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Abstract

Energy security as a part of national security has been given a lot of attention in the literature. There are a lot of definitions of energy security, but all of them include the famous «triad»: security of supply, affordability and sustainability in regards to energy. These three aspects are also the ones that the EU energy security strategy has at its forefront. However, research has consistently shown that achieving these three goals at the same time is impossible due to different internal and external, economic and political factors. The past sixty years of the European energy policy has clearly proven the ambiguity of the EU energy security strategy. Recent developments in the field, however, have led to a renewed focus on the security of supply.

This paper will examine the changing nature of the strategy and evaluate its progress. The objectives of this research are to determine whether the development of the European gas market liberalization is to be beneficial for the security of supply. Thus, in order to solve the security dilemma, which arises from the interaction between energy security and energy price, I argue that defensive realism should be applied to the economic situation. The current study found that liberalization of the European gas market helps the market to become more independent from its gas suppliers, and to not be bound by the fixed-price long-term contracts. As a result, liberalization introduces market forces for its actors, and undermines the tendency of gas suppliers to market monopolization. Another important finding was that due to ambiguity of the EU energy security strategy, the process of gas market liberalization does not follow the planned schedule time-wise. Taken together, the results of this research support the idea that liberalization of the market has a positive impact on security of energy supply in the EU and these results suggest the reduction of bureaucracy and work with EU countries in order to «speak in one voice».

Zusammenfassung

Energiesicherheit als Teil der nationalen Sicherheit hat in der Literatur viel Aufmerksamkeit gefunden. Es gibt viele Definitionen von Energiesicherheit, aber alle beinhalten Versorgungssicherheit, bezahlbare und nachhaltige Energie. Diese drei Aspekte stehen auch im Mittelpunkt der EU-Energiesicherheitsstrategie. Die Forschung hat jedoch durchweg gezeigt, dass das Erreichen dieser drei Ziele gleichzeitig aufgrund unterschiedlicher interner und externer, wirtschaftlicher und politischer Faktoren unmöglich ist. Jüngste Entwicklungen auf diesem Gebiet haben jedoch zu einer erneuten Konzentration auf die Versorgungssicherheit geführt.

Dieses Papier wird die sich verändernde Natur der Strategie untersuchen und ihre Fortschritte bewerten. Ziel dieser Untersuchung ist es festzustellen, ob die Entwicklung der europäischen Gasmarktliberalisierung für die Versorgungssicherheit von Vorteil ist. Um das Sicherheitsdilemma zu lösen, das sich aus der Wechselwirkung zwischen Energiesicherheit und Energiepreis ergibt, argumentiere ich, dass der defensive Realismus auf die wirtschaftliche Situation angewendet werden soll. Die aktuelle Studie hat ergeben, dass die Liberalisierung des europäischen Gasmarktes dazu beiträgt, dass der Markt unabhängiger von seinen Gaslieferanten wird und nicht durch langfristige Festpreisverträge gebunden ist. Infolgedessen führt die Liberalisierung Marktkräfte für ihre Akteure ein und untergräbt die Tendenz der Gaslieferanten zur Monopolisierung des Marktes. Ein weiteres wichtiges Ergebnis war, dass der Prozess der Liberalisierung des Gasmarktes aufgrund der Mehrdeutigkeit der Energiesicherheitsstrategie der EU zeitlich nicht dem geplanten Zeitplan folgt. Zusammenfassend unterstützen die Ergebnisse dieser Untersuchung die Idee, dass sich die Liberalisierung des Marktes positiv auf die Energieversorgungssicherheit in der EU auswirkt. Diese Ergebnisse legen nahe, die Bürokratie abzubauen und mit den EU-Ländern zusammenzuarbeiten, um «in einer Stimme zu sprechen».

List of abbreviations

EU	The European Union
LNG	Liquefied natural gas
IEA	International Energy Agency
ACER	Agency for the Cooperation of Energy Regulations
TANAP	Trans-Anatolian gas pipeline
Nabucco	Nigeria-Niger-Algeria pipeline
TACC	Russian news agency; former Telegraph Agency of Soviet Union
BTU	British thermal units
ETS	Emissions trading system
RES	Renewable energy sources
EEA	European Environmental Agency
EC	Energy Community
TEP	Third energy package
ENTSO-E	European networks for transmission system operators for electricity
ENTSOD	European networks for transmission system operators for gas
GTM	Gas target model
CEER	Council of European Energy Regulators
HHI Index	Market concentration index of Herfindahl-Hirschman
RSI	Supply safety index
VIE	Vertically integrated enterprise

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Introduction

The series of crises of the second half of the 20th century, which were mostly of a political nature, marked a turning point in the understanding of energy security issues. Many countries in the world, whose success in economic development depended on stable energy supplies, were confronted with the problem of energy vulnerability.

The most acute disruptions in the supply of energy resources, as well as the rapid growth in energy prices, were experienced by the countries of the united Europe, which provided the needs of their economy on average by 2/3 due to the import of hydrocarbons.

The beginning of the 21st century was marked by interruptions in the supply of gas from the Russian Federation, the largest gas supplier to the countries of the united Europe.

All this created the prerequisites for the development of a strategy for raising the level of energy security in the countries of the European Union (hereinafter referred to as the EU). due to the changing, under the influence of the processes of globalization, the nature of international relations, energy vulnerability has become a determining factor in reducing the level of national security of states.

By closely examining energy security policies, we get an indication why energy has become a question of national security, especially in eastern Europe. Former Soviet Union countries gained independence in the 1990s but have ever since remained dependent on oil and gas imports. For example, Lithuania imported 85% of its crude oil from Russia in 2016 (Observatory of Economic Complexity 2016). This dependency raises security concerns in terms of availability of energy if Russia were to shut down all oil and gas imports to the region. Countries in the region have dealt with the issue by trying to reduce their dependency on imports from Russia. Lithuania has constructed its own LNG terminal in the city of Klaipeda in order to diversify its energy imports in a region that is extremely lacking in LNG infrastructure¹. By having a more diversified energy mix, Lithuania now has more reliable energy imports and is less prone to adverse behaviour of one single country from which it imports.

¹ Leal-Arcas et al. 2015, 283

Cherp and Jewell define the concept of energy security as the «low vulnerability of vital energy systems». Vital energy systems are those features of the energy structure that are needed to support critical social functions in a specific sector or geographical region². The authors carry on by stating that energy security should be viewed as just another branch of security in general and should therefore answer the three basic security questions detailed by Wolfers (1952, 489); security for whom, for which values and from what threats? Energy security is seen purely through a realist lens and the management of risk is of paramount importance. The International Energy Agency (International Energy Agency 2018) defines energy security as «the uninterrupted availability of energy sources at an affordable price».

There are multiple reasons why energy governance currently also encompasses energy security³; firstly, since the end of World War Two, European countries have been dependent on the import of oil from the Middle East. As such, security strategizing has been deployed to obtain a stable supply for the region. This has involved quite unorthodox foreign intervention at times; for example, the actions of Britain at Palestinian oilfields in 1936⁴. Secondly, the liberalisation of energy markets means a shift away from government monopolies in the energy sector. The increase in competition has created threats for price stability. Thirdly, with the rise of nuclear energy, there are threats regarding its safety which creates new security challenges. Furthermore, political instability in important countries in the energy network and extreme natural events have created new challenges for the security of supply. In this context, it is rational to assume that energy security should follow similar considerations as general security ideology.

In reality, the energy industry is a complex network of suppliers, consumers, intermediaries, governments, interest groups and various other actors⁵. There is a massive gas pipeline infrastructure between Europe, Central Asia and Russia that not only has become deeply embedded in the European-Asian energy industry, but also one that various governments try to influence to their own benefit. For instance, Russia uses its

² Cherp and Jewell 2014, 419

³ Chester 2010, 888

⁴ Mitchell 2009, 410

⁵ Chester 2010, 889

domestic energy companies to sustain European dependence on its exports. Gazprom, a Russian energy company, planned to construct the South Stream gas pipeline under the Black Sea to avoid European countries constructing other pipelines with Central Asian countries and thereby diversifying their gas imports away from Russian gas⁶. Construction on the South Stream pipeline was started even though it would have been economically completely unviable. This demonstrates the power and folly of strong supplier countries, like Russia, to manipulate the energy sector and restrain supply⁷.

This Master thesis, thus, will analyze the process of liberalization of the gas market in the EU, its influence on the EU gas market and its security. The changes in geopolitical situations between Russia as an EU energy supplier and Ukraine as a transit country are to be examined. The aim of the work is to find an answer to the research question - what impact does liberalization of the European gas market has on energy supply security to the EU. As a conclusion, the thesis is aimed to show a tough path of gas market liberalisation and new trends in gas trade between the EU and its partners in this regard.

Theoretical foundations

Literature review

There is a vast selection of academic literature regarding the European gas market and its liberalization process. In order to get the balanced view on the topic, I will also use original sources in Russian and Ukrainian on recent developments of European gas trade with Russia under the recent geopolitical changes. Cherp, Aleh and Jessica Jewell (2014), Chester and Lynne (2010) give a good understanding of the concept and complexity of energy security. Mel'nikova S. and Konopljanik A. A. provide a good analysis of the Third Energy Package and its impact on the EU-Russian gas trade. Egging, Gabriel, Holz and Zhuang (2008), for example, distinguished between different types of market players in the EU gas market, which is important and makes it simpler to analyze.

⁶ Leal-Arcas et al. 2015, 285

⁷ ibid

There are numerous forms of direct sources; for example, European Commission regulations and decisions. The good framework for analyzing the topic gives the EU's Green Paper on «Secure, Competitive and Sustainable Energy for Europe», The European Commission's Directive of security of supply and two gas Directives. There is abundance of papers and reports published by the IEA, World Energy Outlook and other related organizations as well as works published by researchers at the Oxford Energy Research Institute and the Agency for the Cooperation of Energy Regulators (ACER). This all enables me to constantly research historical and recent developments. Moreover, the topic of the Master thesis requires a great attention to prioritizing the resources, due to their high number and different origin.

Research question

What impact does liberalization of the European gas market have on security of energy supply in the EU? The study will focus on liberalization effects in gas trade on the European market, its advantages and disadvantages and the developments over time. This work will also examine the consequences of the EU strategy implementation on the relations with the main EU trade partners.

Theoretical framework

The main idea of this master thesis will be to apply security dilemma to the economic situation. Herbert Butterfield in 1949 first described the security dilemma logic, but the term itself was coined in 1950 by John Herz, the American political scientist.

In the case of energy markets, security dilemma arises from the interaction between energy security and energy price. Since there are two ways of determining the price - contractual (fixed) price and market price - they have their own security implications. Having a fixed price, even though it is usually higher than a market price, ensures the high level of energy security in terms of energy supply. Market price, on the other hand, brings ambiguities to the energy security, but allows paying lower costs. In the latter case though, the importer of energy is turning to the alternative markets and develops the use

of renewable energy, which also allows them to tackle environmental issues. By doing so, the EU (acting as an importer of energy) decreases its dependence on suppliers, and consequently increases its energy security.

Defensive realism, which is one of the theories within the school of Realism in international relations theory, is also important to examine. The theory assumes that a state can never be sure about true intentions of the other state, but each of them maximizes its individual prospect of surviving through implementing its own political strategies. The EU as a defensive realist seeks security not by decreasing the security of others intentionally, but by cooperation and resolving the conflict of interests. Liberalization of the gas market is a response to fixed prices of the EU gas suppliers, contrary to offensive realism, where the measures taken by the country can pose as a threat to the other country. In my case, liberalization of the European gas market that comes under defensive realism helps the market become more independent from its gas suppliers, and not being bind by the fixed-price long-term contracts. As a result, liberalization introduces market forces for its actors and undermines the tendency of gas suppliers to monopolization of the market.

Methodology

The application of two disciplines, fields of study - international relations and international economics - allows me to use a lot of research methods while writing. Among them are comparative and systematic methods with the cause-effect principle. I am also using inductive reasoning.

The theoretical and methodological basis of the study was the work of such authors as B. Buzan, A. Bely, A. Kazantsev, M. Hofner, P. Krotovchil, as well as a huge array of directives and official EU reports on energy security. When writing the thesis, both general and special methods of scientific knowledge were used.

The basis for the analysis of questions of a general theoretical nature, considered in the work, was the method of dialectical cognition, as well as the historical, comparative methods of scientific cognition.

The scope and structure of the work is predetermined by the purpose and objectives of the study. The thesis includes an introduction, six chapters, a conclusion and a list of literature.

The object of the study is the EU strategy for achieving energy security. The subject of the study is the impact of the implementation of the EU strategy for achieving energy security for the economic development of the EU and its main energy suppliers.

The aim of the study is to consider the EU strategy for ensuring energy security and to analyze the impact it has on the development of the EU countries, as well as the possible consequences of its implementation for the main energy suppliers to the countries of the united Europe.

The relevance of the research - The problem of energy security, which was most sharply manifested in the second half of the 20th century due to political instability in the Middle East, has not lost its relevance in the 21st century. If the international community was concerned about the consequences of oil crises earlier, then with the beginning of the new millennium, disruptions in the supply of natural gas would become especially important. Especially sharply similar crises are experienced by the countries of the united Europe, whose economic well-being directly depends on stable purchases of hydrocarbons. In an effort to improve its energy security, the EU jeopardizes the national security of its major hydrocarbon suppliers. The issue of protecting its national interests, due to the implementation of the EU strategy for national security, is most acute for the Russian Federation, which is the largest supplier of natural gas in the EU.

To achieve the goals of the research, the author set and solved the following tasks:

- Analyze the current legislation of the EU that regulates energy security issues;
- Assess the goals and the ways to improve energy security provided for by EU legislation;
- Analyze possible consequences of the implementation of the strategy for achieving energy security for the economic development of the countries of the EU and economic cooperation with the main trade partners;

- Assess the impact of the EU strategy for achieving energy security on the national security of major gas suppliers to EU countries (for example, the Russian Federation).

1. ENERGY SECURITY CONCEPT

The energy crises of the second half of the 20th century, caused by political instability in the Middle East and the response of European states, marked a turning point in understanding energy security in the science of international relations⁸.

The existence of geographic disparities between energy production and consumption areas, as well as interruptions in the supply of hydrocarbons to import-dependent countries, led to the issue of energy security occupying an important place on the political agenda of the international community, and were also included in the range of problems studied by the science of international relations.

The concept of «energy security», considered for a long time, mainly from the economic point of view, is acquiring more and more political and ecological sounding. If during the first thirty years of its existence, the journal *International Security* published only eight articles devoted to the problems of energy security, then energy issues are would currently be discussed both in scientific and broad public circles.

It seems that this is due to the realization that the successful economic development of the modern state, and its competitiveness in the international arena, directly depend on the degree of the state's provision of energy resources. Such dependence was established as early as the beginning of the 20th century by the British Admiral John Fisher: «Whoever owns oil will rule the world».⁹

Bloody wars and rapid rates of development of world industry and economy in the 20th century showed that European countries are not able to cover their energy needs from domestic resources. The result of this was the growing dependence of states on the import of energy sources, which in turn, in the case of unforeseen difficulties with energy

⁸ House of Commons ECC Committee (2011). UK Energy Supply: Security or Independence? Volumes I and II <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/1065/1065.pdf>

⁹ Sustainable Energy Authority of Ireland (2011). Energy Security in Ireland: Statistical Overview http://www.seai.ie/Publications/Statistics_Publications/EPSSU_Publications/Energy_Security_in_Ireland/Energy_Security_in_Ireland_A_Statistical_Overview.pdf

supplies, jeopardized the successful economic development of the state and, consequently, its own national security. Thus, by adopting a decision in the first half of the 20th century to provide its navy with imports of oil from the Middle East, Britain was one of the first countries in the world to face the problem of energy vulnerability: that any instability in the oil production zone could prove fatal for Britain in matters of maintaining national security.

The self-sufficiency of the EU countries in energy is shown in the Table 1.1. This information allows us to conclude that Europe needs to import more than 50% of energy to cover its needs.

Table 1.1. Self-sufficiency in energy of the EU countries

Self-sufficiency in energy, 1998, in % (energy production in Mtoe)	
Germany	38,16
Austria	31,23
Belgium	21,95
Denmark	96,98
Spain	28,32
Finland	40,68
France	49,10
Greece	36,67
Holland	83,99
Ireland	18,60
Italy	17,30
Luxembourg	1,36
Portugal	10,60
UK	117,76
Sweden	65,09
Total EU	52,45
Poland	90,67
Hungary	46,92
Czech Rep.	75,03

Source: Data adapted from the IEA.

The reassessment of the importance and role of energy resources in the successful functioning of the whole world economy, and of each individual state, was reflected in the growing interest of international scientists in energy and, in particular, in energy security.

The subject of the study of the science of international relations has traditionally been the political relations that arise between states. Modern political problems increasingly require their consideration in close connection with economic realities, and vice versa¹⁰. So the problem of energy security, which, at first glance, is of an exclusively economic nature, directly affects the issues of political security of the state¹¹. This is reflected in the desire to analyze the issues of energy security from the point of view of the theory of international relations. However, it should be noted that the relationship between the issues of national and energy security¹² is interpreted differently by representatives of different theoretical schools of the science in international relations.

An analysis of the EU strategy for achieving energy security, as well as possible internal and external consequences of its implementation, is presented in this paper on the basis of an understanding of the problem of energy security from the point of view of the school of realism in the theory of international relations, for which international security issues have traditionally been the main subject of consideration.

