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## **BACKGROUND FORMATION OF ENERGY CLUSTERS IN UKRAINE**

Indicators of the existing energy intensity of production in Ukraine indicate an extremely high level of electric power losses, low energy efficiency and insufficient use of energy saving technologies, which necessitates finding effective ways to optimize and rationalize energy consumption.

Given the stable economic and political situation and improving the financing conditions for renewable energy (RES) projects, Ukraine will be able to significantly modernize and ensure the energy independence of electric and heat generation through renewable energy technologies.

It should be noted that today in Ukraine the preconditions for the formation and development of innovation-integrated structures in the field of energy are created. Such structures are eco-energy clusters, the use of which in advanced economies has proven effective [2; 3; 4].

In Ukraine today there is a small number of institutions and programs aimed at financing RE projects. According to the estimates of the international agency IRENA, Ukraine has one of the largest among the countries of Southeast Europe the technical potential of using RES (without taking into account large hydroelectric plants). The biggest is the technical feasibility of using wind and solar power stations: 321 GW and 71 GW respectively [1; 5].

According to the National Commission for State Regulation in the Energy and Utilities (NERCP), by 2016, the RES sector in Ukraine numbered more than 170 companies and 291 energy facilities. During 2016, the largest increase was shown by solar power - 36 new entities and 47 new electricity generating facilities [2].

The main stimulus tool for state policy on development of RES is the system of "green tariffs". According to the Law of Ukraine on Electricity: Green Tariff is the

tariff, according to which the wholesale electricity market of Ukraine is obliged to purchase electric energy, produced on objects of electric power from alternative sources of energy.

The dynamics of solar power generation is the largest among RES in Ukraine. In 2016, the installed power of solar power stations increased by 23%. Such a development of solar power plants in Ukraine is due to the relative ease of implementation of projects (compared to other RES technologies) and short terms of project implementation (6 months together with design).

The situation in the wind energy segment is less dynamic in Ukraine than in the solar year. Wind power generates 1% of the total electricity production in Ukraine. Since wind power plants require rather large investments and relatively long time to implement the project (2-3 years), it is very difficult to develop projects in the conditions of economic recession and low investment attractiveness of Ukraine.

The domestic wind energy also has a green tariff. Any investor can get it, no matter what equipment he has installed.

In the Mykolaiv region, the second stage of the most powerful wind power plant in Ukraine - Tuzla WP was launched. And the international company Euro Cape New Energy plans to build a 500 mW wind power plant on the shore of the Azov Sea, which will be one of the most powerful wind power plants in Europe. The located wind power plant will be located in the Priazovsky and Melitopol districts of the Zaporozhye region.

Today, one big wind power plant - Botievskaya (DTEK) - is already operating in Zaporizhzhia Oblast. It was put into operation in 2014 and today it is the largest wind farm in Ukraine, which includes 65 wind turbines with a total capacity of 200 mW [4].

Another example of the introduction of renewable energy sources is energy crops, which are a source of biomass, used in many European countries. Among them - Italy, Germany, Sweden. In Ukraine, there are about 4 million hectares of scarce land suitable for growing energy crops, in particular, in the Kyiv, Zhytomyr, Chernihiv and Lviv regions.

Due to the need to support the country's environmental safety, new technologies for the implementation of renewable energy sources should be implemented, integrated regional programs for improving the energy efficiency of the state aimed at reducing energy consumption, modernizing the housing and communal services sector and introducing energy saving technologies at industrial enterprises.

Hence, issues in the energy sector require new approaches and the use of more effective ways to achieve economic and environmental security. International experience of the countries shows that in this sphere an effective way of forming and implementing innovative integrated structures - eco-energy clusters, which will improve the ecological and economic condition of Ukraine, as well as increase social standards of life, can be developed.

### References

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