

# Reforming of Energy Sector of Uzbekistan: Transition to Market and Increasing Generation

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**Abstract:** By 2030, Uzbekistan will need to generate 2 times more electricity than today in order to meet the needs of the economy and the population, or, in other words, to ensure the country's energy security. To achieve this goal which was set by the leadership of the country, the Ministry of Energy of the Republic of Uzbekistan is gradually implementing large-scale projects and coordinating the processes of reforming the industry in order to transfer it to market relations.

**Key words:** Reforming, energy sector, increasing generation, thermal energy, renewable energy sources.

## Introduction.

The energy sector today is one of the basics for any country. It provides opportunities for the development of the economy, comfortable living for people, creating conditions for the normal functioning of such important social areas as education, medical care, social security, public services and so on. However, it is no longer possible to maintain a huge energy infrastructure in normal working order, and even more so to increase generation, that is, to increase electricity production, without transferring the sphere to the rails of a market economy. Only when the most modern achievements in the construction and operation of power plants, power grids and other elements of the energy infrastructure, each of which has its own and very responsible role, are used in the energy sector, the set goals will be achieved. The development of energy based on the laws of the market creates conditions for competition, which makes it possible to attract the most qualified investors to the implementation of projects, who have not only funds, but also modern technologies and experience that make it possible to bring equipment and the methodology that will be relevant for decades to come into the energy sector of Uzbekistan.

## Main body.

The Ministry of Energy in its current form was established more than 2 years ago. The main reason for the transformation was the lack of flexibility and inefficiency of the previous structures. Some of them did not correspond to modern tasks, such as a coordinated approach to the development of the fuel and energy complex; introduction of innovative management principles; building a healthy competitive environment and creating an attractive investment climate in our country. Currently, the Ministry of Energy coordinates the development of the entire fuel and energy complex of Uzbekistan. The Ministry of Energy and the organizations included in its structure and coordination carry out state regulation of the processes of production, transmission, distribution and consumption of electric and thermal energy, coal, as well as the extraction, processing, transportation, distribution, sale and use of oil, gas and products of their processing.

These fundamental changes in the fuel and energy complex required a radical reform of the entire basic structure. So, in the energy industry at the beginning of 2019, a radical restructuring of Uzbekenergo JSC was carried out, on the basis of which three joint-stock companies were organized: Thermal Power Plants, National Electric Grids of Uzbekistan and Regional Electric Networks. The purpose of this reorganization is the transition to modern methods of organizing the production, transportation, distribution and sale of electrical energy.

In mid-2019, the process of reforming the oil and gas industry began, as a result of which the stage of its transformation has been completed by now.

A new organizational structure of Uzbekneftegaz JSC has been formed, redundant intermediate links in the company's management system have been reduced. JSC "Uztransgaz" was withdrawn from JSC "Uzbekneftegaz", which was determined as a single operator for the purchase of natural gas from gas production organizations for further transportation, including export and import, as well as sales to consumers connected to main gas pipelines. On the basis of the territorial branches of gas supply of Uztransgaz JSC, Khududgaztaminot JSC was established to operate gas distribution networks and supply natural and liquefied gas to the population and social facilities.

In addition, into the structure of the Ministry of Energy was transferred some government bodies that were previously in the system of the Cabinet of Ministers of the Republic: the Agency for the Development of Atomic Energy - "Uzatom"; Inspectorate for Control over the Use of Petroleum Products and Gas (formerly the State Inspectorate for Control over the Use of Petroleum Products and Gas); and the Inspectorate for Control in the Electricity Industry (formerly the State Inspectorate for Supervision in the Electricity Industry).

During the period that has passed since the establishment of the Ministry of Energy, a number of huge changes have been made. In particular, priority was given to the development of generation based on renewable energy sources, as evidenced by the adoption in May 2019 of the Law of the Republic of Uzbekistan "On the use of renewable energy sources", as well as the development by the Ministry of Energy of the Concept for the development of renewable energy sources in the country for the period 2019-2023.

At the end of April 2020, the Government approved the "Concept for the provision of the Republic of Uzbekistan with electric energy for 2020-2030", that was developed by the Ministry of Energy together with the involved ministries, departments, as well as international consultants.

One of the successful steps towards market relations in the energy industry was the implementation of generation projects, including renewable energy sources, on a fundamentally new model for the energy sector of Uzbekistan - public-private partnership (PPP). Today it has become the basis for almost all power plants under construction and planned. PPP-based projects are carried out on a tender, that is, a competitive market basis, while technical assistance to bring the best international experience in holding tenders is provided, in particular, by the International Finance Corporation, a member of the World Bank Group, the Asian Development Bank, the European Bank for Reconstruction and Development.

