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## **ENERGY COMPONENT OF UKRAINIAN REGIONS' ECONOMIC SECURITY**

***Summary.** The article highlights the basic concepts of energy security of regions. Factors influencing the energy security of the regions are considered, they can be divided into two groups: factors that can be eliminated or localized in the current and strategic period, that are directly in the field of management (these include energy shortages, man-made accidents, financial problems); factors whose management period is based on the time of strategic programs (period of hypotheses) and which are managed only indirectly through the concepts of development (these include limited resources, environmental problems, etc.). The economic threats to the energy security of the regions are highlighted: lack of investment resources necessary for the development, modernization and technical support of the normal operation of the energy complex; financial instability of ensuring the functioning of the energy complex, provision of fuel resources, materials and components to support technological processes, stability of payment of all current costs; breach of economic ties; inefficient use of fuel and material resources; excessively high prices for fuel and material resources; high levels of monopoly of producers, suppliers and distributors of energy and fuel resources;*

*technical constraints arising from lack of funds; imbalance of production and consumption (FER), shortage of energy capacity, insufficient network capacity. The main characteristics of the energy security system of the regions, which should be emphasized in the formation of the management mechanism: energy saving as a characteristic of organizational and technical policy of energy security in the framework of social responsibility of the subjects; energy efficiency as a characteristic of economic policy to ensure the optimal balance of energy supply and energy intensity and energy consumption of production systems; energy competitiveness as a characteristic of political regulation of consumption of energy resources of the region. The mechanism of energy security management of regions, which should be based on the most important principles and their combination, is analyzed.*

**Key words:** *energy security of regions, economic security, threats to energy security, factors, mechanism of energy security management of regions.*

**Problem formulation.** The foundation of economic security is energy security, because without energy it is impossible to organize any kind of production, to establish a smooth flow of social processes. The energy security of the region should be understood as a characteristic of the fuel and energy complex of the region, which determines the ability of this complex based on efficient use of internal and external resources to ensure reliable energy supply of economic entities and the population without compromising economic security. In this regard, the problem of increasing the level of energy efficiency of the national economy is one of the most important in the modern economy.

The current state of energy security in the regions of Ukraine, the fundamental need to ensure energy independence and access to the trajectory of

self-sufficiency of socio-economic development of energy, including alternative types of resources.

The way out of the current situation may be the development of a fundamentally new theoretical paradigm to ensure energy security of the regions on the basis of structural and systemic approach and an effective organizational and economic management mechanism.

**Analysis of recent research and publications.** The energy security problems of the regions are devoted to the works of such scientists as: N. Andrushkevich [6], M. Akulyushina [1], V. Zakharchenko [1], V. Kovalsky [2], M. Kozoriz [3], S. Rassadnikova [4], Yu. Svirchevska [5], V. Shpilova [6], J. Shevchuk [7] and others.

**Main goal.** Highlight the energy component of Ukrainian regions' economic security.

**Presenting main material.** The concept of Ukrainian regions' energy security, as well as other countries, is multifaceted and affects phenomena and processes not only in the energy system but also in the economy.

Today, economic development has reached a level at which the energy sector plays a key role in its impact on other components of the economy. Therefore, determining the contribution of the energy factor to economic security is crucial for the analysis of economic security. Ensuring energy security is becoming one of the most important tasks to create conditions for the proper functioning of all sectors of the economy. Economic security characterizes the state of the economy, which provides guaranteed protection of the interests of the individual, society, state, social orientation of policy, even under adverse conditions of internal and external processes [2].

Energy security is one of the components of the region's economic security.

Currently in the scientific literature there are three definitions of energy security, which complement each other:

1) energy security - is the confidence that energy will be available in such quantities and quality that are required under these economic conditions;

2) energy security is a state of protection of vital "energy interests of the individual, society and the state from internal and external threats";

3) energy security - is the state of protection of the country (region), its citizens, society, state and economy from the threat of deficit in providing energy needs economically available (FER) of acceptable quality under normal conditions and in emergency circumstances, as well as from the threat of stability fuel and energy supply [3].

