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EVALUATION OF THE EFFICIENCY OF THE DIVERSIFICATION MECHANISM GAS SUPPLY TO UKRAINE IN THE REVERSE DIRECTION

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Introduction. Today, the issue of studying the economic efficiency of diversification of natural gas supplies to Ukraine is extremely relevant, as our country is still quite energy-deficient, its own natural gas reserves are not enough to fully meet the needs of the economy. Security of gas supply is a daily challenge not only for Ukraine but also for the countries of the European Union. The European Union is working to strengthen its energy security by creating a single gas market and removing physical and administrative constraints between EU member states gas transmission systems. The aim of this process is the free access of any country to at least three independent natural gas resources.

In addition, the study of reverse gas supplies to Ukraine from the European Union is extremely important, given the existence of crisis situations related to the supply of natural gas from the Russian Federation and ensuring its transit through Ukraine to EU member states.

These issues have not only economic, but also deep political meaning, as well as their history of development. Additional concerns about Europe's dependence on Russian natural gas emerged after two gas supply disruptions (2006 and later in 2009) due to commercial and political disputes between Russian gas giant PJSC «Gazprom» and Ukrainian gas company NJSC «Naftogaz of Ukraine». Since then, discussions on natural gas supply have become increasingly securitized and polarized [1].

Analysis of literature data and problem statement. Recently, in scientific and special literature, political circles at various levels (including international) there are active discussions on the economic feasibility of the mechanism of diversification of natural gas supplies to Ukraine in an acute crisis. At the same time, further research is needed to ensure a balanced assessment and careful analysis of the European Union's energy policy [4] in the context of consistent diversification of natural gas sources and routes to Ukraine and to study the economic efficiency of these projects. Equally important are the role of the European Commission in shaping the energy security policy of the European Union [5] and its consequences for Ukraine in the context of ensuring the energy independence of our country. In the works by such specialists as Andriichuk V.H., Bobro D.H., Behun S.V., Verbinskyi V.V., Horbulin V.P., Zemlianyi M.H., Dolan E.G., Dzob O.H., Yerokhin S.A., Kanishchenko L.O., Lindsay D., Mochernyi S.V., Macmillan R., Riauzova T.V., Romashko O.M., Unihovskyi L., Chastukhin V., Shnypko O., Shevtsov A.I., etc. The main EU legislative measures aimed at reducing energy dependence and strengthening security of gas supply [6], as well as prospects for cooperation between EU member states, including Poland and Ukraine in the energy sector. In addition, the study focuses on the prospects of gas transportation from the LNG terminal in Swinoujscie (Poland) to Ukraine. For several decades, 23 regasification terminals have been built on the shores of the European Union, allowing the flow of liquefied natural gas to the continent. A brief look at the level of their use in recent years, depending on the availability of resources and competition from other parts of the world, shows that LNG imports into the EU have been relatively modest in recent years and could potentially increase [7].

The purpose and objectives of the study is one sentence. The aim of the study is to substantiate the theoretical, methodological and practical principles of system development and increase the economic

efficiency of diversification of natural gas supply sources and to develop approaches to assess the effectiveness of the mechanism of diversification of natural gas supplies in the reverse direction.

Achieving this goal necessitated the solution of the following tasks: to deepen the socio-economic essence of the concepts of "energy security", "economic efficiency of diversification of sources and routes of natural gas supply to Ukraine" and "state policy to diversify sources and routes of natural gas supply to Ukraine"; substantiate and clarify methodological and methodological approaches to the study of diversification of natural gas supply to Ukraine, due to the supply of this energy in the reverse direction in the context of energy security.

Materials and methods of research. The formation of market relations in the energy sector requires a revision of traditional mechanisms of energy supply in order to ensure energy security of countries and individual regions, which requires increasing the level of competition in the market and increase its operational efficiency. From these points of view, the diversification of sources and ways of natural gas supply helps to reduce the level of energy dependence of countries, by increasing the number of independent energy suppliers.

The specifics of the formation and implementation of the mechanism of natural gas diversification is determined by the geographical location of the country and the development of the network of intercontinental pipeline systems. To a large extent, the level of diversification is due to the availability of access to the sea and the possibility of using natural gas liquefaction technologies (LNG technologies) [18, p. 37 - 40]. In the applied aspect, the peculiarities of the formation of the mechanism of natural gas diversification are most clearly demonstrated by the crisis situation in Ukraine, which developed in the period from 02 to 06 March 2018, which had the level of emergency defined by the National Action Plan approved by the Ministry of energy and coal industry of Ukraine of November 2, 2015 № 687 [2], developed jointly with the Research Center of the Directorate General of the European Commission (DG-JRC) pursuant to EU Regulation 994/2010 [3].

