

PRIORITY AREAS FOR EFFECTIVE IMPLEMENTATION OF THE ORGANIZATIONAL AND ECONOMIC MECHANISM FOR REFORMING THE ELECTRICITY MARKET IN UKRAINE



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Abstract. Radical reform of the electricity market has begun long ago. European vectors of liberalized market development stimulate to adapt to changes in Ukraine. However, the internal conflict environment of the domestic market is hampered by these changes. This is manifested in the following: all enterprises (producers and suppliers) in the electricity market must operate on a separate, self-organized basis; publicity and publicity, and free access to the use of networks of all business entities based on public contracts; Legislation stipulates and envisages the creation of several electricity markets: intraday market, balancing market, ancillary services market. On each of them, there is a separate order of functioning, a system of purchase and sale of the electric power, price formation, the establishment of norms, and quotas of sales volumes.

The purpose of the article is to determine the priority areas of the most effective implementation of organizational and economic mechanisms in the process of reforming the electricity market in the country.

Results. We believe that the most effective reform of the electricity market should be carried out based on the efficient and transparent operation of the NERC; delimitation of the production sector from the distribution sector of electricity networks; carry out the necessary certification of the transmission system operator; update system, hardware, and software; optimize measures and reform the retail market to the needs of consumers; economically justify tariff formation to the needs and opportunities of consumers, including changing the mechanism of cross-subsidization. Achieving the set goals and priorities will reduce the risks of reforming the electricity market, revive competition between participants (entities) of the market, create conditions for improving the quality of services, limit the impact of negative environmental factors with incentive pricing policies.

Keywords: *efficiency, organizational mechanism, economic mechanism, formation of the electric power market, energy market.*

Introduction

Radical reform of the electricity market has begun long ago. European vectors of liberalized market development stimulate to adapt to changes in Ukraine. However, the internal conflict environment of the domestic market is hampered by these changes. An important basis for these changes is the Law of Ukraine "On the Electricity Market", which was adopted in 2017, it forms a bridgehead for radical reform. This is manifested in the following: – all enterprises (producers and suppliers) in the electricity market must operate on a separate, self-organized basis; – publicity and publicity, and free access to the use of networks of all business entities based on public contracts; – the creation of several electricity markets is stipulated and envisaged by law: the intraday market, the balancing market, the market of ancillary services. On each of them, there is a separate order of operation, the system of purchase and sale of electricity, pricing, setting norms, and quotas of sales (Dz'oba, 2014).

The purpose of the article is to determine the priority areas of the most effective implementation of organizational and economic mechanisms in the process of reforming the electricity market in the country.

Research methods. To achieve the desired results, as well as to achieve this goal, this article used not only general scientific approaches in the study but also special, including analysis and synthesis, regional and economic analysis, statistical and historical analysis.

Analysis of scientific research. The process of formation of the modern market of electric services has its history of formation, which is the result of long-term civilizational changes. For the most part, the historical and economic approach determines the stages of the formation of electricity from resource provision to a holistic strategically important industry. Researchers who have enriched the terminological and technological breakthroughs of the electricity market include the philosopher Thales of Miletus, the English physicist William Hilbert, the physicist Otto von Biren, the scientist Stefan Gray, the German engineer's Hausen, Bose and Vinyl, the Italian naturalist Alexander the Great. Nicolas Tesla, Thomas Alva Edison, Lord Kelvin, Galileo Ferriss and others. In addition, the process of improving the electricity market continues, so the following constellation of modern researchers is being formed: V. Kupchak, O. Pavlova, O. Strishenets, K. Pavlov, V. Pavlov, V. Lagodienko, A. Yakimchuk, and others.

Presentation of the main material and substantiation of the obtained research results. When integrating, the national electricity market, following the European model, should carefully follow the Directives of the European Union. In particular, the EU Member States shall coordinate their efforts to implement Directive 96/92 / EC, the European Parliament, and the Council of Europe on common conditions for the internal market in electricity about the following types of implementations:

- 1) increase the level of competition for retail electricity supply over a specified period;
- 2) democratize the choice and access of all participants within the free activities in the electricity market (Electricity market law: what it prepares for us, 2017).