According to K. Waltz¹³, a representative of the school of the international relations theory, states are compelled to act under the conditions of the anarchic nature of the international environment. This creates a struggle between states for existence and ensuring their own security, which, in turn, has a direct impact on the nature of relations between states, including in the allocation of resources. However, despite the anarchic

¹⁰ Wallis, J. J. (2010), "Lessons from the Political Economy of the New Deal", *Oxford Review of Economic Policy*, 26, 442-462.

¹¹ Jacks, D. S., Meissner, C. M. and Novy, D. (2011), "Trade Booms, Trade Busts, and Trade Costs", *Journal of International Economics*, 83, 185-201.

¹² Checkel, Jeffrey T. "Process Tracing". In *Qualitative Methods in International Relations: A Pluralist Guide*. Palgrave Macmillan, 2008

¹³ Waltz, K., *Theory of International Politics*, ed. Random House, New York, 1979.

nature of the international environment, neo-realists do not exclude the emergence of structuralism in international relations. This is due to the interaction of states, as well as the emergence of certain norms and principles arising in the process of such interaction¹⁴. Such a structural perspective aims to show that the world is becoming increasingly interconnected, and the actions of one state are often crucial for the security and successful development of another¹⁵.

In the theory of realism, there are traditionally two understandings of the concept of «security»: defensive (in response to a possible threat) and offensive (designed to maximize the benefits of cooperation with other actors)¹⁶.

In the understanding of K. Walz, the concept of «security» is mostly defensive in nature, because, despite some elements of structural nature, the international environment is primarily characterized by anarchy¹⁷. However, in Western Europe, energy security, according to neo-realists, is offensive¹⁸. This is due to the inadequate supply of Western European countries with natural energy resources and as a consequence of the need for their imports from other regions of the world.

Such import dependence makes it necessary for the EU member states to establish mutually beneficial cooperation with energy producing countries. However, in the conditions of anarchy of international relations, the producing countries operate primarily on the basis of their own interests, which, as a result, can lead to irregular supplies or energy price hikes and, consequently, threats to the successful economic development of the EU countries and their national security as a whole.

¹⁴ Buzan, B., Hansen, L. The Evolution of International Security Studies. Cambridge [UK]; New York: Cambridge University Press, 2009

¹⁵ CIEP (2004). Energy Supply Security and Geopolitics, Study by Clingendael International Energy Programme, http://europa.eu.int/comm/energy_transport/doc/2004_lv_ciep_report_en.pdf.

¹⁶ Morgenthau, H. J., Thompson, K. W. (1985). Politics Among Nations: the Struggle for Power and Peace. McGraw-Hill Higher Education, Boston.

¹⁷ Searle, J.R., 1979. Expression and Meaning: Studies in the Theory of Speech Acts. Cambridge University Press, Cambridge.

¹⁸ Buzan, B. People, States, and Fear: an Agenda for International Security Studies in the Post-Cold War Era. Boulder, CO: L. Rienner 1991.

Security problems have been given a completely new sound in the studies conducted by the Copenhagen School¹⁹, which identified security issues as priorities for its scientific research. Representatives of the Copenhagen School argued that the choice of a scientific theory depends on the nature of the issue being studied²⁰, so they preferred not to relate themselves to any one theoretical school within the framework of the science of international relations. Nevertheless, it is worth noting that, like representatives of a realistic school, scholars of the Copenhagen School believed that international relations were anarchic in character, which certainly affects the nature of interactions between states.

Representatives of the Copenhagen School introduced a completely new understanding of the problem of security in the science of international relations. They proposed to depart from the traditional understanding of security as a series of actions taken in response to the emerging threat, and to define the notion of "security" on the basis of the theory of «securitization»²¹ that they developed.

Representatives of the Copenhagen school, and in particular B. Buzan, a prominent American specialist in the field of international relations, defined «securitization» as a process «in which the work is presented as a problem of discomfort and begins to look like an ugly person».²²

B. Buzan introduces into the scientific revolution the special term «reference object», namely, the existence of a malignant state is established²³. The process of securitization begins with the representation of the securitizer of certain questions, persons or entities as carriers of existential threats to reference objects.

¹⁹ Buzan, B., Waever, O. *Regions and Powers: a Guide to the Global Security Order*. Cambridge: Cambridge University Press, 2003

²⁰ Buzan, B., Waever O., Jaap de Wilde. *Security: A New Framework for Analysis*. Boulder (Colo.); London: Lynne Rienner publishers, 1998

²¹ Buzan, B. *People, States, and Fear: an Agenda for International Security Studies in the Post-Cold War Era*. Boulder, CO: L. Rienner 1991.

²² Ibid

²³ Buzan, B., Hansen, L. *The Evolution of International Security Studies*. Cambridge [UK]; New York: Cambridge University Press, 2009

In the context of considering the problem of ensuring energy security of the EU countries, the secreting actor is the EU, the carriers of existential threats - the energy supplying countries to the territory of the united Europe, in particular Russia, as the reference facility is directly the level of energy security of the EU countries, which may be threatened by violation of the terms of supply of energy raw materials.

Representatives of the Copenhagen School distinguish five main areas of international life, to which the theory of securitization is applicable²⁴:

- political, covering the problems of both internal and external security of the state;
- military, including the issues of defensive and offensive capabilities;
- social, uniting the issues of preserving cultural and national identity;
- Economic, covering access issues, both to international markets and to markets of other states, as well as the problem of resource provision;
- ecological, designed to protect and preserve biodiversity and protect the environment from the consequences of aggressive human economic activity.

Such a classification does not single out issues of energy security in a separate group, but this does not mean that the theory of securitization is not applicable to the consideration of energy security problems. According to representatives of the Copenhagen school, there are a number of issues (among them, energy security issues also stand out) for the analysis of which a complex examination of several spheres of international life, which are traditionally objects of study within the theory of securitization, is required²⁵.

States, like Western European countries that do not have the opportunity to independently ensure the successful development of their economies due to the limited internal natural resources, are forced to establish an uninterrupted supply of energy at affordable prices from countries that traditionally are energy exporters; in particular, the Middle East and Russia. This entails the emergence between countries in not only economic, but also political relations. In view of the anarchy of the international environment each side seeks

²⁴ Buzan, B., Waever O., Jaap de Wilde. Security: A New Framework for Analysis. Boulder (Colo.); London: Lynne Rienner publishers, 1998

²⁵ Buzan, B., Hansen, L. The Evolution of Interantional Security Studies. Cambridge [UK]; New York: Cambridge University Press, 2009

is first and foremost to protect and protect its own interests. The result of this is often the desire of one of the parties to change the terms of the contract, which in turn can lead to interruptions in the supply of energy resources, and as a result, to a growing threat to the national security of the energy importing country.

The study of the problem of energy security is complicated by the absence in the scientific community of a universal definition of the concept of «energy security». It seems that the reason for this is that the very phenomenon of «energy security» is the sum of several complex problems that have undergone major changes over past decades.

In 1981, J. Nii and D. Deis defined energy security as «uninterrupted oil supplies at prices affordable to the consumer»²⁶. However, since then, the understanding of energy security issues has changed. In many respects, this happened due to the processes of globalization, the complication and change in the nature of human economic activity, as well as the emergence of challenges and threats of a new nature, in particular, global climate change. All this led to the emergence of a large number of new definitions of the concept of «energy security».

Analyses of 45 similar definitions, presented in B. Sovakul's book «A Brief Guide to Energy Security»,²⁷ showed that all definitions differ significantly from one another. As an explanation of the lack of unity in the opinion of scientists in the definition of the concept of «energy security», B. Sovakul calls the contradiction originally inherent in the very phenomenon of «energy security».

So, according to B. Sovakul, energy security can be considered from the point of view of interests of two groups of actors: suppliers (producers) and consumers of energy resources. It is the contradictions of interests observed in the relations of these actors that are the reason for the impossibility of an unambiguous definition of the concept of «energy security». One of the researchers of energy problems, D. Victor, noted that «energy security is similar to the Rorschach test - everyone sees what he wants to see». However, the study of energy security at the theoretical level requires the rejection of subjective judgments.

²⁶ David A Deese and Joseph S Nye, "Energy and Security" (Cambridge, Mass.: Ballinger Pub. Co., 1981)

²⁷ Sovakool, B. The Routledge Handbook of Energy Security. Routledge, 1 edition, 2011

During the analysis of the definitions of «energy security» presented in the scientific literature, it was revealed that the phenomenon of energy security is most often described as the sum of several components:

1. Guaranteed uninterrupted supply and transportation of energy resources from the production area to the place of consumption;
2. Availability of energy resources - consumers can get the desired amount of energy at an affordable price, and producers can secure a reliable sales market;
3. Sustainable development - reduction of emissions polluting the environment and produced during production and energy consumption; minimization of the consequences of global climate change affecting the issues of security and development, both states and individuals.

2. EU ENERGY SECURITY STRATEGY AND ENERGY PRICES AS A DEFINING FACTOR

Market liberalization is one of the EU's energy policies aimed at increasing energy security in the EU. This chapter will analyze how the process started, and what was at stake at every time slot. This chapter will also focus on the main goals set by the EU depending on the international situation on the market and external obstacles.

There are main three goals that the European Union energy security is trying to achieve: safe, affordable and sustainable energy. However, off hand, these goals contradict each other and their realization at the same time is impossible. This is also a core problem and reason why there are collisions arising when implementing some EU energy policy directions.

Ensuring the security of supply almost always requires additional costs, thereby creating a conflict in order to minimize costs. Additional expenses may be dictated by a higher cost of energy from a safe source than in a «dangerous» one, investments in infrastructure, political costs and even costs to ensure «hard» security of supply sources. The result of attempts to provide additional security of supply is excessive infrastructure (within the framework of market logic) and irrational (from the economic point of view) energy consumption structure, which increases the cost of final energy for the consumer.

The EU energy policy, declaring all three goals simultaneously, actually emphasizes one or the other element out of them, responds to actual challenges and adapts to the changing correlation of forces within the association. I am trying to analyze the evolution of EU energy policy priorities and shows the reasons for these changes.

The EU priorities in energy policy are determined both by external causes and by the dynamics of the interests of the EU member states. Shift from one goal to another became more popular in recent years than in 80's due to the increased number of the EU states and thus, differences in energy interests between the member states. This has a consequence on effectiveness and consistency of the EU energy policy. Moreover, the need to follow all three stated goals also reduces efficiency.

The current concept of EU energy security emerged in the late 1990's. It was then that the classical triad was formulated, which was constantly repeated in the EU documents: energy security is the provision of safe, accessible and sustainable energy²⁸. «Safe energy» presupposes reliability of physical supplies of energy resources for a foreseeable future. «Affordable energy» is an opportunity to purchase energy at reasonable prices, which does not limit the development of the economy and is acceptable for households. «Sustainable energy» is not only «green energy», but in a broader sense, the production and consumption of energy with minimal negative consequences for the environment (in the context of EU energy policy, it is primarily concerned with climate change). Thus, practically all directions of the EU energy policy work to achieve security: market liberalization, stimulation of renewable energy, energy saving, reduction of greenhouse gas emissions and infrastructure development²⁹.

At the same time, the concept of EU energy security is internally contradictory. Three elements of energy security can not be achieved at the same time. Safe supplies can not provide a low price and require the use of environmentally «unstable» types of energy. Cheap energy is not environmentally «sustainable» (when it comes to large volumes) and, most likely, is accompanied by supply risks. «Sustainable» energy, accordingly, can not be cheap and creates risks of supply reliability, since it can not provide a determining share in the energy balance. Here is the official policy declaring these three goals simultaneously, either it will be ineffective, or it will impartively prioritize one goal to the detriment of others, creating a systemic conflict between rhetoric, expectations and reality.

However, unlike the «impossible triad»³⁰ in the economy, energy security is not an absolute law, which is typical first of all for a large highly developed economy with a large import dependence and a high level of energy efficiency, such as the European union. In addition, this pattern is peculiar only to the current level of development of energy production and consumption technologies. However, it is unlikely to expect in the foreseeable future the emergence of economically competitive «green» technologies that

²⁸ Butorina, Borko, Ivanov et al. 2003; Zhurkin, Grinevsky, Gromyko and others 2011

²⁹ Potemkina, Kaveshnikov, Kondratieva et al. 2012

³⁰ The hypothesis by Mandel and Fleming that it is impossible to get fixed exchange rate, free capital movement and independant monetary policy at the same time.

can become the basis of the energy balance. Of great importance is the global context: the distribution of energy production and consumption centers, transportation technologies and costs, the institutions of the world energy system, the level and correlation of prices for major energy resources.

2.1. The strategy and legislative initiatives for the development of the gas market

Among the main directions of the EU energy policy are the liberalization of energy markets, the diversification of imports, the development of a cross-border infrastructure between the EU countries, the promotion of renewable energy sources (RES), the reduction of greenhouse gas emissions and coordinated foreign energy policy. Further, it will be considered, which of the goals is achieved by each of these directions and what conflicts arise between them. What are the contradictions that arise when it is necessary to choose between certain types of fuel.

Back in 1984, the contradiction between the security of supply and cheap energy was identified by the EU Court³¹, admitting that the freedom of movement of goods and services was permissible for the sake of ensuring the security of the supply of oil products. This almost always requires additional costs, creating a conflict in order to minimize the cost. Additional costs may be associated, for example, with a higher cost of energy resources from a safe source in comparison with the «dangerous» one, investments in infrastructure, political costs, and even costs of providing «hard» security sources of supply. As a result of attempts to provide additional security of supply, there is an unnecessary (in the framework of market logic) infrastructure and an irrational (from an economic point of view) energy consumption structure that raises the cost of energy for citizens and enterprises. And, on the contrary, setting the goal of providing cheap energy through market liberalization «is able to create the risks of reducing investment incentives and, accordingly, to enter into conflict with the goal of ensuring the reliability of supplies»³².

³¹ Judgment of the Court of 10 July 1984 – Campus Oil Limited and others v Minister for Industry and Energy and others –Case 72/83

³² Seliverstov, Gudkov, 2014

There are few studies attempting to quantify the additional costs of ensuring the security of supply. In particular, Arnold and his colleagues tried to assess how many West European countries were trying to protect themselves against fluctuations in oil prices in the 1970s and 1980s. At the same time, the research concerned not all consumption, but only electric power. France, in order to minimize purchases of oil, has boosted the development of nuclear energy - the costs accounted for only 3% of the price of electricity. Italy and Spain have increased purchases of hydrocarbons from North Africa to reduce dependence on Middle Eastern countries, for which they took part in the construction of pipelines along the bottom of the Mediterranean Sea. The cost of this strategy is estimated at 11% of the price of electricity³³.

Today, security of supply requires much higher costs. The EU's strategy of diversifying imports requires the creation of an additional infrastructure. The search for new gas suppliers in the EU generates dubious projects from the economic point of view: the Arabian gas pipeline (Egypt-Jordan-Syria), the Trans-Saharan gas pipeline (Nigeria-Niger-Algeria), well-known Nabucco. For example, the cost of Nabucco only in the Turkish sector was estimated at 8 (in 2009) to 10-14 billion euros (in 2011)³⁴. But it is still necessary to build an Azerbaijani section, a bundle with Iran (there was such a plan) and a gas pipeline from Turkmenistan on the bottom of the Caspian Sea. Unsurprisingly, the project turned out to be unbeatable. As a result, instead of Nabucco, a much more modest Trans-Anatolian gas pipeline (TANAP) is being built, according to which only 10 bcm per year will be supplied to Europe. However, its construction will not cost much, approximately \$10 billion³⁵.

The existing gas trade flows in Europe can be seen on the Map 1.

³³ Arnold et al. 2009

³⁴ Nabucco could cost up to 14 bln euros – Oettinger. Reuters. [www.reuters.com/ article/nabucco-idUSL5E7LD2X520111013#lQrQJ05oXm6ptiyU.99](http://www.reuters.com/article/nabucco-idUSL5E7LD2X520111013#lQrQJ05oXm6ptiyU.99)

³⁵ TANAP price tag rises by \$3 bln to \$10 bln. Interfax Global Energy. <http://interfaxenergy.com/gasdaily/article/3578/tanap-price-tag-rises-by-3-bln-to-10-bln>

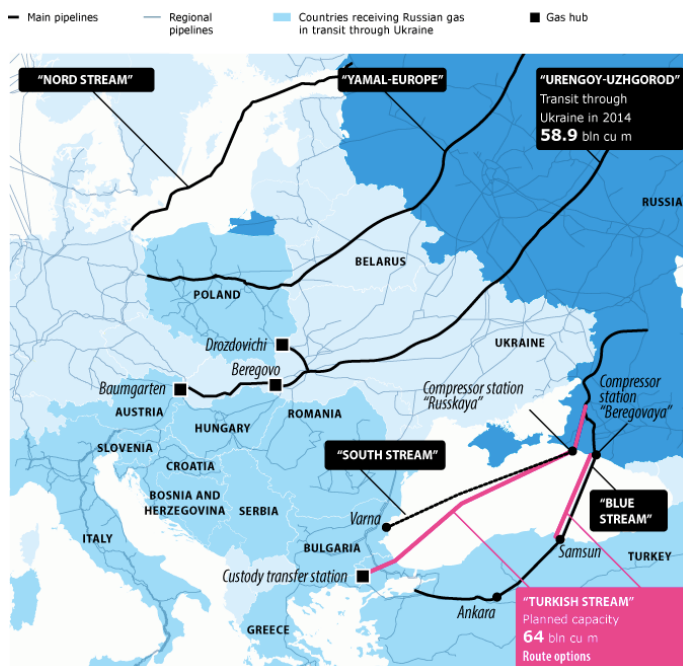
Map 2.1. Gas trade flows in Europe.



