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GAS SUPPLY SECURITY MODEL TO EU CONSUMERS

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Recently, the problem of choosing methods of establishing transit tariffs for natural gas transportation services to consumers of EU countries and finding ways to adapt them to the conditions of an international gas transportation consortium (IGTC) has become even more significant. *The subject of the article* is the problems of Ukrainian gas supply security to consumers of the EU countries using international economic and legal mechanisms. *The purpose of the article* is to develop a methodology for regulating transit Ukrainian-European gas supplies by creating IGTC "Ukraine-EU" to increase competition and establish an acceptable and mutually beneficial gas price for the end European consumer and for the gas transportation system itself. *Research objectives*: substantiating the solution of the problems associated with gas transit with the help of economic policy instruments; developing a method of forming IGTC "Ukraine-EU". General scientific *research methods* were used: synthesis, analysis, systematic approach, statistical analysis of international tariff setting practice application to resolve controversial issues related to the transit of natural gas. *Main results and their scientific novelty*. Based on the forecast of growth in demand for natural gas in the EU, the author shows the effectiveness of forming IGTC "Ukraine-EU" to ensure reliable gas transit through the territory of Ukraine. A unified mechanism for transit gas supplies through the gas pipeline system of Ukraine under the conditions of the functioning of the "Ukraine-EU" consortium has been proposed. *Conclusions*: using the mechanism for coordinating the interests of individual participants with the proposed methods will significantly raise the level of security of gas supplies to consumers in the EU countries - both within the framework of the proposed gas transportation consortium with European countries, and for other gas transportation projects.

Key words: energy security, natural gas, international gas transportation consortium "Ukraine-EU", gas transportation system, consumers of European countries.

Introduction. Energy security is an important component of the national security of the state, and its provision is one of the priority tasks, given the aggravation of the energy problems of mankind and the constantly growing competition on a global scale for control over energy resources. Despite the continuing risks and uncertainty about the prospects for growth in gas demand in Europe, there are now certain preconditions for its resumption in the medium term.

The situation on the gas markets is transitional and is subject to transformation from regional to global, following, in many respects, the American model of the development of the spot market in natural gas trade, with the expansion of liquefied natural gas (LNG) terminals for international supplies. All of this significantly changes the structure of relationships in the markets linked by long-term gas contracts, primarily in Europe. The growing Chinese market is also making its own adjustments to the global transformation, trying to equalize the prices of LNG supplies (mainly from Australia) with the prices of new transnational pipeline supplies from Russia.

All this creates both new opportunities and new risks for natural gas producers, primarily from Ukraine. Uncertainty in sales volumes on the European spot market and the regulated price of gas in the Chinese market do not allow producers to count on a return on investment, both in the development of new complex fields and megatransport projects (North and South Streams).

Export supplies of Ukrainian gas to the European market are directly dependent on transit countries. On the other hand, the geopolitical position of Ukraine has a high transit potential for the transportation of energy resources for consumers in the EU countries. Significant volumes of natural gas reserves create preconditions for the sale of gas to the European market.

The need for the transit of natural gas through the territory of Ukraine is associated with economic and political risks, which have repeatedly manifested themselves in the form of gas conflicts over the conditions for the supply of natural gas to Ukraine, as well as the transit of gas to European consumers.

Taking this into account, ensuring the stability of gas supplies to European consumers requires new approaches in organizing gas transit through the gas transmission system (GTS) of Ukraine.

In this context, current issues are the analysis of the existing international practice in methods of

establishing transit tariffs for transportation of natural gas to consumers in the EU and find ways to adapt them to the conditions of an international gas transportation consortium, which determines the timeliness and importance of the work presented.

Materials and Methods.

The theoretical and methodological basis for research in the field of economics of the gas industry was the work of scientists: Francesco Dalla Longa and oth. The issues of tariff formation and transit of natural gas are presented in the works of Ahmed Olanrewaju Ijaola and etc. (Ijaola *e al.*, 2020, Longa *et al.*, 2020).

Foreign authors whose works are devoted to the problem of gas transit to Europe include: Carlos Melo and oth., Leigh Hancher, Anna Marhold (Melo *et al.*, 2019; Hancher and Marhold, 2019; Salam Al-Rbeawi, 2019).