The essence of this crisis situation was as follows. In accordance with the Final Decision of the Arbitration Institute of the Stockholm Chamber of Commerce in the arbitration case TPS V2014 / 078/080 from PJSC "Gazprom" and the terms of the Contract dated February 15, 2018, the Ukrainian side received a preliminary invoice № 9 dated February 13, 2018 for payment gas to be delivered under the Contract in March of the current year, the payment of which is in full the obligation of NJSC «Naftogaz of Ukraine», and which was to be paid no later than the last day preceding the month of delivery, i.e. by February 28, 2018 . The bill was paid by the company on February 26 of the current year in accordance with the decision of the meeting of the Board of the National Joint Stock Company "Naftogaz of Ukraine" (Minutes of February 21, 2018 № 83).

Notwithstanding the above, on March 1, 2018, in accordance with the terms of the Contract № KP at 10:00 Moscow time on the first day of the month, the supply of natural gas to PJSC «Gazprom» was not started.

In order to resolve this situation, NJSC «Naftogaz of Ukraine» has developed and launched a mechanism for diversification of natural gas to meet the needs of Ukrainian consumers: 1) the Board decided to urgently purchase imported natural gas from the European direction by concluding individual purchase agreements sales of natural gas in the amounts necessary to ensure the gas balance in Ukraine; 2) in order to resolve this situation, NJSC «Naftogaz Ukraine» and the Polish company «PGNiG» signed a contract for urgent supplies of natural gas by the end of March 2018 with a total supply of more than 60 million cubic meters of natural gas.

Thus, the mechanism of diversification of natural gas supply to Ukraine was launched, as well as a new stage in the formation of the country's energy policy in an acute crisis situation. This mechanism is based on the possibility of integration of Polish and Ukrainian gas transmission systems, which are part of the North-South Gas Corridor, allows the transportation of gas from the LNG terminal to Swinoujscie through Central and Eastern Europe using cross-border interconnectors. The main goal was to create a flexible transportation infrastructure in Central and Eastern Europe that would connect Western gas markets and the global LNG market with the Central and Eastern European market. Such a large-scale effect should have a positive effect on competition and the attractiveness of the region in the perspective of market participants.

At the same time, in order to assess the effectiveness of the mechanism of diversification of natural gas supply to Ukraine launched in the crisis, it is necessary to conduct a number of studies on its justification for the next stages of development of the energy sector in the country. This requires a deeper understanding of a number of concepts and methodological provisions. Socio-economic essence of the concepts "energy

security", "economic efficiency of diversification of sources and ways of natural gas supply to Ukraine" and "state policy on diversification of sources and ways of natural gas supply to Ukraine" are shown in Table 1.

