
ENERGY POLICY AND ENERGY EFFICIENCY AND ITS IMPLEMENTATION

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Annotation

This article discusses the issues of classification of energy and energy efficiency policy and its implementation, where competent provision of energy security becomes possible largely due to the implementation of a well-thought-out energy policy, which is understood as the sphere of state activity related to ensuring national economic and energy security. There is a presentation of statistical data, which allows an objective analysis of the current state of the industry.

Keywords

energy, energy efficiency, strategy, energy security, energy policy, modernization, concept.

Introduction

Energy conservation and energy efficiency improvement are currently one of the priority strategic tasks set by the Government of the country in the context of economic reform. The implementation of an energy-efficient policy, the use of energy-saving technologies in production are the main directions of increasing the competitiveness of the domestic economy, increasing the investment attractiveness of production facilities, as well as solving environmental issues. As practice shows, competent provision of energy security becomes possible largely due to the implementation of a well-thought-out energy policy, which is understood as the sphere of state activity related to ensuring national economic and energy security. As a rule, the goal of the state's energy policy is to maximize the efficient use of natural energy resources and the potential of the energy sector for sustainable economic growth, improving the quality of life of the country's population and helping to strengthen its foreign economic positions.

Literature review

Such scientists as A.G. Aganbegyan, A.L. Vershinin, M.G. Delyagin, V.V. Ivanter, N.P. Laverov, D.S. Lvov, A.A. Makarov, V.E. Fortov and others made a great contribution to the development of general theoretical issues of the

development of electric power enterprises. Modernization aspects of increasing energy efficiency in the economy are considered in the works of L.Y. Bogachkova, A.I.Gromov, I.S. Kozhukhovskiy, T.A. Mitrova, D.B. Ponarovkin, V.V. Trufanov. Complex problems of formation and implementation of the state energy policy are considered in the works of such Uzbek scientists as N.M.Makhmudov, M.A.Ikramov, A.M.Kadyrov, G.A.Samatov, G.Zh. Allaev, M. Saitkomolov.

Material and methods

In the modern period, there is a shift in the center of the world economy and economic cooperation towards non-Western countries, which includes China. The development of energy in China is one of the most discussed topics in the context of the analysis of socio-economic changes in the country and its leadership in the world. Its energy sector remains not fully integrated into the world economy and the international fuel and energy complex. It is characterized by a high component of the coal industry, unity of management and movement towards autonomy. The foreign policy component in this context is assigned to the development of bilateral relations with developing countries and is a model of national monopoly energy policy. In 2018, the growth of energy consumption in China amounted to 3.7 % [6]. During the same period, global energy consumption has grown significantly due to sustained economic growth and growing demand in China, which has been the largest energy consumer in the world since 2009.

The Silk Road Economic Belt Project is one of the tools for implementing the energy strategy, which allowed Beijing to find profitable suppliers of oil and gas (Kazakhstan, Kyrgyzstan, Turkmenistan), created an alternative to the supply of hydrocarbons from the Persian Gulf countries by sea. Regarding the Chinese national strategy of "going beyond", it should be noted that Chinese corporations are actively involved in projects implemented by the above-mentioned countries for the exploration, production and transportation of hydrocarbon raw materials. [5]

In the future, China's energy supply is seen as a promising growing business both for various states and for international multinational companies. A positive fact is the growth of "green" energy in China and the great attention paid to environmental problems at the political level. Ecology is officially given priority over the economy, so-called "clean zones" and "clean cities" are being created.[6] Beijing is also increasingly actively purchasing natural gas, engaged in complex purchases of liquefied natural gas. Today, there are quite a few problems in the Chinese energy sector, some of which are related to the rather complex process of establishing market relations in the industry and pricing issues. One of the tasks of

state regulation of the market in China is the desire to reduce the volatility of domestic fuel and energy prices.

Energy conservation and energy efficiency improvement are currently one of the priority strategic tasks set by the Russian government. High energy costs reduce the competitiveness and investment attractiveness of the country's economy, contribute to a constant increase in energy prices and all types of marketable products and worsen the ecology of the environment. The implementation of an energy-efficient policy, the use of energy-saving technologies in production are the main directions of increasing the competitiveness of this economy, increasing the investment attractiveness of production facilities, as well as solving environmental issues.

Separately, it should be noted that the lack of a clear and effective system for monitoring energy consumption and incentives, primarily economic, to improve energy efficiency and energy conservation significantly affects the environmental situation in Russia, including the almost unregulated powerful depletion of raw materials, pollution of the environment and other negative consequences for human life.