At the same time, the updated configuration of the electricity market places new demands on the operation of electric grid companies. Among them are the conditions that allow for reform on a competitive basis, namely: promoting transparent and non-discriminatory access to electricity networks, timely development of the electricity market to meet the needs and challenges of a dynamic economic system, lifting restrictions on electricity transportation.

Clarification of strategic guidelines for the effective implementation of organizational and economic mechanisms, reform of the electricity market determines the nature and significance of the category "organizational and economic mechanism". Organizational and economic mechanism of reforming the electricity market of Ukraine is the current forms and methods of state influence on the activities of electricity entities, including management functions, namely: planning, organization of interaction, coordination, motivation, and control (Linchevs'ka, 2014).

At the same time, the structure of this mechanism should include the following elements: – information and system and regulatory support of reform processes; methods of regulating the activities of the liberalized electricity market; investment and innovation policy; tools for regulating the activities of electricity markets.

In our opinion, the structured structure of the organizational and economic mechanism will allow systematizing in some way the understanding of the stages of functioning of the electricity market. Thus, the following stages together form a single system of relationships between reform goals,

search for reform methods, sources of financial support, subject and object positions, principles, and methods of their regulation, which directly or indirectly affect the effectiveness electricity market. This is presented in Fig. 1.

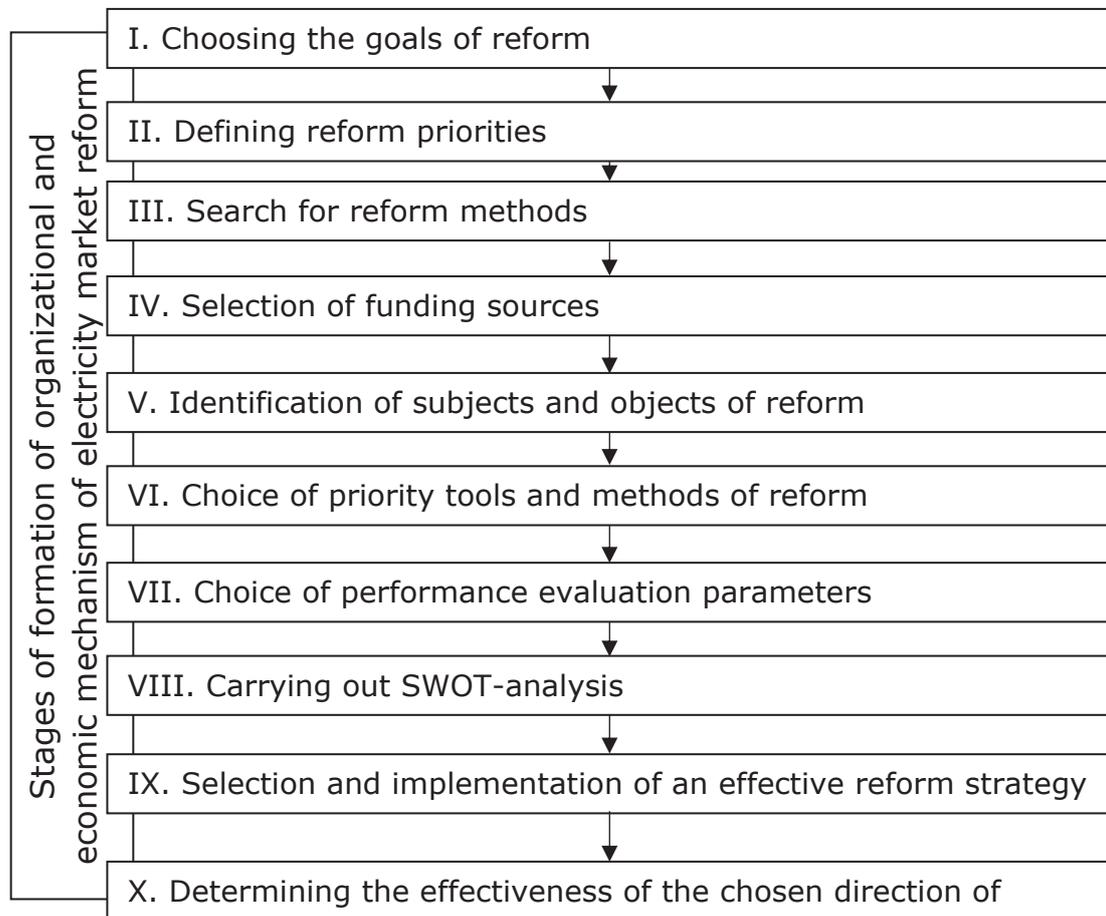


Figure 1. Determining the stages of formation of the mechanism of reforming the electricity market. Created the author based on (Dz'oba, 2014).

The proposed approach is mainly focused on the interdependence and sequence of the proposed stages, their focus, system (combination of relationships, methods, forms, principles of organization, and effective reform).