Information base of research is based on data from government and commercial organizations (Xinyue Liu and Dongxiao Zhang, 2019). References were also used by international organizations – the International Energy Agency (IEA), Eurostat, the European Union of the Gas Industry (Eurogas), CEER, reports of major world oil and gas companies – BP, Shell, Gazprom (Oil and Energy Trends, 2019; The European Union Agency, 2020).

In the study are used national and international regulations: "Energy Strategy of Ukraine until 2030", "Road Map 2050", EU Program "20-20-20" (EU Security of Gas Supplies, 2020).

The applied aspects of the problem of formation of the tariff policy for natural gas are considered in the scientific works of Pramod A. Reddy et al., Ya Meng and Zhiping Li and oth. (Meng and Zhiping, 2016, Reddy *et al.*, 2019; Mohsen Zare *et al.*, 2019). The organizational and legal form of regulating the relationship between the main participants in the gas market in the form of a consortium is disclosed in the scientific works of Wenhui Song and oth., Salam Al-Rbeawi, Caumon (Wenhui *et al.*, 2017; Marie-Camille Caumon *et al.*, 2019; Al-Rbeawi, 2020). However, they lack mechanisms for establishing a transit tariff in the format of an international gas transportation consortium for the export of Ukrainian gas to EU countries through Ukraine.

General scientific research methods were used: synthesis, analysis, systematic approach, statistical analysis of international tariff setting practice application to resolve controversial issues related to the transit of natural gas.

Results.

1.1. An integrated approach to the regulation of transit procedures using a single mechanism for gas supplies through the gas pipeline system of Ukraine to EU countries.

In a highly competitive environment, it is becoming increasingly difficult for Ukraine to maintain its position on traditional gas supplies for several reasons (Richard Wheaton (2019); Hobyr, *et al.*, 2020):

1. the pressure from the spot market on the price of gas exported under long-term contracts is increasing;
2. competition between the main gas suppliers on the European market persists and intensifies (Fig. 1);
3. as a result of an increase in transportation costs for gas export, profitability from export activities decreases (instability in relations with transit countries leads to an increase in the transit tariff);
4. transit risks remain unresolved when exporting gas through the territory of Ukraine (associated with economic, political, technical, environmental and other aspects of transit);
5. the number of players on the gas market is increasing;
6. the position of the European Union on reducing import dependence on Ukrainian natural gas supplies remains.

According to experts, in the coming decades, the USA and China will become the most influential participants in the gas market besides Russia. It is expected that Russia will retain its leadership in the production and export of gas. However, participation in expensive projects, which become marginal in all export markets, makes it hostage to market fluctuations and weaken its geopolitical position.

The development of the global gas infrastructure presupposes the complication of the gas market structure, the expansion of the scale and number of participants (Farhad *et al,*, 2019). Changes in global energy markets require a revision of the traditional export model for Ukrainian gas.

At the same time, Ukraine has the ability to increase the volume of gas supplies to Europe in the coming decades. However, this requires a more flexible approach when working with European consumers and solving transit problems (Hobyr *et al,*, 2020). All methods of increasing the competitiveness of Ukrainian gas should play an important role, especially the tightening of control over production and transportation costs, special taxation regimes, as well as the development of measures to reduce transit risks when transporting gas through the territory of neighboring states.

The emergence of new projects for the export of Russian gas to the European market provoked gas conflicts that began at the turn of 2005-2006. As a result, Russian-Ukrainian relations in the gas sector have deteriorated, and due to the introduction of new transit-free gas pipelines, the value of the transit corridor through the territory of Ukraine has decreased to 25% (Oil and Energy Trends, 2019).

The settlement of conflicts on gas issues between Russia and Ukraine has been going on for ten years,

and still remain unresolved. Ukraine insists on lowering the import price of Russian gas, and the Russian side, in turn, is trying to find an acceptable option for it to use the gas pipelines of Ukraine.

