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Abstract. At a time when fossil fuels are running out and humanity is increasingly interested in renewable energy sources. This article discusses the use of alternative and renewable energy sources.

Keywords: Alternative energy, energy, IES, GES economics, application, organization, solar energy.

INTRODUCTION

Extensive use of alternative energy sources is in line with the priorities and energy security objectives of each country and is one of the fastest growing areas of the energy sector.

Today, in the framework of a joint project with the Ministry of Economy of the Republic of Uzbekistan and international organizations, a low-carbon development strategy and a program until 2050 have been developed. According to these documents, the current energy efficiency measures in the country will reach 27.3 million by 2050. t.n.e. saves energy resources. If alternative energy sources account for 19-23% of the total energy balance of Uzbekistan, then in 2030 it will be 3.28 million. t.n.e and 5.88 million in 2050. t.n.e. saves. Our country has a huge potential in the field of alternative energy. The necessary regulatory framework for the widespread use of non-traditional resources, including solar energy, is being formed. The use of alternative energy sources is an important factor in the sustainable development of the economy and increase its competitiveness¹.

MATERIALS AND METHODS

Under the leadership of the President, special attention is paid to the use of modern solar energy sources. In our country, where the sun shines for almost a year, these renewable energy sources are very convenient for the population. The introduction of new technologies for energy efficiency, energy from solar, wind and biological waste significantly reduces electricity costs. There are more than 20 enterprises producing solar equipment in our country. The Eco-Energy Research and Application Center established under the State Committee for Nature Protection of the Republic of Uzbekistan is also working in this direction. The total capacity of the country is 9.4 kW. 19 photovoltaic power plants were installed and commissioned. It is planned to commission 4 more stations by the end of the year. It is known that in recent years, renewable energy sources, which are an alternative type of energy, are gaining global importance and are becoming one of the priorities of the world economy².

RESULTS AND DISCUSSION

According to experts, in the near future the sustainable development of any country will depend on the share of renewable energy sources in the energy sector. Therefore, attention is paid to improving the legal framework in this area. Because it is in this way that the relations in this area are legally regulated and its development is ensured.

According to the analysis, so far, national legislation in the field of alternative energy sources has been created in about 80 countries. In particular, over the past decade, Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Estonia, the Czech Republic, France, Germany, Ireland, South Korea, the Netherlands, Portugal, Singapore, Sweden, Switzerland, the United States, India,

¹ A. Rakhimov, "Fundamentals of Electrical Engineering and Electronics", Tashkent, "Teacher", 2018.

² A. Blashkin, "Obshaya elektrotehnika", Leningrad, 2016.

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and Mongolia have all been affected. Relevant laws have been adopted and amendments have been made to the existing legislation. Uzbekistan has accumulated significant experience in conducting scientific and experimental research in the field of alternative energy sources, especially solar energy, which has been developed for several decades. The Academy of Sciences is the only scientific and experimental center in the country that has no analogues in Central Asia “Physics of the Sun” Scientific Production Association was established, the results of which were recognized worldwide. Research and development work on the creation of low-potential devices for hot water and heat supply, photovoltaic and thermodynamic converters for electricity, special materials synthesis technologies, the use of solar energy in the thermal processing of materials and structures is particularly active and effective. The results of the research are widely used experimentally in various sectors and industries of the economy. For more than ten years, the country has been developing and piloting hot water supply systems for homes and social facilities on the basis of solar water heaters. In Tashkent, Samarkand region and other regions, solar water heaters have been installed. Production of photovoltaic devices of different capacities has been mastered³.

Wind power plant: The production of environmentally friendly electricity due to the large power of wind is of great importance today. In our country, wind farms can be located near the cities of Yaypan and Bekabad in the Uzbek district of Fergana region. The experience of Denmark in the production of electricity using wind energy is particularly noteworthy. The main mechanism that converts wind energy into electricity is the wind turbine. Currently, traditional but temporarily secondary wind energy generation methods are being revived. The main disadvantage of a wind farm is that it cannot be built into the population due to the noise coming from the wings.

