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POWER OF INTELLECTUAL ENERGY RESOURCES IN UZBEKISTAN

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ANNOTATION
The essence of the sources of intellectual energy is widely disclosed in the article. Also, indicators of the potential of renewable energy sources in Uzbekistan were analyzed.
KEYWORDS: *Distributed energy , digital energy , energy, sources of energy, renewable energy.*

The longed for development of the industry affects the environmentalist environment. Therefore, the problem of protecting the atrophy and the rational use of natural resources is of great importance now. It is known that the main sources of environmental pollution are chemical and petrochemical, energy, light industry and construction materials enterprises. They account for 90 percent of harmful substances released into the atmosphere. In recent years, there has been a slight decrease in the emission of harmful substances. Because, as in the whole country, the attention of the ecologist to improve the situation has increased in the region as well. Many enterprises have been provided with modern cleaning equipment, and funds are being allocated for this work. However, environmental pollution has not been given enough attention.

Unlike previous approaches to the development of the electric power industry, it is more efficient to start the transition to an intelligent energy system from the bottom, from the consumer and local energy supply systems, creating distributed clusters of new energy, a new market environment in the industry. And the experience of the world's largest economies shows the success of such undertakings.

Intensive advances towards the intelligent electric power industry are being carried out in Europe, the USA, the BRICS countries, Japan, South Korea, etc.

The topic of an intelligent energy system, a national technological initiative reflects the main trends that exist or are emerging in the development of modern electric power industry - a bias towards information and communication technologies, active electrical devices, active regulators of electrical energy flows, and integrated distributed sources of electrical energy.

It is required to solve a number of important tasks for the creation of modern intelligent electrical systems [1]:

- to change the power industry management system. The goal should be to minimize the costs of development and operation of the industry while meeting the requirements of reliability, quality of electricity, ecology, energy security of the state;

- to develop methods and information and software tools for obtaining optimal solutions for the development and functioning of the country's electric power complex;

- to create a unified system of technological and commercial rules and mechanisms for joint work of the owners of electric power facilities, ensuring the implementation of optimal solutions in the exercise of appropriate control by state authorities;

[1] Allaev KR Power industry of Uzbekistan and the world. T .: Fanva technology, 2009. 463 c .

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- create an industry-wide system of strategic planning, taking into account long-term prospects for ensuring the reliability and quality of electrical energy;

- to create a system for planning and conducting research and development of innovative technologies, including technologies for flexible highly integrated energy systems using automation, robotization, informatization, and digitalization of the industry.

The task of developing a system of integral optimal management of the development and operation of the electric power complex in the presence of many owners of electric power facilities, taking into account different temporal and territorial levels of management and a variety of generation sources and components of power systems, is relevant.

From a wide range of new market participants and service providers, new networks of producers and consumers are being formed and, as a result, completely new business models of energy trading are emerging [2]. There are many examples of the use of artificial intelligence algorithms in forecasting tasks [3]. For example, the dependence of renewable energy generation on weather conditions has greatly increased the need for accurate forecasting.

In Germany, the German company Schleswig-Holstein Netz AG, which operates electrical networks, uses artificial intelligence methods (a self-learning network) to determine the locations of alleged damage [12]. Information on the service life of electrical network elements and repairs carried out, as well as information on loads and weather conditions are used as initial data.

In the United States, unmanned aerial vehicles are used to survey the condition of high-voltage power lines and wind turbines, controlled based on software with artificial intelligence algorithms to process monitoring results [4]. The neural network helps to better solve the problem of pattern recognition, for which, during the training process, thousands of images of damaged wind turbines are loaded into the program (including the consequences of lightning strikes, delamination, coating erosion, etc.).

Today, such a term as " digitalization" is increasingly heard, which should cover all areas of the economy and industry [5]. The digitalization of the energy industry is the most important component of the future energy industry and, accordingly, the state economy. Digital energy is an energy industry in which relations between producers and consumers of electricity have changed dramatically, as new, affordable technologies have appeared.

"Digitalization" is called a fundamental part of the architecture of the fourth industrial revolution, the so-called "Industry 4.0" [6]. Digital energy will become part of the digital economy - digitalization of all branches of the fuel and energy complex: electric power, which should become intelligent and distributed; oil and gas and coal industries .

