

THE STATE OF THE ELECTRICAL ENERGY NETWORK OF THE REPUBLIC OF UZBEKISTAN DURING THE TRANSITION TO THE INTERNATIONAL STANDARDS OF FINANCIAL REPORTING

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Abstract

The current state of the energy system of the Republic of Uzbekistan is considered in the article. Necessary conditions for further reforms have been established. Practical work on the components of the energy system: generation, transmission and delivery to the population is defined, as well as the ways of development are indicated. Network modernization and diversification.

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The world experience of developing economic sectors shows that the most optimal and effective factors that ensure rapid development of the country are the creation of a system of relations based on market relations in the country with the introduction of mechanisms of market relations. This task was set before the energy workers of our country in the President's report to the parliament on December 28 of this year [1].

It should be noted that, due to its large scale, it is difficult to introduce a unified structure of the electric power industry, which covers generating sources, main networks and distribution networks, into the market system [2].

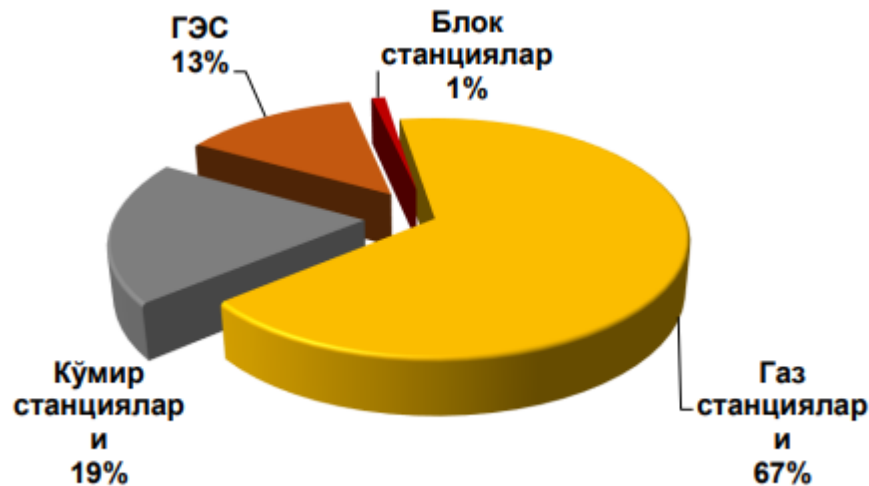
In the modern conditions that ensure the development of a competitive environment in the field of electric power, the introduction of market-based management mechanisms and the attraction of investments require a radical improvement of the institutional and legal framework of activities in the field of electricity production, transmission and supply [3].

In order to implement the tasks of reforming the electric power industry and increasing its investment attractiveness, as well as in the Strategy of Actions on the five priority directions of the development of the Republic of Uzbekistan in 2017-2021 and the Decree of the President of the Republic of Uzbekistan dated March 27 in the Republic of Uzbekistan in order to fulfill the tasks defined in the concept of mury reforms. 2019, (No. PQ-4249) "On the strategy of further development and reform of the electric power industry of the Republic of Uzbekistan" according to the modern methods of organization of production, transportation, distribution and sale of electric energy by OJSC "Uzbekenergo" DAK - organization:

1. Establishing a joint-stock company "Issiklik Elektrstaniya" that manages thermal power plants and power centers producing electricity and thermal energy;

2. Establishment of joint-stock company "National Electric Networks of Uzbekistan" on the basis of the terminated "Uzelektroset" UK and "Uzbekenergo" JSC "Energosotish" branch:

exploitation and development of main power networks of the republic; transportation of electricity through main power grids of the republic and interstate transit; export and import of electricity, as well as interaction with electricity systems of neighboring countries; single operational-dispatching management of electricity generating enterprises, including those with private capital participation, as well as main and regional power grids; tasks of the sole buyer of electricity by the enterprises producing electricity, including with the participation of private capital, as well as the sale of electricity to the enterprises of regional electricity networks;



3. Establishment of the joint-stock company "Regional Power Networks" that manages regional power network enterprises that distribute and sell electricity to final consumers.

By the Presidential Decree No. PQ-4142 dated February 1, 2019, "On measures to organize the activities of the Ministry of Energy of the Republic of Uzbekistan", the organizational structure of the Ministry of Energy of the Republic of Uzbekistan was approved, and the issues of heat and electricity are the responsibility of the Minister of Energy. Was handed over to the director.

At present, the above structures have begun to successfully fulfill the tasks assigned to them, and we need to see the results of the decisions made and our activities.

