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Features of state management and regulation in the Kazakhstan energy supply system: opportunities and risks

Abstract: This article is intended to determine the features of public management and the development process of the energy supply system of the Republic of Kazakhstan. Today, the sustainable development of the country's economy depends directly on the energy sector. Modern society and industry are completely dependent on a stable power supply and today, energy is considered the most important component of the life support of the country's population. The country's electrical power industry needs new large-scale investments and promising development. To do this, in the near future, the state needs to consider ways to solve problems that have arisen. The purpose of the study is to consider the elements of public administration and the evolution of the energy supply system in Kazakhstan, as well as public administration systems in other countries, such as the USA, Norway, Great Britain, and the Russian Federation. In the article, with the help of SWOT analysis and scientific analysis, the factors of development of the country's energy industry are considered.

Keywords: energy supply, state regulation, responsibility of the state, reliable energy system

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Introduction

With the collapse of the USSR, some structural changes took place in the economy of Kazakhstan, including in the energy sector. From this period, it was determined that the energy sector in the country should be developed and improved at the state level. However, the performed changes did not bring final changes to the energy industry, including investment and technological modernization.

Significant reforms will be required in the energy sector, as there are a number of unresolved problems in the field, such as the fact that the power generating stations are over thirty years old and are in a state of disrepair. This situation is caused by the fact that for the last five years, the power plants have been operating at a loss or at a loss because tariffs were fixed a few years ago. The next issue is power grid balancing. If Kazakhstan loses contact with its neighbors due to politics, the country may be left without electricity. Today, despite the fact that Kazakhstan overpays the neighboring state for shunting capacity, this is a matter of the country's state security. If tomorrow, a neighboring state needs more shunting capacities, they will turn Kazakhstan off, and they will be right because they need to solve their internal problems.

Since the energy industry in Kazakhstan was entirely controlled by the government and was not given proper attention on the political level during the economic crisis of the nineteen-nineties, the industry was in a tough position. To move the economy toward market connections, the energy industry was privatized. In this sense, large power facilities have been formally transformed into distinct businesses, while others have been privatized or decommissioned. Additionally, networks and heat and power units were privatized or given to communal ownership.

The interregional and interstate power grid remained under state ownership, in other words, its management was entrusted to KEGOC JSC with a national dispatch center. At the regional level, regional power grid companies were created on power lines with a voltage of 0.4–110 kV. Some of these companies are privately owned, some are communally owned, and the rest are part of the Samruk Energo group. There are currently nineteen power distribution companies in each region, including three state-owned companies, one quasi-state company and fifteen private companies.

It should be noted that in 2004, the energy sales departments of electric grid companies were legally separated into separate organizations and energy supply organizations were created. In 2009, marginal tariffs for power plants were introduced in order to attract investment in power plants, but this situation reduced competition between energy supply organizations as private generating companies began to set the terms of purchase and sale (KEGOK 2022).

These reforms in the energy sector have led to a change in the form of public administration. Today, the state manages the energy sector through licensing mechanisms, setting maximum tariffs, and regulating the activities of natural monopolies. The regulation of the energy sector is performed directly by state bodies. The sphere of the electric power industry in Kazakhstan is conducted on the basis of the Law of the Republic of Kazakhstan "On the Electric Power Industry", and the authorized body is the Ministry of Energy of the Republic of Kazakhstan. Services

provided in the field of natural monopolies, including electricity transmission, energy production, and transmission, are performed within the framework of the law "On Natural Monopolies", the Ministry of National Economy of the Republic of Kazakhstan, which implements state policy, and the Committee for the Regulation of Natural Monopolies, Protection of Competition and Protection of Consumer Rights.

The government puts regulations on the price of electricity in order to prevent increasing the tariff for the general public (Mamyshev 2022). This implies that the government uses administrative tools to regulate pricing in a market that could be competitive, which is in direct contradiction with the nature of market management.

Unresolved concerns in the energy industry have remained on the agenda of the government of Kazakhstan in recent years. For instance, in 2019, the President of the Republic of Kazakhstan K. Tokayev, in an address to the people of Kazakhstan, spoke about the problems of the energy sector. The main problems in the industry are the increasing level of depreciation of the main power generating facilities that have been operating for more than forty years (Akorda 2021).