Source: 2018 OECD/IEA

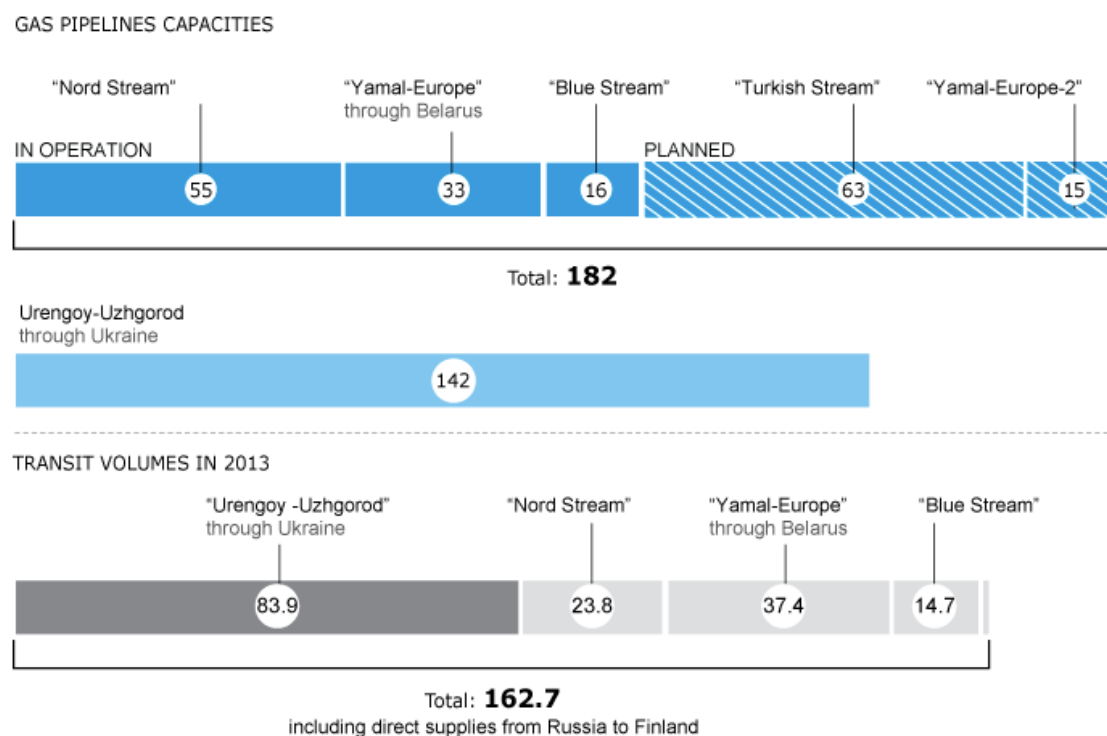
According to the Russian news agency TASU, Russian Federation does everything possible to build the TurkStream and finish the Nord Stream in order to stop gas transit to Europe through Ukraine after 2019 (see Map 2).

Map 2.2. Gas pipelines from Russia to Europe and «Turkish Stream»



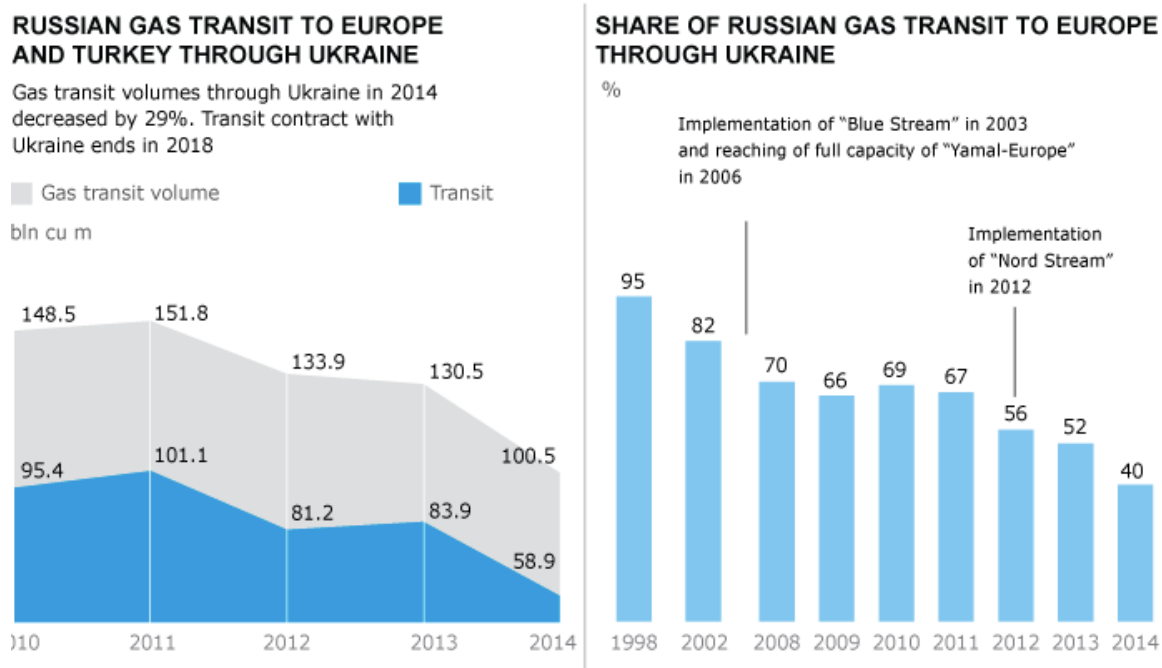
Source: TASU, 2015

Figure 2.1. Russian gas pipeline capacities



Source: TASU, 2015

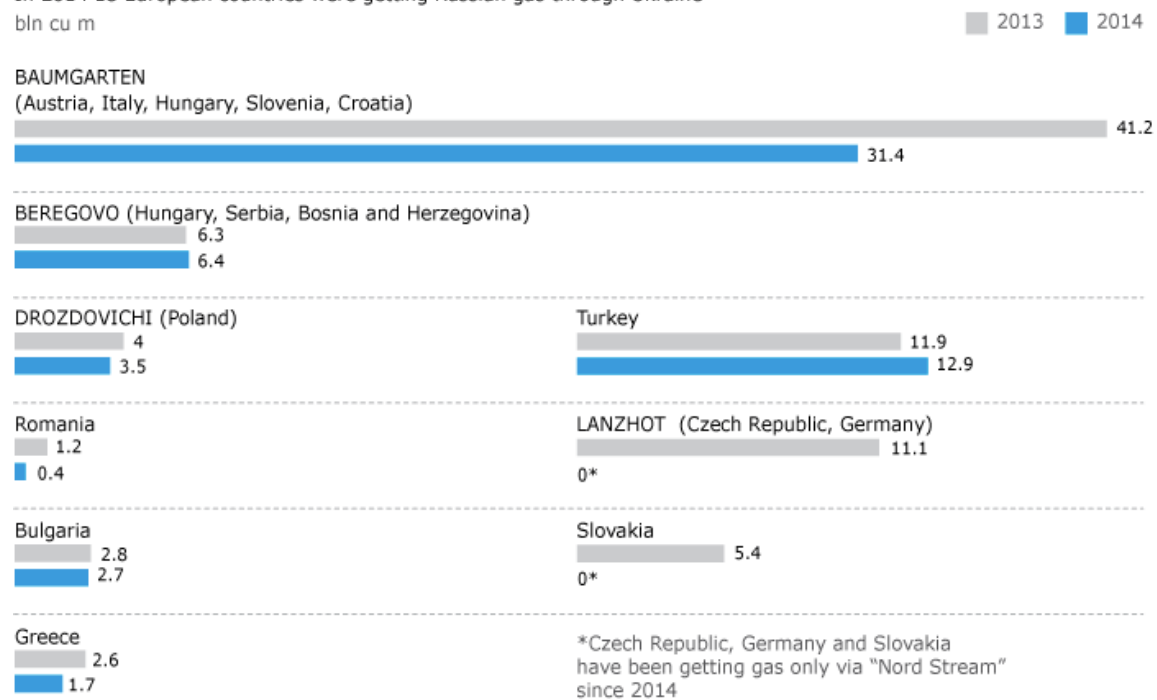
Figure 2.2. Share of Russian gas transit to Europe through Ukraine



Source: TASU, 2015

Figure 2.3. European countries that get gas through Ukraine

In 2014 13 European countries were getting Russian gas through Ukraine
bln cu m



Source: TASU, 2015

The last figure clearly shows us that, due to the 2014 Ukrainian crisis, such countries as Czech Republic, Germany and Slovakia did not receive any planned gas from Russia. Moreover, some other European countries also suffered the reduction of gas supply. For this reason, active discussion and response with regards to the security of supply takes place in the EU.

In May 2014, the European Commission introduced a new European Energy Security Strategy³⁶, where the issues of the future development of European energy are linked to the analysis of the energy dependence of individual states. Particular emphasis is placed on gas supplies from Russia and the countries where such supplies account for more than half of total natural gas imports.

In addition to short-term measures to strengthen energy security (increasing the capacity of facilities, developing infrastructure, including reverse flows, reducing energy

³⁶ European Energy Security Strategy, COM (2014) 330 final, Brussels, 28.05.2014

consumption and switching to alternative fuels), the new strategy offers a number of long-term measures:

- Increased energy efficiency, primarily for the building and industrial sectors, which account for 40 and 25% of the total European energy consumption, respectively;
- Increased energy production in the EU (including alternative energy, fossil fuel and peaceful nuclear energy) and diversification of supply countries and supply routes;
- Development of competition in the internal energy market of the EU and construction of interconnectors for the operational redirection of flows in the event of their interruption or other necessity;
- Speaking in a «unified voice» in energy policy, including informing the European Commission about the proposed or concluded agreements with the third parties that could affect the energy security of the EU;
- Strengthening cooperative mechanisms and overcoming infrastructure constraints, including coordination between the EU countries on the use of the facilities, the development of reverse flows and the reduction of risks at both regional and pan-European levels.

The vulnerability of gas supply to European states reveals published EC results of stress tests³⁷, with a complete halt in the supply of Russian gas or its transit through the territory of Ukraine for a period of one to six months. When stopping the transit of Russian gas through Ukraine, Bulgaria, Hungary, Bosnia and Herzegovina, Macedonia, Serbia, Finland and the Baltic states will face a need to reduce gas consumption by 20-60%, Poland, Romania and Greece - by 10%. The maximum monthly reduction in supplies can be 100% for Bulgaria, Finland, BiH and Macedonia, 73% for Estonia, 64% for Serbia, 59% for Lithuania, 35% for Hungary, 31% for Romania and 28% for Poland.

In fact, the proposed energy security strategy, supported by the results of stress tests, prepares the European community to ensure the functioning of its economy in a risk

³⁷ «Preparedness for a possible disruption of supplies from the East during the fall and winter of 2014/2015», 16 October 2014

environment, including. full or partial stoppage of Russian gas supplies, offering an extensive set of short-term and long-term measures for their compensation.

The development of cross-border infrastructure between the EU countries is another way to ensure security of supply. The European Union paid special attention to this area after the crisis with the transit of Russian gas in January 2009. The President of the European Commission, Jose Barroso, in March 2010, stated: «We learned from the recent gas crisis; [this crisis] was one of the reasons why we decided to provide great financial assistance to new energy infrastructure development projects»³⁸. Then followed the 2014 crisis for the Russian gas transit.

The sums sounded during the discussion are colossal. In 2010, it was mentioned the need to invest 1 trillion euros in the energy infrastructure of the EU by 2020 and another in the next decade³⁹. However, a year later, in October 2011, the Commission estimated the cost of priority projects in a much smaller amount - 210 billion euros until 2020⁴⁰. In 2013, the plan for the development of energy infrastructure⁴¹ was approved, including 248 projects (140 in the electricity sector, about a hundred in the gas industry, several projects in the oil sector and the development of smart grids). However, there are no money to fulfill them, and therefore priority projects are entitled to: 1) subsidies by a specially created «Connecting Europe Facility» with a budget of 5.85 billion euros until 2020, and 2) loans from the European Investment Bank. Obviously, the bulk of the investment costs will fall on commercial companies and partly on the budgets of the member states. Meanwhile, not all of them are ready to pay the required amounts for improving energy security, and therefore it is unlikely that these plans will be fully implemented.

³⁸ Bulletin Quotidien Europe, no. 10091, 5 April 2010.

³⁹ European Commission. Communication. Energy infrastructure priorities for 2020 and beyond - A Blueprint for an integrated European energy network. COM (2010) 677, 17.11.2010

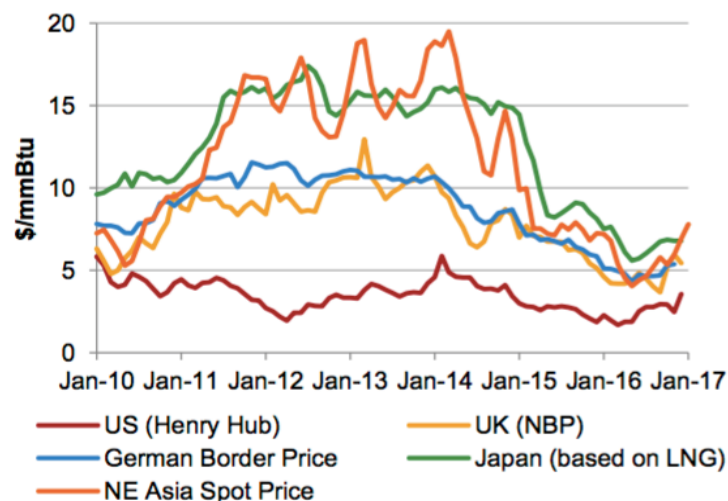
⁴⁰ Bulletin Quotidien Europe, no. 10475, 10 October 2013.

⁴¹ European Commission. Communication. Long term infrastructure vision for Europe and beyond. COM (2013) 711, 14.10.2013.

2.2. Energy prices fluctuations and its effect on the goal of sustainable energy through CO2 emissions

Another strategy for ensuring the EU's energy security is to increase the import of liquefied natural gas (LNG). The supply of LNG to the world market is large, and a large part of the deliveries are made under one-time contracts. In recent years, the EU has built a large number of terminals for receiving LNG (primarily in Western Europe, but there are separate projects in Poland, Croatia and Lithuania). However, the reliability of LNG supplies must be paid. European buyers in this market compete with Asian consumers. The price of gas in the Asian market is significantly higher than in Europe, in 2013 it was 11 and 8 dollars per million British thermal units (BTU) respectively (see Graph 1). That is why the existing LNG terminal capacities in Europe are used by no more than a third, and consumers prefer a cheaper, albeit less «safe» pipeline gas from Russia, Norway and Algeria. According to Energy Aspects, if in 2014 Russian gas supplies were completely replaced by LNG purchases, in two months the price of gas in the exchange market of the United Kingdom would have grown by 127% and amounted to 19.9 dollars per million BTU⁴². However, as can be seen on the Picture 6, the situation with the LNG prices is getting better for Europe since the prices are comparing. Thus, LNG becomes a very possible good opportunity for Europe to compete with Asia on a demand sidet.

Figure 2.4. Monthly average regional gas prices, 2010-2017

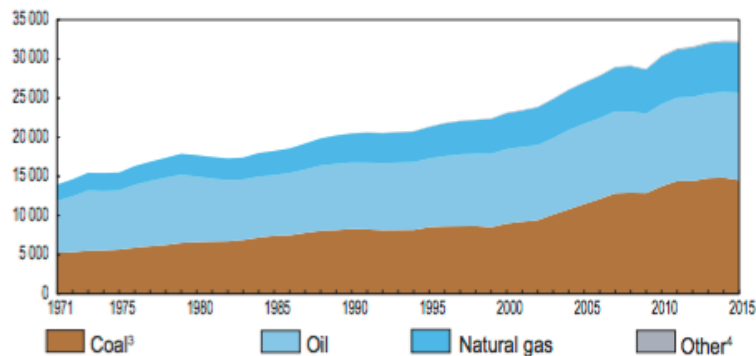


Source: IHS, Cedigaz, US DOE

⁴² Shiryaevskaya A. and Strzelecki M. Europe Seen Paying Twice as Much to Replace Russian Gas. <http://www.bloomberg.com/news/2014-03-28/europe-seen-paying-twice-as-much-to-replace-russian-gas.html>

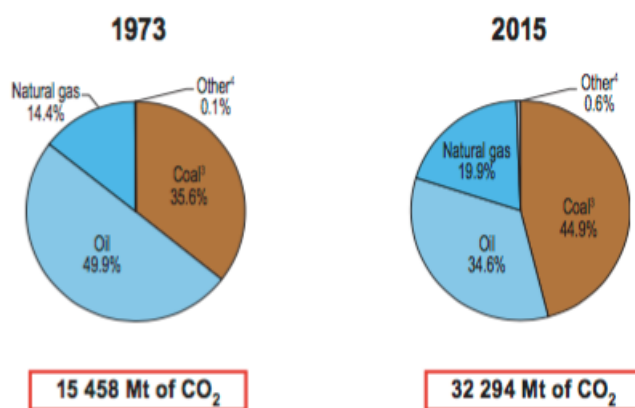
To study the conflict between the goals of environmental sustainability and cheap energy, let us first turn to the example of coal and gas competition. It is well known that natural gas is much better than coal in terms of greenhouse gas emissions (Figure 4, 5). This was one of the reasons that prompted the EU to increase gas consumption in the late 1990s.