Currently, the energy system of the Republic of Uzbekistan is one of the leading energy systems in Central Asia and is characterized by:

The presence of 110-500 kV main power grids with a voltage of 110 kV, including 75 transit substations and 10,000 kilometers of high-voltage main power transmission lines, which allows you to transport and transmit electricity to any region of the republic with minimal technological losses. provides (no more than) 2.3%) and ensures stable operation of the entire energy system;

Elektr quvvatlarining texnik xususiyatlari [4]

	Elektr tarmoq stantsiyalar	Belgilangan quvvat, MVt	Taqsimlangan quvvat, MVt	Ishga tushirilgan yil
1	Sirdaryo IES	3 065	2 660	1972-1980
2	Yangi-Angren IES	2 100	1 280	1985-1995
3	Toshkent IES	2230	2010	1963-1971
	Shuningdek, PGU -1	370	370	2017
4	Talimarjon IES	1 700	1 680	2004
	Shuningdek, PGU -1 va 2	900	900	2016-2017

5	Navoi IES	1 618	1 358	1963-1972
	Shuningdek, PGU -1	478	478	2012
	Eski energobloklar	1 140	880	
6	Taxiatash IES	730	500	1967-1990
7	Angren IES	634	250	1957-1963
	Shuningdek, yangi TG-10	150	150	2016
	Eski energobloklar	484	100	
8	Farg'ona IES	305	130	1956-1981
9	Muborak IES	60	60	1985
10	Toshkent IES	57	50	1939-1969
	Xammasi:	12 499	9978	80 %
	ulardan:	2 698	21,6%	
	Zamonaviy energobloklar			
	Eski energobloklar	9 801	78,4%	

Distribution power lines with a total length of more than 260,000 km and 73,000 transformer substations, of which 5,000 km of new lines are modernized annually, eliminating commercial losses, generating capacity, consumer units and A modern ASKUE system, which realistically assesses technological flows, will be introduced. the composition of losses in the distribution of electricity and taking effective measures to reduce them, increase the energy efficiency of distribution networks;

The next structure in energy systems is high-tech thermal power plants based on modern state-of-the-art cycle power plants and rapidly developing hydroelectric plants;

In addition, long-term plans for the widespread introduction of solar power plants (FES) and wind power plants, as well as the construction of a modern nuclear power plant, which excludes carbon dioxide emissions into the atmosphere, do not cause a "greenhouse effect" and improve the environment.

As for trunk, distribution and low-voltage networks - their total length is about 270 thousand km, including high-voltage networks with a voltage of 220-500 kV - 10 thousand km and 35-110 kV - 30 thousand km, voltage 0.4-10 Low-voltage networks with kV - 230 thousand km, the number of TP transformer points is 73 thousand units.

About 62.4% of networks have a service life of more than 30 years.

2.9 thousand km (29%) of power lines and 50 pieces of equipment are required to be renewed in high-voltage main networks. substations (66%), distribution networks - 130.2 thousand km (50%) and 39.6 thousand transformer points (55%).

To reduce electricity losses, by 2030, 130,400 km of 0.4-10 kV low-voltage networks and 849 high-voltage 35-500 kV networks of 10,000 km should be modernized and introduced. 35-500 kV and 39.6 thousand substations transformer points 0.4-10 kV.

The high wear and tear of the length of the distribution networks leads to excess losses of about 6.4 billion kWh, which is equivalent to the operation of two steam-gas plants with a capacity of about 450 MW each.

According to forecasts, in 2030, the republic's demand for electricity will increase to 121 billion kWh or 1.8 times compared to 2018 (66.2 billion kWh), including the population of the republic - 20.0 billion kWh hours (1.7 times), industry - up to 90 billion kWh (1.9 times) [5].

By 2030, the total electric load during the peak period will be approximately 20 thousand MW compared to 11 thousand MW in the autumn-winter period of 2018-2019. Thus, by 2030, the country will need to increase its energy capacity by about 1.8 times.

Considering the fact that the construction of power plants has taken a long time, it is recommended to

continue the renovation and construction of high-efficiency production facilities, including modern energy-efficient combined cycle plants and the development of renewable and alternative energy sources (hydropower, solar, wind, etc.), as well as a careful and comprehensive review of the construction and modernization of new coal-fired power units.

One of the performance indicators of the energy system is the full operation of outdated uneconomic power units with high fuel consumption.

There are many technical problems that require urgent measures to solve them. Most of the IES and IES power units commissioned in the last century developed park resources, low energy efficiency (almost twice as much fuel consumption as modern power units) and stable supply of energy to consumers, does not meet modern requirements for economic use and energy efficiency improvement.

During the peak load period, the production capacity of thermal power stations is 87.2%.

Electricity production remains highly dependent on natural gas and coal, the share of hydroelectric power stations is low (13%).