It should be noted that in the country there are more than 460,000 km of electrical networks of different voltage classes and their wear and tear amounted to 70% (Smagulova 2023). In some regions, this level of depreciation has approached 80%, such as Eastern Kazakhstan, Kostanay and Western Kazakhstan, where networks are privately owned (KOREM 2020). This problem leads to a loss of electricity in the power grid. Energy losses in the network have already reached 15% of the country (Trade.gov 2022), this figure in Germany and Japan is 4%. It ranges from 5% in China, the United States, and France to 6%, in Russia – 10%, Brazil – 16%, India – 19%, and the Democratic Republic of the Congo 21% (Statista Research Department 2023). This level clearly shows the accumulating problems that require urgent solutions in the development and reconstruction of electrical networks and equipment.

Currently, one of the gaps in the legislation is the regulation of the maximum level of electricity tariffs. For example, in the law "On Electric Power Industry", every seven years, the authorized body approves the marginal tariff for the cost of electricity produced by an energy producing organization that is part of a group of energy producing organizations, which consists of the costs of generating electricity and the rate of return determined according to the methodology established by the authorized body (Adilet n.d.). For instance, marginal tariffs for energy producing companies for the years 2016 to 2020 were approved in 2015. Although these tariffs were set on the basis of actual expenses spent in 2014, in actuality they greatly outpaced the five-year inflation rate. Natural monopolies are prohibited from including the required expenditures, such as wage increases, in the tariff section under this marginal tariff.

The policy of maintaining tariffs, namely the artificial reduction of costs in the tariff, violates the equality of the subjects of natural monopolies and worsens the conditions for production and economic activity. The tariff policy, which was solely focused on the consumer, for many years allowed the maintaining of a socially significant level while also causing significant degradation. The established tariff policy was aimed only at consumers for many years but did not lead to the development of the energy sector.

In places where competition cannot be achieved through the market process, the state employs direct regulation. One of these areas is the energy sector because due to the presence of private investment in this sector, private enterprises think more about the goal of obtaining personal profit than satisfying the needs of society.

The state can use legal, political, and economic methods to implement honesty and fairness in the market based on legitimacy. The state can prohibit monopolies from reducing negative indicators in the energy sector and neutralize the market, maintaining a competitive environment. The purpose of state regulation in the energy sector is to ensure the interests of energy entities and consumers and create conditions for the sustainable development of the industry.

State oversight includes control over the reasonableness of tariff increases and overlooking the high level of reliability required to ensure energy efficiency, production and consumption. The electricity market in Kazakhstan has been growing and developing since independence. However, due to the low level of competitiveness of the industry in the country, it is obvious that there are serious risks in the electricity market, including the wear and tear of equipment, costs in power grids, and energy inefficiency. Today, the reliability of electricity production, transportation, and work with consumers, in other words, the coverage of the energy system, is declining. If the mechanism of state regulation in the energy sector is weakened, the economic development of the country will be hampered. In this regard, strengthening the state's role in the sphere and measures of accountability for energy entities are the only guarantees of achieving this country's socioeconomic development.

1. Literature review

To begin with, let's deal with the concepts of "public administration" and "state regulation". Although the concepts of "public administration" and "state regulation" are somewhat similar in meaning, their definitions are different. The concept of public administration is more general than state regulation. State regulation should be considered to be a special case of public administration.

In modern science, the definition of "state regulation of the economy" has many categories, that is, a set of measures taken by the state to adjust and establish the basic economy. The main task of state regulation is the realization of national interests, the development of social production and its impact on improving the social development of the country, and its goal is the adaptation and stabilization of the socio-economic system in the country to changing external conditions.

In the current market situation, the following risks can be distinguished without state regulation in the economy: the unlimited use of natural resources; environmental pollution; the lack of regulation of the use of natural resources; the lack of stimulation of the production of goods and services used by people (roads, communications, transport, energy, etc); mass unemployment;

the emergence of property inequality, and public goods, leading to non-productive (Golubchikova 2016).

D. Stigler, who received the Nobel Prize for research on industrial structures, the functioning of the market, and the causes and consequences of state regulation, was an active opponent of state interference in economic activity. He figuratively called the state "a blind Robin Hood that robs almost everything". Stigler's conclusion: State intervention is only required if vertical integration provides some level of market control at least at one stage of the manufacturing process. Having studied the economic spheres, the scientist came to the conclusion that excessive state regulation of the economic spheres is ineffective. He believed that state intervention in the economy protected industrial enterprises from new competition, and not the interests of consumers. Stigler's question is: "If regulation usually fails to achieve its goals, why are there so many regulatory institutions?" (Dovbenko 2018).