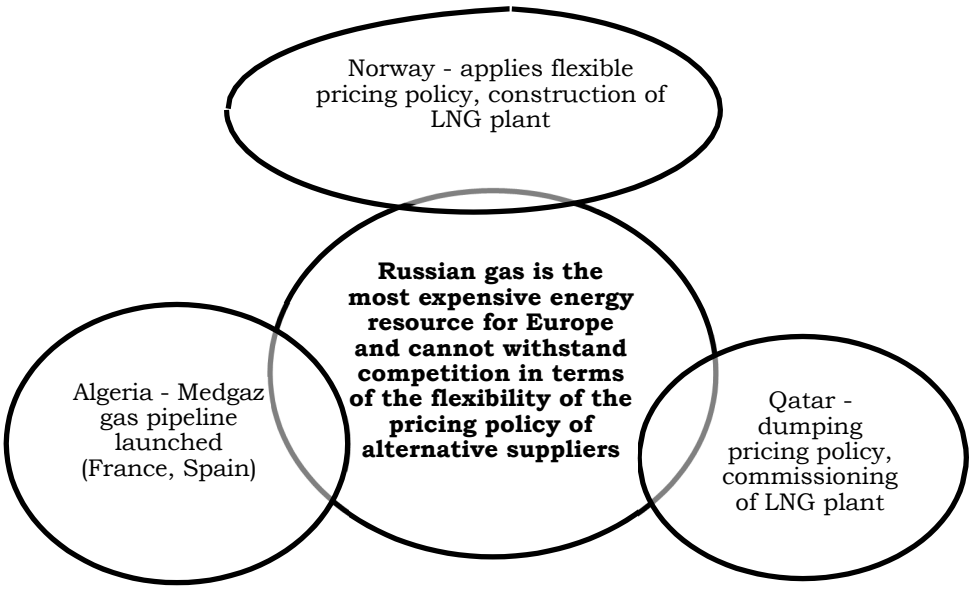

Рис. 1. Main competitors of Ukraine in EU gas market

Source: compiled by the author

The development of all export routes for gas supplies is one of the most important tasks in the foreign economic policy of our state. It should be borne in mind that the wear and tear of the gas transmission system of Ukraine is at least 60% (The European Union Agency, 2020).

The article contains calculations to optimize the costs of transportation and transit of natural gas. According to our estimates, the largest share of the cost of gas transit services through the Ukrainian GTS falls on the purchase of process gas. The main reason for the significant share of costs for process gas in the total volume of gas transportation and transit is the increase in the price of gas for own needs and technical losses, the cost of electricity required to connect the electric drive units that were in reserve.

Consequently, the primary task is to modernize the Ukrainian gas transportation system: pipelines, gas turbine engines, compressor stations, gas pumping units. The modernization of the Ukrainian gas transmission system will lead to a decrease in the costs of process gas of the gas transmission consortium, and as a result, will reduce the total costs of transit services. It is assumed that the surplus of pipeline capacities in the export direction without concluding new contracts will grow to one third, and by 2030 to 68% (Table 1).

Table 1

Assessment of the prospective throughput of transit routes (bln m³)

	2015	**2020**	**2030**
Ukraine	110	120	130
Belarus	35	35	35
Finland	5	5	5
Blue stream	16	18	18
Nord Stream	55	80	80
South Stream	15	30	63
Total	236	288	331
Gazprom contractual obligations	185	175	103
Surplus pipeline capacities	**51 (22%)**	**113 (40%)**	**228 (68%)**

Source: author's estimates based on the data of 2020 EU Security of Gas Supplies,

In the author's opinion, the prerequisites for a consortium creation and the efficient use of the Ukrainian GTS capacities still exist today, although they differ significantly from those that were at the beginning of the last decade (Table 2).

In the context of an increase in export obligations to European consumers and plans to increase the resource base of gas fields in Ukraine, it is especially urgent to develop measures to regulate transit gas supplies through the Ukrainian gas transportation system in order to reduce transit costs during export operations.

Table 2

Changes in the initial prerequisites for Ukrainian-European gas transportation consortium creation

Prerequisites for creation a consortium in the early 2000s.	Prerequisites for creation a consortium in present time
1) reducing the dependence of Gazprom on the only transit country by acquiring partial control over the Ukrainian GTS system; 2) elimination of unauthorized gas withdrawal by Ukraine; 3) participation of Russia and Europe, with proper legal regulation, guarantees a balance between the economic independence of Ukraine and the attraction of investments in its gas transportation system.	1) exacerbation of the problem of attracting investment in the Ukrainian gas transportation system, which was not fundamentally solved in the last decade; 2) UkrGAZ's need for the widest possible diversification of export routes, taking into account both offshore gas pipelines (Blue Stream, Nord Stream, South Stream) and the Yamal-Europe gas pipeline, especially in the case of an increase in demand for Russian gas in Europe ; 3) Ukraine's preservation of a competitive advantage in gas supplies to the largest European countries (Germany, France) over the suppliers of liquefied natural gas and the supply of shale gas by sea.