Figure 2.5. World CO₂ emissions from fuel combustion 1971- 2015 by fuel (Mt of CO₂)



Source: *Key world energy statistics, IEA 2017*

Figure 2.6. 1973 and 2015 fuel shares of CO₂ emissions from fuel combustion



Source: *Key world energy statistics, IEA 2017*

However, starting from 2010, coal prices in Europe fell significantly due to the supply of cheap raw materials from the US. According to Euracoal, the cost of fuel for electricity generation in 2012 was 68 euros for MWh for gas stations, and for coal plants only 37 euros for MWh⁴³. Business instantly opted for cheapness. In 2011-2012, the consumption

⁴³ Euracoal. Annual report 2012

of gas in the EU decreased by 12.1%, and consumption of coal - increased by 5.6%. The system of trade in greenhouse gas emissions created in the EU in such a situation should increase the cost of coal. However, in the second half of 2011, the price of emissions began to fall and in recent years is 4-7 euro per ton of CO₂. This is clearly not enough to stimulate the use of low-carbon technologies. For example, at 2012 prices for coal and gas in the EU, in order for gas to compete with coal as a fuel for power generation, the cost of a ton of CO₂ should have been about 35 euros⁴⁴.

2.3. Reform of the ETS as an important part of the strategy

The history of the EU emissions trading system (ETS) provides a good example of a 15-year balancing between the goals of cheap and sustainable energy. ETS works on the principle of «limit and trade». The annual volume of emissions is set, this volume is distributed among the EU member states, and then between the enterprises of the branches participating in the ETS. If the allocated permits for emissions are not enough, the enterprise can buy an insufficient amount in the free market. However, up to now, the large volume of quotas and their mainly free distribution reduce the cost of emissions and do not allow ETS to fully fulfill the function of a market mechanism for their reduction.

In October 2014, the European Council approved the main policies for climate and energy until 2030 (Strategy 2030)⁴⁵. An important part of the strategy is the reform of the ETS in order to eliminate the surplus of quotas and raise the price of a ton of emissions. However, at the insistence of a number of EU countries, the implementation of these measures will begin only in 2021. At the same time, a number of compensation mechanisms were created at the request of the countries of Central and Eastern Europe, designed to ease the load on the energy-intensive sectors of the economy.

The next reform of the ETS again reflected a half-hearted approach - the search for a balance between the goals of cheap and sustainable energy. The reduction in the maximum amount of emissions after 2020 by 2.2% annually will only slightly increase

⁴⁴ Sia Partners. The future of coal in Europe. <http://energy.sia-partners.com/20130724/the-future-of-coal-in-europe/> (accessed 08.11.2014)

⁴⁵ European Council. Conclusions on 2030 Climate and Energy Policy Framework. SN 79/14

their price⁴⁶. At the same time, the voices of critics, who believe that the ETS reduces the competitiveness of the EU industry, are increasingly voiced in comparison with those countries that do not reduce greenhouse gas emissions.

2.4. RES contribution to the Strategy

The development of renewable energy in the EU contributes to the achievement of at once two elements of the energy goals: sustainable energy and security of supply. However, it should not be forgotten that modern technologies do not allow most types of RES to compete with traditional energy on an equal footing⁴⁷. Their development is possible only through state support⁴⁸. According to the latest estimates, the total amount of subsidizing RES in the European Union in 2012 was about 40 million euros⁴⁹. Throughout the first decade of the 21st century, the volume of support grew both in absolute and relative terms, that is, the size of subsidies increased per unit of energy resource produced from RES. This stimulated a sharp increase in the production of energy from renewable sources, which, in turn, taking into account earlier adopted legislation, led to an ever-increasing subsidy cost. Direct subsidies were financed by state budgets of the EU countries (taxpayers), indirect subsidies led to a rise in the cost of energy and paid for by end users.

Improving RES technologies will ultimately ensure their competitiveness with hydrocarbons, but this is a distant future. Meanwhile, the conflict of goals is obvious. In the context of the economic crisis in 2013, the European Union made a new choice: the principal conditions for the further development of renewable energy sources are «their economic efficiency, the development of market mechanisms»⁵⁰.

Recently the pace of the RES growth is much slower, although the progress was significant from 2005 until 2015 (Map 3). The goal is to meet 20% RES share in 2020. In 2016 the RES share was 16.9%, while in 2014 it was 16.1%. This increase happened even

⁴⁶ Buchan et al. 2014

⁴⁷ Kaveshnikov 2014

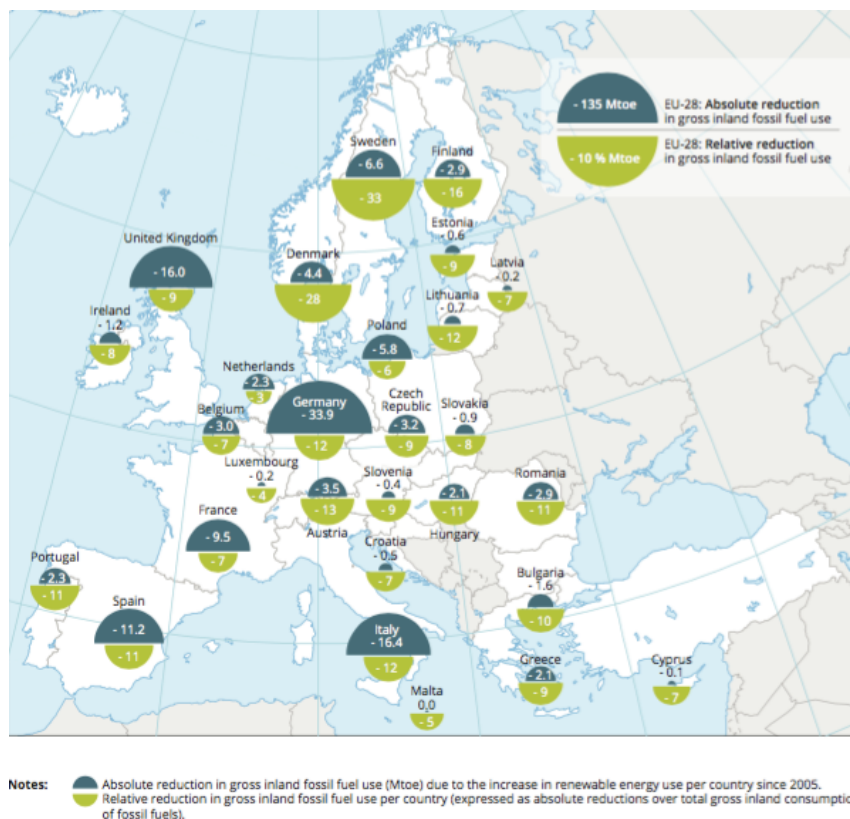
⁴⁸ Bloem et al. 2010

⁴⁹ Ecofys. Subsidies and costs of EU energy. An interim report by order of European Commission, p. 23.

⁵⁰ European Council. Conclusions. EUCO 75/1/13 REV 1

despite the overall energy consumption of all sources that was happening during the last two years in the EU (EEA, 2017a). However, the average yearly growth of the RES share was not very fast - 5.9 % in 2016 - compared with the average annual pace of growth in 2005-2014 – 6.7%.

Map 2.3. Total and relative reduction in gross inland fossil fuel use (per year, in 2015)



Source: EEA, Eurostat, 2017b, 2017c.

3. «ROAD MAP» AND PROBLEMS ARISING ON THE WAY

Examples of conflict of supply security objectives and environmental sustainability are well known and do not require detailed consideration. Nuclear power provides reliable supplies of cheap electricity, but carries the potential risks of man-made disasters. The choice of politicians from individual EU member states is diametrically opposed. France has consistently continued the development of nuclear power plants, and Germany after the Fukushima accident decided to close all 17 power units by 2022, eight of which were stopped as early as 2011.

The shale revolution in the US gave birth to the desire to follow the American example, especially since shale gas reserves in Europe are quite large, primarily in the Netherlands, Great Britain, Poland and Germany. At the same time, the extraction of shale gas is associated with a series of negative environmental consequences and risks, for example, greenhouse gas emissions, the risk of groundwater contamination, and the need for large volumes of water for pumping into gas-bearing formations⁵¹. In this regard, shale gas production is prohibited in a number of EU member states (for example, in France and Bulgaria). Meanwhile, Poland remains its active supporter. As Prime Minister Donald Tusk noted in 2011, the reserves of gas shale will be able to provide it with gas security from Russia by 2035⁵². However, today the prospects for the extraction of shale gas in Europe look much less rosy than five years ago.

Based on an analysis of the main directions of the EU energy policy and the structure of the energy balance, it can be seen that all three goals of energy security can not be achieved simultaneously. Therefore, the EU's energy policy willy-nilly accentuates one or another goal, responding to the current challenges and adapting to the changing balance of influence within the EU.

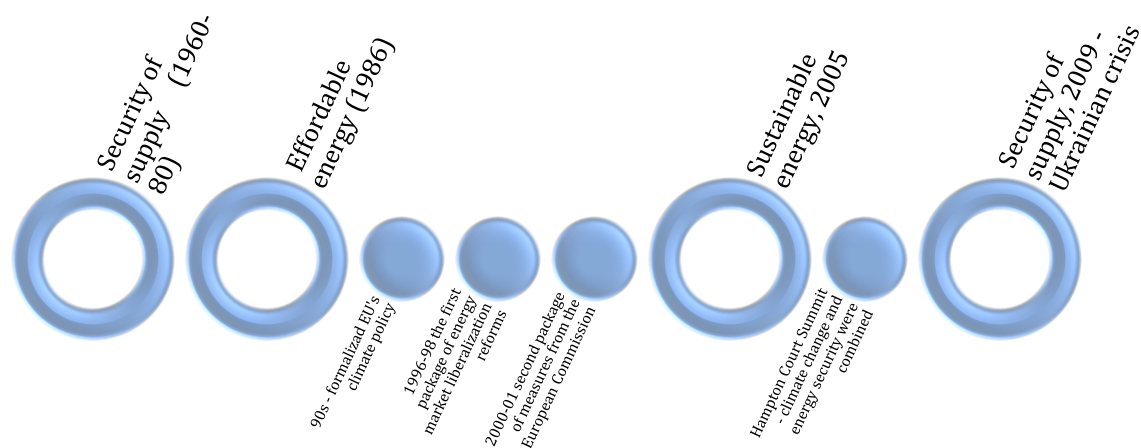
⁵¹ Zolotova 2012

⁵² «Poland seeks independence from Russian imports through shale gas despite pollution concerns» // The Washington Post. – 19.05.2011. – http://www.washingtonpost.com/blogs/wonkblog/post/wonkbook-on-debt-the-conventional-wisdom-vs-the-markets/2011/05/19/gIQAxwmJKP_blog.html

3.1. The development of the strategy over time

During the 1960s and 1980s, it was difficult to talk about the energy policy of the European Communities, because this sphere practically remained completely within the national competence of the member states. The extremely few conceptual documents and practical measures of that time clearly demonstrate that the main priority of the EEC activity was the security of supply (Figure 6). In 1968, the European Commission, in a communication with the speaker, «First Guidelines for the Community Energy Policy»⁵³ notes the need for cooperation in the event of a shortage of energy resources, and calls for the creation of a common energy market. Practical actions at that time were limited to the obligation to provide information on energy imports and investments in the fuel and energy sector (in 1972), and the creation of a mutual assistance system in the event of supply interruptions (in 1977).

Figure 3.1. «Road map» of the EU energy strategy



Source: Data based on Vogler, *Changing conceptions of climate and energy security in Europe. Environmental Politics. Vol. 22., 2013*

⁵³ European Commission. Communication. First Orientation for a Common Energy Policy. 18 December 1968

In the second half of the 1980s, the goal of «affordable energy» was voiced in the Brussels lexicon: in 1986, the European Council noted the need to ensure «energy security and accessibility on an acceptable economic basis as prerequisites for achieving economic and social goals». Reacting to this political instruction, the European Commission in 1988 announced the concept of energy market reform, which formed the basis for the ongoing process of liberalization to this day.

Although in reality the first package of measures for the liberalization of energy markets was adopted only a decade later (in 1996-1998), during the entire decade, the focus on «cheap energy» was gradually increased. In the 1990s, the EU's climate policy was also formalized, aimed at implementing the Kyoto Protocol. Although at that time the priority of «sustainable energy» was not yet definitively formulated, climate policy had already begun to affect the energy sector. Moreover, while the latter was stagnating, the former, on the contrary, developed very quickly⁵⁴.

Thus, despite the fact that in the 1990s the goals of energy security of the EU were not yet established as something tired, the corresponding areas of activity were gradually being formed: a single energy market with the task of creating a competitive environment (reduce prices); climate policy, including its energy aspects; The European Energy Charter as a means of ensuring the security of supply. The process of liberalization of the energy market had the greatest importance for the EU in this period (Hancher 1998).

But it was only in the Green Book of 2000 that the «triad» was clearly formulated: «The energy security strategy should be aimed at ensuring, for the sake of the well-being of the population and the good functioning of the economy, the uninterrupted physical availability of energy products on the market at a price affordable for all consumers ... with respect for the tasks of nature protection and the pursuit of sustainable development»⁵⁵. However, the sharp increase in world oil prices (in 1998 - 13, in 2000 - 28 dollars per barrel) forces the EU to concentrate even more on measures to «cheapen» energy, and in 2001 the European Commission initiated a second a package of measures to liberalize the energy markets.

⁵⁴ Vogler 2013: 629

⁵⁵ European Commission. Green paper. Towards a European strategy for the security of energy supply. COM/2000/0769.

An impulse to change the balance of priorities was given at an informal summit in Hampton Court in October 2005, where the leaders of the EU countries declared the need for a truly effective, long-term and comprehensive energy policy at the EU level. The «new energy policy» linked the various activities of the EU. First of all by integrating into the energy policy a climatic track, which previously developed almost autonomously. For the first time, the EU documents emphasize the need to «balance the realization of all three goals»⁵⁶. As noted by J. Vogler, by 2009, EU officials «spoke in a language of synergy in which climate change and energy security meant two sides of the same coin, with both problems requiring the same drug».

After the summit in Hampton Court, the «cheapness» of energy began to recede into the background, and the main focus was on security of supply and sustainability of energy. It was the implementation of these objectives that was devoted to seven of the eight tasks that the European Council delivered to the European Commission in March 2006. In 2007, the Conclusion of the European Council, under the slogan of «integrated climate and energy policy», contained two pages devoted solely to combating climate warming⁵⁷.

The crisis of Ukrainian gas transit in January 2009 made safety of deliveries an unquestionable priority for the EU energy policy. Here's how the President of the European Commission, Jose Barroso, assessed the situation: «Challenges are real, and it is necessary to react quickly ... The discontinued deliveries accounted for almost one-fifth of imports. Direct or indirect damage is caused to half of the EU countries. Therefore, when we talk about European energy policy today, security of supply is a major concern».⁵⁸ A wide expert and political consensus is emerging that «security of supply as an area of EU activity is underdeveloped»⁵⁹.

The EU, one by one, is taking a number of new plans for infrastructure development, both import and cross-border (between member states). If earlier the existence of connections

⁵⁶ Brussels European Council. Presidency Conclusions. 7771/1/06. 23-24 March 2006.

⁵⁷ Brussels European Council. Presidency Conclusions. 7224/1/07. 8/9 March 2007.

⁵⁸ Barroso J. "European energy policy for the 21st century". Speech at BDEW Conference, Berlin, 24 June 2009. SPEECH/ 09/311.

⁵⁹ Andoura et al. 2010

between the energy systems of the EU countries was perceived as a prerequisite for the development of competition (the consumer in search of a better price can turn to suppliers from neighboring countries), nowadays it is a means to maneuver physical flows of energy resources in the event of supply interruptions from any direction.

Under the slogan «We must speak with our partners in a single voice», the European Union activates activities in the sphere of foreign energy policy. In September 2011, the European Commission published a concept paper outlining a visionary vision of a comprehensive EU external energy policy⁶⁰. The main attention in this area was paid to: «exporting» energy legislation to neighboring countries; attempts to diversify suppliers and routes for the supply of energy resources and administrative regulation of energy by the EU institutions, which has a significant impact on external counterparties⁶¹. In 2012, a mechanism is created for the exchange of information on bilateral agreements between EU member states and third countries. The role of the European Commission as a participant in energy negotiations with supplier and transit countries is being strengthened. It is even instructed to play the first violin in politically sensitive issues, for example, with mediation in the energy dispute between Russia and Ukraine in 2014-2015⁶². The balance of interests between the EU countries and the external context unleashes the European Commission's hand to implement a series of tough measures against the most «unloved» supplier - Russia, including the 2012 anti-monopoly investigation against Gazprom.

Realizing that the economic recession in Europe was replaced by a prolonged stagnation, the EU was forced to reduce the resources allocated to sustainable development. The rebalancing of targets stimulated a 2-3-fold gap in energy prices between the EU and the US, which is reducing the competitiveness of European industry.

The Summit of the European Council on May 22, 2013, declared a change in the priorities of the EU energy policy: instead of «sustainable energy», «competitive energy»

⁶⁰ Communication from the Commission on security of energy supply and international cooperation. "The EU Energy Policy: Engaging with Partners beyond Our Borders". COM (2011) 539. 7.9.2011.

⁶¹ Kaveshnikov 2013

⁶² Fedorov, Nosov, Mironenko et al., 2015

comes to the fore⁶³. This strategy change is based on the recognition that the accelerated development of renewable energy is accompanied by a number of problems, above all, too much, which puts a heavy burden on the state budgets and the end user.

This trend was confirmed by the main climate policy and energy policies approved in October 2014 until 2030 (Strategy 2030). The long-term goals of the European Union formulated after long discussions can hardly be called ambitious, but rather «a cosmetic improvement of the modern trajectory of the movement»⁶⁴. In fact, the European Union on this issue was divided into rich and poor, to high and low competitiveness economies, which in a fundamentally different way are able to cope with the additional «environmental» burden on business. As a result, the position of the «poor» Europe prevailed, which assesses the Strategy - 2030 not in the categories of ecology, but in the categories of costs. The March 2015 decision to build the Energy Union⁶⁵ clearly demonstrates the current priorities of the EU policy: first of all, the security of supply, second place is cheap energy, and sustainable energy has only been left to the third plan.