State regulation of the energy system has long been established as a form of government. In the initial stages, when power equipment was commissioned, public administration was not given much attention in the politics of many countries. Only at the beginning of the twentieth century, during the second period of state administration, was a private or state monopoly established in the energy sector. At the end of the twentieth century, in the third period, energy reform began all over the world.

Instead of influencing the monopoly, the state began to demonopolize the industry, in other words, it took the lead in the creation and implementation of market economic mechanisms. The degree of state regulation decreased and competition appeared on the market. This was necessary to create competition between companies. Countries that considered the state an inefficient manager, such as the USA, Great Britain, Russia, Portugal, Norway, and Italy, began to privatize the industry. In foreign countries, the following direct methods of state regulation are used: the preservation of the main part of state-owned enterprises and the formation of uniform market rules and licensing (Belov and Lovygina 2015).

2. Materials and methods

In this paper, the analysis of the country's energy industry is performed using the SWOT analysis (strengths, weaknesses, opportunities and threats), taking into account the research of domestic and foreign authors. SWOT analysis is used to assess internal and external factors that affect the relative strengths and weaknesses of an industry. The results of the SWOT analysis will help make model forecasts for the industry in the future. SWOT analysis is considered one of the most effective strategic analysis tools. This method is used at various individual, organizational, national, and international levels. The purpose of SWOT analysis is to define the strategic goal and help to create a strategy by identifying all the strengths, weaknesses, opportunities and threats of an organization, its initiatives, or its business in the market.

3. Results and discussion

The need for changes in the global power industry became evident at the end of the last century. Until the nineteen-nineties, in most countries around the world, this sector was considered a natural monopoly. As a result, some countries began to introduce elements of competition into this industry. This was achieved either by splitting monopolies and creating competing companies or by allowing independent power producers into the industry or by both. The new structure of the industry required new rules of the game

In order to modernize public administration in the energy sector, the experience of foreign regulation, which has created a competitive market system, can be used. In some countries, a free market has emerged where the price of electricity is set based on supply and demand (Table 1). Such a competitive market first appeared in England and Wales in 1990, and unrestricted competition in the wholesale electricity market was first introduced in Norway in 1991 (Kosticyna 2012). In accordance with the Energy Law of 1990, the liberalization of the electricity market began in Norway. Consequently, Norwegian customers were among the initial global population to have the option to buy electricity from their prefered power provider (Norway's Governments 2016). In this regard, it was possible to choose the purchase price or other important indicators and a competitive situation arose between supplier companies (Norway`s Government 2016). The Norwegian model is considered the most successful model for reforming this sector its action is based on the administrative control of the market and the level of energy prices.

In the United States, the role of the state in the sphere power industry (production and supply) is minimal. However, in order to create a fully fledged competitive electricity market, the US government had to create a set of rules for regulating the power industry (Kurbanov 2014).

If we briefly consider history, in 1907, a resolution was passed on the state regulation of communal companies and regulatory bodies were established in three states, and nine years later, such institutions were already functioning in thirty-three states. To reduce costs and determine tariffs, as well as to increase investments in the construction of power plants in 1945–1965, the disintegration of holding companies began (Kiseleva 2009). In 1978, the US Congress passed the National Energy Act, which was designed to stimulate a shift in the energy balance structure in favor of alternative and renewable energy sources with the aim of reducing US dependence on foreign energy resources and increasing energy security for the economy. This law included a range of measures aimed at promoting alternative and renewable energy sources. While not all measures provided for in this law were fully implemented, it became an important stage in the development of renewable energy sources. The adopted bills were aimed at making the market more competitive and new regulatory methods were intended to improve the falling demand for electricity (Tinkova et al. 2021).

Sweden, Norway, Finland, Great Britain, New Zealand and a number of other countries have completely opened the competitive market (Chernysh 2008).