Source: compiled by the author

It becomes obvious that a steady growth in gas exports, ensuring the country's energy security, is possible with the creation and use of a single mechanism for resolving transit problems, based on the formation of the MGTC with the participation of Ukraine and Europe.

1.2. The effectiveness of the creation Consortium "Ukraine-EU" to ensure the safety of gas transit to EU consumers.

The possibility of increasing natural gas exports is conditioned not only by the availability of resources, but also by the capacity of the transport infrastructure.

The growing needs of the European Union countries in energy imports, associated primarily with objective factors of a decrease in their own production and the need to intensify efforts to combat global warming, lead to the formation of a stable demand for oil and gas imports, and also create conditions for an increase in the supply of electricity to these markets (Welsch, 2017).

It should be noted that most research organizations estimate that gas demand in Europe will increase by 2030 (Fig. 2).

In the natural gas markets of Ukraine and Europe, new preconditions are being formed for combining the efforts of all three parties around the Consortium:

The full functioning of the Common Economic Space of the Eurasian continent is impossible without the participation of Ukraine, which controls a significant transit potential in the East-West direction, not only in the field of gas and oil transportation. The fuel and energy complex has a significant role in the Ukrainian economy. The integration of the fuel and energy complex (FEC) of both countries (both geopolitical and economic) is the ultimate goal of a consortium forming, which would mean Ukraine's choice in favor of participating in the Common Economic Space (in the future, taking into account the revision of the country's legislative framework).

The main objectives of the interstate gas consortium (IGC) could be:

• creation of a transparent and reliable (both legally and technologically) infrastructure for gas transportation in the West direction on conditions acceptable to all parties;

• formation of an international legal basis for the transportation of energy resources within the Eurasian economic space;

• modernization and optimization of gas transmission capacities in Ukraine, attraction of investments in energy and resource saving technologies of the European gas supply system, formation of new inter-corporate alliances in the fuel and energy complex of Europe.

Accordingly, the risks of international transit of Ukrainian gas when exporting gas to consumers in Europe can be eliminated by creating a gas consortium that can play an important role in the settlement of gas disputes.

1.3. Safe mechanism of transit gas supplies through the gas pipeline system of Ukraine in the conditions of functioning IGTC "Ukraine-EU".

A safe mechanism for organizing transit gas supplies through IGTC system “Ukraine-EU” means:

- formation of the organizational and legal form of the consortium;