Realizing the existing problems, the EU's politicians speak of «the need to balance the three elements: environmental sustainability, consumer protection and security of supply»⁶⁶. In the framework of political statements, it is easy to agree with the need for such a balance, but it is a little easier to achieve it than to find the circle squaring.

As a result, the EU energy policy is a history of fluctuations. The «general line» of Brussels prioritizes one, then another, then the third goal of the energy triad. However, there are periods when the emphasis is on two out of three, such as in recent years (security of supply and cheap energy). However, these fluctuations, as well as the need to verbally position all goals as priorities, make the EU energy policy «inconsistent for its own purposes and unsatisfactory by results»⁶⁷, suffering from «lack of management»⁶⁸.

⁶³ European Council. Conclusions, 22 May 2013. EUCO 75/1/13 REV 1.

⁶⁴ Kaveshnikov, 2015: 101

⁶⁵ European Council. Conclusions. 19 and 20 March 2015. EUCO 11/15.

⁶⁶ Bulletin Quotidien Europe, no. 11030, 04.03.2014.

⁶⁷ Andoura 2010: 61

⁶⁸ Szulecki, Westphal 2014

The change in the priorities of the EU is determined both by external causes and by the dynamics of the correlation of interests between Member States. In the last decade, the shift in emphasis has been much more frequent than in the 1980s and 1990s. Apparently, the increase in the number of participants in the integration process increased the differences in energy interests within the EU. Different Member States see different elements of the three goals as priorities for the national energy policy. Poland continues to firmly defend its coal industry and France - nuclear, Germany consistently puts on «green» energy, the UK traditionally considers energy liberalization the answer to all questions, the Baltic countries and a number of states in Central and Eastern Europe are sensitive to threats to security of supply and politely indifferent to the issues of sustainable development. Such differences in strategic interests compel Brussels to pursue three hares at the same time.

3.2. Establishment of the EU Energy Union

On February 25, 2015, the European Commission published a document on the creation of the European Energy Union⁶⁹, which provides for the development of a consolidated position of all EU countries on energy, including relations with third countries. The key provisions of the strategy fit into the mainstream of the European energy policy and cover the following main areas:

- security of supply, which implies a reduction in energy dependence from non-EU countries, through more efficient use of own energy resources and diversification of sources of supply from outside;
- development of an internal energy market with free energy flows, without technical or regulatory barriers, which in the end should ensure an optimal level of prices, as well as fully realize the potential in the field of renewable energy;
- increase in energy efficiency, contributing to reducing the harmful impact on the environment and the need for energy imports;
- reduction of harmful emissions (achieving a 40% reduction in emissions by 2040 relative to 1990), revision of the European Emissions Trading Scheme and increased investment in renewable energy;

⁶⁹ *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy, COM/2015/080 final, 25.02.2015.*

- research and innovation in energy that promote technological leadership in alternative energy and reduce energy consumption⁷⁰.

The strategy for the creation of the Energy Union is the most significant initiative of the EU in the field of energy after the Third Energy Package. It includes the desire of the EC to obtain a significant part of the sovereign powers of the EU member states in order to carry out the Union's external energy policy. Algeria, Turkey, Azerbaijan, Turkmenistan, the Middle East, Africa, Norway, the USA and Canada are among the countries to develop strategic cooperation, with particular emphasis on cooperation with Ukraine⁷¹. The only mention of Russia in this document emphasizes that when favorable conditions, it is possible to revise relations in the energy sector while respecting market openness, fair competition and mutual benefit.

The creation of the Energy Union is intended to help the EU «gain a unified voice during negotiations with third countries» («... speaks with one voice in global affairs ...»)⁷². The European Commission proposes to consider options for collective gas purchases in crisis situations, which is especially important for countries dependent on a single supplier (the Baltic States and Eastern Europe). Previously, on the possibility of collective agreements on the purchase of gas, Poland insisted, but in a more radical form.

It is noteworthy that the Roadmap of the Energy Union⁷³ along with the initiative to strengthen the Energy Community and the signing of a memorandum on strategic partnership with Ukraine, expected in 2015 to sign a tripartite memorandum on the construction of the Trans-Caspian gas pipeline between Turkmenistan and Azerbaijan (with further export to Europe), but later this term was postponed to 2016⁷⁴.

Presented by the European Commission during the large-scale tour of the leadership of the Energy Union for all European countries in 2015-2016, documents describing the

⁷⁰ In the framework of this paper, only the gas aspect of the concept of the Energy Union

⁷¹ *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, COM/2015/080 final, 25.02.2015, p. 6-7

⁷² *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, COM/2015/080 final, 25.02.2015., p. 1

⁷³ *Roadmap to the Energy Union, annex 1 to A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, COM/2015/080 final, 25.02.2015

⁷⁴ *Updated Roadmap of the Energy Union, Annex to COM (2015) 572*, 18.11.2015

advantages of integration for each country (Benefits of the Energy Union for ... ⁷⁵), specify the direction of this initiative in the gas market. Practically every such brief analysis begins with an emphasis on the dependence of the given country on the import of gas from Russia and the proposed measures for its overcoming within the framework of the Energy Union.

In November 2015, the European Commission published a package of documents, the main one being the Status of the EU Energy Union ⁷⁶ and a number of reports monitoring the processes that are significant for the functioning of the Energy Union in their condition at the end of 2015. For the purposes of this paper, I will analyze only those aspects of these documents that relate to the gas market (although there is not always a direct causal relationship between the creation of Energy Union and certain events on the market):

- During 2015, the new LNG terminal in Klaipeda (Lithuania) for the first time ensured the diversification of gas supplies in the Baltic region, the interconnector between Poland and Lithuania, whose agreement was reached, will finally remove its isolation. It also points out the importance of an interconnector between Hungary and Slovakia with the possibility of a reverse, along with the same capacities on the border with Ukraine.
- The Gas Group for Central and South-Eastern Europe has agreed on a list of priority projects, the implementation of which will provide the region with access to at least three sources of gas. The EC Forum on Energy Infrastructure was also launched, the first meeting was held on November 9-10, 2015.
- The European Commission is actively working with member countries to remove regulatory barriers in the cross-border trade in gas and electricity and the full implementation of TEP provisions. Intensification of the EC initiative on the market design initiative sets the framework for further development of the regulatory process for the purpose of integrating energy markets.

⁷⁵ http://ec.europa.eu/priorities/publications/benefits-energy-union-country-factsheets_en

⁷⁶ *State of the Energy Union 2015 COM (2015) 572, 18.11.2015*

One of the urgent issues is high price differentiation and distortions in market integration between different countries, which is observed even with high price convergence of the main gas hubs due to the influence of long-term contracts and the lack of infrastructure. Retail markets remain national at the same time, therefore the EC proposes to activate regional market integration.

Commenting on the plans of the companies to build new networks linking Russia and Germany on the bottom of the Baltic Sea, the EC stresses that the 3rd and 4th stages of the North Stream will not provide access to a new gas source, but will only be another route from Russia, while the already existing ones power is only used in half. This project should fully comply with European law, and the European Commission reserves the right to assess it accordingly.

To systematically monitor the process of creating the Energy Union, a number of key indicators have been proposed in five main areas⁷⁷. Strategic planning is based on national plans, the first version of which is expected by 2017, so that after the finalization they come into force from 2021 with their subsequent periodic adjustment.

As part of the Energy Union, in February 2016, the European Commission presented a package on security of energy supplies, designed to ensure the inclusion of the EU in the transition of the world energy to low-carbon, and to increase its readiness for possible interruptions in energy supplies. The key documents of this package, significant for the development of the gas market, are the revision of the regulation on security of supply 994/2010, the revision of information mechanisms in the framework of intergovernmental agreements and the strategy for LNG.

All in all, the European Union can not simultaneously fulfill all three goals: availability of safe, affordable and sustainable energy. However, liberalization of energy market contributes to achieving these goal. Within the framework of this thesis, this conclusion is confirmed by an analysis of the implementation of most of the EU energy policy directions and their impact that will be shown further.

⁷⁷ EC Working document “Monitoring progress towards the Energy Union objectives - Concept and first analysis of key indicators”, SWD (2015) 243, 18.11.2015

4. THE THIRD ENERGY PACKAGE

The beginning of the energy market reform of the EU countries was laid down by the First and Second Gas Directives of the EU, adopted in 1998 and 2003 respectively. In 2009, the EU adopted the Third Energy Package, designed to complete the reform of the energy market.

The third energy package was designed to improve the functioning of the internal energy market of the EU and resolve existing structural problems. It regulates the following main areas:

- separation of energy suppliers from the functions of a network operator;
- strengthening the role and independence of national regulators;
- establishment of the Agency for the Cooperation of Energy Regulators (ACER);
- cross-border cooperation between network operators and the creation of a European Networks for Transmission System Operators (ENTSO-E for electricity and ENTSOG for gas);
- Increasing transparency in retail markets in the interests of consumers.

These provisions will be considered in detail below, with an emphasis on those innovations that have the greatest impact on the prospects of the gas exports organization to the European market to ensure energy security.

The third power package includes the following documents:

- 1) EU Gas Directive;
- 2) EU Electricity Directive;
- 3) Regulator of access to gas networks;
- 4) Regulator for access to electrical power networks;
- 5) Regulator for the cooperation on regulatory bodies.

The third package entered into force on September 3, 2009, but began to apply from March 3, 2011 after the expiration of the Gas and Energy Directives implementation.

The legal basis of the documents included in the Third Energy Package is diverse. The regulations are direct actions and do not require implementation, but the directives should be transferred to the national legal field of the EU member states within the prescribed period. The choice of the forms and methods for the directives' practical implementation is left to discretion of States. The third energy package is designed to develop 12 legally binding network codes⁷⁸, five of which relate to the formation of norms and rules for the functioning of the gas market.

The implementation of the Third Energy Package norms turned out to be a serious challenge for most EU countries. Since its adoption, the European Commission has followed the procedure for the complete transfer of the requirements of the electricity and gas directives to the national legal framework. By the deadline - March 3, 2011 - no country was able to report on the full and unconditional fulfillment of all requirements. In September 2011, after the situation was recognized as unsatisfactory, the European Commission opened 38 cases for the elimination of incompatibilities (infringement procedures) with regard to 19 countries on the fact of inadequate or incomplete transposition of directives. Under such administrative pressure, the EU countries largely corrected the situation, after which many procedures for eliminating inconsistencies were terminated.

In October 2012, the European Commission began to bring cases to the court that they tried to avoid before. In total, 15 (in terms of electricity and gas) were opened against Poland, Great Britain, Bulgaria, Slovenia, Romania, Finland and Estonia. All the countries mentioned, with the exception of Romania, timely eliminated inconsistencies that allowed them to avoid prosecution and imposition of fines.

After the primary completion of the procedures for introducing the directives into the national legislative field, the European Commission moved to the second stage - identifying and taking measures to correct cases of incorrect implementation, or unsatisfactory application in practice (the so-called «non-conformity problems»).

⁷⁸ Regulation (EC) 715/2009, p.15

As a result, the Commission opened preliminary trials («EU Pilot case») for 12 member countries in order to clarify and discuss the «non-compliance issue» with the national authorities. Later nine of these conciliation cases were initiated, but only one of them ended with the newly initiated procedure for eliminating inconsistencies.⁷⁹

In 2015-2016 there were no official notifications of the European Commission on judicial procedures in the framework of the TEP implementation, except for claims to Germany in April 2016. A warning was sent with the demand to adjust the application of the network operator's model in terms of insufficient staff independence and management of the operator and the national energy regulator.

In general the European authorities are still far from being satisfied with the development of the situation in this area. Thus, the strategic document of the agency ACER that defines the priorities for the coming decade «A Bridge to 2025»⁸⁰ defines the full implementation of the adopted energy legislation, including network codes and the Target market model as one of the central tasks. It also encourages all market participants to join forces to fully implement the provisions of the Third power package.

The Strategy for the Sustainable Energy Union Establishment, adopted in February 2015⁸¹, notes that «the European Commission will use all possible political instruments, insisting that all EU member states fully implement the provisions of the Third Energy Package». The authors of the document emphasize that despite the development of pan-European rules in the energy sector, in practice there are still 28 national legal zones, and the current market structure and national regulation do not provide clear signals to potential investors.

The revision of the EU energy market review, published by ACER⁸² at the end of November 2015, noting the significant progress made in the implementation of the TEP, emphasizes that full market integration is far from being achieved and many barriers to the formation of a single market are still preserved.

⁷⁹ Details on EU Pilot http://ec.europa.eu/eu_law/infringements/application_monitoring_en.htm

⁸⁰ *Energy Regulation: A Bridge to 2025 Conclusions Paper*, 19 September 2014

⁸¹ COM (2015) 80

⁸² *ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2014*, 30 November 2015

The process of implementation of the Third Energy Package has far exceeded the deadline for completion in 2011, and the essence of the reforms is not satisfactory to the European Commission, which does not see the expected results for the erosion of national differences and the formation of a homogeneous pan-European gas market. At the same time, part of the responsibility for non-compliance with deadlines also lies with regulators themselves, since the process of developing TEP development documents - network codes and a gas market model - is also far from being over. Such a delay in the process is explained not only by the complexity of institutional changes, but also, mainly, by the resistance of national governments and market participants against the loss of many sovereign powers in this area with their transfer to the union level.

The requirement of mandatory implementation of all the provisions of the Third Energy Package also extends to the member countries of the Energy Community⁸³. In this regard, Ukraine is of the greatest interest because of its transit status. In order to integrate with the European energy market, on April 9, 2015, the Verkhovna Rada approved the Law of Ukraine No. 2250 «On the natural gas market» (entered into force on October 15, 2015). It established the norms defined by the Third Energy Package of the EU in the country, in particular the separation of the operator's functions from functions of producers and suppliers.

⁸³*The Energy Community, established in 2005, an international energy policy organization that brings together a number of European countries and the countries of South-East Europe and the Black Sea area in order to ensure their market integration on a unified legal basis. In addition to 20 EU member countries, it also includes Albania, Bosnia and Herzegovina, Macedonia, Kosovo, Georgia, Moldova, Montenegro, Serbia and Ukraine as partners under the treaty (Contracting Parties). Armenia, Norway and Turkey have a status of observers. Belarus applied for an Observer status in October 2016.*

5. TARGET MODEL OF THE EU GAS MARKET

For the first time officially, the topic of the Gas Target Model (GTM) of the EU, as a framework concept, announced in the TEP, was raised at the 17th meeting of the Madrid Forum (European Gas Regulatory Forum) in 2010.

The key ideologies are the erasure of cross-border barriers for free movement of gas in Europe, the increase in the number of market participants, primarily due to traders. Let us emphasize that the formation of a single open market of the European Union is a kind of unique experiment, since the experience of the United States and Great Britain that was taken as benchmarks limited the construction of the market to a national framework, while Europeans have to unite 28 national markets by erasing their borders and unifying different country rules and practices .

The proposed model, along with the division of the market into zones according to the principle of «entry-exit»⁸⁴, is based on two key postulates - competitive excess gas supplies to the European market and extensive developed infrastructure. These two provisions are designed to ensure the viability of the liberalized European gas market, which does not yet have a sufficiently developed infrastructure, which is recognized at all levels, and has a limited number of external suppliers and high import dependence.

The European Regulators Association CEER published in December 2011 a vision of the Target Gas Model in Europe⁸⁵. According to this document, the general structure of the gas market in Europe is built on transport-related «entry-exit» zones with a virtual hub in each, with sufficient capacities and free access to them. The functioning of the wholesale market implies a lower concentration index⁸⁶ (HHI) below 2000, a churn rate for hubs of

⁸⁴ Introduced by in the Regulation 715/2009 of the European parliament and of the Council of 13 July 2009. «Gas should be traded independently of its location in the system, i.e. give network users the freedom to book entry and exit capacity independently»

⁸⁵ CEER “*Draft Vision for a European Gas Target Model*”, December 2011.

⁸⁶ The U.S. Department of Justice and the Federal Trade Commission [34] characterize markets with a HHI below 1500 as unconcentrated, between 1500 and 2500 as moderately concentrated, and above 2500 as highly concentrated.

at least 8, three different sources of gas (previously referred to as two) in each zone with a consumption of at least 20 billion cubic meters. m. As of 1 December 2012, the RSI index (Residual Supply Index, the ratio of the total supply of gas minus the supply of the largest supplier to the total demand), which should exceed 110% for more than 95 days a year, was added to these criteria.

There are a number of significant points, the totality of which forms a completely individual position for each individual EU country:

- the level of provision with own energy resources and, accordingly, the degree of import dependence;
- access to external sources of supply, incl. and LNG;
- alignment of relations with external suppliers, incl. with Russia;
- traditions and opportunities for inter-fuel competition in the country;
- availability of gas infrastructure;
- presence / absence of transit flows;
- the opportunity to become a regional gas hub.

These factors, coupled with the varying degrees of maturity of the national gas markets and the level of development of competition, determine the own interests of each country that come into conflict with the unified approaches of the Target Model, which seems to be one of the most controversial and problematic innovations. The most controversial condition of the model may be the division of the European space into market / balance zones, where small national markets will have to merge into larger ones, which in practice means the loss of sovereign rights and powers of national players in the sensitive gas sphere, transferring them to non-national zone operators.