However, the proposed stages will have different performance effects on the chosen model of reform and the impact of external factors and strategic guidelines that affect them and the amount of possible financial investments. Therefore, the choice of the most optimal solution requires a clearer justification of directions and methods of reform. Today, there are enough models that will allow us to assess and forecast the processes of market reform. However, most of these models are elements of the scholastic method, which, unfortunately, makes the accuracy of the result impossible.

Thus, a simplified system of relationships will achieve the formation of deterministic models, which through a system of parameters can describe the state of the object, and can be used in a wider range, so the electricity market is unable to significantly predict the transformation of external factors. straight. Therefore, the effectiveness of reform processes will depend on the accuracy of reform methods with further forecasting. In this case, the relationship between objectives and areas of regulation should be classified according to the degree of their closeness, direction, and analytical accounts (Hrebeshkov, 2010).

Clarification of the outlined range of problems will create preconditions for the integrated use of statistical, dynamic, expert methods, the application of rating analysis, by modeling the assessment of the processes of reforming the electricity market.

At the same time, the objects should be services for the provision of electricity consumer resources, to increase the production efficiency of electricity entities, and the entities are at the same time electricity networks and the National Commission for Energy Regulation.

Of course, any organizational and economic activity adheres to the process of reforming clear and understandable principles, which in our study are presented in such an algorithm:

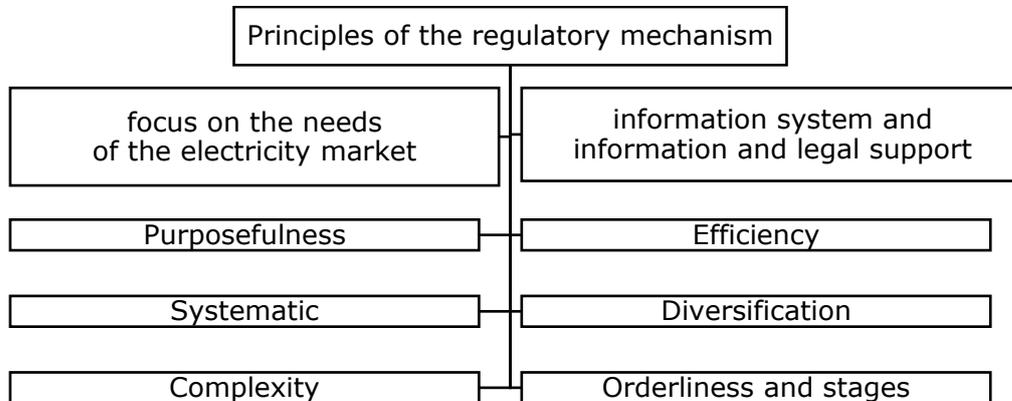


Figure 2. Principles of the organizational and economic mechanism of electricity market reform.
Created by the author based on Strishenets', Pavlov, 2016, 2017; Strishenets', 2017.

