, Algeria and Qatar regarding its natural gas imports. Further, concerning the crude oil supply, the Union should continue to intensify energy trade cooperation with Russia, Kazakhstan, Nigeria, Iran, Saudi Arabia and Libyan Arab Jamahiriya. Regarding the EU-Russian energy trade relations, economic cooperation with Russia is still beneficial to the EU when stressing the liberal paradigm instead of an aggressive geopolitical external energy policy. Since an increased destabilization of the Middle East is expected, Iranian oil supply becomes less predictable. Concerning the EU's natural gas import, also Algeria became an uncertain source of energy supply, due to the struggles for domestic market stability. Consequently, as the diversification approach of the EU is weakened, the

Union should encourage negotiations of multinational energy trade agreements with natural gas producing states, such as the USA and Canada and for crude oil with West Afrika. Therefore, the EU should recollect its regulatory power in global politics. Regarding the diversification of energy sources and structure, the Union needs to regularly invest in domestic green energy production, including the consideration of an extension of the Horizon 2020 budget. Besides, the Union should push more ambitiously its climate targets to create an actual value of green energy to the economy. Further, the Union should apply a liberal market-based approach to create a 'basic safeguard for suppliers and consumers' which grants greater competition between energy providers (Jakubowski, Miland, & Wozniak, 2011). The lack of an adequate distribution mechanism and solidarity among the member states will be addressed in the following part, since this issue corresponds with the rigidity-, dissolution-, and vagabond trap.

b) Prevention of the Rigidity Trap and the Dissolution Trap

Escaping the rigidity trap and the dissolution trap requires the creation of a more autonomous and flexible organizational structure of the European energy security system as well as greater centralized decision-making power, which enhances innovativeness and flexibility of the system regarding the transformation towards a low-carbon economy (euilibrium phase) and concerning the creation of a robust crisis response mechanism (deconstruction phase). Thus, both phases are affected by the same weakness of a lack of adaptive capacity. Therefore, 'authorities beyond the traditional hierarchies play an essential role', preventing the obstruction of sub-systems resilience towards the resilience of the roof organization (Fath, Dean, & Katzmair, 2015, p. 6).

Establishing a decoupled advisory instrument in form of a European Energy Security Agency, allows a more effecive management of energy resilience. The ENTSO-Group and the GCG-network partly correspond to this tool. However, the competences of the network are up until now rather limited and do not create a supranational coordination mechanism (Fath, Dean, & Katzmair, 2015, p. 5). Thus, some tasks should rather be unified under one roof to avoid the fragmentation of measures. Further, a link between the advisory institution and the bodies of the Union that are involved in the legislative proceess needs to be drawn.

Regarding the creation of a European Energy Security Agency, flexibility and autonomy, especially concerning large size organizations, can be created through the divisionalization of the system in different entities commissioned with specific tasks. These entities should correspond to the monitoring, strategic planning and enforcement of energy security measures and should be organized according to the federal structure of the Union.

The monitoring department must observe the Union's environment, including the re-evaluation of the short and the long-term measures after system attacks. This practical implication acknowledges the fact that stresses and shocks can provide an important source of innovation. The monitoring unity should also conduct stress tests for crude oil and natural gas supply to an equal value. This mechanism also corresponds to the goal of committing the member states to disclose their resource capacities through an bottom up approach for strategic planning purposes (growth phase), which in turn enables the identification of external sources of threats.

Further, the strategic planning entity should be divided along the interdisciplinary nature of energy security. Thus, several sub-groups composed of experts from socio-economic, financial, climate political and legal background should cooperate along the interdisciplinary nature of energy security to provide possible strategic initiatives. The groups shall propose an annual report on the progress and possible measures to further improve the resilience of the energy

security system based on an organizational management approach. The proposals are directed towards the Commission, the EU-Parliament and the Council and should influence legislation.

The enforcement of energy security measures should be coordinated along the federal structure of the Union involving regional European Energy Security Agencies. Concerning the external energy security matters the EEAS' competences should be extended towards the negotiation of energy security agreements with third actors which requires arguably a Treaty amendment. This implication is deemed to prevent internal market fragmentation and create a common external energy security framework as well as a clear distribution of competences.

c) The Vagabond Trap in the Reorientation Phase

Since the Union is also in danger of falling into the vagabond trap, it is threatened by the inability to reorientate. Therefore, a more practical measure would be the creation of a Research and Development Energy Security Department that is incorporated in the European Energy Security Agency's structure in order to allow innovation. This entity should function like a Think Tank, which sets the agenda for the discussuion of energy security issues to the monitoring and strategic planning department.

