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PROSPECTS FOR PROVIDING DECENTRALIZED AREAS WITH RENEWABLE ELECTRICITY

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Abstract: This work is devoted to the analysis of the calculation of the gross energy resource of renewable energy sources. An economic calculation of the application of the possibilities of providing decentralized territories of the Andijan region is considered.

Key words: alternative energy, gross energy potential, equivalent.

Introduction

The development of the economy today cannot be imagined without energy. In recent years, electricity consumption has been constantly growing and its sources of production are decreasing. Therefore, the decision to provide electricity using renewable energy sources (RES), especially small hydropower, is especially important for the case of providing electricity to decentralized territories.

The saturation of water resources in these territories of the Andijan region differs from each other. For example, the Zhalakuduk region has most of the flat (80%) and hilly (20%) relief, the degree of water saturation can be estimated as average. Some areas are dry.

In the case of the Kurgantepa district, the following should be noted:

- the territory is almost completely flat (95%),

- saturation with water resources is very good,

- the population density is average.

Khuzhabad region is almost completely covered with hills and the degree of water supply is very low. This area is convenient for using electricity in the form of a complex using solar and wind energy in most of the area.

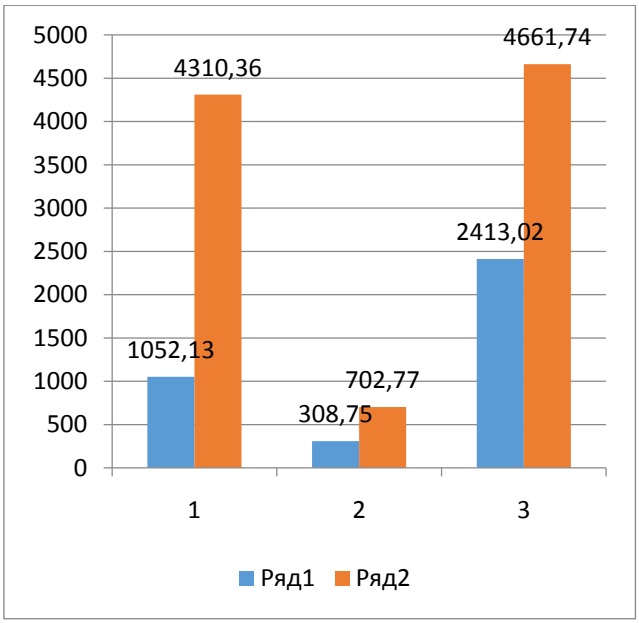

Fig. 1. Prospects for generating electricity using water resources in the territories of Khuzhabad, Zhalakuduk and Kurgantepa districts of the Andijan region (in MW).

Row 1 is the minimum, Row 2 is the maximum.

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On the territory of Khuzhabad, Zhalakuduk and Kurgantepa districts of the Andijan region, 3773.90 and 9674.87 MW can be obtained. These data correspond to the minimum and maximum values for the selected territory of the Andijan region. The values differ because the level of water supply depends on many factors. These are the height of the snow cover, the inflow of water, the height of precipitation.

Now consider the above values in terms of coal equivalent.

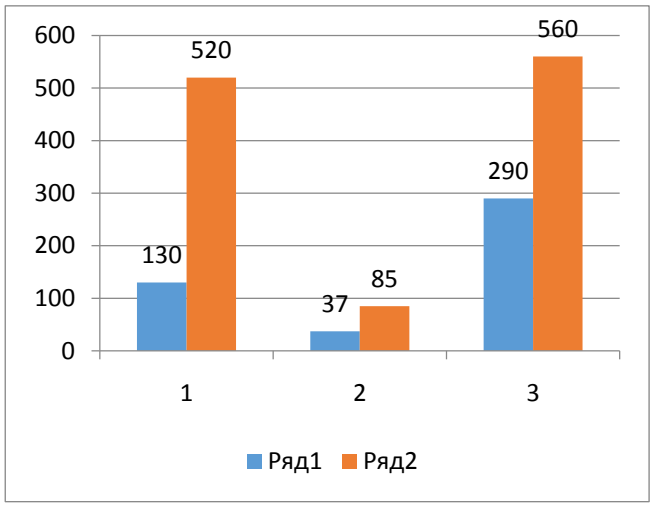
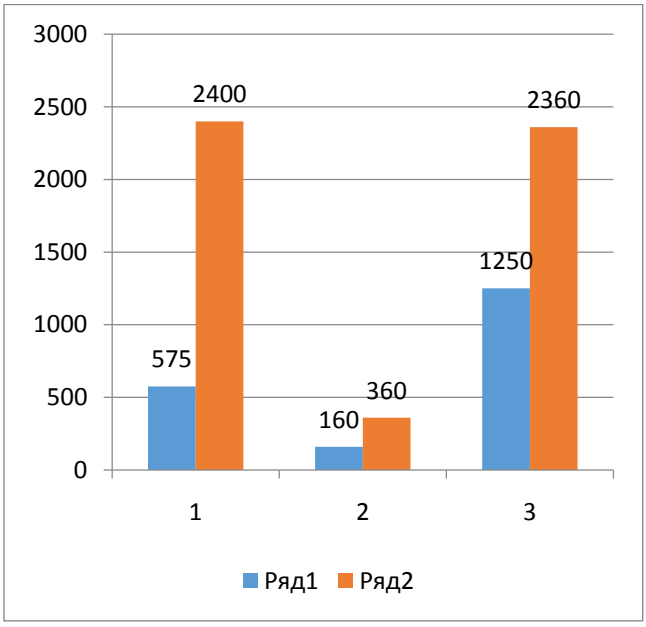


Fig. 2. The volume of coal for consumption in the territories of Khuzhabad, Zhalakuduk and Kurgantepa districts Andijan region (in million tons).

Row 1 is the minimum, Row 2 is the maximum.

To obtain the necessary electricity to the territory of the Khuzhabad, Zhalakuduk and Kurgantepa districts of the Andijan region, it is necessary to deliver 457 million tons and 1165 million tons of coal (respectively, the minimum and maximum volume of supplies). If we take into account the cost of coal transportation, then the cost of 1 kW will increase by another 30-40%. In addition, the environmental impact of burning this volume of coal will be added, which will have an adverse impact on the environment.

For the needs of agriculture, you can use running water after irrigation or processing of agricultural land in the winter season. For example, water to reduce soil salinity, flush agricultural land can be reused as a source of electricity. The values of the primary electricity obtained from the indicated type of sources are given below.



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In total, you can get 1985 MW and 5120 MW (respectively, minimum and maximum) based on the volume of water used in the indicated territories. The source here is recycled water.

Taking into account that the real value of the electricity received is 55% of the total possible energy saturation of the used irrigation system of this territory of the Andijan region (Khuzhabad, Zhalakuduk and Kurgantepa districts), we will get a large replenishment and decrease the load on the central energy system to 15-25%. With an increase in the cost of 1 kW, the resulting economic benefit can be used for the needs of the population and farms, small industrial facilities.

In conclusion, it should be noted that the use of RES to provide decentralized territories with the help of primary water resources and secondary water sources (after use in agriculture) will save financial resources and improve the state of electricity supply to the population and economic facilities in these territories.

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