- orientation and needs of the electricity market – is an extraordinary reform of the most inefficient areas in the activities of the electricity market, which will reduce or avoid the risks of irrational spending on management decisions;
- purposefulness – suggests that the goals of reform and their directions should be identified following the possibility of potential and sources of funding, which will ensure the effective course of the reform process;
- systematic – means the development and flow of the mechanism for reforming the electricity market;
- complexity – involves the process of reforming the activities of all sources and instruments of organizational and economic change;
- information system and regulatory support - hints at the use of existing results of the reform of the information system and regulatory framework of the electricity market;
- efficiency – focuses on the right choice of methods and tools of reform in terms of achieving the best results;
- diversification – involves the comprehensive application of updated goals, models, directions, and sources of reforming their activities;
- orderliness and phasing – determines the focus of the mechanism for reforming the electricity market with the planned orderliness at the approved stages, which in the right direction will achieve the most desirable effect.

The principled approach of the organizational and economic mechanism of reforming the electricity market considered by us will allow all the factors that can directly or indirectly affect the smooth operation of the electricity market.

At the same time, the backbone of important changes in the structure of relevant institutions and bodies, the orderliness and organization of which will contribute to the likelihood of planning further development and effective operation of enterprises that expand their strategic potential.

Table 1.

Opportunities and threats of the electricity market of Ukraine through the application of SWOT-analysis, (National Renewable Energy Action Plan until 2020, 2014)

<i>Strengths</i>	<i>Weak sides</i>
<ul style="list-style-type: none"> - orderly and phased implementation of elements of the organizational and economic mechanism of progress in minimizing electricity costs; - high level of information and operational security of power grids, through constant control over software updates and industry computer protection; - availability of international resources of leading financial companies; - cross-border advantageous geographical connection of Ukraine; - significant raw material and reserve potential to meet internal and external needs. 	<ul style="list-style-type: none"> - limiting the volume of export supplies due to the unstable economic and political climate of Ukraine; - regulatory framework not adapted to liberalization processes; - monopolization of electricity generation and distribution sectors; - low level of cultural electricity consumption; - significant material and technical depreciation of fixed capital; - dependence on the regulator (NKREKP) and non-objectivity to modern requirements for tariff setting; - Lack of innovation policy in business processes and a significant level of bureaucratic procedures.
<i>Opportunities</i>	<i>Threats</i>
<ul style="list-style-type: none"> - diversification options for finding sources of raw materials for hydropower plants and nuclear power plants; - consolidation of efforts and further cooperation with international companies and creation of own fuel cycle for fuel waste management; - increase of safety level at the development of system complexes of emergency automation; - approval of the strategy for the development of alternative energy sources; - implementation of EU requirements and standards using the integration into the European energy of the domestic electricity market. 	<ul style="list-style-type: none"> - low investment attractiveness; - military conflicts with Russia; - impossibility of mutual (bilateral) delimitation of energy systems between Russia and Belarus; - significant lobbying of the interests of monopolists in the processes of liberalization of the electricity market; - total monopsonistic dominance in regional electricity supply markets; - low national capacity of electricity consumers.

To determine the goals, priorities, and objectives of the electricity market, it is first necessary to analyze the pros and cons of its operation. In our opinion, it is most appropriate to apply the method of strategic SWOT analysis, which can be used to assess the real situation and predict the further development of the industry. However, the range of factors and factors that determine the strengths and weaknesses, potential opportunities, and threats of the electricity market is extremely new but sufficient to either focus on the necessary elements of the strategy (Table 1.).

Given the advantages and disadvantages of weaknesses and strengths of the electricity market by SWOT-analysis, we should focus on the probability of reforming key elements of the strategy of reforming the electricity market of Ukraine, which we visualized by grouping these elements: (Fig. 3.).

