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Анализ факторов ценообразования на газ в России в контексте экономической безопасности и стимулирования экономического развития

Аннотация. В статье представлен анализ внешних и внутренних факторов ценообразования на природный газ с позиции их влияния на динамику цен газа, а также важности для России в целях обеспечения экономического развития газовой отрасли и возможности повышения защищенности экономики от внутренних и внешних угроз в энергетическом секторе. В результате проведенного анализа были выявлены различные группы факторов, оказывающих влияние на цены природного газа. В целом, все факторы можно классифицировать на первостепенные и второстепенные, внешне и внутренние факторы газовых цен. Не менее значимыми на сегодняшний день остаются такие факторы, оказывающие влияние на динамику цен природного газа, как безопасность поставок, повышение энергоэффективности и влияние технологических «шоков» в добыче и транспортировке природного газа. При учете данных факторов, необходимо также обеспечивать возможность экономического развития России за счет повышения конкурентоспособности газовой промышленности, окупаемости проектов газовой отрасли и обеспечения равной доходности внутренних цен газа с ценами его экспорта.

Ключевые слова. Природный газ, ценообразование на газ, факторы цен природного газа, экономическая безопасность, экономическое развитие.

Analysis of gas pricing factors in Russia in the context of economic security and stimulation of economic development

Annotation. The article presents an analysis of external and internal factors of natural gas pricing in terms of their influence on the dynamics of gas prices, as well as their importance for Russia in order to ensure the economic development of the gas industry and the possibility of increasing the security of the economy from internal and external threats in the energy sector. As a result of the analysis, various groups of factors influencing natural gas prices were identified. In general, all factors can be classified into primary and secondary, external and internal factors of gas prices. Still significant today are such factors influencing the dynamics of natural gas prices as

security of supply, energy efficiency and the impact of technological "shocks" in the production and transportation of natural gas. Taking into account these factors, it is also necessary to ensure the possibility of Russia's economic development by increasing the competitiveness of the gas industry, the payback of gas industry projects and ensuring equal profitability of domestic gas prices with the prices of its exports.

Key words. Natural gas, gas pricing, natural gas price factors, economic security, economic development.

The relevance of this paper lies in the increased interest in the study of the factors that determine the price of natural gas both in the domestic and non-foreign markets. The price situation in the world energy markets is quite unstable and is subject to the influence of many factors that affect the dynamics and price of energy resources.

There are various approaches to the classification of factors affecting the price of natural gas. As Linnik Yu.N. notes, pricing factors in the natural gas markets can be divided into external and internal [4], as well as primary and secondary factors that affect the price of gas, while these groups of factors “equally affect the change in the structure and balance of supply and demand in the markets” of natural gas (Fig. 1)

| Primary Factors | | Secondary Factors Influencing the Gas Price |
|---|---|--|
| Internal Factors Affecting the Gas Price | External factors influencing the price of gas | |
| hydrocarbon reserves | political factors | Weather |
| technology - the level of production and transportation technologies | | Demography |
| balance of supply and demand | | |
| seasonality (natural conditions in areas of gas production and consumption) | financial crises | Remoteness of separate settlements from the central gasification |
| prices for alternative fuels (primarily oil prices) | | The economic growth |
| cost of production and transportation | competition | Storage and export of natural gas |
| production concentration level | | Natural disasters |
| ratio of sellers to buyers | | |

Figure - 1 Classification of factors influencing natural gas prices

Compiled by: Linnik Yu.N. Theory and practice of forecasting prices for energy resources: monograph / ed. Yu.N. Linnik, V.Ya. Afanasiev, A.S. Cossack. - M. : INFRA-M, 2018. - 339 p.

Natural gas markets are heterogeneous and are characterized by different costs of hydrocarbon production, processing, and transportation of natural gas.

However, the gas price is not always set depending on the internal factors shown in Fig. 1, for example, in order to ensure energy security within a particular state, internal regulatory mechanisms for pricing for households and producers can be applied, which can be attributed to regulated gas pricing models. This approach to pricing is appropriate in cases where the marginal social cost of production exceeds the marginal cost of the enterprise (which is typical for companies with a high degree of capitalization) [4].

It is necessary to consider in more detail the secondary factors influencing the price of natural gas, which mainly include: weather conditions, the remoteness of certain territories from the central gasification and natural phenomena of an extraordinary nature.

