ISSN 2181-3187

AVAILABLE POSSIBILITIES OF USE OF RENEWABLE ENERGY SOURCES IN UZBEKISTAN

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Abstract: This article is about the possibility of using renewable energy sources in Uzbekistan, which has seen a significant increase in recent years. The article analyzes the current state of renewable energy resources that are suitable for the geographical and climatic conditions of Uzbekistan. At the same time, it highlights the potential and challenges of major renewable energy sources such as solar, wind, biomass and hydropower. The innovative projects implemented by the government of Uzbekistan, the development of these types of energy in our country and their economic and ecological benefits are also discussed. The article also highlights the future of renewable energy and the importance of public policy in this area.

Keywords: Renewable energy, Solar energy, Wind energy, Biomass, Hydropower, Energy resources, Climate conditions, Environmental sustainability, Energy development.

Аннотация: Эта статья о возможностях использования возобновляемых источников энергии в Узбекистане в последние годы наблюдается значительный рост. В статье анализируется текущее состояние возобновляемых энергетических ресурсов, соответствующих географическим и климатическим условиям Узбекистана. В то же время он проливает свет на потенциал и связанные с ним проблемы основных возобновляемых источников энергии, таких как солнечная, ветровая, биомасса и гидроэнергетика. Также будет рассказано об инновационных проектах, реализуемых правительством Узбекистана, развитии этих видов энергии в нашей стране и их экономических, экологических преимуществах. В статье также подчеркивается будущее использования возобновляемых источников энергии и важность государственной политики в этой области.

Ключевые слова: Развитие в области возобновляемых источников энергии, солнечной энергии, энергии ветра, биомассы, гидроэнергетики, энергетических ресурсов, климатических условий, экологической устойчивости, энергетики.

The volume of renewable energy sources in Uzbekistan is almost 51 billion. is equal to tne. Today, using the technology and equipment available in the world, 179

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mln. tne can be obtained. This is more than three times the current annual volume of fossil fuel in the country. It does not include biomass resources, i.e. plant, livestock and industrial wastes. The potential of this resource must be determined in the near future. For example: 2 to 4 tons of cotton stalks can be obtained from one hectare of planted cotton area. This means that the stocks of cotton will increase from 1 mln. to 2 mln. can form tne.

Of the renewable energy sources in the energy balance of Uzbekistan, only hydropower of natural and artificial watercourses makes up a significant share; its share is slightly more than 1 percent of all energy production. Other sources of renewable energy - solar, wind and biomass - are used very little. In recent years, a number of projects on the use of solar and wind energy have been implemented.

Due to its unique geographical location and climate diversity, our republic is uniquely positioned for QTEM. This possibility has been determined in sufficient quantity and it is defined as one of the priority directions of the country's development.

The electric power industry of our country is an important sector of the national economy of the Republic and, having certain production, scientific and technical capabilities, makes a significant contribution to the development complex of the national economy. This gives the power system of Uzbekistan the opportunity to fully satisfy the demand for electricity of the national economy and population of the republic.

It is not for nothing that it is said that "Energy is the bread of industry". The more the industry and technology develop, the more energy they need. There is even such a concept - "energy advanced in development". This means that no industrial plant, no new city or home is built without the availability of an energy source.

The technical and economic power of any country can be determined from the energy it produces and uses. Nature has a lot of energy reserves. The global economic crisis is putting new demands on the economy of many countries in the extraction, processing and transmission of energy resources.

If the peculiarities of climate and weather conditions are taken into account, there are enough opportunities for QTEM in our country. One of the most important issues is energy, for the development of the entire economy of the region, using the available fuel and energy resources in effective and effective ways and attracting new types of ecologically clean energy to the energy balance.

QTEM (electricity, natural gas, hot water) is a solution for people in remote desert, mountainous, waterless, seasonal jobs or expeditions that require electricity, heat and drinking water becomes important.

In Uzbekistan, more than 60 percent of the population lives in rural areas. About 1,500 residents of remote rural settlements do not have access to traditional sources of

ISSN 2181-3187

electricity. Therefore, there is an increased focus on programs for the use of QTEM in the country.

The new technologies that QTEM creates are, in many cases, less expensive than traditional energy supplies. In the conditions of the market economy, the centralized supply of electric energy has become less relevant, because such energy supply is too expensive in distant farms, villages with a few households, mountainous and desert. The control device of non-conventional energy sources is of primary importance and is coming to the forefront. It allows the farmer to carry out irrigation activities (water extraction and irrigation of the field through artesian wells), in some cases to provide drinking water for people and livestock, water purification, to independently solve the farm's electricity supply. is doing

It is not very difficult to organize management of autonomous work processes in agriculture in the system of automata and computer databases. For example, a farmer can irrigate land with wind turbines or solar panels even if he is not in the field, because he can control it according to the information entered into the computer program. The non-traditional energy source connected to the single energy information network will not only dramatically increase the efficiency of the farm, but also increase the farmer's opportunity for work and cultural recreation. It is important to interest the farmer in his economic fundamentals, to demonstrate clearly working projects. One of the forces that change rural life is rural youth. By studying computer science and introducing new technologies, they become accelerators of rural transformation.