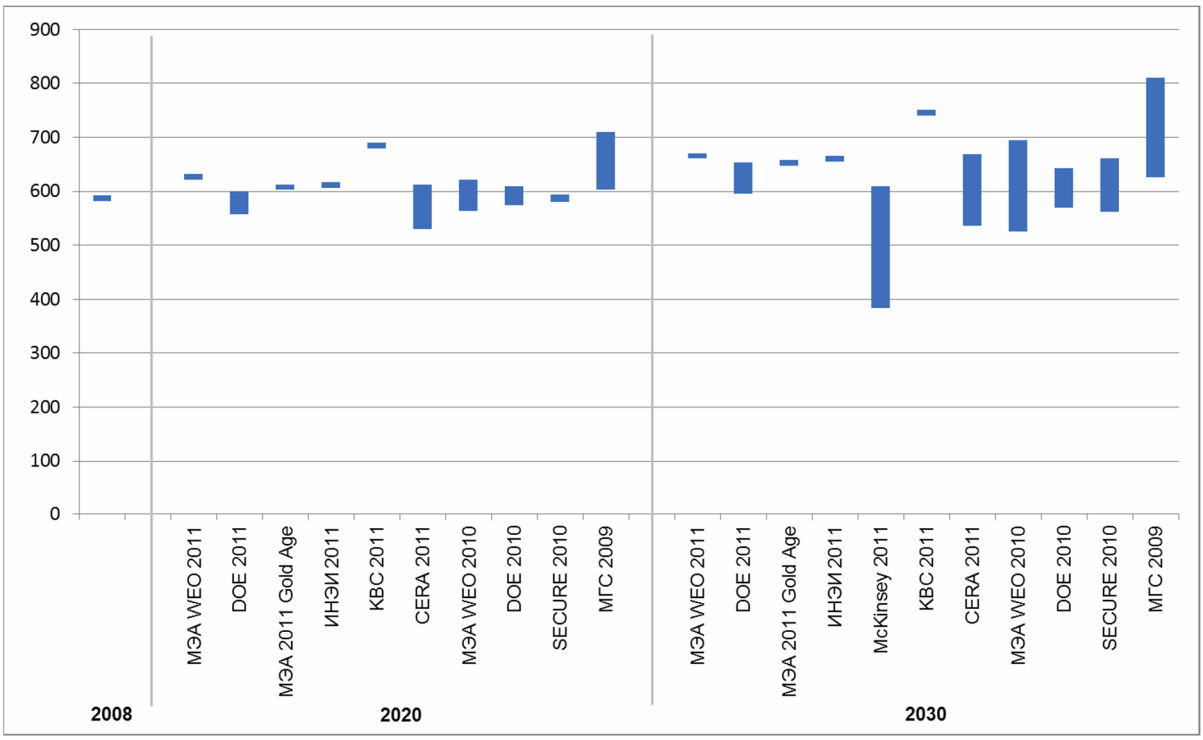

Fig. 2. Gas demand forecasts in Europe, bln. cubic meters
Source: compiled according to data from international research organizations

- establishment of tariff methodology;
- creation of the Reserve Fund for accumulation from the current activities of the consortium;
- the bilateral gas transportation consortium "Ukraine-EU" takes into account the interests of all parties: Europe - in terms of the amount of purchased gas, Ukraine - in terms of transit safety.

The proposed algorithm for the formation of a single mechanism for transit gas supplies to the EU consists of 6 main stages (Fig. 3).

The key condition for the consortium's competitiveness will be the level of supply reliability, which, in turn, is determined by the level of tariffs for transported gas. It is obvious that the tariff for gas transportation is highly correlated with the price for natural gas.

And if at present Ukraine cannot have a significant impact on the level and methods of setting prices for gas exported by it to Europe, then the role of tariffs in ensuring effective gas exports becomes decisive.

1.4. The "floating tariff" methodology designed for efficient transit gas supplies through the Ukrainian gas pipeline system.

The main source of income for the consortium is income from the provision of gas transportation services in the East-West direction.

World experience shows that the determination of prices for transit services does not have a single methodological base - prices are set in each country on the basis of uniform national methods, or are fixed in contracts based on negotiations. At the same time, the following main methodological approaches to the formation of fees for gas transportation services, including those for transit, can be distinguished (Table 3).

In the Consortium, the author proposes the formation of costs using the method of direct costs "plus" fixed profit.

In world practice, various methods of setting tariffs for gas transportation are used: almost all of them were proposed and tested in European countries and the USA. The main methods for setting tariffs used in developed gas markets include: point-to-point tariff, distance tariff, postage stamp tariff, entry-exit tariff.

In addition to the four named methods for setting tariffs for gas transportation and transit in European countries, there is a whole range of hybrid models for setting tariffs for gas transportation in Europe, taking into account national specifics.

The current tariff rate does not allow increasing the efficiency of transit gas supplies. Taking into account new cost elements for the "floating tariff" will increase the efficiency of transit gas supplies through the gas pipeline system of Ukraine.

Ukraine's entry into the Energy Community of Southeastern Europe in 2011 obliges it to modify gas legislation in line with the European model. According to the Target Gas Market Model, it is possible for European gas operators to switch to a unified tariff setting system based on the "entry-exit" method []. As stated in the official document [], the Ukrainian GTS refers to the transit system, where transit volumes are mixed with the volumes of a highly ramified nationwide power system. In

such conditions, transit flows can be determined by collecting all the data of gas metering stations at all injection points and comparing them with the same data at all delivery points, which will be almost impossible.

This circumstance will not allow calculating the tariff according to the "entry-exit" system for the Ukrainian gas transportation system, since its calculation will require accounting for all transported gas. Moreover, additional capital investments will be required for the construction of interconnecting gas pipelines (interconnectors).

