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# **The Need for Renewable Energy Sources and Energy-Saving Technologies in Central Kyzylkum and the Advantages of their Use in Environmental Facilities**

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**ABSTRACT:** The role of electricity and clean drinking water in improving the economic efficiency of our country and in the social life activities of the population is incomparable. Also today there are problems associated with such resources, the prevention and elimination of which is the duty of every person to humanity. Such problems occur not only among settlements, but also in separately protected areas, directly and indirectly affecting the vital activities of the plant and animal community with its own population in these areas. The following article summarizes the level of tab in relation to electricity and water of separately protected natural areas, the methods of satisfaction of demand, as well as the difficulties and ways to overcome them in providing quality energy, cooperation with farmers for the development of agro technologies suitable for the new area and opinions and recommendations regarding the area that can be used in this direction.

**KEYWORDS:** protected natural areas, clean drinking water, rare animal species, rare plant species, electricity, solar panels, wind generator.

## **I. INTRODUCTION**

Today, the current energy conservation policy in our Republic is based on the introduction of energy-saving technologies and the development of low-power renewable energy sources, which will support the widespread use of renewable energy sources by the population and business entities of the state, as well as the use of energy resources for administrative purposes in buildings and structures. Indicates willingness to encourage effective use.

The practical effort to gradually introduce renewable energy sources, taking into account the acquired local experience and practice, including proven technologies of solar energy use, has been particularly active in recent years. In particular, in accordance with the decision of the head of our state on September 9, 2022, the program of measures for the introduction of alternative energy sources and their share in energy consumption to achieve the indicators for 2022-2023 was approved. The main goal of this program is to further increase energy efficiency, introduce energy-saving technologies and approve a comprehensive program for the development of renewable energy sources. This program is planned to be carried out on a large scale, i.e. 30 percent within ministries and agencies. According to the comprehensive program, until 2030, the share of renewable energy sources is to reach 25% of the total volume of electricity production.

## **II. SIGNIFICANCE OF THE SYSTEM**

The role of electricity and clean drinking water in improving the economic efficiency of our country and in the social life activities of the population is incomparable. The study of methodology is explained in section III, section IV covers the experimental results of the study, and section V discusses the future study and conclusion.



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## III. METHODOLOGY

It is planned to cover the model of electricity saving in the example of Navoi region, industrial production, housing and communal economy, individual service and other areas. The main goal is to achieve cost savings without sacrificing quality.

For several years, the region has been one of the largest local areas for energy conservation and the introduction of energy-efficient technologies. Average in Karmana district of the region in 2021.

It can be said that the first solar photoelectric power plant in the republic, designed to produce 30 million kilowatt hours, has been put into operation.

Construction of a 500-megawatt wind power plant, scheduled to be commissioned by the end of 2024, continues in Tomdi district. According to preliminary estimates, it is capable of producing 1 billion 800 million kilowatt-hours of electricity per year. As a result, 540 million cubic meters of natural gas will be saved per year, and more than 700,000 tons of harmful gases will be prevented from entering the atmosphere.

At the extraordinary session of the Regional Council of People's Deputies held in November 2022. As the first of them, the head of state announced a model of energy efficiency improvement of the economy and social networks, introduction of energy-saving technologies and the use of renewable energy sources. For this purpose, solar batteries are installed in all organizations and a system of efficient operation of water pumps is being established.

According to the task, it is planned to install solar batteries with a capacity of 14 thousand 554 kilowatts and solar heating devices with a capacity of 165 thousand 900 liters in 319 objects in the region for two years, and transfer 1 thousand 725 objects to the use of renewable energy sources. For example, the planned capacity in 2022

1,516 kilowatt solar batteries and 47,500 liter water heaters were replaced by 2,233 kilowatt semiconductor devices and 4,950 liter solar collectors.

For information: consumption of electricity in the region in 2022 more than 6685 million kWh, of which 401 million are for the population, 6284 million were delivered to legal entities.

Also, during the implementation of the "Prosperous Village" and "Prosperous Mahalla" programs, 654 lights with a capacity of 90 kilowatts powered by solar batteries were installed on the streets of the neighborhood. According to estimates, about 558,000 kWh per month and an average of 6.7 million kWh per year are saved due to the use of renewable energy sources, which is equivalent to three billion soums in cash.