The energy security of the region today is determined by the region's capabilities in interregional integration of economic and political level, as well as the degree of development of energy infrastructure.

A distinction should be made between direct and indirect energy security. Direct energy security is related to the impact of energy resources on the socio-economic system. Indirect energy security is determined by the man-made impact of energy on the environment and other aspects of the territory [6, p. 689].

The operation and development of energy faces a number of environmental problems that threaten to become more acute in the coming years, as fuel and energy is one of the main sources of environmental pollution.

Issues of negative impact of the energy sector on the territory are currently considered through the prism of conflict of interest, which is not entirely correct when designing development programs. It is necessary to form an approach from the standpoint of ensuring long-term strategic benefits and balance of interests of all subjects of the socio-economic system.

Thus, energy security is formed as a result of the process of mutual influence of energy and other economic entities, which is manifested in the change of goals and methods of development.

Factors affecting the energy security of the regions can be divided into two groups:

- factors that can be eliminated or localized in the current and strategic period, which are directly in the field of management (these include energy shortages, man-made accidents, financial problems);

- factors whose management period is based on the time of strategic programs (period of hypotheses) and which are managed only indirectly through the concepts of development (these include limited resources, environmental problems, etc.).

Threats to energy security are short-term or long-term events that can destabilize the operation of the energy complex, limit or disrupt energy supply, lead to accidents and other negative consequences for energy, economy and society.

The economic threats to the energy security of the regions include the following factors:

- shortage of investment resources necessary for the development, modernization and technical support of the normal operation of the energy complex;

- financial instability of ensuring the functioning of the energy complex, provision of fuel resources, materials and components to support technological processes, stability of payment of all current costs;

- breach of economic ties;

- inefficient use of fuel and material resources;

- excessively high prices for fuel and material resources;

- high levels of monopoly of producers, suppliers and distributors of energy and fuel resources;
- technical constraints arising from lack of funds;
- imbalance of production and consumption (FER), shortage of energy capacity, insufficient network capacity.

The energy security of the region is determined by the risks, both general economic and specific, inherent in the energy sphere. The energy complex, being part of the socio-economic system, is subject to natural, economic, managerial and socio-political risks. At the same time, systemic risks play a special role for the region's energy sector [6, p. 690].

The methodology of energy security management in the region will be to identify, assess, produce, use and increase energy resources, as well as the development of energy infrastructure.

Depreciation of the active part of funds in the electricity sector is 60-65%, in particular in rural distribution networks, this figure exceeds 75%. Domestic equipment, which is the technical basis of electricity, is obsolete, does not meet modern requirements and is inferior to the best world products. Therefore, a significant update based on new equipment and technologies for the production and distribution of electricity and heat is needed [1].

The presence in the power systems of worn-out, exhausted equipment, the share of which has already exceeded 15% of total capacity, and the lack of possibility of its restoration introduce electricity into a zone of high risk, technological failures, accidents and, consequently, reduced reliability.

Interregional energy integration allows for operational regulation in the event of man-made disasters.

Of course, the development of a mechanism for interregional energy integration requires taking into account the interests of energy business owners. It

is necessary to develop a number of regulations that make it possible to offset the possible decline in the profitability of the energy business, which arose due to the presence of territorial preferences [5].

Thus, in the conditions of a single state in the neighboring regions with economically disproportionate energy systems to improve energy efficiency is objectively necessary the emergence of integration processes of smoothing and distribution of natural territorial preferences.

The process of forming a regional energy policy consists of several stages.

At the first stage, the formation of energy potential takes place. Taking into account the demand and supply of economic entities at the micro, meso and macro levels, the potential of energy resources is assessed in terms of compliance with the interests of energy policy participants.

In the second stage, favorable conditions are created for the energy potential to be used in a timely manner.

At the third stage, the efficiency of the used energy potential for all participants of energy policy is assessed.