Reorientation of the Union's current energy security system further requires the change of a mindset. Thus, it is increasingly important to proove the efficiency of certain measures and the benefits of supranational cooperation. This 'soft' implication is also important to create organizational unity. In that respect, disclosing the success that a cooperation promises ties the member states closer together.

VII. Conclusion

In order to answer the main research question: 'How can the European Union create a resilient energy security system regarding its crude oil and natural gas import dependency on external actors?' the research paper first analyzed the current European energy security system along with its objectives, the available competences and tools. The objectives and competences determine the scope of action regarding the creation of a resilient European energy security system. Notably, concerning the internal market, the Union focuses increasingly on the compatibility of energy security policies and climate policies as the transformation of the Union towards a low-carbon economy promises the reduction of the energy import dependence on third states. However, since the Union is an organization sui generis, its competences concerning the negotiation of energy trade agreements with third actors are restricted due to the lack of conferred competences to the supranational level. Further, the member states remain in power over the design of their energy mix which jeopardizes supranational coordination measures.

In that respect, the paper more closely discussed the European Energy Security Strategy from 2014, which corresponds to the tool that mainly shaped the current European energy security system. Short-term measures, such as energy capacity building, the protection of the strategic infrastructure or the creation of an integrated market have been discussed. Further, medium to long-term measures, such as the moderating of the energy demand and the development of new energy technologies have been analyzed. Other measures concerning external energy security management, such as the diversification of suppliers for crude oil and natural gas involving partnerships with third actors were also examined. Additionally, the goal of a unified voice about energy security issues has been discussed regarding the external appearance of the EU.

To what extent the current European energy security framework already creates greater resilience has been analyzed along with Holling's Adaptive Cycle of change which provides an actual approach about how to manage resilience in governmental organizations. Accordingly, the analysis adds up to the main research question. Thus, a connection between the different phases of the Adaptive Cycle and the European Energy Security Strategy measures has been established, revealing the strengths and weaknesses of the current system towards the respective phases. Accordingly, the Union's energy security system is threatened to enter a poverty-, rigidity-, dissolution-, and vagabond trap. Generally, the Union faces these traps because the strategy's measures are mainly preventative and correspond with the engineering perspective on resilience. Accordingly, the Union possesses great short-term resilience and is already able to resist short term energy supply disruptions. However, a poverty trap is created when the Union faces long-term supply disruptions. The main issue regarding the rigidity-, dissolution-, and vagabond trap, however, is the lack of flexible and autonomous structure of the organization, resulting from the lack of competences conferred to the Union. Thus, the Union's current energy security approach stresses the 'survival' and resistance rather than an actual approach to resilience.

Consequently, creating a resilient European energy security system asks for the following practical implications to successfully navigate through the different phases of Holling's Adaptive Cycle of Change.

1. Practical Implications for the Poverty Trap

- Since there is a lack of awareness about the impact of long-term disruption effects on the European economy and society, the long term resources availability for both crude oil and natural gas need to be assessed based on annual reports and to an equal value. This implication aims to commit the member states to disclose their resource capacities through an bottom-up approach for strategic planning purposes.

- The Union should further stress the diversification of energy supply to their current partners, including cooperations with Russia, Norway, Algeria and Qatar regarding its natural gas imports and Russia, Kazakhstan, Nigeria, Iran, Saudi Arabia and Libyan Arab Jamahiriya concerning crude oil imports. However, as the diversification approach of the EU to traditional suppliers is weakened, the Union should also encourage energy trade negotiations with natural gas producing states, such as the USA and Canada and for crude oil with West Afrika.

- Regarding the EU's energy relations with Russia, the Union should continue to apply a liberal market-based approach instead of a geopolitical realist paradigm. The analysis disclosed that the anxieties about the use of an 'energy weapon' are not well-founded, at least regarding the Union's relationship with Russia. The respective interdependency creates a balance of dependence and renders the 'energy weapon' unrealistic.