Currently, there are three fundamental basic documents in the field of energy conservation and energy efficiency in Russia: "Energy Strategy for the period up to 2030", the Federal Law "On Energy Conservation and Energy Efficiency Improvement and on Amendments to Certain Legislative Acts of the Russian Federation", the State Program "Energy Conservation and Energy Efficiency Improvement for the period up to 2020", which includes nine subprograms on energy conservation and energy efficiency improvement in the main activities. Despite the availability of traditional energy carriers, Russia is interested in using non-traditional renewable energy sources.

The strategic framework for the development of the energy sector of the Republic of Uzbekistan is based on the following documents:

The Strategy for the transition of the Republic of Uzbekistan to a "green" economy for the period 2019-2030 and the Concept of providing the Republic of Uzbekistan with electric energy for 2020-2030.

The main goal of the Strategy is to achieve long-term sustainable economic development and the fulfillment of the goal of Uzbekistan under its obligations under the Paris Agreement, which was ratified by Uzbekistan in 2018. The main goal of the Concept is to meet the growing demand for electricity (the deficit of which was estimated at 9.4% in 2012-2019, and the annual growth of consumption

until 2030 – at the level of 6-7%) and to ensure further balanced development of the electric power industry.[1]

The main purpose of the Roadmap is to assist the Government of Uzbekistan in achieving the goals of the Paris Agreement. The document illustrates the technical and economic possibility of Uzbekistan to achieve a zero level of carbon energy already in 2050. According to the results of this simulation, the transition of the electric power industry to zero net greenhouse gas emissions by 2050 will require 94 billion US dollars. In general, the roadmap assumes stages for achieving potential goals in 2050. [3]

As of January 1, 2021, the following main programs and roadmaps in the field of energy efficiency exist in Uzbekistan:

1. A program of measures for the further development of renewable energy, improving energy efficiency in economic and social sectors for 2017-2021, setting an average annual reduction in energy intensity by 8-10 %;

2. “Roadmap” for further improving the energy efficiency of economic and social sectors, as well as the development of renewable energy sources, which provides for the implementation of 36 measures, 21 of which relate to energy efficiency;

3. The Roadmap for improving Energy efficiency and saving fuel and energy resources at large energy-intensive enterprises of economic sectors, which provides for 29 measures aimed at improving energy efficiency in energy-intensive sectors of the economy;

4. Comprehensive program on digitalization of the electric power industry for 2019-2021. The institutional framework in the field of energy efficiency includes several interested organizations. ME plays a leading role in promoting energy efficiency policy.

Due to its geographical location and diverse landscapes, Uzbekistan has great potential in the field of renewable energy.

The highest technical potential belongs to solar energy (176.8 GW), but the country also has good potential for biomass energy (2.9 GW), hydropower (0.4 GW), wind energy (0.4 GW) and geothermal energy (0.3 GW).

The strategy of innovative development of the Republic of Uzbekistan for 2019-2021 provides for the achievement of a 20% share of electricity production from renewable sources by 2025, while the Resolution on accelerated measures to improve the energy efficiency of economic and social sectors, the introduction of energy-saving technologies and the development of renewable energy sources

provides for the achievement of a 25% share of renewable energy in electricity production by 2030.[2]

The intention is to achieve the set goals through the construction of new renewable energy power plants with a total capacity of 10 GW, including solar (5 GW), wind (3 GW) and hydroelectric power plants (1.9 GW).

The legislative base of the Republic of Uzbekistan in the field of renewable energy consists of the Law “On the Use of renewable energy sources”, adopted in 2019. The Law provides for a number of financial incentives and benefits, including exemption of renewable energy producers from all types of taxes for up to five years, starting from the date of their state registration. In addition, according to the Program of Measures for the Further Development of Renewable Energy, Improving Energy Efficiency in Economic and Social Sectors for 2017-2021, all consumers who install generating capacities at home receive a guaranteed “green” tariff based on official electricity prices for commercial consumers.

Thus, modernization, diversification and energy efficiency improvement of the industrial sector are one of the priorities of the Government to create jobs and improve living standards in Uzbekistan.

According to the assessment carried out within the framework of the UNDP and the Ministry of Economy project “Support of Uzbekistan in the transition to the path of low-carbon development of the national economy”, the potential savings in the electricity sector will amount to 8.3 million tons of n.e., or 11 billion m³ of natural gas per year. The study emphasizes that only the commissioning of high-efficiency PGTS can reduce the specific energy consumption from 0.275 to 0.175 tons n.e./MWh. Additional savings of 2.63 million tons of natural gas per year, or 3.23 billion m³ of natural gas, can be achieved through the construction of cogeneration plants at energy-intensive industrial enterprises.