Some of the most successful countries in reforming the energy sector include Sweden, Finland, Germany, the United Kingdom, New Zealand, Australia, and Canada. These countries have

Table 1. Features of the electric power complex in a foreign country

Tabela 1. Cechy kompleksu elektroenergetycznego w obcym kraju

Type	Russia	UK	USA	Norway
Generation	Electricity generating companies are owned by private investors.	All assets are privately owned.	In highly competitive states, generating assets are excluded from public ownership.	There are many manufacturing companies in the industry.
Distribution	Distribution networks are in state-owned companies.	Distribution is carried out by private companies.	In liberalized states, distribution is carried out by independent companies, in non-liberalized states – by public utilities.	There are many private distribution companies.
Supply	In state-owned companies	In a privatized company	Independent system operators and regional sales companies	United privatized transmission companies
Realization	Private regional companies	Private regional companies	Private regional companies	Many private distribution companies
Tariffs	Tariffs are regulated for the population, formed as a result of competitive bidding for other customers.	Competitive bidding	Competitive bidding	Competitive bidding

implemented various models of energy reform that have helped to improve the efficiency and competitiveness of their energy systems. Each of these countries had its own unique circumstances and issues that required individual approaches to reform, but overall, their efforts were successful in improving the energy sector and ensuring more effective operations in the electricity market.

In consideration of varying factors such as the geographical environment, resource distribution, population density, economic characteristics, and government regulation, it is imperative to examine the countries outlined in Table 1 with greater scrutiny. The disparate attributes of each country necessitates tailored adaptations to the electricity market mechanisms within those countries. As such, an in-depth analysis is required to understand the distinct features of each country's electricity market mechanisms.

It is appropriate to analyze the energy sector of the Russian Federation since the country has a similar socio-economic and energy development to Kazakhstan.

During the Soviet era, the electricity industry in Russia was organized under a vertically integrated system wherein the state-owned Unified Energy System (UES) was responsible for the entire process of electricity generation, transmission, and distribution. This system precluded any competition at the wholesale level and consumers had no choice in selecting their electricity supplier. In 2003, a set of laws and regulations were introduced to initiate the reform

process. Russia has since undergone several modifications to its electricity market by adopting a liberalization and privatization model similar to that of Anglo-Saxon countries. A complex framework has been established to govern the electricity market in Russia (Boute 2013). According to (Chernysh 2008), in recent years, the necessity of separating vertically integrated energy companies has been called into question. This separation could lead to a loss of reliability in the energy system, a reduction in employment, and an increase in debt. Positive factors of this separation can include a reduction in tariffs, an increase in the efficiency of station operation, and an influx of investments. The reform of the electricity sector in Russia resulted in the separation of different activities, the establishment of a wholesale market for electricity and capacity, and the implementation of a day-ahead market, a balancing market, as well as mechanisms for capacity selection and payment. Additionally, power supply contracts were introduced, monopolistic activities were regulated, and pricing calculation procedures were approved for consumers who provide supplier guarantees (Zhilkina 2013). The reform of the Russian electricity sector represented a significant departure from the previous system of centralized planning and management, adopting instead a market-based approach. This shift enabled the introduction of competition and the development of a more efficient and cost-effective electricity supply system. Subsequently, this facilitated the attraction of further investment and improved the quality of service provided to consumers. The Russian experience has provided valuable insights for other nations considering reforms to their electricity sectors and striving to encourage competition in the energy industry (Ayzenberg 2014). However, according to Musaev and Chernysh (2014), the completion of the power industry reform in Russia did not lead to an increase in enterprise efficiency and innovation activity. Moreover, effective competition was not established in either the wholesale or retail markets, and electricity prices for consumers sometimes exceeded global levels. In developed countries, networks of various manufacturers are employed for objects with high energy consumption. However, in Russia, the power grids are owned by the state, which precludes competition between network companies and makes it challenging to adapt foreign experience in the country. The results of the reorganization are ambiguous because the structural transformations were conducted without taking into account the principles of vertical integration, which significantly influenced pricing policy and investment programs.

Chernysh (2008) asserts that the Norwegian model is the most successful model for reforming the electric power industry with functioning based on an administration that controls the market and tariff levels. As a part of the united pool of Scandinavian countries, the wholesale market is organized as a single-spot market, with a single transportation company.

The largest company in the generation market in Norway is a state-owned company that produces up to 30% of the country's electricity. A total of 55% of the company is controlled by municipal power companies, while 15% is owned by numerous independent producers. Tariffs are established on a zonal principle: each zone has its own transportation tariff, and an additional fee is set for the delivery of electricity in the case of a deficit. Retail market tariffs depend on the profitability of supply companies. The main drawbacks of the Norwegian market model are that, due to ineffective regulation of sales, supply companies overestimated their costs for distributing electricity (Davidovsky 2011).

Meanwhile, the British model refutes the theory of a tendency towards the development of competitive relationships through the appearance of new market participants. Competition in this country was achieved through the artificial fragmentation of generating companies by the government. Thus, direct regulation methods do not create sufficient incentives for the development of the energy system.