Digital energy, as a new format for managing the operation of electric power systems, ensures the optimization of technological and business processes to achieve the target state of the electric power industry.

Digitalization of the electric power industry, unlike other technological areas that support the traditional, extensive development of the industry, can significantly reduce the pace of this development without compromising the reliability and cost of energy supply, due to more efficient use of the existing energy infrastructure , which at the same time receives its information counterpart - "energy Internet".

[2]Quadrature energy circle .
(https://w5.siemens.com/web/ua/ru/news_rress/news/2019/pages/kvadratura-energeticheskogo-ruga.aspx) . _ _ _ _ _ _ _ _ _ _
[3]Comprehensive FNI plan. "Fundamental problems of intelligent energy systems and ways to solve them"./Under. ed. corresponding member RAS Stennikova VA – M. ISEM SB RAS. 2017.48 p.
[4] Artificial intelligence in electrical networks. energy innovation. (https://electricalnet.ru/blog/iskusstvennyi-intellect-v-elektricheskih-setyah-innovatsii-v-energetike) . _ _ _ _ 2018.
[5]Allaev KR Power industry of Uzbekistan and the world. T.: Science and technology, 2009. 463 c .
[6]Martynov A. _ Power industry 4.0: go on digit _ (http://atomicexpert.com/electricenergy4.0).

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As noted, the world will witness how in the future the digital and physical worlds will come together, this will give impetus to the 4th industrial revolution, where the applications of artificial intelligence, blockchain, robotics and augmented reality technologies to the energy system will be in the foreground. The energy sector will benefit from such changes, as advanced technologies will help reduce production costs, increase energy efficiency and eliminate network failures. Overall, digitalization will have a profound impact on the global energy system now and in the future [7]. Digitalization of existing and future energy supply structures, including energy markets, makes it possible to create complex simulation models of their regimes, processes and development, and, therefore, it will be possible to find the right technical and economic solutions for the energy supply system .

Today's development path for the electric power industry is towards a flexible, highly integrated energy system that has a single energy space, a utility utility and, ultimately, energy prosumers . On this path, the role of distributed generation will be significant. It is obvious that the future of the electric power industry is a harmonious balance of "large" centralized and "small" distributed energy. It is the gradual approach of generation to the consumer that will lead to the emergence of energy consumers.

The size of the global market for distributed generation technologies in 2015, according to BCC Research, amounted to 65.8 billion dollars. It is predicted that from 2016 to 2021 it will grow by 10% annually .

The global energy sector needs environmentally friendly electricity, the generation of which makes maximum use of renewable and nuclear energy sources . It is clear that moving away from fossil fuels and centralized systems with few power plants and towards decentralized systems with many renewable energy sources such as wind turbines and solar panels will not happen overnight.

Such radical changes require the solution of serious technical problems. The processes of production and consumption of electricity are separated in time and space, which inevitably leads to the complication of energy systems. And the more decentralized devices are integrated into the power system, the more challenges arise [8]. In the world energy sector, the period of unbridled globalization has ended, and the era of decentralization and cost optimization has begun.

Table 1
The potential of renewable energy sources in Uzbekistan[9]

Types	Great potential	Techniques for potential
hydropower	9.2 Mtoe _	2 million toe.
Wind energy production	2.2 Mtoe.	0.4 Mtoe.
Solar energy _	50,973 Mtoe.	177 million toe.
Geothermal energy	67,000 Mtoe _	0.3 Mtoe.
Zhami	117,984 Mtoe.	179.3 Mtoe.

[7]Decarbonization, digitalization and the search for solutions to global energy problems. (https://www.ruscable.ru/news/2018/06/09/ Dekarbonizatsiya_tsifrovizatsiya_i_poisk_reshenij /).
[8] Quadrature energy circle .
(https://w5.siemens.com/web/ ua / ru / news_rress / news /2019/ pages /kvadratura-energeticheskogo-kruga.aspx) .
[9]https://review.uz/ru/post/vozobnovlyaemaya-energiya-dlya-ustoychivogo-razvitiya