The updated version of GTM-2014⁸⁷ was presented by ACER on January 16, 2015, preceded by the publication in September 2014 of ACER's «A Bridge to 2025»⁸⁸ document, where the implementation of GTM is identified as one of the key priorities for the forthcoming period. As for the time frame for its practical implementation, the EU

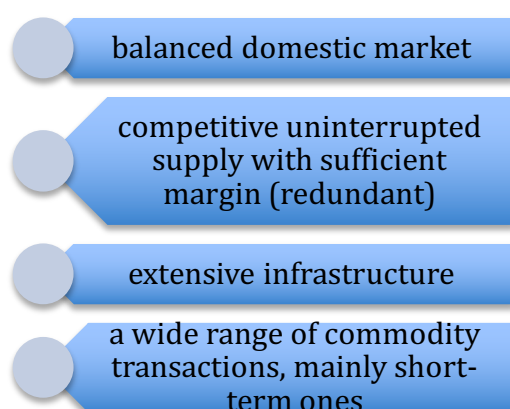
⁸⁷ In all accompanying documents, the new version of the Gas Market Target Model is referred to as GTM2014, although it was submitted late in 2015.

⁸⁸ http://www.acer.europa.eu/Events/Presentation-of-ACERs-Conclusions-Paper-Energy-Regulation-A-Bridge-to-2025/Documents/Bridge%20to%202025_Exec%20Summary.pdf

Commission Scenario 2016 perspective scenario, published in July 2016, calls for a very vague period for the successful implementation of the Target Model – «after 2020»⁸⁹.

The new edition of the GTM explains the ACER document «European Gas Target Model - Review and update»⁹⁰. The key principles of the construction of the European gas market have not changed in comparison with the first version of the GTM - the creation of a single competitive open market in Europe based on entry / exit areas and virtual trading hubs. Market integration is provided by an appropriate infrastructure for free gas flows between market zones to consumers most in need of its supply. Schematically, the operation of GTM, based on the indefinite number of market zones connected by the principle of overflowing basins, is presented in Figure 7 and Figure 8.

Figure 5.1. Market conditions of market functioning

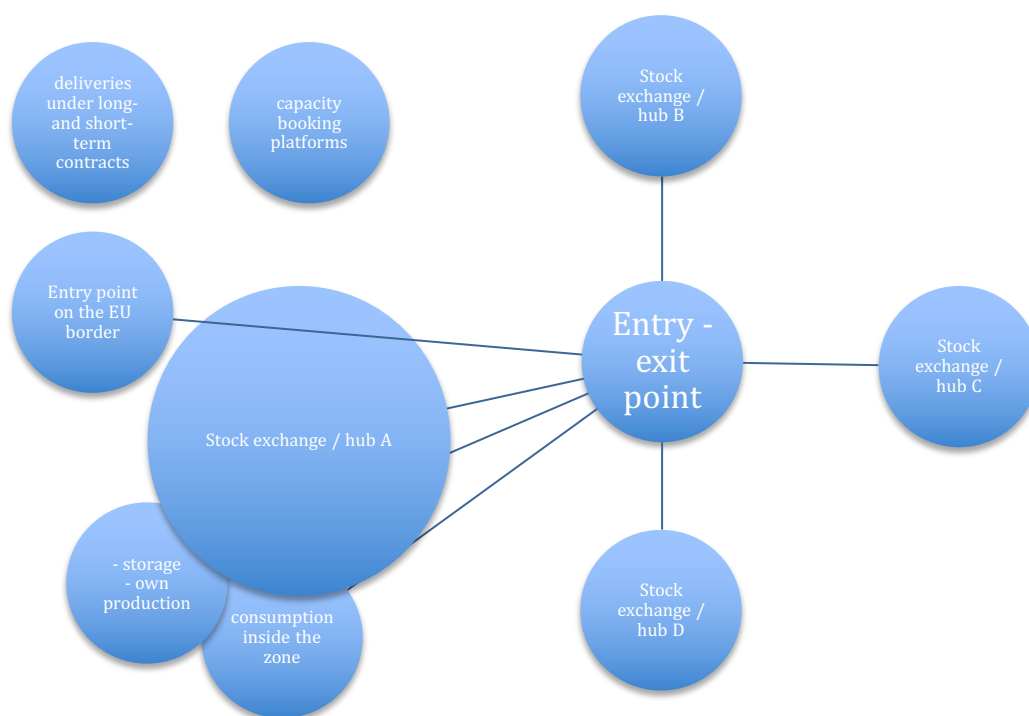


Sources: Data adopted from Energy Research Institute of Russian Academy of Sciences

⁸⁹ *EU Reference Scenario 2016 – Energy, Transport and GHG emissions Trends to 2050, июль 2016*

⁹⁰ <http://www.acer.europa.eu/Events/Presentation-of-ACER-Gas-Target-Model-/default.aspx>

Figure 5.2. General scheme of market functioning based on market zones



Source: Data adopted from the Energy Research Institute of Russian Academy of Sciences

The key element of the GTM is a market or trade zone that is formed by the merger of two or more related markets at the wholesale trade level by using a joint infrastructure, combining their virtual trading points (hubs) and creating a common cross-border trading / balance zone.⁹¹ The main features of a single market zone are:

- a single integrated transboundary balance area, including a gas transportation system and a gas distribution system;
- the capacities of gas-transport interconnectors are reserved and paid for by distributors, but not by suppliers. The cost of booking is included in the tariffs of distributors at the exit from the system;
- the tariffs for the input / output zones are calculated in accordance with the network code NC TAR for each market zone;

⁹¹ Available here: <http://www.acer.europa.eu/Events/Presentation-of-ACER-Gas-Target-Model-/Documents/European%20Gas%20Target%20Model%20Review%20and%20Update.pdf>

- all entrances and exits to / from the GTS and the distribution network included in the cross-border balance zone are integrated into a single balance sheet system;
- a single cross-border operator of the market zone is created for the united markets with the participation of system operators of these markets.

In the new edition of GTM2014, the restriction of consumption for each market zone at the level of 20 billion cubic meters was excluded from consideration. It is emphasized that the optimal size of the market zone should not be determined by national borders, and in the advancement to the single market larger areas should appear, however, exceptions are possible in this process.

The indicator of liquidity of trading platforms was also excluded. Analyzing the dynamics of the this indicator on European hubs, it is easy to assume that the authors of GTM2014 abandoned this widely used liquidity criterion in the world practice precisely because of its huge gap with the accepted standards and the inability to promptly correct this situation.

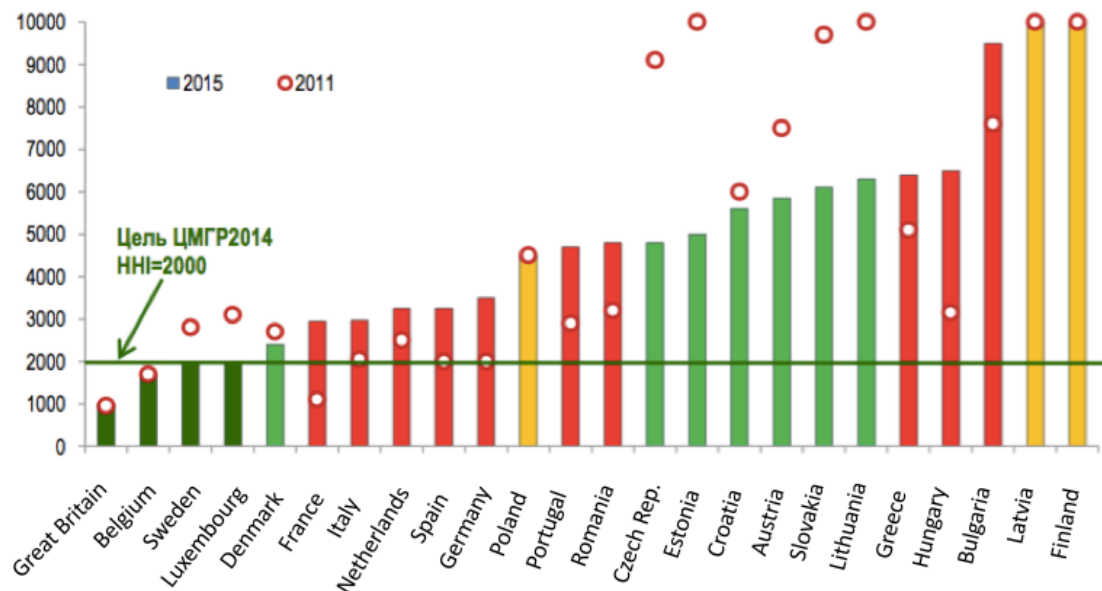
GTM2014 retained some of the criteria for its previous version, namely, the Herfindahl-Hirschmana (HHI) market concentration index below 2000, the number of sources of supply equal to or greater than three, and the value of the supply safety index (RSI) above 110%. To this list, market concentration indicators for trading activities were added below 40% for one company.

What are the positions of the European states at the moment in relation to the key criteria of the new GTM2014?

As of the end of 2015, 13 EU countries (Portugal, Slovakia, Greece, Spain, Austria, Netherlands, Czech Republic, Great Britain, Hungary, Germany, Italy, France and Belgium) receive gas from four or more sources of supply. Croatia, Slovenia and Poland have three sources of supply, which meets the minimum requirements of GTM2014. At the same time, ten European countries still depend on one source (Finland and Latvia) or two (Romania, Ireland, Bulgaria, Denmark, Lithuania, Sweden, Estonia and Luxembourg), which does not meet the requirements of the Target Model.

At the end of 2015, a very unexpected dynamics shows a significant HHI index for understanding market concentration. The required concentration level (below 2000) corresponds to only four countries (Figure 9). By 2015, Lithuania and Estonia have significantly improved their positions, which is due to the opening of the LNG terminal in Klaipeda, as well as the Czech Republic and Slovakia, which are gradually departing from their traditional peg to Russian gas due to the new infrastructure. However, during the considered period a number of states (Mediterranean, East European, France, Germany, Greece) showed the reverse dynamics, i.e. a significant increase in the HHI index. They explain this by reducing consumption and abandoning some LNG supplies against the backdrop of the need to fulfill their obligations under long-term contracts. In fact, many of these countries have sacrificed a variety of gas sources in favor of large suppliers, primarily Russia, due to the price competitiveness and flexibility of such supplies.

Figure 5.3. HHI (market concentration level) dynamics in the EU, 2011-2015



Source: Data adopted from ACER MMR2016

In addition to those discussed above, a number of new criteria were introduced at GTM2014, aimed at developing short-term trading on the wholesale market⁹², including not only spot, but also forward and futures:

- a) Order book volume: sufficient and adequate volumes of supply and demand for gas in the «order book», which are necessary for gas supplies in a reasonable time frame, which will allow market participants to buy and sell gas when they need it, providing with effective risk management;
- b) Difference between bid and offer price: a low difference in these indicators means low transaction costs for market participants and supports market participants with a low level of maneuverability and flexibility in trading operations;
- c) Price book sensitivity sensitivity: a low value of this indicator means a lower added value for market participants when buying or selling significant volumes of gas and supports market participants with a low level of maneuverability and flexibility in trading operations;
- d) Number of trades: a sufficient number of trading operations persuading market participants that prices are transparent and fairly reflect the situation on the market.

As of mid-2016, these new criteria generally correspond to two market zones in the EU, united around the British NBP hub and the Dutch TTF hub. According to several indicators, Germany is approaching them with market zones around the NCG and Gaspool hubs, other European market areas do not meet the stated liquidity criteria.

Complementing the «portrait» of the new market model, should be added that security of supply and upstream-competition require diversity and explicit «redundancy» - both infrastructure and external supplies. The drop in demand for gas has recently contributed to the formation of the necessary «redundancy» of gas transmission capacities, but this is still not enough to form a safe and competitive system. In addition, maintaining the redundancy of infrastructure means an increase in final prices. How the economy of excess gas supplies should develop is also not entirely clear, because the constant reservation of certain volumes will also increase the final cost.

⁹² By «wholesale gas market» here is meant the total trading activity in the gas market (including spot, prompt and forward) with agreed delivery to a certain point and concluded on an open trading floor). The main delivery points are the virtual entry / exit points of the GTS.

Special attention should be paid to several recommendations of the document on the updated European Gas Target Model - Review and update (ACER).

Regulators are convinced that priorities in energy policy should be given to market-oriented measures, but in some situations, non-market measures need to be implemented, and in a number of EU member states such measures have already been taken. It is curious that, as an example of a non-market solution to this issue, the Baltic countries are reduced, which have reduced their dependence on imports from Russia through the construction of an LNG terminal, for the sale of which it was necessary to introduce a quota of 25% for all consumers.

Also, EU countries are invited to oblige suppliers to split the total volume of imports into small areas of supply, for example, at least 20% should come from import points in the west and about 80% from import points in the east of the country.

The next possible legislative measures may be legal restrictions on resources obtained from a single source,⁹³ it is suggested that some premium margin be introduced to encourage replacement of those missing from the main source of supply from other sources. ACER stipulates that such non-market measures should only be applied if supplies are disrupted and their security level is reduced, without identifying exact criteria for determining the crisis situation. In fact, this way allows to create artificial conditions, in which, on the one hand, the level of competition rises, but on the other hand, the capabilities of individual market participants are limited and prices are likely to increase.

Thus, the new edition of GTM in the EU strengthens attention to the development and optimization of short-term trade. With regard to the organization of external supplies, which is fundamentally important for energy-deficit Europe, along with declarations on increased competition and diversification, non-market measures are also proposed, up to an extreme - directive restriction of supplies from a single source. Such proposals have

⁹³ "... If, as a result of market development, there is a long-term excessive dependence on a particular source of gas supplies, an additional possible measure may be the legitimate restriction of the share of this single source. This measure can be viewed as the legal way by which the EU maintains supply security with least cost "For more details, see section 3.3.3. ACER's "Gas target model - review and update"

not yet been fixed normatively, but it is important that they are expressed by a pan-European regulator, and this makes the probability of their implementation quite high.

Work on the concept of the Target Model, and even more so, its practical implementation, is far from complete. Expert P. Hiater assumes that not only the outlines, goals and terms of the model implementation can change, but also the views of the European Commission on the single energy market. «If we assess the current state of affairs in 2015, it seems that EU policy on the gas market can not be fully realized, and most likely, there will be a gradual transition from region to region over time».⁹⁴

The general logic of the transformation of the European gas market in the framework of the implementation of the Third Energy Package and the Target Gas Market Model is really complicated and requires consistency. The current state of the European gas market is the transition from the old traditional approaches to the new model of the gas market based on the Anglo-American model.

The proposed model for the formation of an open competitive gas market in the EU space, coupled with the perseverance of its leadership in translating its ideas into practice, practically leaves Europeans in no doubt about its viability and choice in the ways and methods of its formation. Since the beginning of reforms in the area of the united Europe, competition has significantly increased, both on the part of suppliers and among companies operating in the domestic market, in the transportation and distribution sector; Integration processes started, supported by the adoption of unified operational and technical rules (network codes); the price gap between countries is shrinking, the traditional system of contractual supplies is increasingly transformed into a short-term market model with the gradual formation of gas hubs. However, certain features and weaknesses of the ongoing reforms are also evident:

- high heterogeneity of market participants and equally strong differences in their interests, forced, nevertheless, to obey common standards and common action algorithms;

⁹⁴ P. Heather "The evolution of European traded gas hubs", OIES, December 2015.

- europe's gas market operates under conditions other than the Anglo-American market model that developed within a single country, with a substantial production, low import dependence, excessive infrastructure and a large number of participants;
- the short-term market and the transformation of many things after the separation of the network business into gas traders makes it difficult to implement large-scale infrastructure projects. But the already available capacities, with their incomplete loading, against the background of falling demand in general, can lead to the abandonment of large-scale construction, limited only to the expansion of bottlenecks, which makes the problem of new large capacities less sensitive. But if the industry in the region were at the stage of steadily growing demand, some regulatory requirements could become a brake on this process.

The model of an open, single gas market in the EU is one of the manifestations of a pan-European market concept, which in turn is based on the idea of a unified Europe with its basic postulate on the free movement of people, goods and services. How viable this idea will be in the face of new geopolitical and economic challenges leading to the disintegration and re-sovereignization of the EU countries is not yet obvious.

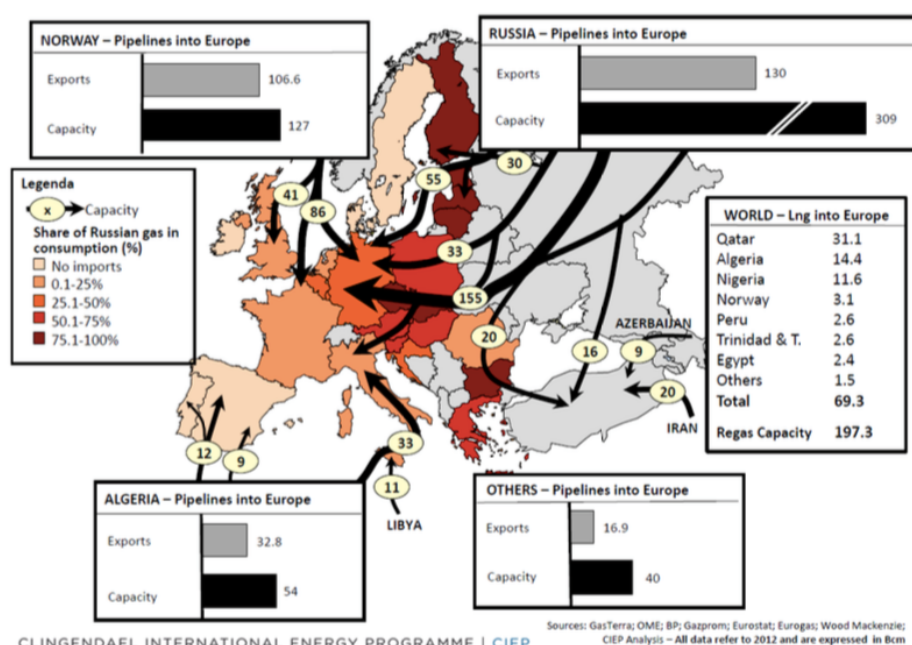
Thus, we are witnessing a change in the legislative paradigm of the European gas market, which is objectively time-consuming. The process of developing and implementing network codes and the Gas Market Target model essentially means a total replacement of regulatory, technical and organizational rules for the functioning of the market with significant institutional changes at the union, national and corporate levels. The European Commission, clearly defining its goals and creating legal instruments for their achievement, is steadily moving towards their implementation, eventually overcoming the resistance of the environment, which is yet another confirmation of the supremacy of the Union right over national interests. The conceptual approaches of the European Commission to create a single market may well be adjusted under the influence of general economic and political trends.