The electricity industries of advanced nations, such as the UK, USA, Norway and other countries, have been undergoing consistent modifications over the last forty years and are recognized as the pioneers in the restructuring of the electricity sector (Liu et al. 2022).

Prior to 1990, the electricity system in the UK, similar to many other nations, was owned and controlled by the state in a centralized manner (Grubb and Newbery 2018).

Liu et al. (2022) considered three reforms made to the UK electricity market. The first reform involved the privatization of the industry and the establishment of the UK Electricity Market through the Pool. The competition in the provision of electricity was stimulated by the privatization process which was performed through a legal framework called the Pooling and Settlement Agreement. This agreement created a mandatory electricity market where all major electricity generators and customers were obliged to buy and sell electricity through the Pool. Despite this, the transmission network remains under government ownership and the trading and operation of the electricity market are managed through the Pool markets. The second reform, known as NETA/BETTA (New Electricity Trading Arrangement/ British Electricity Trading and Transmission Arrangements), utilized bilateral contracts to replace the complex trading mechanisms of the Pool, allowing for capital participation in all stages of the electricity industry. Following the NETA/BETTA reform, the government completely divested itself from asset ownership, instead retaining only a regulatory and management role. This approach helps to prevent the structural flaw that arises when the government acts as both asset owner and manager. The third reform, the Electricity Market Reform, employed various measures such as Contracts for Difference, Capacity Market, e Emission Performance Standard, and Carbon Floor Price to promote renewable energy growth while providing secure and affordable electricity to end consumers. The fundamental objective of the UK electricity market reform is to introduce market principles to the electricity sector. The British government aims to create an open market where electricity, despite not being a fully tradable commodity, can be freely traded. Given the current state of the UK electricity market, it is necessary to address the issue of monopolies, and the next reform should focus on regulating the profits of these monopoly enterprises. The main drawbacks of the market model are that the generation market is always a seller's market. Triebs and Pollitt (2019) evaluated the impact of privatization on the efficiency of companies in the electricity sector of the United Kingdom from the perspective of agency theory. The conclusion was drawn that under competitive conditions, private companies have more incentives to increase efficiency than state-owned ones.

Electricity markets in the United States consist of two main components: wholesale and retail. Wholesale markets are responsible for the trading of electricity between electric utilities and traders, which is later sold to consumers. Retail markets are responsible for the direct sale of electricity to consumers. These markets can be either regulated or competitive in nature,

depending on the circumstances. Certain areas of the wholesale electricity market in the United States are classified as traditionally regulated (indicated in gray), which means that vertically integrated utilities are in charge of the entire electricity delivery process to consumers. This includes ownership of the generation, transmission, and distribution systems used to provide electricity to consumers. In contrast, some regions of the U.S. wholesale electricity market, such as the Northeast, Midwest, Texas, and California, have restructured competitive markets. These markets are overseen by independent system operators, which includes regional transmission organizations. The independent system operators use competitive market mechanisms that enable independent power producers and non-utility generators to trade electricity. In restructured competitive markets, "utilities" typically handle the retail electricity service to customers and are less likely to possess generation and transmission resources. Retail electricity markets in the United States are determined at the state level and can be either traditionally regulated or competitive. In traditionally regulated retail markets (shown in gray), consumers are not able to select their electricity provider and must purchase electricity from the utility in their area. Traditionally regulated markets dominate most of the Southeast, Northwest, and much of the West, with the exception of California. In competitive retail electricity markets, consumers have the option to choose from various competitive retail suppliers. These markets have opened up electricity generation for competition from independent power producers in twenty-four states. Of these states, eighteen and Washington, D.C. have also implemented retail choice, which allows residential and/or industrial consumers to choose their own electricity provider and generation options, such as renewable energy (EPA 2022). The absence of privatization in the United States is explained by the fact that the government was not the main owner of vertically integrated companies in the electricity industry from the very beginning. The United States is an example of a case where there was initially a considerable amount of private ownership in the industry, and there was no unified regulation (each state has its own specifics).