Solar batteries with a total capacity of 381 thousand 570 kilowatts in 488 organizations during 2023 at the initiative of the governor of Navoi region,

It is planned to install 190 thousand 500 liter solar water heaters and five thousand lighting devices powered by solar batteries.

Implementation of the tasks of expanding the area of protected natural areas in the "Strategy for the preservation of biological diversity in the Republic of Uzbekistan for the period of 2019-2028", approved by the Decree of the President of the Republic of Uzbekistan No. PF-6155 of February 3, 2021 and the Cabinet of Ministers' Decision No. 484 of June 11, 2019 In 2021, a lot of work was done to ensure this. By the decision of the Cabinet of Ministers No. 58 dated February 8, 2021, the "Sudoche-Akpetki" state reservation reserve with an area of 280,507 hectares was established in the Republic of Karakalpakstan. 2021 of the Cabinet of Ministers

By decision No. 282 dated May 5, the statute on the protection zones of Zomin, Nurota, Qizilqum and Surkhan state reserves and the protection zones of protected natural areas was approved. On the basis of the model regulation, the regulations on the protection zones of 6 protected natural areas were developed and approved. Also, with the decision of the President of the Republic of Uzbekistan "On measures to establish protected natural areas in the system of the State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan" dated February 16, 2022 No. National Nature Park "Central Kizylkum" with a total area of 1,200,000 hectares; The state reserve "Oktog-Tomdi" with a total area of 40,000 hectares was established in Tomdi district. These established protected natural areas are mostly located in remote areas, and there are some obstacles to the further improvement of human factors in these areas.



**The process of seasonal measures to improve the living conditions of animals and birds**

The first of these is the lack of clean drinking water. The issue of providing clean drinking water has been raised at the level of state policy, and the correct use of natural resources in the desert zones of our country and the timely elimination of problems such as water shortage and food security that threaten it is one of the most urgent issues of the present time. A number of problems have arisen in these areas due to water scarcity in the last 10 years, including:

- decrease in the level of supply of clean drinking water to the population due to water shortage;
- death of some unique animal species due to lack of water;
- leading to the loss of rare and rare plant species;
- the disturbance of the ecological balance existing in nature causes the disturbance of the soil composition;
- increase in salinity, etc.

According to estimates, 10 million people worldwide die every year due to salinity. Hectares of land are turning into wasteland. By 2050, it is estimated that more than 50% of the world's agricultural land will have problems with soil quality and degradation. The following methods can be used to use the available natural resources in ecologically important desert zones in our country and to solve the water shortage problems that threaten it:

- strengthening phytoremedial activities in the desert area;
- planting new drought-resistant varieties of trees and crops in the fields;
- creation of artificial water bodies (springs) for animals and plants, etc.



**In order to provide water for animals and birds in the protected area, studies are being conducted**

If the problem of water shortage is not solved, due to the fact that the groundwater in the desert zone is located in a very shallow layer, the soils of this area are highly saline, and therefore, a large amount of water is required for salt washing. Due to the lack of surface water and the low efficiency of its use, it leads to water shortage during the growing season and an increase in soil salinity. As a result, it causes a sharp decrease in productivity.

One of the second main problems is sufficient energy sources





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non-existence. The issue of rational and efficient use of energy resources has always been considered an urgent task on the agenda. Today, energy saving has risen to the level of state policy, and it can be seen in the example of decrees, decisions and a number of regulatory documents adopted and implemented by our government in this direction in recent years. As a logical continuation of such practical work, based on world standards, industrial enterprises require the introduction of new energy saving technologies in technological processes, household consumers and other types of energy consumption objects. The energy source is the main source that lightens people's burden, provides remote communication, and provides heat. Special importance should be given to the implementation of renewable energy sources (solar, wind devices) in order to ensure systematic development of the energy sector, stable supply of electricity to consumers, and environmental safety in our republic. Despite the high demand for electricity in some regions of our republic, there is still a shortage of energy in some regions. As just one example, it should be noted that the location of the Central Kyzylkum National Nature Park far from the city center and the distance from the electricity supply creates some inconveniences:

- insufficient functioning of means of communication, i.e. lack of opportunity to establish permanent communication with each other of the employees working in protected natural areas;
- problems arise in the correct and complete organization of work processes, in this case, the difficulty of constant control of the animal world of natural areas and the calculation of their number day and night;
- the existence of a negative impact of the constant need for electricity on household and work activities and other problems.