6. CONSEQUENCES OF THE IMPLEMENTATION OF THE EU ENERGY SECURITY STRATEGY FOR THE GAS TRADE PARTNERS

The realization of the EU energy security strategy, which goes along with the economy decarbonization, has an impact on the traditional suppliers' interests. As a result of decreasing or refusal of natural gas import from Russia, the later will have some revenue implications⁹⁵ that will have negative impact on the Russian economy development and national security maintainance in general. Thus, some Russian authors claim that the EU energy security strategy aimed at the increasing its energy security puts in danger the partner-country's security, in this case, Russian. This is first of all specified by the long-term EU-Russian partner relationship in the natural resources trade.

The EU imports up to 70.8% of Russian export natural gas, thus being a vital market for Gazprom, a company that has monopoly⁹⁶ on gas exports since 2006 as a result of the adoption of the law on gas exports. The Russian Federation is, in turn, the main supplier of natural gas to the countries of the EU⁹⁷.

Map 6.1. Europe gas imports in 2012; actual flows and capacity



Source: CIEP based on sources quoted in the map

⁹⁵ About 50% of budget revenues is income from the energy resources sales

⁹⁶ The monopoly also extends to subsidiaries of OAO Gazprom.

⁹⁷ The share of Russian gas in the total volume of natural gas imported by the EU is 34%

Taking into account the existing interdependence, the «EU-Russia Roadmap: Cooperation in the field of energy until 2050» recognized the maintenance and development of stable relations between the Russian Federation and the EU in the field of gas cooperation as one of the priority areas for the development of bilateral relations.

However, under the anarchist nature of international relations, states act primarily based on their own interests and needs. This has led to the fact that the countries of the EU, realizing the high level of their import-dependence from energy suppliers, have been beginning since the mid-1990s. implement a number of active measures aimed at improving energy security.

It seems that the policy of increasing the share of energy received from renewable sources, approved in the White Paper adopted in 1997, laid the foundation for a low-carbon model for the development of the economies of the EU countries. The EU's further steps to ensure energy security included diversifying energy suppliers and energy sources, as well as reforming the EU energy market.

Such measures aimed at enhancing the security of the EU have created a threat of a possible reduction in demand from the EU member states for natural gas supplied from the Russian Federation, which in turn may have negative consequences for the economic development of the Russian Federation and its national security in general. Here is a collision between European and Russian view with regards to the understanding of the EU energy security strategy. While Russia claims that this strategy goes along with offensive realism theory, the European Union sees it only as a defensive realism strategy which maximizes the countries' benefits through defence, cooperation and diplomacy.

Based on the definition of «energy security» presented at the beginning of this work, an important component of energy security is the contribution by the country / group of countries to the sustainable development of the international community. This implies that a country/ group of countries takes responsibility to reduce emissions that pollute the environment, as well as implementing measures to prevent global climate change in the course of active human economic activity.

One of the priority tasks of the EU for the period up to 2050 is to reduce greenhouse gas emissions by 80-95% relative to the level of 1990⁹⁸. At least ambitious are the medium-term plans of the integration group to reduce greenhouse gas emissions - by 2020 their share should be reduced by 20% from the basic year⁹⁹ established by the Kyoto Protocol.

The EU plans to bring the existing plans to life by implementing the strategy of transition of the EU countries to a low-carbon model of economic development¹⁰⁰. Such a transition should be carried out due to the refusal to use hydrocarbon energy sources (primarily coal and oil) in economic and economic activities, which are the main sources of increasing the amount of greenhouse gases in the atmosphere. Alternative sources of energy are called substitutes for hydrocarbons, primarily solar and wind energy, tidal energy, energy produced from biofuels.

An important step towards the transition to a low-carbon model of economic development is the reform of the energy sector¹⁰¹. According to expert estimates, in 2010, up to 26%¹⁰² of the world's greenhouse gas emissions accounted for the energy sector¹⁰³. For comparison, similar indicators for the industrial and transport sectors were 19% and 13%, respectively¹⁰⁴.

⁹⁸ European Commission (2011). Energy Roadmap 2050. http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf

⁹⁹ European Commission (2010). Europe 2020: A European Strategy for Smart, Sustainable and Inclusive Growth. <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

¹⁰⁰ European Commission (2011). Energy Roadmap 2050. http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf

¹⁰¹ European Commission (2011). Energy Roadmap 2050. http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf

¹⁰² Geden, O., Marcelis, C., Maurer, A., (2006). Perspectives for the European Union's External Energy Policy: Discourse, Ideas, and Interests in Germany, the UK, Poland, France: Research Unit EU Intergration, Stiftung Wissenschaft und Politik. German Institute for International and Security Affairs.

¹⁰³ ILO (2011). Skills and Occupational Needs. http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_168354.pdf

¹⁰⁴ REN21. (2012). Renewables 2012 — Global Status Report. <http://www.map.ren21.net/GSR/GSR2012.pdf>

In the EU, the energy sector accounted for up to 60% of all greenhouse gas emissions in 2010, 19.7% in the transport sector and 7.3% in the industrial sector¹⁰⁵. However, it is worth noting the positive dynamics of the reduction of greenhouse gas emissions in the European energy sector over the past decades. As a result of the adoption of the EU Green Paper in 2005, which identified the development of sustainable, competitive and safe energy as a priority¹⁰⁶, the amount of greenhouse gas emissions in the EU energy sector decreased by 3.2% in 2010 compared to 1990, in the transport and industrial sectors by 5.8% and 1% respectively.

EU is planning to further reduce the volume of greenhouse gas emissions into the atmosphere as a result of the reform of the energy sector, which will be based on increasing the share of energy produced from renewable energy sources in the overall energy balance of the EU.

The decision on the active development of renewable energy sources (RES) and their implementation in the economic activities of the EU member states was adopted and recorded in the White Paper «Energy of the Future: Renewable Energy Sources»¹⁰⁷, published in 1997. Then it was recognized that the benefits provided as a result of the development and use of renewable energy are not fully used by the member countries of the integration group¹⁰⁸.

In 1997, the share of energy produced from RES was less than 6% of total energy consumption¹⁰⁹. In order to ensure and maintain a high level of its energy security by the EU countries, the White Paper (1997) determined that by 2010 these figures would

¹⁰⁵ Eurostat (2010). Greenhouse gas emissions by source sector 1990 and 2010. http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Greenhouse_gas_emissions_by_source_sector_1990_and_2010.png&filetimestamp=20130123130433

¹⁰⁶ European Commission (2005). Green Paper on Energy Efficiency or Doing More with Less. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0265:FIN:EN:PDF>

¹⁰⁷ European Commission. (1997). Energy for the Future: Renewable Sources of Energy http://europa.eu/documents/comm/white_papers/pdf/com97_599_en.pdf

¹⁰⁸ *ibid*

¹⁰⁹ European Council. (2007). Action Plan (2007–2009) Energy Policy for Europe (EPE) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0001:FIN:EN:PDF>

double to 12%¹¹⁰. Taking into account the degree of development of «green» technologies at that time, achieving such indicators seemed not feasible.

However, the analysis of statistics showed that the EU countries not only achieved the planned plan of 12%, but exceeded it. The share of energy produced from renewable energy sources amounted to 12.5%¹¹¹ of the total energy consumption of the EU in 2010. The new ambitious plans of the EU to increase the share of «green» energy in the total energy consumption are presented in energy strategies developed for the period up to 2020 and 2050. According to the «Strategy 2020», the EU plans to increase the share of energy produced using «green» technologies to 20% in the total energy consumption of the countries of the EU¹¹². By 2050, this figure should increase to 55%, and under favorable conditions for the development of the European economy, the share of "green" energy should be 75%.

Some experts consider the implementation of this scenario unlikely due to the growing crisis phenomena within the integration group, which, above all, are of an economic nature¹¹³. However, it should be noted that in recent years, the EU countries have experienced several major crisis events that have slowed down the economic growth of the European economy, but have not been able to impede its full development.

In 2007, the share of energy produced from renewable energy reached 9.8% of the total energy consumption of the EU. By 2008, this indicator increased to 10.5%, and in 2009 it was already 11.7%¹¹⁴. It seems that such an active development of «green» energy, including in times of crisis, is connected with the EU's desire to increase its energy security and, consequently, national security in general.

¹¹⁰ European Commission. (1997). Energy for the Future: Renewable Sources of Energy http://europa.eu/documents/comm/white_papers/pdf/com97_599_en.pdf

¹¹¹ Eurostat. Share of renewable energy in gross final energy consumption. http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=t2020_31&language=en

¹¹² European Commission (2010). Europe 2020: A European Strategy for Smart, Sustainable and Inclusive Growth. <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

¹¹³ European Commission (2008). Second Strategic Energy Review: An EU Energy Security and Solidarity Action Plan

http://ec.europa.eu/energy/strategies/2008/doc/2008_11_ser2/strategic_energy_review_memo.pdf

¹¹⁴ EurObserv'ER. (2012). The State of Renewable Energies in Europe <http://www.eurobserv-er.org/pdf/barobilan11.pdf>

Thus, over the last ten years, the share of energy produced from renewable energy sources has doubled in the total volume of primary energy sources. This indicates that there is a stable trend in the EU countries to substitute hydrocarbon consumption through the development of renewable energy sources, which, in turn, can reduce the long-term import dependence of EU member states and thereby increase their national security.

As of 2010, a significant share (66.6%)¹¹⁵ of energy derived from non-traditional renewable energy sources in the total volume of primary energy sources is biomass. 18, 45% are hydro power, 7.7% - wind energy, 3.57% and 2.38% for geothermal and solar energy, respectively. It should be noted that for the period from 2000 to 2010, the highest growth rates were typical for solar energy. If in 2010 the share of solar energy was 0.25% of the total energy received from non-traditional RES, then by 2010 this indicator increased to 2.38%¹¹⁶.

The price of traditional energy sources, especially hydrocarbons, is characterized by instability and a propensity for growth. Moreover, in the conditions of an anarchic environment of international relations, the actions of the state in relation to partner countries can often be selfish and aimed at obtaining their own benefits. This pattern of behavior is most typical, first of all, for the crisis periods, when each state strives to use as much as possible all available resources and levers of influence with a view to ensuring national security.

In such conditions, the needs of import-dependent countries often become objects of manipulation. Countries that are under pressure are often forced to accept the terms of the treaty, which in the ordinary situation would be considered, rather, as unacceptable. It seems that it is the desire to protect themselves in the event of crisis phenomena is an important incentive for active development of renewable energy in the EU.

¹¹⁵ Own calculations based on statistics Eurostat. Primary Production of Renewable Energy

<http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=ten00081&language=en>

Eurostat. Renewable energy primary production: biomass, hydro, geothermal, wind and solar energy

<http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=ten00082&language=en>

¹¹⁶ *ibid*

The increase in investments¹¹⁷ in the development of technologies that allow to receive energy from renewable resources has made it possible to also increase the number of people employed in the «green» sectors of the economy from 1 million in 1991 to 1.4 million in 2005, which averaged 0.64 % of the total number of employees in all sectors of the economy of the EU. By 2010, the number of employees in the «green» sectors increased by 25% and averaged 1.75 million people¹¹⁸. As part of the implementation of the Strategy 2020, it is planned that this figure will increase to 2.8 million by 2020.

The active development of «green technologies», accompanied by the growth in the number of people employed in the renewable energy sector, has led to the fact that the «green» sectors of the EU economy account for an average of 1% of GDP. By 2020, this indicator should increase to 1,45%¹¹⁹.

As of 2010, the greatest number of jobs was created as a result of the development of technologies that allow energy to be extracted from biomass - 273,000 jobs, followed by wind power and solar energy - 253,145 and 268,110 jobs, respectively¹²⁰.

Currently, the highest growth in employment is observed in the solar energy sector, where the number of employed in 2010 increased by 50% in Germany and France and 70% in Italy¹²¹. It seems that such a rapid growth rate is due to significant investments in solar energy, which is currently one of the priority areas for the development of non-traditional energy in the EU.

Summing up, it should be noted that as a result of the active development of «green» technologies, the average number of employed in the countries of the united Europe has increased. A significant contribution to the reduction in the level of unemployment was made by the development, first of all, of solar and wind power, as well as the improvement of technologies allowing to receive energy from biomass.

¹¹⁷ In 1991, investments in the development of "green" technologies amounted to 29 billion euros, in 2005 - 61 billion euros, in 2010 - 101 billion euros

¹¹⁹ WWF. (2009). Low Carbon Jobs for Europe Current Opportunities and Future Prospects

¹²⁰ Ragwitz, M., Schade, W., Breitschopf, B., Walz, R. (2009). The impact of renewable energy policy on economic growth and employment in the European Union http://ec.europa.eu/energy/renewables/studies/doc/renewables/2009_employ_res_report.pdf

¹²¹ ibid

According to experts¹²², one of the results of the active development of «green» technologies will also be an increase in the productivity of the European economy, which will lead to an increase in the competitiveness of the EU countries in the international arena.

The main objective of the Third Energy Package is to create a competitive environment in the European energy market, protect the rights of electricity consumers, and ensure efficiency in the supply and distribution of resources.

The main concern of the EU partners due to the adoption of the Third Energy Package is related to a set of measures for structural reform of vertically integrated enterprises (VIEs), whose purpose is to separate the natural monopoly from competitive activities (production, sale). The objective of this division is, on the basis of the representatives of the EU, the non-members of the system for transporting assets and commercial incentives to discriminate against non-affiliated companies.

Russia, which has declared for several years, its intention to participate in the EU gas business at the same time in two ways: the consignor and the owner and/or operator of the gas transmission system, as a result of the adoption and implementation of the Third Energy Package, will be forced to abandon its intention. According to the European Commission, implementation of such measures envisaged under the Third Energy Package is necessary to increase competition in the European energy market and reduce the price of energy.

Currently, most European consumers receive gas under long-term contracts, however, starting in 2009, many large companies that buy Russian gas from Germany and Italy, which account for half of Gazprom's export sales to Europe, have requested a reduction in the minimum level of selection gas for three to six years. Moreover, all consumers insisted on developing a new price formula, where part of the gas would be tied to spot transactions.

¹²² EurObserv'ER. (2012). The State of Renewable Energies in Europe http://www.euroobserver.org/pdf/press/year_2012/bilan/english.pdf

As a result of the negotiations, preferential terms were granted to the four largest consumers of Russian gas - German E. On Ruhrgas, Italian Eni, Turkish Botas and French GDFSuez. The parties agreed that part of the fuel (15% per annum of the contract volumes)¹²³ will be delivered at spot prices. Gazprom called such measures temporary and noted that the basic terms of the contract were not violated.

However, despite the concession, the competitiveness of Russian gas against the background of other suppliers has significantly decreased. According to the results of 2010, according to the data of the Federal Customs Service and the Central Bank of Russia, the volumes of Russian gas to Europe decreased from 158.4 billion cubic meters in 2008 to 120.5 billion cubic meters. m in 2009 and amounted to 107.4 billion cubic meters. m in 2010¹²⁴. In 2011, the export of Russian gas to Europe increased by 9% and amounted to 116.8 billion rubles. cu. m, which was still below the pre-crisis level.

In 2011, European consumers tried again to get discounts from Gazprom, but the Russian company refused further concessions. As a result, European consumers decided to settle the matter in court. Edison, Premium Gas, RWE Transgas, E.ON applied to the Stockholm Arbitration Court, which required a review of the terms of the contract in court. Some of the requirements of European consumers were satisfied by OAO Gazprom in a pre-trial order.

In recent years, there has been a steady trend of gas market reform, the main goal of which, according to the European Commission, is to create a competitive environment, improve efficiency in the supply and distribution of resources, and protect the rights of electricity consumers.

One of the directions of the reform of the European gas market is the transition to the indexation of the spot price and the reduction in the volumes of oil received by European consumers under long-term contracts.

¹²³ Boute, A. (2012). Promoting renewable energy through capacity markets: an analysis of the Russian support scheme. Energy Policy.

¹²⁴ Boute, A. (2012). The European foreign energy efficiency policy: securing external energy supply in a carbon-constrained world, pp.66–85.

The desire of the Russian Federation to keep gas supplies profitable for itself within the framework of long-term contracts, bypassing the requirements of the Third Energy Package, leads to an increase in tension within the framework of the gas cooperation between Russia and the EU. As a result of Gazprom's reluctance to adopt new rules of the game on the European gas market, first of all, the Russian economy as a whole will suffer. Gas exports to Europe constitute a significant part of the Russian budget revenues.

The EU seems more protected in this situation. The countries of the united Europe are able to ensure a high level of their energy security through the diversification of energy sources (the development of alternative energy sources, the possible start of shale gas production in the territory of a united Europe), as well as the diversification of energy suppliers (the start of LNG import from the USA, the commissioning of additional gas pipelines).