A solar power plant is a set of devices that absorb light from solar radiation and convert its energy into heat or electricity. If the technical potential of renewable energy sources is fully used, about 450 million tons of greenhouse gases emitted into the atmosphere will be eliminated from carbon dioxide. The energy sources currently used are mainly coal, oil, natural gas, water and other natural resources, which are produced at great expense. In addition, the reserves of fossil fuels are limited, and their amount decreases from year to year. On the downside, the use of natural resources pollutes the environment and generates large amounts of non-recyclable waste. Therefore, it is important to study the benefits of using renewable energy, especially ways to use solar energy more efficiently, to improve them and to implement the most optimal options. Solar boilers only reduce the use of natural gas by up to 60 percent. These devices are mainly used by the population, the private sector and public organizations, and are 50-70% cheaper than widely used energy sources. For clarity, a brief description of the solar-powered photovoltaic system - FES 100/12 model is as follows: - working principle - conversion of solar energy directly into electricity and storage in a rechargeable battery, then through an autonomous consumer use in electrical equipment and other electrical devices; - Use of up to four 11-watt fluorescent lamps, 16-cm black-and-white TV and other options, 25-color color TVs, radios, tape recorders and ultrasonic washing machines, as well as special low-voltage pumping units. Development of strategies and goals for the development of renewable energy, as well as appropriate incentives for the development of a new sector of the economy in Uzbekistan, primarily solar energy, which accounts for about 99% of the total potential of renewable energy sources The main disadvantages of solar power plants are that they require a large amount of space and the equipment is always clean⁴.

"Green" economy is based on saving energy and resources, reducing carbon emissions into the atmosphere, transportation using clean energy, alternative sources of energy, organic

³ Akramov X Zaynobiddinov S Teshaboyev A Photoelectric phenomena in semiconductors Textbook Tashkent. Uzbekistan 2014

⁴ Alimovbayev AU "Thermal power supply and heating networks" Tashkent 2017.

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agriculture, ecocodevelopment (construction with a low impact on the environment), advanced logistics. This, in turn, allows the economy to develop without harming nature and preserve the ecological well-being of the population, increases production efficiency due to the preservation and increase of natural capital, reduces the release of toxic substances and carbon, expands biodiversity, and also increases the income and employment of the population. Careful and rational use of both primary and secondary resources is characteristic of the "green economy", in which a society accustomed to traditional consumption becomes a society of responsible consumption. The "green economy" model normalizes human activity and cooperation with nature.

Environmental protection, rational use of natural resources, transition from a resource-intensive economy to an innovative model of development, and ensuring sustainable economic development in many ways are the priorities of any country's economic and social development in the 21st century.

In contrast to the "green economy", the traditional model of the economy of the 20th century, the "brown economy" is based on energy-intensive and resource-consuming models of production.

Environmental problems, depletion of natural capital, lack of fresh water, food, energy, widespread poverty are the main negative consequences of the "brown" economy.

In the development of the "green economy", one of the important directions of the service sector is the development of "ecological" tourism. As a result, it expands its capabilities in increasing the competitiveness of the national economy.

The goals of sustainable development in the Republic of Uzbekistan are the main principles of economic reform. In this framework, emerging market mechanisms are optimally integrated with conservation and social policies based on innovation. A large legislative base has been created in the field of nature protection.

CONCLUSION

In short, almost all of the electricity and heat produced today comes from the burning of fossil fuels, such as gas, oil, coal, and the like. However, these mineral resources are non-renewable and their amount is limited. And humanity is growing every year. Therefore, one of the biggest challenges facing humanity is finding new sources of energy. Scientists around the world are working hard to achieve this. Electricity in Uzbekistan is currently sourced mainly from non-renewable energy sources, which makes electricity more expensive and depletes our natural resources. So we need to make more use of new energy sources. The fact that the natural resources of this land will be passed on to future generations will lead to a reduction in the cost of electricity.

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