In the CAREC study on the energy sector financing roadmap, the potential energy savings in the electricity sector by 2030 are estimated at 6.85 million tons n.e. The calculation takes into account an increase in the average efficiency of gas thermal power plants, which was about 33% in 2013, and a reduction in technical and commercial losses, which accounted for 23% of the net admission to the network in the same year. The study also suggests that total energy savings in the next 15 years could reach 25%, although the analysis did not specify the exact baseline for such a forecast.

The latest report on the results of a comparative analysis of electricity losses published by the Council of European Energy Regulators (CEER) in 2020 also explains the lack of a consistent definition of electricity losses, especially in relation

to non-technical losses, and the lack of consistency in the representation of losses as a percentage of energy entering the grid or energy leaving it. For example, while the CEER report compares electricity losses in 35 countries as a percentage of revenue, the WB estimates this figure as a percentage of useful output.

Thus, only reducing electricity losses to the global average could be the most cost-effective measure to eliminate the shortage of electricity supply, which the government estimated at an average of 9.4% of the volume of demand in 2012-2019. The main reason for such a high level of electricity losses are outdated elements of trunk and distribution networks. According to the Ministry of Energy, 66% of trunk networks and 74% of substations have an operational life of more than 30 years. The service life of 62% of distribution networks and more than 50% of transformer stations has also exceeded 30 years.

Taking into account data on own consumption at thermal power plants and CHP plants, in 2019 the net efficiency of coal-fired power plants was 24.7%, and gas-fired power plants - 31.9%. The European Bank for Reconstruction and Development indicates that the net electrical efficiency of the new 1.56 GW power plant, which will be built by Siemens in Surkhandarya region by 2024, will be above 60%.

Presidential Decree No. PP-4779 of 10.07.2020 provides for the planned savings of fuel and energy resources in the amount of 1.859 million tons of n.e., which is a mandatory energy efficiency target to be achieved in the electricity generation subsector by January 1, 2023. In accordance with the approved target parameters of fuel and energy saving, the relevant ministries and departments in the context of enterprises have developed and approved organizational and technical measures to save fuel and energy resources for 2020-2022 with justifying calculations of savings for each event.

The Concept of providing the Republic of Uzbekistan with electric energy for 2020-2030, approved by the Order of the Ministry of Energy No. 70 dated 04/28/2020, provides for specific goals related to electricity losses, that is, reducing the level of losses by 2030 in the main networks from 2.72 to 2.35%, and in distribution networks - from 12.47 to 6.7% (from the supply to the network). At the same time, in the legislative framework of Uzbekistan there are no targets for natural gas losses related to the operators of the transmission system (TSO) and distribution (DSO) of gas.

Discussion

Currently, the state and the regions face a new task - optimization of the fuel and energy balance while improving the quality of life of the population. This task

can be solved through the comprehensive implementation of real energy saving and energy efficiency measures, as well as the widespread use of renewable energy sources. At the same time, for the development of renewable energy, it is necessary to adopt a legislative framework, which is virtually absent at the moment.

When summarizing the key conclusions and conclusions of this section, the following main barriers are identified:

- there is no independent energy regulator in Uzbekistan;
- strategic decisions on the development of the energy system are based on options for measures regarding supply and do not take into account measures regarding demand;
- extremely old, outdated and inefficient technologies and equipment are used in the electric power industry, which leads to high vulnerability of the system and regular outages;
- there is no transparent methodology for calculating, monitoring and verifying planned savings. The existing legislative framework includes planned energy saving indicators for the electric power sector, but does not provide any targets for the transportation and distribution of natural gas;
- there is no policy that encourages highly efficient cogeneration;
- state-owned energy companies have no incentive to reduce their operating costs.

The issue of providing energy resources is part of the geopolitics of the country, whose interests in the field of energy security should be supported by a set of foreign policy and foreign economic measures in harmony with domestic policy. In choosing a strategy, economic goals and objectives are subordinated to political ones, and the interdependence of the internal and external dimensions of the country's energy policy plays an important role. This is manifested both in the effective use of available resources and their supplies from abroad, and in choosing the optimal model for risk distribution and obtaining the most advanced technologies.

Conclusion

Thus, improving energy efficiency and energy conservation is a complex problem, since energy consumption affects all spheres of the economy and society. The experience of European countries in improving energy efficiency shows that the most important driving force in the development of this issue is the involvement of all economic entities and almost the entire population in it.

To solve this problem, it is necessary to conduct an effective energy policy in the country with the participation of the state, business and the population. At the

same time, a systematic approach of economic, scientific, technical and organizational measures will be required.

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