Until now the energy security system can be regarded as resistant towards supply shocks. However, the actual socio-ecological understanding of resilience emphasizes the transformation and adaptation of the system, acknowledging the possibility of change as the consequence of an internal process. Accordingly, the research paper stressed that the biggest threat to the resilience of the European energy security system is not the issue of supply disruptions but the Union's organizational characteristics, such as its size and composition as well as the degree of unity. The lack of transformative capacity prohibits the realization of the strategy's long-term measures, which demand fundamental changes to the Union's system.

This incident concerns especially the member states' own energy production, the development of new energy producing and saving technology as well as the Union`s external energy security policy. In that respect, there is great divergence, which energy supply partnerships the Union should further work on. These circumstances necessarily have a challenging impact on the successful navigation of Holling's Adaptive Cycle. Therefore, the following countermeasures should prevent the rigidity-, dissolution-, and vagabond trap and allow the EU to design a resilient energy security system:

2. Practical Implications for the Rigidity and Dissolution Trap

Escaping the rigidity trap and the dissolution trap requires the creation of a more autonomous and flexible organizational structure of the European energy security system as well as greater centralized decision-making power, which enhances innovativeness and flexibility of the system regarding the transformation towards a low-carbon economy (equilibrium phase) and concerning the creation of a robust crisis response mechanism (deconstruction phase). Thus, both are affected by the same weakness of a lack of adaptive capacity.

- Therefore, the Union should create an authority beyond its traditional hierarchies, preventing the obstruction of sub-systems' resilience towards the resilience of the roof organization (Fath, Dean, & Katzmair, 2015, p. 6). Thus, establishing a decoupled advisory instrument in the form of a European Energy Security Agency allows a more effective management of energy resilience.

- Thus, concerning the creation of a European Energy Security Agency, flexibility and autonomy especially concerning large size organizations are created through the divisionalization of the system's structure in different entities that are commissioned with specific tasks. These entities should correspond to a monitoring department, strategic planning department and enforcement department that are organized along with the federal structure of the Union.

- The monitoring department must observe the Union's environment including the re-evaluation of the short and the long-term measures. Accordingly, this implication stresses that disruptions can provide a useful source of organizational learning. Further, the monitoring unity should conduct stress tests for crude oil and natural gas supply to an equal value. The member states should be committed to disclose their resource capacities through a bottom-up approach for strategic planning purposes (growth phase), enabling the identification of sources of threats.

- Further, the strategic planning entity should be divided along with the interdisciplinary nature of energy security. Thus, several sub-groups composed of experts form socio-economic, financial, climate political and legal background should cooperate to provide possible strategic initiatives. The groups should propose an annual report on the progress and possible measures on how to further improve the resilience of the energy security system based on an organizational management approach. The proposals are directed towards the Commission, the EU-Parliament and the Council.

- The enforcement of energy security measures should be coordinated along with the federal structure of the Union involving regional European Energy Security Agencies that report back to higher levels. Concerning the external energy security matters, the EEAS' competences should be extended towards the negotiation of energy security agreements with third actors which requires arguably a Treaty amendment. This implication is deemed

to prevent internal market fragmentation and create a common external energy security framework as well as a clear distribution of competences.

3. Practical Implications for the Vagabond Trap

- In order to grant the reorganization of the EU, a Research and Development Energy Security Department that is incorporated in the European Energy Security Agency's structure should be created. This entity should function like a Think Tank, which sets the agenda for the discussion of energy security issues to the monitoring and strategic planning department.

- Reorientation of the Union's current energy security system further requires the change of a mindset. Thus, it is increasingly important to prove the efficiency of certain measures and the benefits of supranational cooperation. This 'soft' implication is also important to reach organizational unity and identification.

The practical implications presented above support the transformation of the European energy security system from a resistant and survival-orientated towards a resilient system, which follows a socio-ecological approach. In that respect, Holling's Adaptive Cycle provides an adequate tool to manage resilience, since the respective traps can be clearly identified, and countermeasures enacted. However, the four phases are not deterministic and should rather function as a guideline for the management of resilience. Practically speaking, it remains unclear if the organization runs past the cycle's phases exactly as predicted. Further, there is no quantative measurement of resilience, which allows to draw exact conclusions about the actual effectiveness of the system.

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