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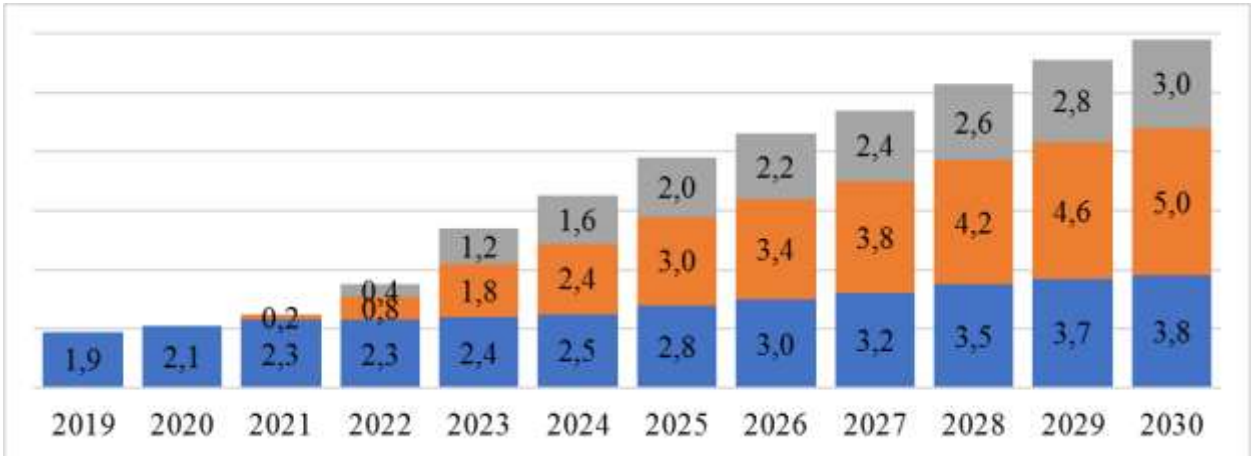

1-distance Uzbekistan forecast indicators of the installation of electric energy production facilities in the alternative energy association until 2030 , MW[10]

63.6 billion in Uzbekistan in 2019. By 2030, in order to diversify the production of electric energy, it is planned to increase the share of electric energy production from alternative sources to 15.3%, the share of atomic energy to 14.9%, and to reduce the share of gas and coal energy to 58.5% (Fig. 2).

In 2020-2022, in cooperation with public financial institutions, tenders (tenders and auctions) for identifying investors using the "Build-own-operate" model will be held in order to activate direct foreign investments in the Republican renewable energy sector, with which electr energy long-term (up to 25 years) contracts are concluded for the purchase of blue.

Attention will also be paid to the creation of isolated (not connected to a single electric power system) power stations in remote areas of the Republican population, in regions where ecotourism development is planned. In addition, medium-power (1-2 MW) kuyosh electric power stations will be built for the production of electric energy for the personal needs of production enterprises and industrial technoparks. Taking into account the rapid increase in the ability of consumers to produce electricity for their own needs and to supply excess electricity to the system, in order to stimulate the activation of the investment potential of the Republica, in 2021-2025, about 150,000 photovoltaic stations (power 2-3 kW) and household appliances will be built. 2- 2.5% of water heaters (average 200 liters) by 2026, taking into account the installation of renewable energy objects by the population, 4.3% of households in the republic will consume about 800 million kW.h per year. Provision of electricity in Khazhmy is being arranged.

LIST OF CITED LITERATURE

1. *Allaev KR Power industry of Uzbekistan and the world. T.: Fanva technology, 2009. 463 p.*
2. *Quadrature of the energy circle . _ _ _ _ _ _ _*
3. *Comprehensive FNI plan. "Fundamental problems of intelligent energy systems and ways to solve them"./Under. ed. corresponding member RAS Stennikova VA – M. ISEM SB RAS. 2017.48 p.*
4. *Artificial intelligence in electrical networks. energy innovation. (https://electricalnet.ru/blog/iskusstvennyi-intellect-v-elektricheskih-setyah-innovatsii-v-energetike) . _ _ _ _ 2018.*
5. *Martynova A. Power industry 4.0: go digital. (http://atomicexpert.com/electricenergy4.0).*
6. *Decarbonization, digitalization and the search for solutions to global energy problems. (https://www.ruscable.ru/news/2018/06/09/ Dekarbonizatsiya_tsifrovizatsiya_i_poisk_reshenij /).*
7. *https://review.uz/ru/post/vozobnovlyaemaya-energiya-dlya-ustoychivogo-razvitiya*
8. *http://minenergy.uz/uz/lists/view/32*

[10]http://minenergy.uz/uz/lists/view/32