They are the owner of the property in their land, they always use their available resources sparingly. There is no doubt about the necessity of modernization and diversification of energy resources. In addition, a new look at QTEMs is of great importance in the energy supply of the country, saving primary hydrocarbon resources in rural and urban areas. In addition to economic factors, non-conventional energy sources are of great social and environmental importance.

Despite the low cost of energy transmission, there are settlements in Uzbekistan that do not yet have an energy source, and the use of devices that generate renewable energy sources is economically justified.

On the one hand, if the cost of initial energy transmitters increases (geological exploration, mining, supply), on the other hand, the technologies of QTEMs are developing rapidly, and this energy is becoming competitive.

In addition, the main traditional type of waste emitted into the atmosphere and environment corresponds to the share of energy (31.3 percent) and a certain share of the oil and gas industry (29 percent).

Sulfur oxides, nitrogen, carbon rise into the atmosphere and rise to long distances, combine with water and turn into an acid solution, fall on dry lands as "acid rain" and

ISSN 2181-3187

have a negative effect on plants, land, and water. shows.

In conditions of high environmental acidity, heavy metals enter the food chain and enter the human body through food. In addition, "generalization effectiveness" is observed, when one substance is present in another substance, it has a harmful effect.

All the world's energy companies are working to implement the latest methods in their energy system and to include QTEM in the field. For Uzbekistan, the use of QTEM solar, wind and biomass energy, as well as small hydroelectric and geothermal facilities is relevant.

The importance of this strategic direction for Uzbekistan is that the long-term energy supply of all regions depends on the implementation of specific projects in the field of QTEM, because traditional energy resources are non-renewable and limited. The future development and adoption of QTEM in Uzbekistan can be achieved by diversifying the electric power system to a certain extent.

The goal of intensive use of QTEM is, on the one hand, to achieve high performance of the fuel-energy complex, and on the other hand, to slow down and stabilize the growth rate of hydrocarbon use in the future. Therefore, the development of innovative energy transfer generation, including solar energy, wind, biomass and hydrogen, is a necessary factor.

The use of QTEM not only preserves fossil fuels for future generations, but also increases existing export opportunities for fossil hydrocarbons. The strategic importance of using renewable energy and local types of fuel is to reduce the consumption of non-renewable types of fuel and energy resources, to reduce the burden on the ecology of remote areas and regions from the activities of the fuel and energy complex, to reduce consumers far from the center with fuel. The provision is to reduce the cost of long-distance delivery of the currently available fuel to some extent. Effective use of renewable energy carriers and indigenous fuels is important for regional energy policy. The need to use renewable energy, determine its potential, solve the following problems: in regions and localities, residents and enterprises are provided with reliable, stable heat and electricity decentralized, as well as forced disconnection from the grid during peak stress and emergency decrease in energy during elimination of cases; reduces emission costs allocated to reducing harmful substances emitted during the use of energy equipment in cities and towns, as well as in recreation and health facilities.

Uzbekistan has all the bases for obtaining and using renewable energy. Along with the increase in the price of all types of fossil fuels, it becomes clear that the economic opportunities of QTEMs are even easier, in addition to their environmental safety, the technology of their use, according to the level of automation, is available in Uzbekistan. competes with conventional fuel technology.

ISSN 2181-3187

We can be sure that in the future, a wide path can be opened for bioenergy. But in the next (5-10) years, this type of energy will not play a decisive role in the global and regional energy balance. In the future, QTEM will not completely exclude traditional energy from the process, but will only serve as a serious addition. Fortunately, investors are not in a hurry to invest in the development of QTEM. This is mainly due to insufficient awareness and conservativeness of producers and consumers who have the opportunity if they have little understanding of it. Also, the problem of the use of QTEM is evidence that it is hindered by insufficient financing of scientific-research and design developments, engineering and scientific personnel of organizational-technical, ecological and economic problems.

As mentioned above, QTEMs include solar, wind, water resources, geothermal resources, biogas obtained from industrial and urban, agricultural waste.

Opportunities of renewable energy sources in Uzbekistan

Indicators	**Total (mln.tne)**	**Including energy (mln.tne)**			
		Hydro	**The sun**	**The wind**	**Biomass**
Gross1	50984.6	9.2	50973	2.2	–
Technician2	179	1.8	176.8	0.4	0.3
Mastered	0.6	0.6	–	–	–

1 - the amount of theoretical energy falling or generated in the specified territory

2 – part of existing technology that can be used to realize gross potential

There are favorable opportunities for using QTEMs in Uzbekistan. The main part of the year in our country consists of hot and sunny days. In addition, rivers flowing through mountainous regions are an inexhaustible source of energy. The technical capabilities of QTEMs in our republic consist of: solar - 98.8 percent, wind - 0.2 percent, hydro - 1.0 percent

Despite the fact that there is a centralized power grid in our republic, in the winter season, due to the occurrence of some malfunctions, there may be cases where electricity does not reach rural areas.

Due to the fact that the use of bioenergy, in particular, biogas, is still not on a large scale in our republic, specific mechanisms for the processing of secondary raw materials have been created in recent years in our country for bioenergy projects. Adoption of the Law "On Waste", as well as the announcement of the decision of the Cabinet of Ministers on the Program for "Nature Protection in the Republic of Uzbekistan in 2008 - 2012" accelerated the development of biogas in the Republic. is causing the development of the horse. In this decision, tasks related to biogas production and use in various sectors of the economy were clearly defined.

ISSN 2181-3187

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