POTENTIAL OF RENEWABLE ENERGY SOURCES IN ENERGY PRODUCTION

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Abstract: This paper deals with renewable energy sources, solar and wind farms to meet the demand for electricity by involving them in the overall production of electricity.

Keywords: renewable energy sources, solar energy, wind farms.

Аннотация: В этой статье рассматриваются вопросы, связанные с возобновляемыми источниками энергии, солнечными и ветряными электростанциями для удовлетворения спроса на электроэнергию за счет привлечения их к общему производству электроэнергии.

Ключевые слова: возобновляемые источники энергии, солнечная энергия, ветряные электростанции.

Anotatsiya: Ushbu maqolada qayta tiklanuvchi energiya manbalari, quyosh va shamol elektr stantsiyalari ularni umumiy elektr energiya ishlab chiqarishga jalb qilish orqali elektr energiyaga bo‘lgan talabni qondirish masalalari ko‘tarilgan.

Kalit so‘zlar: qayta tiklanuvchi energiya manbalari, quyosh, shamol elektr stantsiyalari.

Introduction. Gas and electricity supply is currently the hot topic of the day. Interruptions and restrictions are being imposed. We must say straightforwardly, there are problems in the energy sector in our country and it is not possible to solve them in the short term.

In his address to the Oliy Majlis and the people of Uzbekistan, our president also emphasised that this circumstance requires the development of alternative energy, its widespread introduction in all regions and sectors.

The development of renewable energy sources plays a key role in the transition of Uzbekistan's energy sector to a green economy. According to experts, the potential of renewable energy sources in Uzbekistan is 51 million tonnes of oil equivalent, and the technical capacity is 179 million tonnes of oil equivalent. This is 2.5 times the current amount of primary energy reserves produced per year across the country.

It also says the use of renewable energy sources will prevent the emission of 447 million tonnes of carbon monoxide, sulphur compounds, nitrogen oxides and other pollutants into the atmosphere.

Analysis of literature on the topic. Leading specialists, scientists of the industry conduct large-scale research work to study and eliminate the problems of fuel energy in countries with climate change, damaging the environment, lack of fossil fuel and energy resources.

Including from world scientists J. Duffy and W.A.Beckman, R.V.Gorodov, N.V.Kharchenko and V.Y.Ushakov in scientific works written, the main directions of development of large-scale

use of renewable energy sources, ways of transformation of solar and wind, biomass, geothermal wave energy into electric and thermal energy, heating of houses with the help of solar energy and hot water supply taking into account the latest achievements of techniques and technologies are considered. Special attention is paid to the dynamics of energy consumption and modernisation of energy facilities, development of renewable energy sources and problems of ecological ecology of the environment.

Of the leading scientists of the Republic R.A. Zakhidov, R.R. Avezov, N.R. Avezova, N.R. Matchonov, N.A. Rakhimov, etc. evaluation of the technical potential of solar energy i.e. study of the characteristics of solar photovoltaic stations, modernisation of the potential of ongoing scientific research in the field of solar and wind energy and attraction of new technologies into the industry [3,4,5,6].

Research methodology. The article widely used methods of induction and deduction in forming views, opinions on the research work of scientists to solve energy problems, problems in energy networks of the modern world. On the basis of analysis of increased requirements to alternative energy sources and introduction of renewable energy sources on the territory of Uzbekistan proposals and recommendations have been developed

Analyses and results. In our republic, as in the rest of the world, there are a number of problems related to electricity consumption, which include:

- the increase in industrial production enterprises;
- rapid development of construction and other industries;
- growth of settlements and infrastructure facilities that consume electricity;
- smaller weight of renewable energy sources in the total energy production.

Despite the fact that our country has enough favourable organisational, scientific, economic and geographical opportunities in the field of renewable energy sources, the energy consumption of the national economy remains high, the degree of diversification of the fuel and energy balance with the involvement of renewable energy sources in industrial production does not fully meet the world requirements.