Weather conditions are an important secondary factor influencing the price of natural gas. Thus, in countries with cold winters or hot summers, there may be an increased consumption of natural gas, which is spent on heating or, conversely, cooling, which requires high electricity costs, for the production of which natural gas is actively used. The most "economical" months of the year are May-June and September-October, when natural gas prices are least affected by weather conditions, in November-February, weather conditions have a greater effect on the growth of natural gas prices.

In accordance with the Order of the Federal Agency for Technical Regulation and Metrology dated May 6, 2022 No. 1129, temperature coefficients are used to meet the household needs of citizens in order to determine the volume of gas consumed based on the readings of gas meters installed outdoors and not having temperature compensation (coefficients of reduction to standard conditions) for individual regions (36 constituent entities of the Russian Federation) [1].

The remoteness of certain territories from the central gasification leads to the use of autonomous gas supply and changes in the cost of natural gas. This factor especially affects gas prices for territories located far from main gas pipelines, with an insufficient level of gasification.

Natural phenomena of an extraordinary nature (natural disasters) are also an important factor affecting the price of natural gas. As a result of natural disasters, the number of employees may be reduced, natural gas production activities may be suspended, which, in conditions of increased demand, will have an impact on the growth of the price of "blue fuel".

In addition to the listed main factors affecting the price of natural gas, Konoplyanik A.A. also includes such significant factors as [3]:

- 1) security of supply;
- 2) prices for renewable energy sources;

- 3) external political factors and the transformation of pricing in the European market;
- 4) liquidity of gas markets;
- 5) supply and demand in the gas market (about 45% of global natural gas and LNG imports are affected by the balance of supply and demand for gas);
- 6) the price of oil and oil products (the price of LNG is especially dependent, 70% of its imports are carried out with oil indexation);
- 7) the impact of technological changes (new production technologies, shale gas, alternative energy);
- 8) other factors.

Technological changes of a revolutionary nature, such as the “shale revolution in the US”, can have different effects on the price of natural gas. Thus, after the “shale revolution”, the United States reduced demand for imported gas, since the increase in shale gas production through the use of multiple hydraulic fracturing technology in horizontal wells (as well as a number of other equally important factors, such as a favorable institutional environment) contributed to an increase in its production and the formation of an excess supply of gas, as a result - a sharp decrease in gas prices in the United States [3].

As a result of the rebalancing of gas supply and demand in the United States, a “domino effect” arose, which manifested itself, first of all, in the redirection of LNG supplies from Qatar to Europe, an increase in the volume of natural gas supply in the European region, along with a reduction in demand during the economic crisis of 2008 -2009, as well as EU activities to develop renewable energy and improve energy efficiency, which also led to the development of spot trading in natural gas (mainly in the UK). The US shale revolution has led to a transformation in the natural gas pricing system, especially for network suppliers such as the Russian Federation. Thus, the prices of network gas suppliers to Europe are becoming less and less tied to the price of oil and are increasingly declining, dependent on spot gas prices. The main threat to the economic security of the Russian Federation in this situation turned out to be the single-commodity nature of gas production, when gas is not a by-product of production (for example, like Qatari gas with a high content of liquid fractions, revenue is offset by the sale of other hydrocarbons), but is the main product with the impossibility of a significant reduction export prices below cost.

According to Makarov A.A., Kulagina V.A., Galkina A.A., Mitrova T.A., the following five significant parameters are the key factors influencing the prices of Russian gas from the point of view of stimulating economic development [5]:

- 1) payback of gas industry projects;
- 2) industry competitiveness;
- 3) promotion of energy efficiency;
- 4) acceptability for social consumers - households;
- 5) equal profitability of domestic gas prices with the prices of its exports.

These factors influence not only the price level of natural gas, but also the formation of the energy policy of the state in relation to the formation of prices for natural gas.

The payback of gas industry projects requires maintaining gas prices at a level sufficient to attract new investments in financial projects to develop new fields. Over time, such large fields as the Zapolyarnoye oil and gas condensate field in the Tazovsky district of the Yamalo-Nenets Autonomous Okrug (discovered in 1965), the Yamburgskoye oil and gas condensate field in the Polar part of the West Siberian Plain (discovered in 1969), as well as a unique gas field, the third largest in the world in terms of gas reserves exceeding ten trillion cubic meters - the Urengoy gas field in the YaNAO (discovered in 1966) will be exhausted, which will require the development of new projects due to a shortage of production capacities. Thus, the pricing policy of the state should provide for maintaining gas prices at a level sufficient for the development of oil and gas production in the future, taking into account the forecast of costs and future growth of financial resources.