The process of managing the socio-economic development of regions should be carried out taking into account its basic component of the need to form effective energy security of the region to form organizational and technological solutions to replace traditional energy sources with non-traditional (alternative) and increase energy potential. In turn, this requires the construction of a modern mechanism for managing the process of energy security at the regional level, which provides for the establishment of coordinated interaction of various actors to achieve economic and social efficiency of energy resources. This requires a balance between the economic benefits of the functioning of the energy complex of the region and the growth of tariff and price burden on consumers.

Significant disparities in the socio-economic development of the region, the level of provision of both traditional and alternative sources of energy resources, the state of energy infrastructure necessitates the implementation of a system of global measures:

- reduction of disparities both in the structure of consumption of traditional energy sources and in the levels of energy supply of different regions of the country;
- giving priority to energy development in the regions of Ukraine within the framework of state target programs;
- formation of energy landscape and energy map of Ukraine, in particular on the structure of traditional and alternative energy sources, its changes in the direction of increasing the share of the latter, as well as prospects for relocation of centers of production, processing and consumption of fuel and energy resources from eastern Ukraine
- improvement of the tariff regulation system in the direction of increasing the level of its openness, compliance with European standards and social orientation;
- intensification of the use of the potential of local, non-traditional and renewable types of fuel and energy resources.

However, the implementation of the above global measures is complicated by a number of problems: - Insufficient coherence of strategies, programs and plans of socio-economic development of regions with strategic documents in the field of energy development (Energy Strategy of Ukraine until 2030, master schemes, state target programs ), as well as local investment energy projects; - the presence of "bottlenecks" in energy supply systems, both at the regional and national levels; - Insufficient development of small energy and low degree of



involvement in energy balances of local energy sources of regional and local importance.

The main characteristics of the energy security system of the regions, which should be emphasized in the formation of the management mechanism: 1) energy saving as a characteristic of organizational and technical policy of energy security in the framework of social responsibility of the subjects; 2) energy efficiency as a characteristic of economic policy to ensure the optimal balance of energy supply and energy consumption and energy consumption of production systems; 3) energy competitiveness as a characteristic of political regulation of energy consumption in the region.

The purpose of energy security management at the regional level is to consistently achieve a qualitatively new level of its main characteristics: - the ability of the fuel and energy complex of the regions to meet economically justified domestic demand for energy and energy resources of appropriate quality at affordable tariffs; - the ability of the consumer sector of the economy to use energy resources efficiently, preventing their irrational costs and taking into account the deficit of fuel and energy balance; - resilience of the energy sector to external and internal economic, man-made and natural threats, as well as its ability to minimize damage caused by the manifestation of various destabilizing factors.

The mechanism of energy security management in the regions should be based on the following key principles and their combination: prevention of wasteful use of energy resources); - the principle of renewable non-renewable resources (the rate of consumption of depleted fuel resources should be consistent with the rate of development of energy sources that replace them); - the principle of diversification of the use of different energy sources (reducing the level of dependence of the economy on a particular energy source); - the principle of taking into account the requirements of environmental safety (energy development must

be balanced with the requirements for environmental protection); - the principle of creating economic conditions, primarily through tax and other measures to stimulate the development of the fuel and energy sector in the regions.

The multicomponent and multistructural nature of the energy security system of the regions, its dependence on many internal and external factors necessitates the efficient, balanced, sustainable and reliable operation of all its components. At the same time, the complexity and simultaneous imbalance and inconsistency, and consequently the ineffectiveness of the management mechanism, in particular in the context of institutional changes in the energy sector, leads to weakening of organizational ties both inside and outside the system. to undermine the energy security of the country's regions [7, p. 67].

The management mechanism of the energy security system of the regions combines the solution of three blocks of tasks: balanced development of the regions; sustainable development and operation of energy infrastructure; improving energy efficiency and energy saving in a region with a high cost of energy resources, based on the development of indirect management processes.

The mechanism of management of the energy security system of the region should be based on the process of identification of energy security circuits based on the application of the process approach as a set of interconnected and mutually agreed management actions. The mechanism provides for the implementation of: - increasing energy efficiency and energy saving; - development and operation of energy infrastructure; - balanced development of regions; - ensuring energy security of regions [7, p. 68].