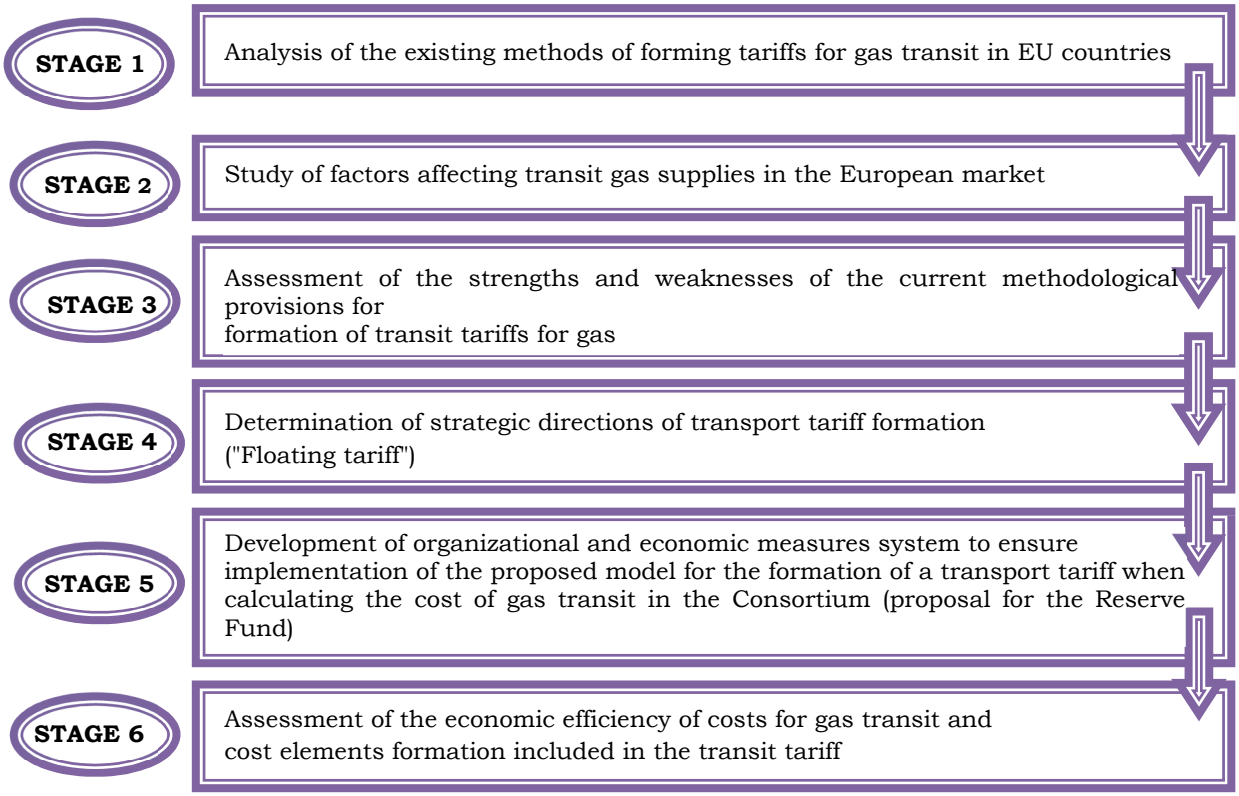

Fig. 3. Algorithm for a secure mechanism formation for transit gas supplies to consumers in the EUSource: compiled by the author

Table 3

Assessment of cost methods for gas transit in the world

	Method	Description
1.	Normalized profitability method (USA)	(profitability base) x (profitability rate) = allowable net profit (allowable net profit + taxes + operating costs + depreciation) = allowable tariff revenue (permissible tariff revenue / delivery volume) = tariff
2.	Direct cost method "plus" fixed income	"Basic" tariff revenue is the sum of the following values: operating expenses, incl. costs of wages, payment of consumables, costs of gas compression, compensation for pressure losses, costs of paying for services of third parties, costs of creating reserves (except for depreciation).
3.	Alternative method cost	If it is possible to carry out transit along alternative routes, the maximum price paid is equal to the opportunity costs, i.e. the costs of organizing transit along an alternative route. In the absence of an alternative, the maximum transit price is the price beyond which the gas sales agreement for the seller becomes unprofitable.

Source: prepared based on the data of EU Security of Gas Supplies

At this stage, Ukrnafta's production, transportation and supply functions are not separated, which also does not allow the calculation of a single entry-exit tariff, to which all European gas transmission operators will switch.

Thus, the transparency of the gas transmission system, its efficiency, and technical reliability will depend on the creation of a gas consortium.