Currently, the total installed capacity of the sources producing in the republic is about 15 thousand MW, including 13 thousand MW (86.7% of the installed capacity of the entire energy system), 8 thermal power plants and 3 thermal power plants and "IES" 3 thermal power plants of OJSC, approximately 2.0 thousand MW (13.5%) 40 JSC "Uzbekgidroenergo" and 0.1 thousand MW (0.7%) AGMK block station, Ustyurt gas-chemical complex and other insulation stations made;

Yonilg'i-energiya resurslaridan foydalanish tizimi

Yonilg'i turi	Yonilg'idan foydalanish 2017 dan boshlab	Elektrenergiya ishlab chiqarishda yonilg'i 2017 yilda	Elektrenergiya ishlab chiqarish 2017 yilda, mlrd.kVt.s	Elektrenergiya ishlab chiqarishda yonilg'i 2018 yilda	Elektrenergiya ishlab chiqarish 2017 yilda, mlrd.kVt.ch
Xammasi, shuningdek:	18 742,1 (100%)		52,1		20 968,2 (100%)
Tabiiy gaz	17 526,9 (93,5%)	15208,4 mln.m3 3 320,2 mln.tn	48,8	17 005,0 mln.m3	19 725,8 (94,1%)
- ko'mir		148,6 ming.tn	2,7	3 460,0 ming.tn	1 072,6 (5,1%)
- Mazut	975,9 (5,2%)	268,3 mln.m3	0,5	92,8 ming.tn	127,1 (0,6%)
- boshqalar	207,4 (1,1%) 31,9 (0,2%)		0,1	350,0 mln.m3	42,7 (0,2%)

Special attention is paid to the development of regional cooperation with energy systems in Central Asia, Russia and neighboring countries:

- Uzbekistan has been exporting electricity to the Islamic Republic of Afghanistan since 2002;
- more than 2.5 billion kWh of electricity is supplied annually;
- In order to meet the ever-increasing needs of the Republic of Uzbekistan for electricity, JSC "Uzbekistan National Electric Networks" together with Afghanistan started the construction of a new interstate high-voltage power transmission line Surkhan-Puli-Khumri with a voltage of 500 kV with a length of more than 250 km;
- All power systems in Central Asia work together; have strong electrical connections using 110 kV, 220 kV and 500 kV transmission lines. The energy system of the Republic of Uzbekistan is located in the center of the energy systems of Central Asia, which allows you to actively participate in regional cooperation;
- depending on the availability of water, 2 billion kWh of electricity is obtained annually from the energy systems of Turkmenistan, Kyrgyzstan and Tajikistan, which allows for the development of

mutually beneficial economic cooperation and the rational use of water and energy resources of the region;

- Active work is being done to connect the energy system of the Republic of Tajikistan to the energy system of the Republic of Uzbekistan with the development of the project of automation of emergency situations and the development of the project of further development of interstate power transmission lines.

In connection with the rapid growth of the demand for electricity, the standard of living of the population of the republic and the development of the industry, the development of the energy system ensures the following:

1. By 2030, with the gradual introduction of new high-efficiency production capacities in thermal power plants and the withdrawal of morally and physically outdated power units, the relative consumption of equivalent fuel for the production of electricity by more than 35 percent increasing production capacity from 14 GW to 30 GW;
2. Improving the efficiency of thermal power plants by introducing new regulatory options to compensate for electricity during peak hours of electricity consumption[6];
3. Diversification of energy sources by increasing the share of coal consumption in the fuel balance of thermal power plants;
4. Construction of new coal power units at the existing Angren IES;
5. Construction of NPP with a total installed capacity of 2.4 GW;
6. Construction of hydroelectric power stations with a total capacity of 2 GW by 2030, bringing the installed capacity of hydroelectric power stations to approximately 4 GW [7];
7. Development of integration of solar and wind power plants;
8. Construction and modernization of main power lines with a total length of 1500 km and 25 substations with a voltage of 220-500 kV - 30 projects;
9. Modernization and development of distribution networks and power supply facilities;
10. Power industry, in particular, automated systems for control and accounting of electricity consumption (ASKUE), power grids, dispatch control and data collection (SCADA), resource management systems, production and management digitalization through process automation (ERP).

Forecasting the future development of the energy system. It can be said that the ongoing technical and technological development, increased investment in human capital, measures taken to develop the energy system, mutually beneficial cooperation with other energy systems, international cooperation with world leaders in the field of energy and leading energy companies involving financial institutions, e.g. ADB(Asian Development Bank), World Bank, ETDB(European Bank for Development and Reconstruction) and others, in general, hope to ensure the main task in the field of energy in the long term - first of all, our people and the well-being of the population. x sectors of the economy are uninterrupted, high-quality and cheap electricity.

We are interested in diversifying the production of electricity and reducing the demand for natural gas, therefore "Uzbekenergo" is actively working to attract foreign investments and introduce energy-saving technologies based on the principles of public-private partnership.

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