The implementation of the component / stage of the management mechanism "improving energy efficiency and energy saving" stimulates the "development and operation of energy infrastructure", which, in turn, expands the possibilities of "balanced development of the region" and contributes to energy security in the

region. The obvious feedback is that other blocks are being developed in response to increased energy security.

It is necessary to distinguish between two components of the mechanism of management of the energy security system of the region: internal, which is implemented at the regional level, according to the above scheme, and external, when the supersystem (state) provides targeted subsidies for energy infrastructure. Management of energy security characteristics of regions is both the impact on the state of energy resources and the impact on the energy component of the socio-economic system of the region as a whole. An important point is also the formation of energy-saving thinking and social responsibility of the subjects.

The key impacts on the energy security system of the regions in terms of local incentives (provocateurs) should be: for energy resources: - search and expansion of domestic raw energy resources, as well as cooperation and integration in attracting external energy resources; - modernization and innovative development of productive energy resources; for the socio-economic system: - energy management; - investments in energy saving and energy efficiency; for society: - formation of normative-legal and organizational bases of energy-saving thinking: - ensuring balance of social and economic interests of all subjects of economy [7, p. 69].

It should be noted that the characteristics of energy security can be manifested in both tactical and tactical periods, providing economic growth for current and future generations.

The implementation of the mechanism for managing the energy security system of the region is carried out by applying a process approach through the use of institutional, legal, organizational, economic and infrastructural components. The role of the institutional and legal component is to create a favorable regulatory framework for energy conservation, energy efficiency of the regional economy, the

transition to alternative energy sources and more. The organizational component involves the formation of effective structures at both state and local levels and an effective system of relationships (communication network) between them for the optimal combination of centralized management and local (local) initiatives. The role of the economic component is reflected, first of all, in the issues of tariff formation and ensuring the principle of economic feasibility of energy supply and energy saving. The infrastructure component involves the creation of an efficient energy infrastructure.

**Conclusions.** It is advisable to monitor the energy security of the region on the basis of the procedure of constant monitoring of the values of indicators and their comparison with the threshold values. If the threshold values of the indicators are exceeded, a critical value is formed, which does not always mean a situation of complete collapse of the energy security management system and provision of fuel and energy resources in the region. At the same time, monitoring indicators is not the only tool for assessing the state of energy security. Equally important is their qualitative description, especially since not all threats can be fully disclosed [4].

It is also necessary to supplement the existing regulatory framework for public administration of fuel and energy with a number of special bills. The most important areas for improving the energy security of the regions include the construction of wind farms for isolated consumers, the development of the local coal base, active fuel and energy saving policies, and others. Measures aimed at improving the functioning of the fuel and energy complex: reconstruction and modernization of existing equipment at fuel and energy enterprises, replacement of production facilities that have developed their resource; improving the production and territorial structure of the fuel and energy sector by ensuring a rational combination of centralization and decentralization, concentration and

deconcentration; increasing the investment attractiveness and strengthening the financial condition of fuel and energy enterprises.

