

**PROSPECTS FOR THE DEVELOPMENT OF RENEWABLE
ENERGY IN BELARUSIAN REGIONS**

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Modern energy systems are showing rising interest in renewable power generation because renewable energy possesses substantial potential. Same-sized application deployments of these technologies face technical obstacles today but these systems present dual economic and green advantages for regional power development. Renewable energy shares the same regional dependence as non-renewable resources since their availability varies based on regional features. This research explores the prevailing renewable energy systems existing in different regions of Belarus. Every regional area possesses specific advantages for transitioning towards alternative energy systems.

Brest Oblast displays major possibilities to develop biogas production activities. Woodworking companies operating in the region benefit from biogas production since they can utilize their industrial byproducts including wood chips and sawdust. The combination of cheaper energy production and maintenance costs with settlement power would constitute a feasible solution. The continuous vegetable production in Brest Oblast enables the region to collect agricultural waste which can subsequently create biomass for installing biogas plants [1]. Ostrich farms represent an attractive feature because they need minimal energy and survive by generating their own renewable power locally.

The potato production throughout Minsk Oblast presents opportunities to convert leftover potato plant matter into biomass fuel and biogas material. The energy costs of agricultural enterprises would experience substantial reduction through this implementation. The region holds its position as the top area for livestock farming as it leads pork and milk and poultry production and the largest livestock sector in the world. The conversion of waste materials from these industries leads to biomass fuel

products that enhance sustainable energy consumption within agricultural operations.

The abundant solar radiation found in Gomel Oblast makes it possible to establish solar energy technology development. Solar power systems enable the supply of electricity to small and medium-sized businesses thus reducing their operational costs. The implementation process of this change will progressively reduce the need for natural gas by traditional thermal and condensing power plants. The national grid restrictions can make solar power a dependable energy option for rural settlements in need of energy access.

Belarusian largest hydroelectric power plant exists in Vitebsk Oblast at the Zapadnaya Dvina River site. The facility functions as an essential element in supplying electricity to the regional area. Future installations of hydroelectric facilities built near agricultural lands can generate electricity and supply irrigation needs to support high-yield crop cultivation. The implemented initiatives would create a positive impact on the regional supply of power and agricultural sustenance.

Novogrudok District in Grodno Oblast hosts the most powerful wind farm in Belarus. The region's status as one of the leading pig farming centers makes it possible to use wind turbines near livestock farms to sharply decrease electricity usage.

The wind energy potential in Mogilev Oblast exists in significant amounts. The region functions as a top destination for producing grain together with legumes and goat products. Wind power generators installed in agricultural facilities would enable enterprises to meet many of their energy requirements. Power surplus generated through solar and wind operations would enable energy supply to distant farming operations which would boost their autonomy while diminishing expenses.

Belarus can advance its regional energy growth by establishing renewable energy programs. Through green technologies the country succeeds in powering remote regions and simultaneously handles agricultural and industrial waste which promotes national environmental sustainability.

References

1. What is Biomass Energy and How Does It Work? // Renewables Advice. – URL: <https://renewablesadvice.com/energy/biomass-energy/> (date of access: 13.03.2025).