

Reforms in Regulating the Electrical Energy Sector of the Republic of Uzbekistan

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Article Information

Received: January 11, 2022

Accepted: February 10, 2023

Published: March 11, 2023

Keywords: *electric power, technological processes, energy resources, electric power transmission systems, competitive environment, lean manufacturing, price (tariff) policy, renewable energy sources.*

ABSTRACT

This article describes the existing problems in the field of electric power in the Republic of Uzbekistan and ways to prevent them, the reforms that are being conducted regarding regulation and management of the field of electricity production, transmission through main lines and delivery through regional power networks.

INTRODUCTION. One of the main fields in the development of the country's economy is the electric power sector. The prospective development of the country is always evaluated based on its energy resources and electricity production potential.

If we pay attention to the economies of countries with developed economies, such as the USA, European countries, China, Japan, South Korea, Singapore and Malaysia, we can see that they have an electricity production sector based on modern innovative technologies.

In the stable development of the country's economy, there is always a need for uninterrupted (regular) and high-quality electricity supply. In particular, simultaneous provision of production, service and infrastructure sectors with electricity is a complex technological process. Because demand and supply of electricity happen at the same time. The demand for electricity from all sectors and industries is constantly increasing, but the ability to regularly supply all sectors and industries with electricity at the same time creates complications. Due to the increasing demand for electricity in the countries of the world, it is causing global problems in the economy of the countries.

In any country's economy, the demand for electricity is always increasing. The higher the demand for electricity, the higher its price. Most of the energy resources used in the production of electricity are non-renewable resources. This affects the cost of products and services. Increasing demand in an economy is always met by higher marginal prices. Constantly forming a competitive environment in the field of electric power, developing measures aimed at reducing prices, establishing energy production using modern technologies, using energy-saving

technologies in the fields, modernizing power generation stations, economic efficiency is achieved.

Our country has many years of experience in the production of electricity, transmission through main lines and delivery through regional power networks. Therefore, in recent years, extensive reforms have been carried out to provide regular energy to all sectors of the country's economy.

In this regard, the President of the Republic of Uzbekistan for the first time in his address to the parliament of our country - Oliy Majlis said: "In order to increase the efficiency of the use of energy resources, we need to reform the energy system of our country and develop a clear strategy in this regard. First of all, inefficient and loss-making enterprises should be privatized and monopolies should be terminated. It is also necessary to create a competitive environment in the supply of electricity and encourage the use of alternative energy sources. For this, it is necessary to switch to market mechanisms for financing production, with extensive involvement of the private sector" [1].

In order to transfer the field of electric energy to organizations that are independent from each other, Decision PQ-4249 of the President of the Republic of Uzbekistan dated March 27, 2019 "On the strategy of further development and reform of the electric energy network in the Republic of Uzbekistan"[2] was adopted. As a result of this decision, "Uzbekenergo" JSC was liquidated, "Issiqlik elktar stansi" JSC, which includes 6 thermal power stations and 3 thermal power centers, JSC "Uzbekenergo" for electricity production, "Uzbekistan National Electric" for transmission of electricity through main lines networks" JSC and "Regional Power Networks" JSC for the delivery of electricity through regional networks to consumers and economic sectors.

As existing problems in the field of electric power of our republic, the following should be mentioned: production of electric energy, transmission through main lines and delivery through regional power networks are the main areas of the economy; lack of sufficient scientific basis of theoretical knowledge on control, regulation and management of enterprises and organizations involved in the production of electricity, transmission through main lines and delivery through regional power networks; the existence of natural monopolies in the field of electric power (electricity production, transmission through main lines and delivery through regional networks); lack of competitive environment in the industry; electricity production, personnel operating in the field of transmission through main lines and delivery through regional power networks are mainly secondary educated personnel and lack of experience; lack of modern technologies in the field of electricity production, transmission through main lines and delivery through regional power networks; that the weight of the electric power sector is higher in the real sector of the economy.

The existing problems and deficiencies in the field of electric energy are studied by the leading specialists and economists of the field, and ways of their elimination are being developed by conducting research based on the experience of foreign advanced countries. In particular, economists scientifically study the environmental and economic damages that may occur as a result of environmental and climate changes in the production of electricity, the uneven distribution of energy resources and mineral resources in the countries of the world, and express their opinions on how to eliminate them.

Analysis of literature on the topic. As reforms in the development of the country's economy: ensuring the independent development of industries and sectors; by carrying out structural reforms in the activities of industries and branches that are part of natural monopolies, separating them into main and service links, developing business activities in the service links of the industry; by adopting separate programs for the development of regions and regions; the development of business activities is being carried out due to the formation of a healthy competitive environment in the fields of electricity generation, transmission through main lines

and delivery through regional power networks and attracting foreign investments in the field.

Scientists such as N. Yusupova [3], L.A. Sokolova [4], A.G. Nuriddinova [5] conducted scientific research on the reforms being carried out in the electric power sector of our republic. Most of their scientific research work is aimed at eliminating problems and shortcomings in the field of electric power.