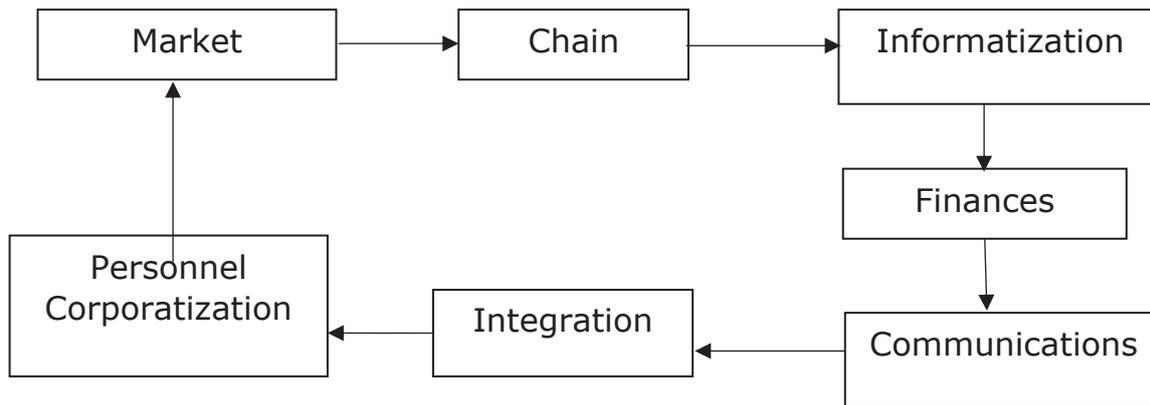


Figure 3. Key elements of the electricity market that underlie the reform (Usenko, 2017).

- reforming the network primarily involves solving the following tasks: increasing the reliability of the system with the subsequent elimination of "bottlenecks" through the concept of reducing the cost of maintaining the entire system;
- market reform by increasing market conditions through a balancing market, the market of ancillary services, delimitation of the functions of commercial accounting and settlement, enhancing consumer participation;
- reforming information technology will help balance the electrical system under modern conditions and requirements by strengthening the quality of automation of payments between market participants, electricity metering, control over payment transactions, reliability of dispatching service;
- reform of financial security will allow choosing the most effective option for financing investment programs and methods of using RAB "tariff by reducing the rapid increase", reduced part of operating costs, growth of the depreciation fund;
- reforming integration processes will prepare the technical side of the UES of Ukraine to adapt to the European network of electricity transmission system operators, the possible volume of capacity exchange, implementation of efforts to control the structured construction of alternative energy through the introduction of "green" tariffs;
- personnel reform and strengthening of corporatization are necessary through increasing productivity, improving the system of its repayment, staff development and comprehensive change of activities based on corporate governance and strengthening corporate social responsibility;
- reforming communication processes will improve the system of internal, external, and international communication through information-transparent information assistance to maximize promotion.
- However, the reform of the regional electricity market should serve certain strategic purposes:
- multifaceted promotion of the competitive environment of production and supply of electricity resources;
- strengthening the technological and reproductive structures of investment support through modernization and re-equipment of market infrastructure facilities to comply with the necessary standards of security and reliability of energy supply;
 - improving the quality of services provided;
 - limiting the eco-destructive impact on leisure;
 - improvement of the pricing system;
 - integration of the system into the European Energy Area.

In general, the market transformation of the electricity market should achieve the following main segments of market transformation: the market of direct commodity electricity supply through bilateral agreements of purchase and sale of electricity goods between producers of electricity resources (TPP, CHP, NPP), suppliers and direct consumers; balancing the electricity market (which coordinates the deviation of the planned volumes of electricity supply from the actual ones), satisfies the consumer needs of electricity by real-time adjustment of volumes, within bilateral contacts and auction sales; market of additional services – will help wholesale market participants on a

competitive basis to maintain and ensure a reliable and specified level of quality of electricity supply to consumers.

Any reforms must first focus on the actual performance of a particular industry so that the effectiveness or, conversely, the ineffectiveness of implemented strategies and measures can be further specialized. About the reform of the electricity market and its model, it should promote non-discriminatory access to electricity networks of new entities, promote the general competitive situation in terms of increasing the generation and distribution of electricity. All this, in turn, involves the creation of an automated system of a differentiated approach to electricity metering and efficient data exchange, which will allow us to learn the algorithm for tracking every kilowatt-hour in the regions of Ukraine. The essence is the need to improve the system of all components of the balancing mechanism (Plyatsko, 2012).