Conclusion

The existence of geographic disparities between the regions of production and consumption of energy resources, and interruptions in the supply of hydrocarbons to import-dependent countries, have led to the issue of energy security, in particular, security of supply, occupying an important place on the international agenda. The most acute consequences of energy crises experienced the countries of Western Europe. The consequence of this was the active development of a strategy aimed at enhancing the level of energy security of the countries of the EU.

An analysis of the normative documents that form the basis of the EU strategy for achieving energy security showed that currently the priority tasks in enhancing the energy security of the countries of the EU are:

- transition to a low-carbon model of economic development;
- an increase in the share of renewable resources in the overall energy balance of the EU countries;
- Diversification of energy suppliers;
- Increasing self-sufficiency in energy resources through the production of shale gas in the EU.

Liberalization of gas market plays one of the most important roles in the energy market reform, which is aimed at enhancing the energy security with a clear focus on security of supply. Opening up the market, making it more liberalized creates many opportunities for the EU countries to cooperate between themselves on the one hand and decreases their dependency on the gas suppliers on the other hand. Moreover, liberalization of the EU gas market prevents its monopolization that is undoubly beneficial for the member states both from economic and political point of view.

Many international relations theories argue that states act on their own interests. The EU working on its energy market reform through market liberalization and other initiatives is acting in the Union's interest too. Thus, the EU strategy can be explained by defensive realism theory meaning that the Union maximizing its prospect of surviving seeks

security not by decreasing security of others intentionally, but by cooperation and resolving the conflict of interests.

The EU energy strategy creates not only favorable conditions for increasing the level of energy security of states and strengthening and developing their economic potential (internal consequences of implementing the strategy), but also brings the opportunity to reform the relations with the partner countries, in particular with Russia (external consequences of the strategy implementation).

The internal consequences of implementing the EU strategy for achieving energy security include the reform of the energy sector, along with an increase in the share of «green» energy in the energy balance of the countries of the EU (primarily due to the development of solar energy) and, as a result, a reduction in greenhouse gas emissions in atmosphere; an increase in the number of people employed in the economy; diversification of energy suppliers, as well as energy sources.

The external consequences of implementing the EU strategy for achieving energy security are ambiguous. On the one hand, EU partners have a unique opportunity to cooperate with the countries of the EU within the framework of the mechanisms stipulated in Directive 2009/28 / EC, designed to promote the development of «green» technologies. It seems that the EU-Russia cooperation within the framework of the 2009/28 / EC directive will allow Russia to increase the innovative potential of its economy – positive externality of the EU strategy.

On the other hand, the implementation of the reform of the European energy market (the adoption of the Third Energy Package), is considered by the Russian Federation as discrimination against Russian suppliers of hydrocarbons, is capable of weakening the position of Russian oil and gas companies on the European market in the event of the impossibility of finding a compromise, which in turn will immediately have a negative influence on the economic development.

All in all, the developments in the EU gas market, reforms and market liberalization has positive implications on the energy security and security of supply in particular.

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Annex I

Interview with em. Univ.-Prof. Dr. Günther Brauner

13.06.2018, 17.30 at the Institut für Energiesysteme und Elektrische Antriebe, Technische Universität Wien

- 1. Different Member States of the EU see different elements of the three goals as priorities for the national energy policy. Poland continues to firmly defend its coal industry and France - nuclear, Germany consistently puts on «green» energy, the UK traditionally considers energy liberalization the answer to all questions, the Baltic countries and Central and Eastern European states are sensitive to threats to security of supply and politely indifferent to the issues of sustainable development. Such differences in strategic interests compel Brussels to pursue three hares at the same time. How realistic is it to push the liberalization of gas market in the EU with such a policy differences?*

Speaking about Poland, for example, they have very old-fashion coal power station with 25% efficiency. Since a long time they have been dependant on coal workers. Thus, Poland keeps coal due to these social reasons. In Germany there is a surplus of wind energy and Polish people would get it for the price, which is much lower than the coal price but again, social reasons. This does not allow the country to go to the future. In the other academic work we created a Polish model with flexible power stations to solve this problem.

Talking about the Energy Union, I am convinced that countries will cooperate. It is just that different countries need different amount of time to come to it. Poland has a very conservative and religious government now, maybe with the next government the things will change. France now decided to cut down their nuclear dependency up to 50%. Flexible power stations would be a good help for them.

When the lines are overloaded they stop working and the power goes to the other line, which stops too. Then it creates the circle and black out happens (referring to the book «Black out», which according to Prof. Brauner is more emotional than realistic, although gives a good understanding to everyone how the system works). Austria, though, has the

best black out prevention system in Europe. The austrian model – decentralized with minimum contact with Internet - can be easily understand with an example of human body. The brain can not be controlled from outside and can only give information. You can not stop the system, the nerves will continue giving the information about body functioning. The same with centralized computers – they are not allowed to control the systems, but are only allowed to get information about energy surplus to the big market. So we must be cyber secure and independant of the centralized system. This system can be also applied for the gas market.

2. *We see a lot of progress in the EU with regards to the energy governance. However, we are still far from meeting the goals set. What does, to your mind, prevent European countries from faster reformation of their energy market?*

In Austria I was fighting for 20 years to bring the attention to the RES, «green» energy. After 20 years politicians finally invited me to the anual party meeting to see what is the future. Five years ago only the situation started to change. 10 years ago we built the first wind generator. So the problem was not Russian gas dependance that served as an insentive but the desire to break the old-fashion approach to energy governance and prepare ourselves to the future.

A big amount of investment is needed. This is always an issue. Also, limited capacity of sun and wind generations should be taken into account. This is why he rate of energy change is 1% a year. Brussels gives motivation by setting the time limit for implementation, which is good. Another issue is that some countries have also very old-fashion approach to the energy government.

3. *Do you think liberalization of the market more benefits or undermines the security of supply? Would you say that this dilemma ends up in choosing what is more important for the country - economy (affordable market price) or politics (national security)?*

Security of energy supply is more important of course. Without supply security we will have extreme costs. However, this does not mean we can not balance affordable price and security of energy supply.

The most important thing in security is maintenance of the power grid. Let it run as it is

was the problem at the beginning of liberalization problem. The maintenance was cut down from 2.5% to 0.5%, this caused the problems. Now the introduced power quality management system allows us to take much care of the maintenance. This is a good thing of liberalization.

Security of supply is now a part of regulation, not like before. The dependence on other countries is a political part. Power station grid was in one hand before, now regulator and seller are separated that creates competition and now the energy price can be easily justified. This is a big advantage of market liberalization. Competitive utilities with a ten-year network development plans are a good thing to do.

4. What is the impact does the EU energy market reform has on gas suppliers?

Everyone looks to more competition. The competition brings more efficiency and this is what is needed. The energy market is free and so, the best out of best are in the market. I don't think that Gazprom will start to change their market though. They are the big company and the big companies are always efficient. The contracts with Russia are reliable I think. The last one for example, between Austria and Russia signed by Mr. Putin when he came to Vienna is a good thing. It is better to have a stable contract until 2040. Being a reliable partner is an important thing since if you let your partner down you do it only once. And Russia that is very dependant on its gas sells/ contracts will be very careful with it. This is also a part of energy security.

5. What would be your estimation or plan for the perfect energy market composition in the EU?

Diversification is important. So we are on the right path now. The result should be 80% of RES and 20% gas. Dependence on oil and gas in future will be costly, 70s and 80s proved it to us already. Under 2050 Strategy all countries should meet these standard.

The problem with Energy Union is that the partners have to have the same willing. They do not need to have the same financial standing but the will to cooperate. Cooperation is a good thing for everyone. It is difficult to give estimations with regards to the end result because a lot of countries have first of all their home-made problems. Long-term strategy of the Union has to be a common goal and then every country should make their own plan how to reach it depending on their capabilities and historical reasons. The country's

energy system can not be changed suddenly. When you have the old system, you should make the long-term plan for building a new one taking into account the costs. However, in the end it will work as I showed it in my book.

Annex II

Interview Andrius Šimkus, Gas Expert at the Energy Community

- 1. Energy security has being defined differently by different authors. But all definitions include the famous “triad” – security of supply, affordable and sustainable energy. These three aspects are also the ones that the EU energy security strategy has at its forefront. However, research has consistently shown that achieving these three goals at the same time is impossible due to different internal and external, economic and political factors. What, to your mind, can be done to provide the consistent energy security policy?*

Definition of energy security varies due to a large number of reasons. International commitments (such as Kyoto Protocol and Paris Agreement), efforts for regional integration of energy markets and systems (such as the EU’s common energy policy), national interests of various countries, geopolitical ambitions (such as Russia’s energy dominance in the EU and the USA’s intention to intercept this dominance by opening some market space for its own energy supplies), commercial interests of energy market players, demand and supply specificities, and needs of certain categories of customers are just few major criteria which cause a largely differentiated approach towards the energy security and the needs for its enhancement. Thus any approach to the energy security, as well as to any other category of the energy policy, mainly depends on interests represented by certain stakeholders, researchers including. The energy policy-makings heavily lacks of actual objectivity and is exposed to intense lobbying.

Setting aside all subjective evaluations, the energy security may well be described through the coherence of the security of supply, affordability of energy and its sustainability. These elements most properly represent the ultimate aspiration of each energy consumer: “I want to be able to consume energy as much as I need it for my welfare” (security of supply), “I want to pay as less as possible” (affordability), and “I want my energy consumption to have lesser negative impact on the environment” (sustainability). The latter element – sustainability – is probably the least emphasised in daily energy consumption, but rising environmental awareness also enhances the

sustainability perception at the level of individual consumers. So here is the basis for this “triad”.

Now the perception of these elements of the energy security’s “triad” once again highly depends on subjective interests as referred above. Even if it is mostly commonly agreed by the international community that this is the core outline of energy policies, the weight of each element varies dramatically depending on particular regional and/or national circumstances.

The issue is that “absolute” energy security may exist only in theory. As any absoluteisation, thinking of the energy security as of some finite or ultimate product/result leads towards utopian perception which does not have much reflection in reality. Therefore, the energy security is a constant process reaching for the balance of secure, affordable and sustainable energy supplies to consumers. And to this extent, consistency of the energy policy depends on continuous efforts to balance the consumption demand with possibilities of supply. This encompasses a large number of economic, technical, legal and regulatory measures.

Consequently, the energy security possible could be much better defined not as a set of the three elements – security of supply, affordability and sustainability, but rather as continuous process in balancing these elements so as to correspond to the actual needs of energy.

In the EU, in particular, reaching for this balance engages complex measures formed by energy strategies, including the Energy Union, and implemented through EU energy law and development of energy infrastructures also co-financed from EU’s funds (such as TEN-E and CEF). Firstly, security of supply is being reached by decreased dependency on energy imports, enhanced diversification of energy sources, routes for supply and alternative suppliers, as well as through strengthened interconnectivity and interoperability of energy systems within the EU. Secondly, the affordability of energy supplies is being reached by market opening and integration which leads towards increased competition between suppliers and thus market-driven pricing. And thirdly, the sustainability is addressed by a set of environmental and energy efficiency measures,

including gradual increase of RES in the EU's energy mix (the EU's future policy of renewable energy and energy efficiency is currently one of the core debated topics).

And finally, efforts to reach consistency in the energy security policy are most objective then addressing current and short-term energy demands. All other measures deal with forecasts and predictions of shifts in demand, supply options and technology developments. The latter, however, is not less important than addressing current needs, but is usually costly (such as financially supported RES developments) and thus causes higher energy prices.

Thus, as a conclusion, the energy security policy remains consistent as much as it corresponds with actual needs with maximum possible balancing of the three elements under discussion. All other strivings divert from consistency, but this is a very natural policy-making process, though to be funded by consumers and tax payers.

2. *The EU tries to diversify the gas market especially when it comes to gas suppliers. But one has to take into account that the EU doesn't have many countries nearby that would be ready to sell gas in the quantities needed for the EU. The countries that have such a capacity would need decades for negotiating and building the necessary infrastructure. So how can security of supply and affordable energy goals be balanced in the EU nowadays?*

Diversification of energy supplies is a must in the EU in order to minimise the existing dependency on Russia's energy sources. This includes crude oil, natural gas and nuclear fuel supplies. In respect of affordability, diversified supplies naturally increase competition in the energy market, including price competition, which result in market-based and, usually, lower retail prices.

A very good example is Lithuania. Before 2014, Lithuania – fully dependent on natural gas supplies from Russia – was paying the highest natural gas price in Europe. Needless to say that there were no objectively justified reasons for that as Gazprom's gas transportation costs to Central Europe, for example, were significantly higher than to the Baltic States. This situation was caused by Russia's energy geopolitics and lack of competition. In 2014, then Lithuania launched its LNG terminal, Gazprom immediately

gave an approximately 25% discount for imported natural gas to keep the price level below LNG prices. So this is a perfect example of how diversification of supplies and competition positively affect the affordability of energy.

Diversification of gas supplies to the EU is and must be one of the core objectives. This is important at least in mid-term perspective until fossil fuels will become gradually replaced by RES with equally technically viable solutions and without negative impacts on energy prices. With extending worldwide LNG market and constructed or planned new pipelines from Caucasus, Central Asia and Africa, there should be no problem for the EU to sustain a balance between different gas suppliers and to keep and even to increase the competition to Russia. Of course, there are also opposite incentives, such as Nord Stream 2, but this is another topic and this leads towards the lack of objectivity in the energy policy discussed above.

To conclude, diversified gas supplies and gradual increase of RES share in the energy mix is, at least for the moment, the only feasible way for the EU to seek for the balance between the security of supply and affordability. Furthermore, diversified gas supplies and thus lower gas prices give bigger financial power to incentivise, including via financial measures, RES developments without causing price shock for final consumers.

3. *Doing the research I found that the EU is facing a security dilemma, which arises from the interaction between energy security and energy price. Liberalization of gas market obviously benefits the goal of “affordable price” since it opens up the market and helps it to become more independent from gas suppliers and not being bind by the fixed-price long-term contracts. Liberalization introduces market forces for its actors and undermines the tendency of gas suppliers for monopolization of the market. However, it is not so obvious what impact it will have on the security of supply i.e. on the gas import to the EU. What is your thought on it?*

In my understanding, it is very straightforward: market liberalisation clearly restricts incumbent or new monopolies and thus opens a space for market newcomers which may come not as mere traders but also as suppliers offering alternative sources and/or routes for gas supply. For example, without EU's efforts to open its energy markets during the

last decade, LNG developments thus resulting competition to pipe gas (and especially Russian pipe gas) most likely would not have happened. Subsequently, larger number of alternative suppliers increases energy security proportionally to decreasing dependency on previously monopoly suppliers.

4. *Do you think liberalization of the market more benefits or undermines the security of supply? Would you say that this dilemma ends up in choosing what is more important for the country - economy (affordable market price) or politics (national security)?*

Market liberalisation undoubtedly contributes to both the security of supply and affordability of energy. The response to this is competition. The bigger the competition between different market players, the bigger share of alternative energy supplies and more intense price competition may be reached. The rest is all about balance between different measures applied. I would not think that, as an ultimate measure, the choice between security and prices causes the dilemma of choosing between two extremes. Relevant measures might be balanced. However, on a momentary basis, some compromise has to be made. Development of RES, which naturally increases energy prices for the moment, is one of the examples which are expected to lead towards more balanced security, affordability and sustainability. Decreasing costs of RES development and, consequently, their impact to energy prices confirm this expectation.

5. *Different Member States see different elements of the three goals as priorities for the national energy policy. Poland continues to firmly defend its coal industry and France - nuclear, Germany consistently puts on «green» energy, the UK traditionally considers energy liberalization the answer to all questions, the Baltic countries and a number of states in Central and Eastern Europe are sensitive to threats to security of supply and politely indifferent to the issues of sustainable development. Such differences in strategic interests compel Brussels to pursue three hares at the same time. How realistic is it to push the liberalization of gas market in the EU in such a policy difference?*

National energy interests are very natural, given the vital importance of energy for each economy. However, despite varying national interests and prevailing policy directions,

the gas market liberalisation goes forward and in many EU Member States it caused tremendously positive results. Since natural gas will remain an important part of the EU's energy mix, at least in mid-term perspective (though there are many different and contravening forecasts), it is a must to open national markets, to enhance competition and market liquidity, and thus to benefit from diversified supplies and market-based pricing.

I would also add that all countries are sensitive towards the security of supply, it is just that the role of gas in national energy mixes and access to alternative sources in countries differ significantly.

6. *Energy Union. The strategy for the creation of the Energy Union is the most significant initiative of the EU in the field of energy after the Third Energy Package. It includes the desire of the EC to obtain a significant part of the sovereign powers of the EU member states in order to carry out the Union's external energy policy. The creation of the Energy Union is intended to help the EU "gain a unified voice during negotiations with third countries" ("... speaks with one voice in global affairs ..."). The European Commission proposes to consider options for collective gas purchases in crisis situations, which is especially important for countries dependent on a single supplier (the Baltic States and Eastern Europe). Is the tremendous project still real to your mind?*

Technically and legally a collective gas purchaser would be doable without much of a drama. The scheme already works for nuclear fuel purchases under Euratom's arrangements (Euratom Supply Agency). However, as regards natural gas, there are lots of national and even company-level interests. Again, Nord Stream 2 is one of the examples. Thus I would not expect for this incentive to be realised in the nearest future.

Pledge of Honesty

On my honor as a student of the Diplomatic Academy of Vienna, I submit this work in good faith and pledge that I have neither given nor received unauthorized assistance on it.

Dariia Skovliuk