### Література

1. Захарченко В. Аналіз енергетичної безпеки регіону / В. Захарченко, М. Акулюшина // Економіка: реалії часу. 2012. № 1(2). С. 147–150. URL: [economics.opu.ua/files/archive/.../147-150.pdf](http://economics.opu.ua/files/archive/.../147-150.pdf)
2. Ковальський В. Про підвищення рівня енергетично-екологічної безпеки України / В. Ковальський // Економіка України. 2000. № 10. С. 34–40.
3. Козоріз М. Політика енергозбереження й шляхи її реалізації в Україні / М. Козоріз // Регіональна економіка. 1998. № 2. С. 61–67.
4. Рассадникова С. Управління системою енергетичної безпеки регіонів в аспекті економічної безпеки країни / С. Рассадникова // Збірник наукових праць ЧДТУ. Серія "Економічні науки". 2016. Випуск 43. Частина I. С. 79-85. URL: [file:///C:/Users/Admin/Downloads/Znpchdtu\\_2016\\_43\(1\)\\_12.pdf](file:///C:/Users/Admin/Downloads/Znpchdtu_2016_43(1)_12.pdf)
5. Свірчевська Ю. Сутність енергетичної безпеки країни та чинники, що на неї впливають / Ю. Свірчевська. URL: [geopolitika.crimea.edu/arhiv/.../042svirch.pdf](http://geopolitika.crimea.edu/arhiv/.../042svirch.pdf).
6. Шпильова В.О., Андрушкевич Н.В. Вплив енергетичної безпеки на соціально-економічний розвиток регіонів / В.О. Шпильова, Н.В. Андрушкевич // Глобальні та національні проблеми економіки. Миколаївський національний університет імені В.О. Сухомлинського. 2016. Випуск 16. С. 688-691. URL: <http://global-national.in.ua/archive/14-2016/139.pdf>

7. Шевчук Я.В. Механізм управління системою енергетичної безпеки регіонів / Я.В. Шевчук // *Агросвіт*. 2016. №23. С. 65-71. URL: [file:///C:/Users/Admin/Downloads/agrosvit\\_2016\\_23\\_13.pdf](file:///C:/Users/Admin/Downloads/agrosvit_2016_23_13.pdf)

### **References**

1. Zakharchenko V. Analiz energhetychnoji bezpeky reghionu / V. Zakharchenko, M. Akuljushyna // *Ekonomika: realiji chasu*. 2012. № 1(2). S. 147–150. URL: [economics.opu.ua/files/archive/.../147-150.pdf](http://economics.opu.ua/files/archive/.../147-150.pdf)
2. Kovaljskyj V. Pro pidvyshhennja rivnja energhetychno-ekologhichnoji bezpeky Ukrajinny / V. Kovaljskyj // *Ekonomika Ukrajinny*. 2000. № 10. S. 34–40.
3. Kozoriz M. Polityka energhozberezhennja j shljakhy jiji realizaciji v Ukrajinny / M. Kozoriz // *Reghionaljna ekonomika*. 1998. № 2. S. 61–67.
4. Rassadnykova S. Upravlinnja systemoju energhetychnoji bezpeky reghioniv v aspekti ekonomichnoji bezpeky krajinny / S. Rassadnykova // *Zbirnyk naukovykh pracj ChDTU. Serija "Ekonomichni nauky"*. 2016. Vypusk 43. Chastyna I. S. 79-85. URL: [file:///C:/Users/Admin/Downloads/Znpchdtu\\_2016\\_43\(1\)\\_\\_12.pdf](file:///C:/Users/Admin/Downloads/Znpchdtu_2016_43(1)__12.pdf)
5. Svirchevsjka Ju. Sutnistj energhetychnoji bezpeky krajinny ta chynnyky, shho na neji vplyvajutj / Ju. Svirchevsjka. URL: [geopolitika.crimea.edu/arhiv/.../042svirch.pdf](http://geopolitika.crimea.edu/arhiv/.../042svirch.pdf).
6. Shpyljova V.O., Andrushkevych N.V. Vplyv energhetychnoji bezpeky na socialjno-ekonomichnyj rozvytok reghioniv / V.O. Shpyljova, N.V. Andrushkevych // *Ghlobaljni ta nacionaljni problemy ekonomiky. Mykolajivskyj nacionaljnyj universytet imeni V.O. Sukhomlynsjkogho*. 2016. Vypusk 16. S. 688-691. URL: <http://global-national.in.ua/archive/14-2016/139.pdf>

7. Shevchuk Ja.V. Mekhanizm upravlinnja systemoju energhetychnoji bezpeky reghioniv / Ja.V. Shevchuk // Aghrosvit. 2016. № 23. S. 65-71. URL: [file:///C:/Users/Admin/Downloads/agrosvit\\_2016\\_23\\_13.pdf](file:///C:/Users/Admin/Downloads/agrosvit_2016_23_13.pdf)