One of essential points is that the winner of the tender is responsible for the design, construction and operation of the new power plant. A long-term agreement is concluded with winner on the purchase of generated electricity for a period of 20-25 years. The main criterion for winning the tender is a favorable price offer (tariff) for electricity. However, before submitting their proposal, bidders must pass a qualification stage, in which they must prove their experience, financial availability and ability to implement and support such projects. Thus, the market rules that have been intensively implemented in the energy sector of Uzbekistan over the past 3 years make it possible to create healthy competition in this area, which is proved by the interest of independent electricity producers. To date, a total of 13 power purchase agreements have been signed, which is a significant milestone in creating a competitive environment for the energy sector. Independent energy producers include such companies as: Total Eren SA (France), Abu Dhabi Future Energy Company - Masdar (UAE), Aksa Enerji Üretim A.Ş. (Turkey), ACWA Power (Saudi Arabia) and others.

In accordance with the decree of the President of the Republic of Uzbekistan dated March 27, 2019 No. PP-4249 "On the strategy for the further development and reform of the electric power industry of the Republic of Uzbekistan", a Project Office was created under the Ministry, which, among other things, works with international financial institutions. International experts with extensive experience in reforming the energy sectors of various countries were involved.

The Project Office experts have developed a Concept that includes a consistent transition to the wholesale competitive electricity market, with the passage of three stages in the period 2021-2025. At the first stage, it is planned to liberalize electric power enterprises and obtain licenses by private (independent) producers wishing to sell the generated electricity.

During the second stage, a single operator of the electricity distribution system will be created, and the functions for selling electricity to consumers will gradually be transferred to suppliers. Consumers will be able to purchase electricity through an online trading platform or through any supplier.

The third stage is “Intraday (hourly) sales”. In accordance with it, on a planned basis, the online purchase and sale of excess or deficient volumes of hourly production and consumption of electricity will be carried out on the trading floor.

Also, work will continue to improve the regulatory framework of the energy industry. In particular, work is being actively carried out on the examination of the developed projects: the Law of the Republic of Uzbekistan "On the Electricity Industry" (work on it was carried out jointly with experts from the European Bank for Reconstruction and Development and the World Bank), the Decree of the President of the country "On Additional Measures to Reform the Electricity Industry", Government Resolutions "On approval of the Code of main electrical networks."

Whatever reforms take place in the energy sector, the result is important, that is, a stable supply of energy resources to the population and economy of Uzbekistan. Taking into account analytical forecasts that indicate a double increase in the demand for electricity in the country in less than 10 years, one of the main tasks of the Ministry of Energy and the entire structure of the fuel and energy complex at the present stage is the construction of new power plants, including thermal (TPP), the development of renewable energy, the search for and implementation of other projects based on renewable energy sources, further expanding the capabilities of hydropower (HPP), including small, etc.

By the end of 2021, it is planned to increase the volume of generating capacities from 14 thousand MW to 15.8 thousand MW or to commission an additional 1.8 thousand MW. Compared to 2016, the production capacity will increase by 50%. On the basis of PPP, an additional 514 MW will also be launched, of which a thermal power plant with a capacity of 240 MW in the Tashkent region, a gas piston power plant (174 MW) in the Khorezm region, and a solar power plant (100 MW) in the Navoi region. Also, this year, two thermal power plants with a total capacity of 470 MW in the Tashkent region, a thermal power plant of 270 MW in Bukhara and 220 MW in the Kashkadarya region, as well as a solar power plant with a capacity of 100 MW in the Samarkand region will be commissioned.

The commissioning of new modern TPPs will also save about 1.5 billion cubic meters of suburban gas per year, which will make it possible to generate additional electricity for the needs of the population.

By 2025, the capacity of the power system is expected to reach 25.6 GW, of which thermal power plants will provide 18.8 GW, hydroelectric power plants - 2.5 GW, and solar and wind power will be 4.3 GW. At the same time, physically obsolete installations will gradually be decommissioned. By 2030, the total production capacity will be 29,200 MW, or 2 times more than today. As a result, in 2030 generated power is 120.1 billion kWh · h (in 2020, this figure is 66.4 billion kilowatts · h).

Uzbekistan is a sunny country, and this is an important argument in the development of such an important direction for the creation of generation based on renewable energy sources (RES), such as solar photovoltaic stations (PVPs).

The Ministry of Energy, in partnership with the Asian Development Bank (ADB) and the World Bank (WB), has developed a ten-year electricity plan for Uzbekistan. By 2030, in the renewable energy plan, the implementation of this plan will lead to the creation of additional energy capacities, which will include 5 GW of solar energy, 1.9 GW of hydropower and up to 3 GW of wind power. The state has set a goal to increase the share of renewable energy sources in the total volume of electricity production by 2030 to 25%. Today this figure is 10%.

In the fall of 2021, the country's first industrial solar photovoltaic power plant (PVP) with a capacity of 100 MW is being prepared for commissioning. It is being built in Karmaninsky district of Navoi region by Masdar company (UAE).

Renewable energy projects introduced in the country will contribute to the implementation of the task set for the energy sector of Uzbekistan. It will also help reduce annual greenhouse gas emissions by about 500,000 tonnes of CO<sub>2</sub> equivalent.

## **Conclusions.**

Thus, as evidenced by figures and facts, the last few years have become breakthrough for the development of the energy sector in Uzbekistan. Development based on the best international experience, development that ensures the onward movement of the energy sector towards the transition to work in a market

economy, which will make it possible to flexibly respond to growing consumption demands and ensure the country's energy security at present and in the future.

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