Table 1

Systematization of definitions of the essence of research concepts

Author	The meaning of the concept
1	2
Economic efficiency	
Andriichuk V.H.	**Economic efficiency** is a ratio between production results and resources at which cost indicators of production efficiency are obtained. There are three possible options for this relationship: 1) resources and results are expressed in cost form; 2) resources - in value, and the results - in kind; 3) resources - in kind, and the results - in value form
Shnipko O.	**Economic efficiency** is a combination of resources that allows you to achieve maximum output at the lowest cost.
Mochernyi S.V., Yerokhin S.A., Kanishchenko L.O.	**Economic efficiency** is the achievement of the greatest results at the lowest cost of living and tangible labor. It is a specific form of manifestation of the law of saving time.
Dolan E. G ., Lindsay D.	**Economic efficiency** is a state of affairs in which it is impossible to make any change that would more fully satisfy the desires of one person without interfering with the satisfaction of the desires of another person. This formulation of the concept of economic efficiency is sometimes called Paretto efficiency . Thus the main task of management is coordination of various interests and formation on the most optimum parity of a complex of the purposes and tasks.
Macmillan R.	**Cost-effectiveness** is the production of the best or optimal combination of products based on the use of the most efficient combination of resources. The optimal combination of products is usually understood as a combination of them, which would be chosen by individual consumers in a perfect market depending on the price. And the optimal combination of resources will be one that will allow you to produce products with minimal opportunity costs.
Diversification of sources and ways of natural gas supply	
Shevtsov A.I., Zemlyanyi M.H., Verbinskyi V.V., Riauzova T.V.	**Diversification of gas imports** is one of the possible ways to reduce energy dependence.
L. Unihovskyi , V. Chastukhin , O. Laktionov , S. Fedorenko	**Diversification of sources and routes of gas supply** in Eurasia as a factor of energy security aims to: (a) reduce the risks and minimize the consequences of accidents at gas infrastructure facilities; (b) development of competitive relations between exporters through the formation of the gas market; (c) reducing the political influence of monopolies or large supplier and / or transit countries.
Dzob O.H., Romashko O.M.	**Diversification of natural gas sources and supply routes** helps to reduce energy dependence by increasing the number of independent energy suppliers. From the point of view of economic theory, this means increasing the level of competition in the market and increasing its operational efficiency.
National perspectives and strategies for diversification of natural gas sources and supply routes	
Horbulin V.P.	**Strategy and priorities for natural gas market development** in the context of Ukraine's current European integration aspirations, including diversification of natural gas sources and supply routes are a range of issues for the functioning of the natural gas market, energy sector management principles, and adaptation of Ukrainian legislation to third energy package directives. EU and changes in the energy sector governance model.
Bobro D.H.	**The strategy of providing the fuel and energy complex of Ukraine with** imported energy resources (problems and prospects) defines strategic objectives for the import of energy resources and energy security.
Bihun S.V.	**The strategy for overcoming threats in the field of energy security** and their impact on the state of national security is to ensure the stability of the supply of fuel and energy resources, in particular, by diversifying its sources; creating conditions for reliable functioning of domestic transit infrastructure and energy supply to domestic and foreign markets

Source: generalized by the author on the basis of [8; 9-11; 14-17]

Thus, the components of the mechanism of diversification of natural gas supply are as follows:

Natural gas supplies in the reverse direction (do not require significant investment, and therefore are cost-effective). This option of diversification makes it possible to conduct short-term one-time purchases during periods of declining prices on the European spot gas market. Use of significant capacities of gas storage facilities in Ukraine (can be used for seasonal price arbitrage to reduce the total cost of imported gas). In 2019, supplies of imported gas to Ukraine were made exclusively from the European gas market. According to JSC "Ukrtransgaz", compared to 2018, gas imports increased by 34.9% - with 10.6 billion cubic meters to 14.3 billion cubic meters (table 2 - 3).

Table 2

Volumes of natural gas imports to Ukraine by areas in 2018-2019, billion cubic meters

	2018	2019	+/-%
Total	**10.6**	**14.3**	**34.9**
from the Russian Federation	0	0	-
from the European market, total	10.6	14.3	34.9
from the territory of Slovakia (GVS Budince)	6.5	9.2	41.5
from the territory of Hungary (GVS Beregdarots)	3.4	3.7	8.8
from the territory of Poland (GVS Germanowicz)	0.7	1.4	100

Source: data of JSC "Ukrtransgaz"

Table 3

Volumes of natural gas imports to Ukraine in 2018-2019, billion cubic meters

	2018	2019	+/-%
Total	10.6	14.3	34.9
for Naftogaz , total	7.0	7.2	1.4
from Gazprom	0	0	-
from other suppliers (European direction)	7.0	7.2	1.4
for other companies , total	3.6	7.1	97.2
from Gazprom	0	0	-
from other suppliers (European direction)	3.6	7.1	97.2

Source: data of JSC "Ukrtransgaz"

Forecasting gas supplies through existing gas transmission systems. In studying the prospects of gas supplies to Ukraine from Poland in the reverse direction, forecasts of gas supplies through existing gas transmission systems are developed by calculating the minimum possible volume of transit natural gas from Russia to ensure profitability of its transportation, which allows to assess the real possibilities of reverse gas supplies, as well as ways to ensure uninterrupted supply of natural gas to Europe through Ukraine.

According to experts, the dependence of industrialized countries on energy imports is expected to increase further. The European Union is currently the world's largest consumer of natural gas. The economies of the vast majority of European countries depend on natural gas supplies from outside.

In this context, EU member states are committed to deepening cooperation with natural gas suppliers and transit countries, as well as to pursuing a policy of diversification of sources and ways of supplying this energy source. Today, the EU imports 70% of the gas it consumes in 2016 42% of these imports came from a single supplier.