Given the need to payback large investment projects in the gas sector, gas prices should also ensure the competitiveness of the Russian industry and be below the netback. Despite the partly correctness of this statement, in the current realities, Russian industry cannot be competitive in conditions of low prices for the industry, to which it is so accustomed.

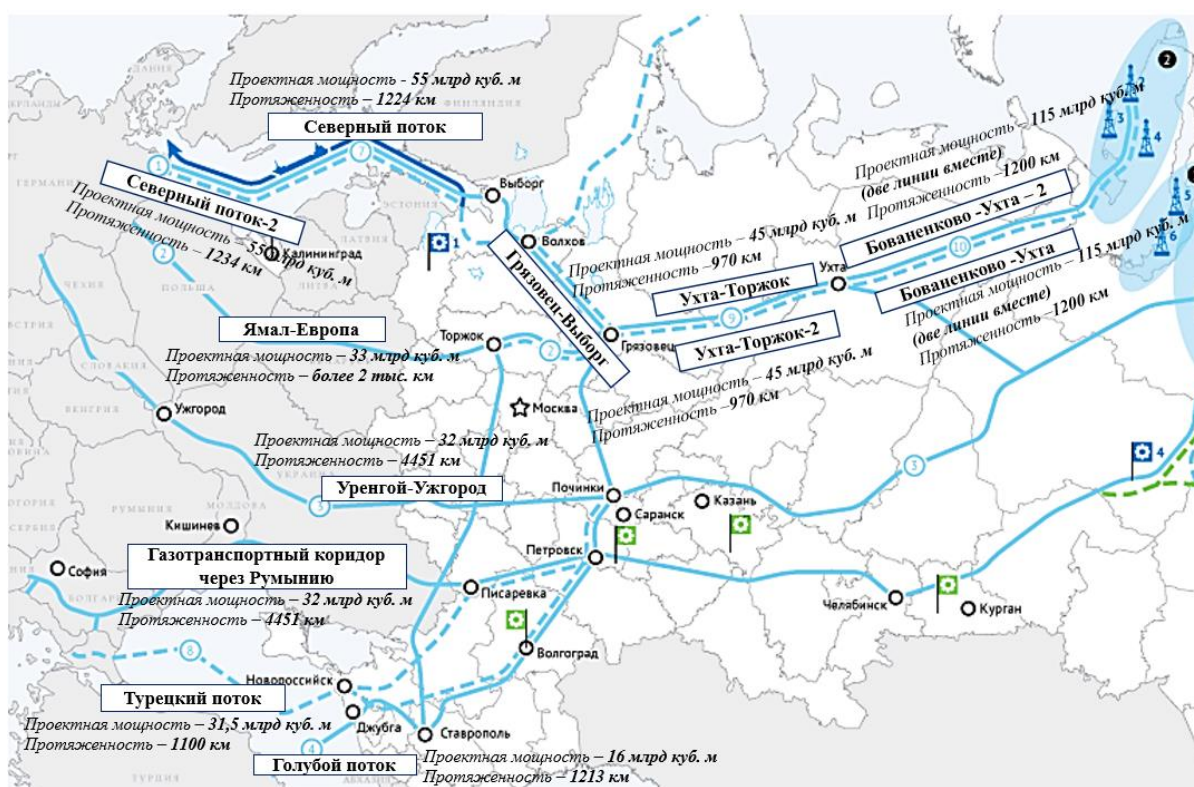


Figure - 2 Main pipeline gas supply routes from Russia

Compiled by: Ermakov V.V. New configuration of Russian export gas pipelines to Europe [Electronic resource] // URL:

<https://energy.hse.ru/data/2017/04/13/1168161199/Gazoprovod.pdf>; Gazprom [Electronic resource] // URL: <https://www.gazprom.ru/projects/bovanenkovo-ukhta/>; Gazprom Export [Electronic resource] // URL:

Russia's significant lag behind the EU in terms of technological development in the gas industry, as well as a high degree of obsolete and worn-out equipment, hinder modernization in the gas industry. The “habit” of domestic producers for understated gas prices hinders modernization in the gas sector, including the possibility of introducing energy-efficient technologies [5]. The introduction of new systems will not improve the energy efficiency of buildings and pipelines, the efficiency of power plants from 30% to 60% at the current level of domestic gas prices.

According to the Energy Research Institute of the Russian Academy of Sciences, a 2.5-fold increase in gas prices for households by 2035 will practically not change household spending on energy and gas, however, it will reduce gas consumption and ensure not only an increase in energy efficiency, but also create prerequisites for the introduction of new technologies in the housing and communal sector of the Russian Federation [5].