The electricity industry in the Republic of Belarus has undergone partial liberalization, resulting in the creation of three levels of markets: wholesale, retail and system operator. RUP "Belgeneration" regulates the wholesale market, while the system operator oversees market relationships and integration within the Eurasian Economic Union's energy system. A unified wholesale market has been established through an energy pool on the corresponding exchange, and the retail market is now open for competition with various electricity companies offering different conditions. "Energy Supervision" serves as the controlling body. These reforms have led to several accomplishments, such as the integration of the electricity market system within the Eurasian Economic Union, improved resource utilization in the retail market, simpler management of the wholesale market, increased energy security and investments in new capacities and modernized distribution networks. However, there may be challenges and opportunities for further reforms, such as the possibility of the introduction of strict control by managing and controlling bodies, which could affect the development of distribution networks (Vertai and Khmialnitski 2018).

The German electricity market has undergone a comprehensive liberalization process that involved several stages, including the division of economic activity into three levels, the separation of wholesale and retail markets, the establishment of rules and norms for economic

relationships, the creation of a network operator to ensure fair access to the network, and the emergence of regulatory bodies to ensure compliance with electricity market conditions. This reform has resulted in the emergence of competition, attracting investments for upgrading power grids, more standardized processes, and better integration with the European Union's energy system. Compliance with deregulation requirements and business separation in Germany has not led to the fragmentation of capital and division, reduced profitability, or competitiveness of the electricity industry. The profits of all separated subsidiaries in transportation, generation and sales of electricity were consolidated in the holding company, which had a positive impact upon the reliability and efficiency of the industry. The consolidation of energy companies has led to an increase in their stock prices and a decrease in the cost of electricity, which in turn, has had a positive impact on the competitiveness of the German economy as a whole. Additionally, hundreds of small energy companies have acquired the status of subsidiaries, leading to the consolidation of capital (Averiyanov 2008).

Despite these benefits, there remain challenges that need to be addressed, such as reducing tariffs for businesses and mitigating the burden on households, requiring further tariff policy adjustments and regulations (Vertai and Khmialnitski 2018).

As of July 1, 2007, the French electricity industry, which includes generation, transmission, distribution, supply and trading, has been completely open to competition. Although the French electricity market has been open to competition since 2007, Electricité de France (EDF) continues to dominate both the generation and supply sectors. Despite this, new market entrants have attempted to gain access to the market by establishing a presence in generation, supply and trading, and have subsequently expanded horizontally through investments in Distribution System Operators. In the third quarter of 2014, the EDF held a market share of over 90% based on the number of sites and a market share of over 91% based on the allocation of consumption, thus demonstrating its dominant position in the supply market. The generation market in France is completely open to competition, meaning that any company has the ability to construct and run a power plant, as long as they secure the necessary authorizations, such as environmental and planning permits. France implemented the First Energy Package initially, which required only accounting unbundling. Consequently, the Transmission Division of EDF, the first French TSO, gained functional independence. The Second Energy Package later imposed legal unbundling. As legal unbundling and ownership unbundling were distinct operations, and legal unbundling did not entail any change in asset ownership, the 2004 Law on public gas and electricity services and electricity and gas companies facilitated the conversion of the Transmission Division into RTE. This transformation led to the creation of a limited company in which EDF currently owns 100% of the capital. The French government did not dismantle RTE or assign third parties to manage any aspect of the transmission grid. This decision was based on the understanding that the transmission grid is an essential facility and that the French Constitution forbids the privatization of national monopolies and public services. As a result, the privatization of RTE is also prohibited under this constitutional provision. Electricity distribution in France is performed either under the public service concessions regime or, less commonly, under the direct management of local authorities. Following the full opening of the electricity market on July 1, 2007,

all consumers in France have had the freedom to choose their electricity supplier. However, the historical incumbent energy suppliers, namely EDF and the ELDs, continue to dominate this market, accounting for 91% of the electricity delivered to end-users. There are alternative energy suppliers in the market, but their presence remains limited. Some examples of these alternative suppliers include ENGIE, Direct Energie, and Enercoop (CMS.LAW n.d.).

Since 2007, France has pursued a path of liberalizing its energy market and transitioning towards renewable energy sources. Despite its longstanding commitment to a public energy service, France has made significant strides in liberalization and energy transition in recent years. For instance, the country has abolished regulated tariffs and enacted the Law on Energy Transition, which aims to promote renewable energy and support its growth.