The group of countries for the production of electricity in the world is as follows: South America, Western Europe, Asia, CIS countries, Latin America, Africa, Australia. 80% of total electricity is produced in developed countries, while developing countries account for 20% [6].

The problem of energy security is determined by the uneven distribution of natural fuel and energy resources on earth and the regional disparities between energy-consuming and energy-producing countries in the socio-economic development of countries. Within the framework of energy security, countries are divided into two groups. In the first group - energy-exporting countries, that is energy-producing countries, in the second group - energy-importing countries, that is energy-buying countries. Countries in both groups strive for economic development [7].

The development of nuclear energy, through which the production of electricity for economic sectors, always requires the creation of modern research and educational infrastructures, as well as comprehensive legal and institutional frameworks.

It creates a need for high-level technological, modern information technology, economic and management knowledge. In addition, it requires the formation of programs that bring macroeconomic and social benefits in the field. Low-cost sustainable development in the production of electricity with the help of atomic energy has a high chance of achieving economic and social goals. [8]

Energy security and energy efficiency are the main strategic objectives of any state energy policy. In order to increase the level of energy security, it is necessary to introduce the following into the main components of the state energy policy: introduction of effective management in the use of resources extracted from the subsoil of the country; constant structural changes in the energy sector; establishment of the energy market on the basis of market principles; rational development-formation of the; development of modern scientific and technical policy in the field of energy; formation of a competitive environment in the regional energy market and a regulatory and legal framework that complies with international standards. [9]

Companies operating in the field of electric energy in developed countries are constantly improving their traditional management mechanisms in order to have their customers in the electricity market. In particular, long-term strategies for the development of the sector are being developed, incentive mechanisms for prepayment of electricity are being introduced, programs based on effective innovative ideas are being developed in the sector to improve the access system of capital investments and customer service. [10]

The introduction of modern management mechanisms in the electric power industry creates an opportunity to create a competitive environment in the industry, attract foreign investors, achieve savings in production, improve environmentally harmful technological conditions, and achieve low-cost and high-quality electricity supply. [11]

In our republic, using the experiences of Japan, South Korea, China and European countries in the field of electric energy, based on our internal capabilities, it is appropriate to analyze and implement the advanced methods of foreign countries. [12]

The electricity market of any country has historically been under state control, and the regulation and management of network activities has been governed not by market mechanisms but by public administration mechanisms. Over-centralization of the process of electricity generation and supply to consumers will keep the network in a monopoly position. As a result, it hinders the

use of more flexible and diverse forms of electricity generation and sales management, as well as various forms of barriers to market liberalization and the effective formation of a competitive environment.[13]

Economic support of the energy sector has always been carried out by the state and it has always been part of the natural monopolies sector. For this reason, the price (tariff) of the produced electricity has always been determined by the state.

The main technical equipment used in the processes of electricity generation, transmission through main lines and distribution of regional electricity networks are highly obsolete. Replacing these technical tools with modern energy-efficient tools and technologies requires a large amount of capital and foreign investment.

In order for the country to develop economically, its industrial enterprises, that is, enterprises and organizations operating in real sectors, must develop. When enterprises and organizations in the industrial sector develop, the country grows economically. For this, it is necessary to develop the country's electric power sector. Because, at the root of the development of all sectors and industries, the field of electric energy occupies an important place.

Due to the growth of the population in the country, the improvement of the lifestyle of the population, as a result of the increase of enterprises and organizations in the economic sectors, the demand for electricity also increases in parallel. But as the demand for electricity increases, so do the problems in the field of electricity generation. Because the production of additional amount of electricity also increases the demand for energy resources, there is a shortage of energy resources from year to year. This causes an increase in electricity prices (tariffs).

Research methodology. In the course of the research, the study and scientific research of the regulatory processes of the electric power industry, comparative analysis and synthesis, induction and deduction, expert assessment, scientific abstraction, statistical grouping, correlation and regression analysis and other methods were widely used.

Analysis and results. Electricity production in our republic is carried out by 6 thermal power plants and 3 thermal power centers that are part of JSC "Issiklik elektr stansiyali". The suppliers of energy resources are natural gas producing and supplying enterprises, such as "Uzbekkomir" JSC and other enterprises. "Uzbekistan National Electric Networks" JSC is engaged in the transmission of electric energy through main lines. The enterprises that are part of JSC "Regional Electric Networks" are engaged in the supply of electricity to the population and economic sectors.

However, the division of the electric power sector into three independent organizations led to an increase in management costs in the sector. In the field of electric power, since the sectors of electricity production, transmission through main lines and delivery through regional power networks are independent of each other, their account numbers are also separate. As a result of this, there are some inconveniences in electricity money receipts and money transfers from the population and economic sectors. Cash receipts from economic sectors and the population are first transferred to the accounts of JSC "Regional Electric Networks", which is engaged in the supply of electricity, and then to the accounts of JSC "Uzbekistan National Electric Networks", which is engaged in the delivery of electricity through main lines. At the very end, is coming to the accounts of JSC "Issiklik Elektrstansila", which is the main producer of electricity. As a result, there are financial difficulties in the production of electricity by JSC "Issiklik elektr stansiya" and in dealing with enterprises and organizations that supply the main energy resources.