Finally, an equally significant factor determining the price of Russian natural gas in terms of stimulating the country's economic development is the equal profitability of domestic gas prices with the prices of its exports to Europe. There is currently no liquid gas market in Russia, so tying to a neighboring liquid gas market may be one of the possible options for setting prices for natural gas exported from Russia. Transportation costs due to the distance to consumers and buyers of natural gas account for at least 45% of the cost structure of natural gas and LNG and are an important factor affecting its export price. Natural gas is transported from the Russian Federation through a unique gas supply system (Fig. 2), gas is transported from the northern fields of Russia to European countries [6].

Thus, when analyzing the pricing of natural gas, it is important to take into account the factors that affect its price. In order to stimulate the economic development of the country and the modernization of the gas sector, the introduction of energy-efficient technologies, such factors as the payback of projects in the gas industry, the competitiveness of industry and equal profitability from gas sales at home and abroad may be preferable, while in order to ensure economic security, it is necessary to take into account the security of gas supplies, prices for alternative fuel sources, as well as external political factors and changes in the pricing of "blue fuel" in the European market. The liquidity of the world gas markets and the impact of technological changes will largely determine the dynamics of natural gas prices in the future and the possibility of Russia's economic development.

Список литературы

1. Приказ Федерального агентства по техническому регулированию и метрологии от 6 мая 2022 г. № 1129 "Об утверждении температурных коэффициентов (коэффициентов приведения к стандартным условиям) на

- второе полугодие 2022 года" [Электронный ресурс] // URL: <https://www.garant.ru/products/ipo/prime/doc/404713533/>
2. Ермаков В.В. Новая конфигурация российских экспортных газопроводов в Европу [Электронный ресурс] // URL: <https://energy.hse.ru/data/2017/04/13/1168161199/Gazoprovod.pdf>
3. Конопляник А.А. Эволюция системы ценообразования на мировом энергетическом рынке: экономические последствия для России / под ред. О.И. Маликовой, Е.С. Орловой. — М: Экономический факультет МГУ имени М.В. Ломоносова, 2017. — 432 с.
4. Линник Ю.Н. Теория и практика прогнозирования цен на энергоресурсы : монография / под ред. Ю.Н. Линника, В.Я. Афанасьева, А.С. Казака. — М. : ИНФРА-М, 2018. — 339 с.
5. Макаров А.А. Трансформация системы ценообразования в газовой отрасли как способ стимулирования экономического развития России / А.А. Макаров, В.А. Кулагин, А.А. Галкина, Т.А. Митрова // Экономический журнал ВШЭ. 2019. №4.
6. ООО «Газпром экспорт» [Электронный ресурс] // URL: <https://gazpromexport.ru/projects/transportation/>
7. ПАО «Газпром» [Электронный ресурс] // URL: <https://www.gazprom.ru/projects/bovanenkovo-ukhta/>

References

1. Order of the Federal Agency for Technical Regulation and Metrology dated May 6, 2022 No. 1129 "On Approval of Temperature Coefficients (Coefficients of Reduction to Standard Conditions) for the Second Half of 2022" [Electronic resource] // URL: <https://www.garant.ru/products/ipo/prime/doc/404713533/>
2. Ermakov V.V. New configuration of Russian export gas pipelines to Europe [Electronic resource] // URL: <https://energy.hse.ru/data/2017/04/13/1168161199/Gazoprovod.pdf>
3. Konoplyanik A.A. Evolution of the pricing system in the global energy market: economic implications for Russia / ed. O.I. Malikova, E.S. Orlova. - M: Faculty of Economics of Moscow State University named after M.V. Lomonosov, 2017. - 432 p.
4. Konoplyanik A.A. Evolution of the pricing system in the Linnik Yu.N. Theory and practice of forecasting prices for energy resources: monograph / ed. Yu.N. Linnik, V.Ya. Afanasiev, A.S. Cossack. - M. : INFRA-M, 2018. - 339 p.
5. Makarov A.A. Transformation of the pricing system in the gas industry as a way to stimulate the economic development of Russia / A.A. Makarov, V.A. Kulagin, A.A. Galkina, T.A. Mitrova // HSE Economic Journal. 2019. No. 4.
6. Gazprom Export [Electronic resource] // URL:

<https://gazpromexport.ru/projects/transportation/>
7. Gazprom [Electronic resource] // URL:
<https://www.gazprom.ru/projects/bovanenkovo-ukhta/>