Having analyzed the policy of the development of the electricity market in developed and neighboring countries, let us consider the energy market of Kazakhstan. The reform of the electricity sector in Kazakhstan started with the separation and privatization of electricity production in 1996. Subsequently, the creation of an electricity wholesale market in 1998 and the adoption of the Law on Electric Power Industry, together with government programs on privatization and restructuring, established the key principles of market reforms in the country. This led to the emergence of competitive conditions for companies operating in the electricity industry, with some companies being recognized as monopolistic. The reforms have created the necessary conditions for establishing a competitive electricity market in Kazakhstan, with several generating companies selling power at market prices and wholesale prices subject to negotiations between suppliers and consumers. The restructuring and privatization of the electricity industry have also led to the modernization of infrastructure and the adoption of international standards in the sector. However, challenges remain, such as the need to improve the reliability and efficiency of the transmission and distribution systems and ensuring fair competition in the market (Kirdasinova and Karlykhan 2015).

In Kazakhstan, state regulation in the energy sector conflicts with certain sectoral ministries. This means that the tasks of one sectoral ministry directly contradict those of another. For instance, the Ministry of Energy of the Republic of Kazakhstan encourages an increase in the production of traditional energy to reduce the energy shortage in the country. Meanwhile, the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan adheres to the strategy of achieving carbon neutrality and attempts to reduce traditional energy production. Additionally, the Ministry of National Economy of the Republic of Kazakhstan sets tariffs for the production and transportation of energy, taking into account the dynamics of social inflation in the country, without considering the development of energy, which is one of the priorities of the Ministry of Energy.

International experience has shown that electricity reform can give rise to several technical challenges concerning market design, market structure, and regulatory arrangements. There is no universal way of administering public affairs in the energy sector. Additionally, the sectoral reforms being conducted in Kazakhstan have not fully led to the implementation of goals and plans. At present, significant material costs are required to revive the energy sector. Given the competitive market conditions, these costs should have been borne by private investors; howe-

ver, due to low tariffs in the country, energy enterprises did not begin to invest and modernize the industry. In 2021, K.K. Tokayev raised the issue of fairness and affordability of tariffs at the Electricity Development Council and stated that although the state is constantly trying not to raise the price of electricity, on the one hand, it does not allow the development of the industry (Akorda 2021).

Factors such as the lack of funds, increased depreciation, lack of investment and imperfection of the mechanism of state regulation clearly indicate that the energy complex has not yet been regulated. The growth of emergencies in the industry requires the improvement of methods and mechanisms of state regulation.

To solve the accumulated problems, it is necessary to transfer the energy industry to competitive relations. The main intended goal is to increase the efficiency of energy facilities, reduce the burden on the budget, attract additional investment in the industry and level out regional differences in electricity tariffs. If the above conditions are met, investors may be interested in the energy sector. This, in turn, has a positive effect on changing the system of state regulation, improving competitive relations, and developing the economy (Fig. 1).

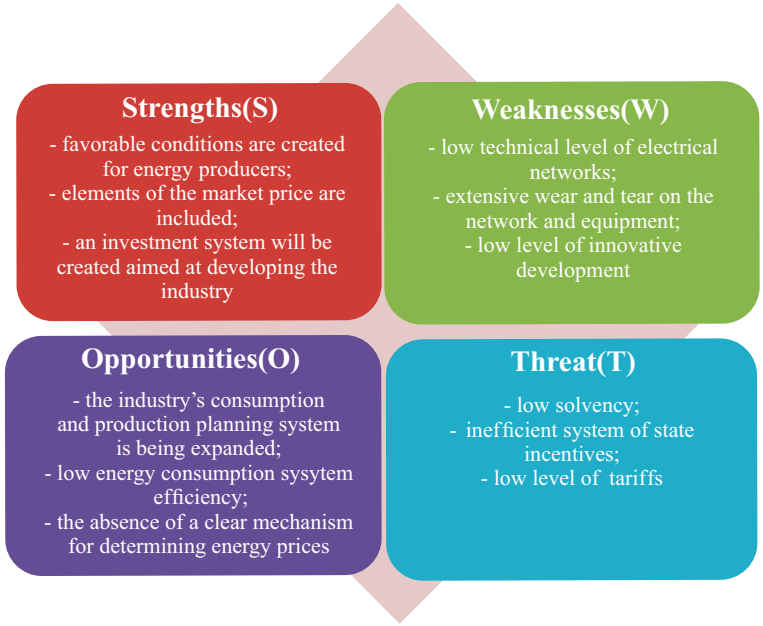

Fig. 1. SWOT analysis of the aggregate demand market model

Rys. 1. Analiza SWOT modelu rynku zagregowanego popytu

In the near future, the electric power industry of Kazakhstan faces the task of transitioning from an "operating model" to an "investment model". In addition, it is necessary to fulfil obligations to reduce greenhouse gas emissions by 2030 and to integrate into the common electricity market of the Eurasian Economic Union by 2025.