Electricity produced in our country is mainly obtained using natural gas, oil and gas condensate, coal and water. The main part of it is natural gas, which leads to an increase in the cost of produced electricity. We can also see this through the data presented in Table 1. Per capita

primary fuel and energy resources as a unit of measure is t.n.e. shown in equivalence.

Table 1. Primary fuel and energy resources per capita (t.n.e.)

Fuel and energy resources	years									The difference between 2020 and 2000
	2000	2005	2010	2015	2016	2017	2018	2019	2020	
According to the Republic of Uzbekistan	2.2	2.2	2.1	1.6	1.6	1.6	1.7	1.6	1.3	-0.9
Oil and gas condensate	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.2
Natural gas	1.9	1.9	1.9	1.4	1.4	1.4	1.5	1.5	1.2	-0.7
Coal	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0
Hydroelectric power	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0

Source: developed by the author based on the information of the State Statistics Committee of the Republic of Uzbekistan.

According to the data in the table, oil and gas condensate resources in 2000 were 0.3 t.n.e. formed, in 2020 0.2 t.n.e. decreased to 0.1 t.n.e. Natural gas resources amounted to 1.9 t.n.e. in 2000, and decreased by 0.7 t.n.e. to 1.2 t.n.e. in 2020. Coal resources amounted to 0.03 t.n.e. in 2000, and the same indicator in 2020. Hydroelectric power resources in 2000 were 0.01 t.n.e. organized, the same indicator was shown in 2020.

Table 2. Electricity consumption by sectors in the Republic of Uzbekistan in 2016-2020 (million kWh)

Types of activities	2016 year		2018 year		2020 year		The difference between 2020 and 2016	The ratio of 2020 to 2016
	consumption	percentage	consumption	percentage	consumption	percentage		
total	57605.2	100	62502.8	100	69021.1	100	11415.9	119.8
In industry	21035.8	36.5	15007.1	24.0	18284.3	26.5	-2751.5	86.9
Under construction	360.7	0.6	414.8	0.7	1448.0	2.1	1087.3	4 m
In agriculture	9502.3	16.5	18053.9	28.9	9202.4	13.3	-299.9	96.8
Transportation	1165.9	2.0	1474.6	2.3	1058.0	1.5	-107	90.7
Commercial enterprises and state enterprises	5242.3	9.1	4970.9	7.9	5238.9	7.6	-3.4	99.9
To the population	11195.7	19.4	13593.8	21.7	15549.5	22.5	4353.8	138.9
To other areas	9159.2	15.9	9062.9	14.5	18290.6	26.5	9131.4	199.7

Source: developed by the author based on the information of the State Statistics Committee of the Republic of Uzbekistan.

If we analyze the table, in 2016, a total of 57605.2 million kWh of electricity was produced, and by 2020, it increased by 19.8% to 69021.1 million kWh of electricity. According to the types of economic activities, 21035.8 million kWh of electricity was consumed in industry, and in 2020, 18284.3 million kWh of electricity was consumed. In 2020, 360.7 million kWh of electricity was consumed in construction, and by 2020, it will increase 4 times to 1448.0 million kWh of electricity consumed. In 2016, the demand for electricity in agriculture was 9502.3 million kWh, and in 2020, the demand for electricity decreased by -299.9 million kWh to 9202.4 million kWh. hours of electricity consumed. According to the information in the table, in which network the demand for electricity decreased in 2020

In our country, the electric energy sector is currently divided into three independent joint-stock companies. These are: electricity production; transmission of electricity through main lines; delivery through regional power networks. Among these, the transmission of electricity through main lines always retains the nature of a natural monopoly. There is an opportunity to create a healthy competitive environment in the fields of electricity production and delivery through regional power grids.

Summary. The electric power sector of the Republic of Uzbekistan is operating in a very difficult situation, because year after year the country is taking great steps towards economic development. The lifestyle of the population is also improving, which requires additional electricity. The general problems of the organizations engaged in the production of electricity, transmission through main lines and transmission through regional power networks in the republic are as follows:

- since the years of our country's independence, until now, the electric power sector has been fulfilling its duty of donating (giving assistance) to other industries and sectors;
- personnel potential in the fields of electricity generation, transmission through main lines and delivery through regional power networks is in an unsatisfactory state. The system of training and upgrading personnel at all levels of the electric power industry (middle level personnel - local training institutes, senior personnel - in foreign countries) is not properly established;
- the establishment of three independent joint-stock companies in the field of electric energy causes an increase in management costs in the field;
- The determination of electricity prices (tariffs) in our republic is currently determined by the working group of the republic (the working group commission established under the Cabinet of Ministers). Determination of electricity prices (tariffs) should be carried out on the basis of market principles (on the basis of classification by economic sectors);
- old principles are still preserved in the management system of organizations involved in the production of electricity, transmission through main lines and transmission through regional power networks.

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