Formation of a new model of Ukraine as a transit country. Ukraine seeks to strengthen its status as a reliable transit country, to integrate into the EU energy space (Table 4).

Table 4

The work of the GTS of Ukraine in 2019, billion cubic meters

	2019	2018	+/-%
Transit	89.6	86.8	3.2
Transportation to consumers of Ukraine	26.4	28.5	-7.4
Together transit and domestic transportation of the Ukrainian GTS	116.0	115.3	0.6
Production and technological costs of the GTS operator	1.9	1.9	2.3
Gas injection into the underground storage	13.1	9.8	33.7
Selection of gas from underground storage	8.0	10.6	-24.5
Imports	14.2	10.6	34.0
Revenues from gas producers	20.7	20.9	-1.0

Source: data of JSC "Ukrtransgaz"

Introduction of new mechanisms of interaction with traditional partners. NJSC Naftogaz of Ukraine unbundled – separated the activity of gas transportation. On January 1, 2020, the independent GTS Operator of Ukraine started its activity, which successfully passed the certification of the National Commission for State Regulation of Energy and Utilities and the Secretariat of the Energy Community.

Also NJSC "Naftogaz of Ukraine", LLC "Operator of GTS of Ukraine" and

PJSC Gazprom has signed new agreements to continue the transit of Russian natural gas through the gas transmission system (GTS) of Ukraine in 2020-2024. Naftogaz has become a company-organizer of transit: book in LLC "GTS Operator of Ukraine" capacity for "entry" and "exit" from the gas transmission system to order of PJSC "Gazprom". Guaranteed minimum transit capacity in 2020 is 65 billion cubic meters. m of gas, and in 2021-2024 - 40 billion cubic meters.

Conclusion of direct inter-operator agreements with operators of neighboring GTS. During the preparation for unbundling LLC "GTS Operator of Ukraine" achieved the conclusion of direct inter-operator agreements (interconnection agreements) with operators of neighboring GTS in accordance with the requirements of EU legislation. In particular, inter-operator agreements were signed with GTS operators in Poland (GAZ-SYSTEM S.A.), Hungary (FGSZ ltd), Slovakia (Eustream), Russia (PJSC Gazprom), Moldova

(LLC Moldovatransgaz and JSC Moldovagaz) and Romania (TRANSGAZ). These changes make it possible to provide a virtual gas reverse service to Ukraine.

As can be seen from the above, NJSC Naftogaz of Ukraine has applied the above components of the mechanism of diversification of natural gas supply.

We emphasize the need to develop methodological approaches to assess the level of diversification of natural gas supply, which can be used as a basis for assessing the security of natural gas supply to Ukraine as one of the priority areas of energy policy.

At once it is necessary to address imperfection or even, in some places, the absence of such methodological approaches to assess the level of diversification of routes and sources of natural gas supply to Ukraine.

Diversification of supply routes is a key part of ensuring a secure and affordable energy supply to EU countries. This includes research and construction of new routes that should reduce Ukraine's dependence on energy supplies, primarily natural gas.

An effective policy in the field of gas supply diversification is a key factor in the energy security of importing countries.

On the other hand, the problem of diversification, in addition to economic and political, is also characterized by technical and technological aspects associated with the rapid development of transport technologies.

To involve Ukrainian companies in projects to diversify gas supply routes, Ukraine is considering expanding cooperation within the Energy Union and the Eastern Partnership.

Diversification of natural gas sources and supply routes helps to reduce energy dependence by increasing the number of independent energy suppliers.

From the point of view of economic theory, this means increasing the level of competition in the market and increasing its operational efficiency.

Opportunity to buy gas on the European spot market on the principle of "virtual reverse", as well as the potential for construction LNG terminals indicate the possibility for Ukraine to meet the requirements of the Target Model, in particular, the availability of at least four sources of gas supply, given the potential of its own production. In terms of the Target Model, Ukraine will be able to create a separate market zone in the European single market and, due to incomplete loading of its gas transmission system, provide the necessary volumes of imports (primarily during peak demand) through "virtual reverse" from European spot markets.

However, the analysis and objective criteria for estimating the level of natural gas supply within the existing number of suppliers, its sources and routes of supply (transportation) are not sufficiently covered in scientific research.

The current state of affairs in the energy sector indicates the imperfection of the existing institutional mechanism for energy security of Ukraine by diversifying the sources and routes of natural gas supply.