The Ukrainian model of formation of tariffs for domestic gas is based on the so-called. "Postage stamp". In other words, for the user of the gas transmission system, the tariff for pumping gas does not depend on the distance; consumers pay the cost of the transit service regardless of the volume and distance of natural gas transportation.

According to the European-Ukrainian contract, the base rate of the tariff for gas transit through the territory of Ukraine is floating, since it takes into account, on the one hand, the cost of fuel gas (the price of which is constantly growing, which can, to a certain extent, also serve as a hidden unauthorized selection of gas on the territory of Ukraine), and on the other hand, it can be adjusted for inflation in Europe. Nevertheless, the transit tariff under the terms of the contract is set according to the "remote" method, i.e. depends on the distance.

It is proposed at the initial stage to preserve the method of tariff formation according to the "remote" principle, but to make it more structured in terms of the composition of costs and include a special component in the formula for the formation of the tariff for gas transportation: the so-called "insurance premium", due to which the consortium's excess profits will accumulate.

In this case, the following condition must be met:

$$P(t) - C(t) - TF(t) \geq 0 \quad (1),$$

where: $P(t)$ –gas price,

$C(t)$ – costs of the gas producing company (including taxes).

Let's introduce P_R –the amount of the insurance premium.

Then the tariff for gas transportation $(TF(t))$ will be calculated using the formula:

$$TF(t) = C_R(t) + P_R / Q, \quad (2)$$

where: $C_R(t)$ – consortium transportation cost.

$\uparrow P \rightarrow \uparrow P_R > 0 \rightarrow TF(t) \uparrow \rightarrow$ consortium makes a profit.

$\uparrow P < min \rightarrow TF(t) \downarrow \rightarrow$ consortium loses profit.

Conclusion.

Thus, the concept of a reserve fund has been proposed for the Consortium.

Its main functions can be:

• accumulation of the results of previous years and the redistribution of a part of the profit to the resulting loss from the sale of gas volumes for export;

• liability insurance in the event of force majeure, both to the co-founders of the Consortium, and possibly to other countries importing gas in this direction;

• financing, reconstruction, modernization and reduction of energy consumption of the Ukrainian gas transportation system - directly, or as a guarantor for loans;

• development of procedures acceptable to all for the formation of reserves and justification of the fund's expenses, as well as the development and implementation of its own strategy for the placement of funds. At the same time, measures can be taken to optimize the current costs of the Consortium in order to prevent overspending of funds allocated from the current budget of the Consortium for the operation of the GTS.

In the event of a fall in gas prices, the accumulated part of this insurance premium should be spent to cover possible losses of the Consortium, by a certain analogy with how reserve funds at state unitary enterprises can be spent to cover losses at the end of the year. However, for the Consortium, which is a commercial organization with foreign investments and has a special, largely experimental legal status, the opportunities for investing funds accumulated during periods of high prices should be large. In particular, if the losses are small or are of a relative nature, the savings can be used for investments in energy and resource-saving enterprises, systems for monitoring and diagnosing the state of gas pipelines, that is, in those works that provide direct savings in operating costs.

Another solution may be to establish a certain gas price to determine the level of the "insurance premium", similar to the cut-off price used in the budget process. If the price falls below the cut-off price set in the current (as a rule, annual) plans of the Consortium, the insurance premium deductions are not made.

Based on the results of proposals for optimizing transit gas supplies in the conditions of IGTC, the author calculated the economic efficiency of creating a "floating tariff".

In general, the formation of IGTC, taking into account the modernization of the Ukrainian GTS, will allow:

• reduce the cost of gas transit by 16%;

• maintain the design technical parameters of the GTS;

• to increase the volume of transit gas through the territory of Ukraine;

• to save gas for technological needs due to the introduction of new domestic gas turbine engines, compressor stations, reconstruction of the gas compressor unit.

The Consortium has the highest chances of selling gas under the most optimistic scenarios of economic recovery in Europe after the financial and economic crisis. The high cost of transportation will attract additional and, therefore, more "expensive" volumes of gas to the Ukrainian gas transportation system in the

face of growing demand. But even in conditions of stable, inelastic demand for gas in Europe, the Consortium has a chance to realize itself as a company that manages the capacities of an onshore gas pipeline, which ensures a balanced mode of operation of gas transmission systems in European countries that receive gas from Ukraine.