In order to accelerate the development of the industry and attract modern technologies, the Decree of the President of the Republic "On additional measures for the introduction of energy-saving technologies and development of renewable energy sources of small capacity" of 9 September 2022 approved the legal framework to support energy-saving technologies, as well as the production of "green energy" of small capacity for the population and business entities.

Expanding the use of renewable energy sources in the development strategy that defines the development of the country, i.e. the strategy of transition of the Republic of Uzbekistan to a green economy in 2020-2030 includes a number of tasks.

Today, the development of the energy sector in the country is carried out mainly at the expense of foreign investments, through the creation of large production facilities of renewable energy sources. In particular: The Chinese company China Energy Energy Energy Corporation (SEES) plans to build a solar power plant with a capacity of 2 GW in three regions of Uzbekistan-Kashkadarya, Bukhara and Samarkand regions [7].

Masdar, a United Arab Emirates company, says a $200 million direct investment in the Gallyaaral district of Jizzak province will put into operation a large 220 megawatt solar power plant that will generate 500 million kilowatt hours of electricity in 2024, when the plant will reach full capacity and cover 20 per cent of the province's needs. Samarkand province has initiated the construction of a 220 MW wind farm in Kattakurgan district, 457 MW in Sherabad district of Surkhandarya province, 100 MW in Karmani district of Navoi province, and 500 MW in Tomdi district of Navoi province. [7,9]

Saudi Arabia “Acwa Power” has begun construction of two 1,000 MW wind farms in desert areas in the Gijduvan and Peshkun districts of Bukhara province. When they are fully operational, 1 million residents of the region will be fully supplied with electricity [8].

Presidential Decree No. PK-57 of 16 February "On Measures to Accelerate the Introduction of Renewable Energy Sources and Energy Saving Technologies in 2023" states that renewable energy sources (RES) with a total capacity of 4,300 MW are planned to be commissioned in 2023. Of these, 2100 MW will be commissioned from large solar and wind power plants, 1200 MW from social facilities, buildings and structures of economic entities and solar panels installed in flats, 550 MW from small photovoltaic power plants built by entrepreneurs. Installation of renewable energy sources will make it possible to produce an additional 5 billion kilowatt hours of electricity and save (save) 4.8 million cubic metres of natural gas by switching consumers to alternative energy and introducing energy efficient technologies [2].

It has been announced that by 2025, solar panels and hot water collectors will be installed in all government organisations and it is expected that 60 per cent of electricity and gas consumption will be converted to green energy as a result of a $2 billion investment. And subsidies for the installation of solar panels in residents' flats are expected to be doubled.

So far, at the initiative of our esteemed President, solar panels have been installed in many public and private sector organisations and homes, and partial coverage of electricity demand has begun. We will be able to achieve this goal if we further intensify the propaganda

work in this direction in the localities and educational institutions, and intensify the work to make the opportunities and conditions created by our state known to the masses.

Conclusions and suggestions. Regarding the large-scale utilisation of renewable energy, solar and wind energy in electricity generation, it is recommended to consider the following:

1. Achieving a reduction in capital costs by reducing equipment breakdowns as well as optimising the equipment repair plan;

2. Accelerating the introduction of modern technologies by attracting foreign and domestic investment in the industry and creating a favourable investment climate;

3. Acceleration of providing the industry with qualified personnel, as well as wide use of international experience in raising the qualifications of personnel working in the industry;

4. Strengthening public-private partnerships to accelerate the effective utilisation of solar and wind energy sources in our country;

5. Technologies that enable the use of renewable energy sources to reduce their cost through localisation of production;

6. To deploy propaganda work among the population regarding the conditions and preferences created with regard to the installation of solar panels in flats and apartment buildings.

As a result of large-scale use of renewable energy sources and introduction of new energy efficient technologies in the industry, the demand of the economic sector and population for electricity during peak hours is met. Natural gas consumption is saved.

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