An insufficient level of diversification of energy sources in Ukraine is a result of inertia inherent in the transformation in the energy sector any country. Levels of diversification are determined by the following steps:

1. In December 2016, the Ukrainian and Polish gas transmission system operators JSC Ukrtransgaz and Gaz-System S.A. signed an agreement on the rules of cooperation to connect the transport systems of the two countries through the future Poland-Ukraine interconnector. Given the mutual interest of the parties, in October 2016 the project was included in the list of "Projects of Mutual Interest» (PMI) of the Energy Community.

2. In August 2019, a memorandum of tripartite cooperation was signed between Ukraine, the United States and Poland to diversify gas supply sources and increase Ukraine's energy security, in particular, to establish American liquefied gas supplies through Poland to Ukraine under the Ukraine-Ukraine gas interconnector project. Poland.

Also, this interconnector is considered as one of the options to diversify gas supplies to Ukraine from the planned "Northern Gate" (Norwegian corridor and LNG terminal) through the national gas transmission system in the direction of Eastern Europe.

From the standpoint of economic security, which includes domestic and foreign energy policy, the possibility of using interconnector capacity by Polish companies that could potentially be interested in creating their gas reserves in Ukrainian gas storage facilities with the prospect of further gas sales in Central and Eastern Europe.

Particular attention should be paid to threats to Ukraine's energy security from the aggressor country of the Russian Federation to intensify work on the development of gas transportation infrastructure. Upon the probable completion of the construction of «Nord Stream-2», almost all Russian gas will be transported exclusively through the controlling gas transportation infrastructure dependent on PJSC Gazprom, in particular, the existing main gas pipelines Nord Stream, Yamal-Europe, and Blue Stream. and «Turkish Stream» kraine's gas transmission system.

At the same time, the organization of a liquid gas trading platform (hub) on the territory of Ukraine will allow gas suppliers, based on the capabilities of Ukrainian underground gas storage facilities, to start trading operations within the Ukrainian and European gas markets.

Another innovation is that from January 1, 2020, the GTS Operator can provide a short-haul service, which allows you to receive a discount on transportation between certain interstate entry and exit points. In accordance with the requirements of the Gas Transmission System Code, this service is defined as "capacity with restrictions".

Due to a significant reduction in Russian transit, the GTS Operator has significant unused capacity at interstate connection points in Western Ukraine. The short hall service opens access to customers to the markets of Poland, Hungary, Slovakia and Romania through the GTS of Ukraine, having the opportunity to book capacity at attractive rates. This product is intended only for transit transportation, without opening access to the Ukrainian VTP and the domestic market. But can be used in conjunction with the service of gas storage operator "customs warehouse" (based on 10 gas storage facilities) JSC "Ukrtransgaz" created organizational and legal opportunities for the functioning of the customs regime customs warehouse. This customs regime allows service customers to store natural gas in gas storage facilities of Ukraine in the customs regime "customs warehouse" for 1095 days without paying taxes and customs duties).

The main content of the short hall service is as follows: if capacity at interstate connection points is not booked at standard rates, the GTS Operator may offer a short hall service for certain pairs of points that are relatively close to each other.

That is why the implementation of prospects for increasing gas supplies to Ukraine from Poland is extremely effective for our country.

Research results. The results of the study determine the effectiveness of the mechanism of diversification of gas supplies to Ukraine in the reverse direction, which for the Ukrainian gas transmission system may remain two scenarios.

1. Underloaded bypass routes using transit through the territory of Ukraine on the final principle, using the volume of pumping as an element of political pressure.

2. Maximum loading of bypass routes without the use of transit through Ukraine.

The first version of the scenario is more likely and will reduce transit through Ukraine to 40 billion m3 per year, depending on the level of congestion of bypass routes, their economic attractiveness, completeness of their completion and the level of natural gas consumption in Europe.

The second scenario becomes more likely as tensions escalate in Ukraine's relations with both the EU and Russia. In this scenario, transit through the territory of Ukraine will be reduced to zero after 2024. The second scenario is accurately implemented in the event of a recurrence of "gas wars" and will lead to an immediate acceleration of funding for bypass routes and increase the load of already built bypass routes.

An important issue for the study is the implementation of the project for the construction of the main gas pipeline-interconnector Drozdovichi – Bilche –Volytsia.

The construction of this main gas interconnector is a priority for Ukraine, as it will provide an opportunity to: increase the technical capacity of the gas transmission system for the import of natural gas; diversify the sources of natural gas supply by ensuring the transportation of natural gas both from the Republic of Poland to Ukraine and vice versa; storage of natural gas of European countries in underground natural gas storage facilities of Ukraine and is necessary for the integration of the natural gas market of Ukraine into the natural gas market of the Energy Community.