At the same time, the reform of the electricity market of Ukraine causes not only the strengthening of liberalization processes of competing principles but also gives an important place to subjective interaction, forming a scenario of unification and coordination of their interests in strategic decision-making. However, competing principles imply an increase in the number of subjects with the emergence of risk situations and force majeure. As mentioned earlier, the subjects of the electricity market of Ukraine are the Ministry of Energy and Coal Industry of the National Commission for Energy Regulation and Coal Industry, NCR "Ukrenergo", a regional gas company. Using a vertically integrated spiral, we can focus on their functional commitments and the risks involved.

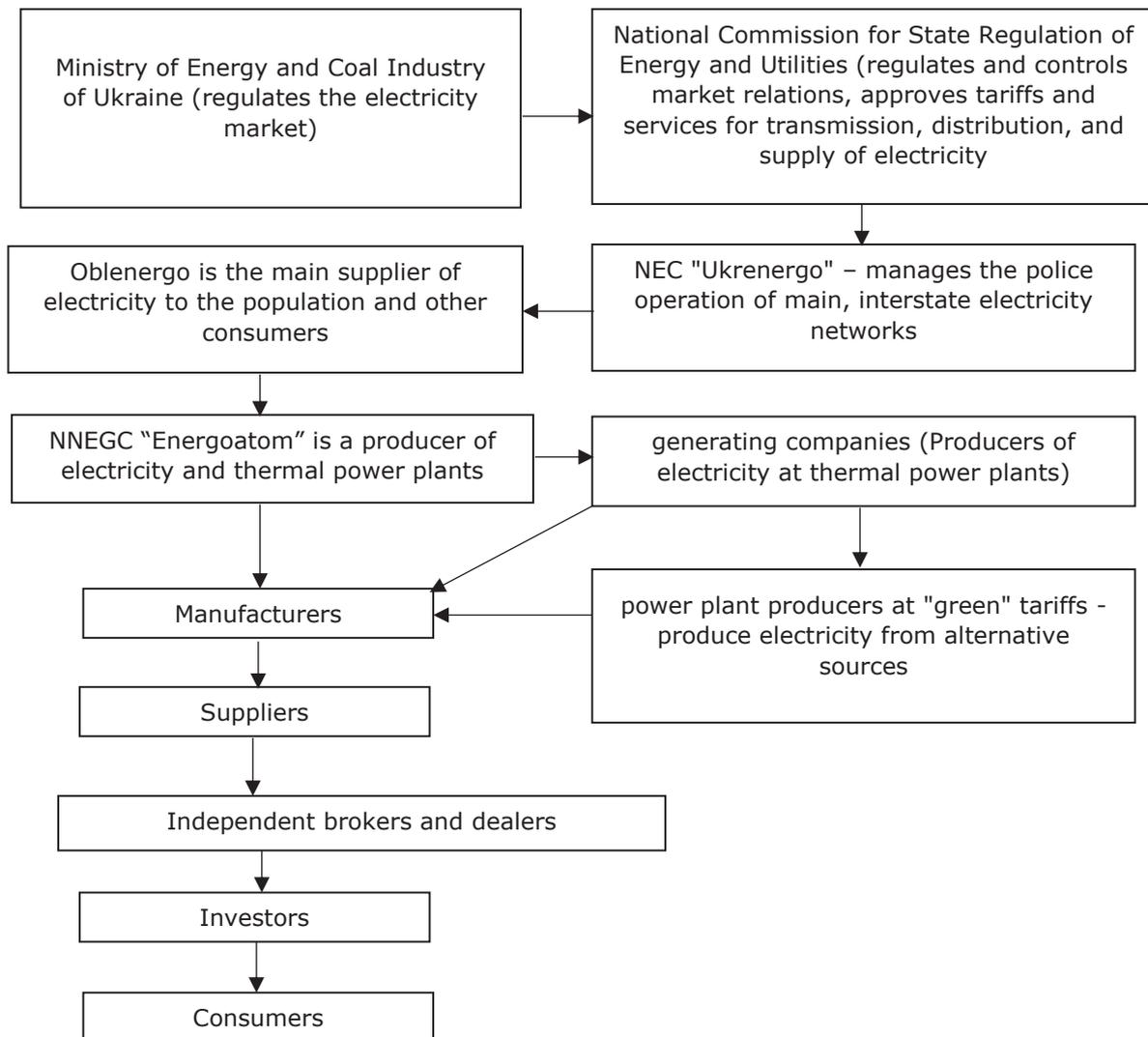


Figure 4. Interaction between entities in the electricity market in the risk of reform (Paliychuk, 2016).