The proposed tariff model turns out to be reasonable, considering, on the one hand, the transitional nature of the Ukrainian economy; on the other hand, the mutual interest of both Ukraine and the leading European countries in efficient gas export, import and transit. Accordingly, the adoption of specific methods for the formation of tariffs for gas transit, taking into account the transitional or crisis nature of the economy of the transit country, seems in this case more than reasonable and realistic.

МОДЕЛЬ БЕЗПЕКИ ПОСТАЧАННЯ ГАЗУ СПОЖИВАЧАМ КРАЇН ЄС

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Останнім часом стають ще більш значущим проблема вибору методів встановлення транзитних тарифів на послуги з транспортування природного газу споживачам країн ЄС і пошук шляхів адаптації їх до умов міжнародного газотранспортного консорціуму (МГТ). *Предметом дослідження* виступають проблеми безпеки поставок українського газу споживачам країн ЄС з використанням міжнародних економіко-правових механізмів. Мета статті - розробити методику врегулювання транзитних україно-європейських газових поставок з допомогою створення МГТ «Україна-ЄС» для підвищення конкуренції та встановлення прийнятною і взаємовигідній ціни газу для кінцевого європейського споживача і для самої газо-транспортної системи. *Завдання дослідження*: обґрунтування рішення проблем, пов'язаних з транзитом газу за допомогою інструментів економічної політики; розробка методики формування МГТ «Україна-ЄС». Використано загальнонаукові *методи дослідження*: синтез, аналіз, системний підхід, статистичний аналіз застосування міжнародної практики тарифоутворення для вирішення спірних питань щодо транзиту природного газу. Основні *результати* та їх наукова новизна: виходячи з прогнозу зростання попиту на природний газ в ЄС, автором показана ефективність створення МГТ «Україна-ЄС» для забезпечення надійного транзиту газу по території України. Запропоновано єдиний механізм транзитних поставок газу по системі газопроводів України в умовах функціонування консорціуму «Україна-ЄС». *Висновки: в*икористання механізму узгодження інтересів окремих учасників за допомогою пропонованих методів, дозволить значно рівень безпеки поставок газу споживачам країн ЄС - як в рамках запропонованого газотранспортного консорціуму з європейськими країнами, так і для інших газотранспортних проектів.

Ключові слова: енергетична безпека, природний газ, міжнародний газотранспортний консорціум «Україна-ЄС», газо-транспортна система, споживачі європейських країн.

МОДЕЛЬ БЕЗОПАСНОСТИ ПОСТАВОК ГАЗА ПОТРЕБИТЕЛЯМ СТРАН ЕС

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В последнее время становятся еще более значимым проблема выбора методов установления транзитных тарифов на услуги по транспортировке природного газа потребителям стран ЕС и поиск путей адаптации их к условиям международного газотранспортного консорциума (МГТ). *Предметом исследования* выступают проблемы безопасности поставок украинского газа потребителям стран ЕС с использованием международных экономико-правовых механизмов. *Цель* статьи **–** разработка методики урегулирования транзитных украино-европейских газовых поставок с помощью создания МГТ «Украина-ЕС» для повышения конкуренции и установления приемлемой и взаимовыгодной цены газа для конечного европейского потребителя и для самой газотранспортной системы. *Задачи исследования*: обосновано решение проблем, связанных с транзитом газа с помощью инструментов экономической политики; разработана методика формирования МГТ «Украина-ЕС». Использованы общенаучные *методы исследования:* синтез, анализ, системный подход, статистический анализ применения международной практики тарифообразования для решения спорных вопросов по транзиту природного газа. *Основные результаты и их научная новизна:* исходя из прогноза роста спроса на природный газ в ЕС, автором показана эффективность создания МГТ «Украина-ЕС» для обеспечения надежного транзита газа по территории Украины. Предложен единый механизм транзитных поставок газа по системе газопроводов Украины в условиях функционирования консорциума «Украина-ЕС». *Выводы.* Использование механизма согласования интересов отдельных участников с помощью предлагаемых методов, позволит значительно уровень безопасности поставок газу потребителям стран ЄС – как в рамках предложенного

газотранспортного консорциума с европейскими странами, так и для других газотранспортных проектов.

Ключевые слова: энергетическая безопасность, природный газ, международный газотранспортный консорциум «Украина-ЕС», газотранспортная система, потребители европейских стран.

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