In order to preserve national interests in Kazakhstan, it is necessary to create an optimal model by creating a market for the total demand for electricity, a single buyer/seller institution, and a financial settlement center for the volume of electricity.

A single buyer allows for increased effective competition between power generation companies in cooperation with the system operator and also allows for the integration of a support scheme for elements and renewable energy sources operating in the electricity market.

The proposed model allows different categories of consumers, depending on the modes of consumption, to receive a single price for electricity with the possibility of applying a low or high tariff and eliminates "extra" intermediaries in the electricity purchase and sales scheme. As a result, investment risks in the industry are reduced, and during the construction of new production facilities, the effect of "melting" in investment tariffs is taken into a single price, which makes it possible to optimize the composition of production capacities, shunting power reserves and the efficiency and productivity of the industry as a whole.

Various forms and mechanisms of energy sector regulation have become the norm in many countries. The main policies of the energy sector are:

- economic efficiency,
- energy security,
- environmental protection,
- social goals.

Economic efficiency is now the driving force behind any government reform. Proof of this is government subsidies and cross-subsidies. If such subsidies continue in the future, there will be no optimal economic efficiency in the energy industry. The main condition for economic efficiency is the ability to determine the price through the interaction of supply and demand. However, it is not necessary that the state refuse all types of subsidies and cross-subsidies, but it is necessary to carefully study the mechanisms of state subsidies and determine their political reasons.

Conclusions

The reasons for implementing reforms in the electricity sector vary from one country to another. Nevertheless, there are certain shared aspects to these reforms, such as the segregation of competitive and monopolistic segments, the formation of wholesale markets, and the establishment of autonomous system operators. Consequently, it is not feasible to identify a single optimal and efficient approach to reform of the electricity sector that is suitable for all nations. In most developed countries, the main driving force for reform has been the desire to reduce the burden on the state budget by privatizing certain parts of the power industry. An important exception to this general trend is the experience of the United States, where the industry was mainly in the hands of the private sector, so the emphasis shifted to improving the efficiency of the industry's operations, and reform focused on providing the necessary regulatory minimum.

Given that Kazakhstan's energy sector is critical to the country's economic development, it is necessary to create a new system for regulating the industry through the development of new mechanisms for public administration and regulation by the state and large market entities.

To restore and modernize the electric power industry in Kazakhstan, it is necessary not to impede the emergence of new independent producers, network service, and sales companies on the market. Systemic problems in the energy sector are caused by a lack of incentives for enterprises to reduce costs. Moreover, whether the energy facility was under private or state ownership, it did not improve the situation. That is, the tariff policy pursued by the state was inefficient.

One of the most important tasks of the electrical-power industry is to provide the population with energy. At the same time, the lack of private investment in the industry is limited by the underdevelopment of market mechanisms and the lack of real development prospects.

Therefore, the state should consider the possibility of improving the tariff policy, which is the main tool that allows the industry to get on its feet.

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Cechy zarządzania i regulacji państwa w systemie zaopatrzenia w energię Kazachstanu: szanse i zagrożenia

Streszczenie

Artykuł ma na celu określenie cech zarządzania publicznego oraz procesu rozwoju systemu zaopatrzenia w energię Kazachstanu. Dziś zrównoważony rozwój gospodarki kraju zależy bezpośrednio od sektora energetycznego. Nowoczesne społeczeństwo i przemysł są całkowicie uzależnione od stabilnego zasilania, a obecnie energia jest uważana za najważniejszy element podtrzymujący życie ludności kraju. Krajowa elektroenergetyka potrzebuje nowych inwestycji na dużą skalę i obiecującego rozwoju. Aby to zrobić, w najbliższej przyszłości państwo musi rozważyć sposoby rozwiązania powstałych problemów. Celem opracowania jest rozważenie elementów administracji publicznej i ewolucji systemu zaopatrzenia w energię w Kazachstanie, a także systemów administracji publicznej w innych krajach, takich jak USA, Norwegia, Wielka Brytania i Federacja Rosyjska. W artykule, za pomocą analizy SWOT i analizy naukowej, rozważono czynniki rozwoju energetyki kraju.

Słowa kluczowe: zaopatrzenie w energię, regulacja państwa, odpowiedzialność państwa, niezawodny system energetyczny