However, based on the experience of foreign countries, the liberalization of regional energy markets may lead to the following negative developments that need to be addressed in the future:

1. Deformation of the market visibility with the transition from the market of perfect competition to the market of "monopolistic competition" with the continued influence of monopoly structures. This circumstance is supported by law, in particular, the Law of Ukraine "On Electricity Market" in respect of which regional energy companies must differentiate their obligations and own documents on the distribution segment (operation, maintenance, development of distribution system, and direct operation of distribution, as well as supply segment electricity through the flow of electricity to consumers through the networks of distribution system operators). As this model does not limit the influence of monopoly structures, it is necessary to strengthen the integrative-implementing contractual relations with the European Union and to involve the potential participant in internal competition through foreign electricity supplies.

2. The increase in electricity tariffs is therefore the result of the interaction of the Energy Strategy 2030. The electricity tariff in Ukraine is one of the lowest in Europe, given the low average wage. The National Commission for Regulation of Economic Competition regulates tariffs for all suppliers, except for PNT, which in turn use their approaches to supply electricity to non-domestic consumers, according to contract prices. At the same time, the retail market is characterized by significant cross-subsidization by industrial consumers for sale to certain categories of consumers at fixed tariffs.

The process of tariff formation, today, is formed according to the scheme: National Commission for State Regulation of Energy and Utilities sets tariffs for energy resources that "Energorynok" sells " regional energy companies " taking into account surcharges for generation and maintenance, in turn, " regional energy companies" sell resources to consumers on the same principle "Costs +". This approach does not motivate managers of these enterprises to reduce inefficient costs because the share of profits does not depend directly on the efficiency of the enterprise. At the same time, the European approach is based on a few other aspects, in particular, the priority is to apply the rate of return on all invested capital and regulatory base of assets, the use of justified time incentives. However, a transition period is currently underway, resulting in an increase in tariffs as a result of the increased depreciation costs of "Ukrenergo".

3. Lobbying political and business interests in the regulation of the electricity market. Given that the legislation will not allow changing the form of ownership, the pricing aspects of which are controlled externally. That is, payment for dispatchers' services is made at a fixed tariff of the National Commission for Regulation of Economic Competition, which indicates a partial impact on the system as a whole (On approval of the Energy Strategy of Ukraine for the period up to 2035, 2017).

4. The imbalance of the unified energy system is largely due to the probable risks of disruption of gas supply and consumption. The action of natural forces, technical failures, or breakdowns often forces not to meet the conditions of bilateral contacts and imbalance the coordination of supply and demand. Responsible for the balance of the "Ukrenergo", which must have appropriate reserves, the instrument of compliance with which is the market of ancillary services. These services operate on a paid basis, the amount of which can be regulated within the current legislation.

5. Falling investment climate in market development. It should be noted that the average service life of electric networks in Ukraine today exceeds 40 years, the material and technical base of infrastructure facilities is worn out by 60-85%, which poses a problem of electricity supply. In just five years, only 20% of the total has been completed for the modernization of infrastructure.

Conclusions

Analysts and practitioners of the electricity market estimate that, given the reliability and uninterrupted supply of electricity, it needs about \$ 25 billion over 10 years.

At the same time, effective reform of the electricity market should be carried out based on: efficient and transparent functioning of the National Commission for State Regulation of Energy and Utilities; delimitation of the production sector from the distribution sector of electricity networks; carry out the necessary certification of the transmission system operator; update system, hardware, and software; optimize measures and reform the retail market to the needs of consumers; economically justify tariff formation to the needs and opportunities of consumers, including changing the mechanism of cross-subsidization.

Achieving the set goals and priorities will reduce the risks of reforming the electricity market, revive competition between participants (entities) of the market, create conditions for improving the quality of services, limit the impact of negative environmental factors with incentive pricing policies.

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