Discussion of results. JSC «Ukrtransgaz» and the operator of the gas transmission system of Poland, the company «GAZ-System S.A.» which interact at the points of interstate connection «Germanovichi» entrance to Ukraine and «Drozdovichi» exit from Ukraine.

Taking into account the main requirements of EU legislation (in particular, Directive 2009/73 / EC of the European Parliament and of the Council of the European Union on common rules for the internal market in natural gas and Regulation 715/2009 of the European Parliament and of the Council on access to natural gas transmission networks) Of Ukraine adopted the Law of Ukraine «On Amendments to the Customs Code of Ukraine to create conditions for a new model of the natural gas market» from 04.02.2016 № 994-VIII [20], which provides for amendments to the Customs Code of Ukraine, which will ensure the possibility of such operations by the GTS operator of Ukraine and will introduce a full market of natural gas in accordance with the Law of Ukraine from 09.04.2015 № 329-VIII «On the natural gas market» [21].

Thus, new concepts have been introduced into the Customs Code of Ukraine: substitution of natural gas (backhaul); operational balancing account; the volume of natural gas balancing; balancing volume between entry points and exit points; and also features of customs control and customs registration of such operations are provided.

Conclusions. The article proves that at the current stage of development of society the state policy on diversification of sources and ways of natural gas supply to Ukraine, as a component of energy security, should be considered as a state of readiness of the country's fuel and energy complex, including the gas complex, environmentally friendly, cost-effective and reasonably sufficient energy supply of the economy and population, as well as to ensure the ability of state leadership in the formation and implementation of policies to protect national interests in energy without external and internal pressure, which is determined by low probability of deterioration of market environment (institutional security of the market, price volatility, adequacy of resources) and participants in international trade (stability of economic ties and social security of citizens).

A methodical approach based on international data is also proposed in order to take into account the state and trends of development of neighboring countries and countries with similar preconditions in the process of state regulation of energy security and diversification of sources and routes of natural gas supply.

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Рамазанов Владислав Андрійович, здобувач наукового ступеня кандидата економічних наук. Національний університет «Полтавська політехніка імені Юрія Кондратюка». Керівник експертної групи з безпеки постачання та розвитку конкурентного ринку природного газу Директорату нафтогазового комплексу та розвитку ринку нафти, природного газу та нафтопродуктів. Міністерство енергетики України. **Оцінювання ефективності механізму диверсифікації поставок газу до україни у реверсному напрямі**. Запропоновано методологічні прийоми прогнозування поставок газу через газотранспортну систему України на основі розрахунків мінімально можливого обсягу транзитного природного газу для забезпечення прибутковості його транспортування, що дозволяє, на відміну від існуючих підходів, урахувати способи забезпечення безперебійного постачання природного газу в Європу територією України та дати оцінку реальних можливостей реверсних поставок газу. Доведено, що на сучасному етапі розвитку суспільства державна політика щодо диверсифікації джерел і шляхів постачання природного газу в Україну як складова енергетичної безпеки, має розглядатись як стан готовності паливно-енергетичного комплексу країни, зокрема й газового комплексу, до максимально надійного, технічно безпечного, екологічно прийнятного, економічно ефективного та обґрунтованого достатнього енергозабезпечення економіки держави й населення, а також до гарантованого забезпечення можливості керівництва держави у формуванні та здійсненні політики захисту національних інтересів у сфері енергетики без зовнішнього і внутрішнього тиску, який визначається низькою вірогідністю погіршення параметрів складових безпеки ринкового середовища (інституційна безпека ринку, мінливість цін, достатність ресурсів) та учасників міжнародної торгівлі (стабільність економічних зв'язків і соціальна безпека громадян). Запропоновано методичний підхід на основі даних, що допускають міжнародне порівняння з метою врахування стану та тенденцій розвитку сусідніх країн і країн із подібними передумовами в процесі державного регулювання енергетичної безпеки та забезпечення диверсифікації джерел і маршрутів постачання природного газу.

Ключові слова: оцінювання, ефективність механізму, реверсне постачання газу, контракт, транспортування природного газу, енергетична незалежність, економіка.

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Key words*:* evaluation, mechanism efficiency, reverse gas supply, contract, natural gas transportation, energy independence, economy.