The most convenient and effective way to solve existing problems and to provide continuous energy without harming nature is to meet the energy demand of protected natural areas and the population living in these areas by installing renewable energy sources, including wind generators and solar energy panels.

Wind generators are devices that convert the kinetic energy of the wind into electrical energy, and the energy of the devices is collected in one place, and as a result, wind power plants are created. The advantage of the device is that it does not require any raw materials for its operation and does not emit any waste. This provides an opportunity to protect the unique animal and plant species of the existing protected area and to provide the population with energy. It also provides an opportunity to eliminate such problems by installing solar energy panels to ensure energy supply in specially protected areas. Solar panels have unique advantages, unlike other sources of energy, solar energy does not run out and the potential of solar energy is much higher than other sources of energy. Also, the sun's rays reach any point on the planet Earth, and it provides ecological safety by providing the opportunity to use it in any point of the earth. Currently used energy sources not only cause great damage to the environment, but it is impossible to replace them. Solar energy is an exception. It is noiseless in production and use, and requires low operating costs.

- The use of wind generators and solar panels to provide sufficient energy to the Central Kyzylkum National Nature Park and to carry out energy-saving reforms will bring about several efficiencies and have a significant positive impact not only on people or nature, but also on community life. These include:

- supply of energy, which is one of the main needs of the population;
- preservation of rare and endangered plant species;
- meeting the population's demand for a heat source, as a result of which some plants should be kept from being brutally cut down. For example, if we study the importance of one saxobul plant, it is the main white and black species that form forests in the Kyzylkum deserts of Uzbekistan, and the population mainly used these species as firewood (fuel) and nutritious feed for sheep and camels. But the insufficient availability of heating sources causes the population to ruthlessly cut down these plant species and reduce their numbers.

- enables the preservation of rare and endangered animal species by preventing the decline of certain fodder plants. Decreasing the source of food for animals causes a decrease in the number of animal populations;

It is also important to carry out agrotechnical measures in order to protect rare and endangered plant species in specially protected areas.

## IV. EXPERIMENTAL RESULTS

In this case, the main attention should be focused on consolidation of mobile sands. In this case, a mechanical method can be used. The mechanical method consists in setting up mechanical protection means and fences made of reeds, yantok, saxovul, lux and other plants. According to their constructional characteristics, mechanical barriers are divided into vertical or horizontal types, and they are installed on the sloping slopes of the dunes in the size of 2x2 or 3x3 m, transverse to the direction of the main wind. In the most dangerous places, fences with a height of 60 cm should be

used. Grass or bush seeds should be planted inside the cage fences, bush cuttings or seedlings should be planted at a distance of 0.5-0.7 cm from the cage wall.



**Scenery of "Shanish Lake" in the territory of "Central Kyzylkum" National Nature Park**

The use of energy-efficient means or methods in providing energy to protected areas is also beneficial for human life and the environment. After all, the use of depleting energy sources leads to the release of toxic gases into the environment, which directly affects all organisms living in this area. However, the use of energy-saving tools and methods is very convenient for the health and lifestyle of the population and creates economic stability without harming the environment. This creates a foundation for development in the social and economic spheres of any country.

## **V. CONCLUSION AND FUTURE WORK**

In conclusion, it should be noted that every piece of nature appears as an important factor in human life. Human life cannot be imagined without these factors. Because every life process, whether internal or external, is closely related to these elements. These include: water, flora and fauna, solar energy, energy, etc. However, effective and rational use of existing natural resources and transfer to future generations is one of the most urgent issues of today. One of the most important methods of the 21st century of technical development is the large-scale use of energy-saving methods and tools in the use of energy sources that provide communication and heat sources.

## **REFERENCES**

- [1]. Decree of the President of the Republic of Uzbekistan No. PF-220 dated 09.09.2022 on additional measures on "Introduction of energy-saving technologies and development of small-capacity renewable energy sources"
- [2]. F.A. Hoshimov A.D. Taslimov "Basics of energy saving" Tashkent "Voris-nashriyot" 2014
- [3]. I.U.Rakhmonov, K.M.Reymov, N.N.Niyazov, A.M.Najimova, S.K.Makhmudkhanov "Electricity saving in the energy supply system" Publishing-printing association "International Islamic Academy of Uzbekistan" Tashkent - 2020
- [4]. "The introduction of alternative energy sources is an important step for our need for electricity" Press Service of the Ministry of Energy of the Republic of Uzbekistan.