A PLACE OF ENERGY SECURITY IN ENSURING THE NATIONAL SECURITY OF UKRAINE

The study of energy security problems is not an easy task because it does not exist a single methodological approach to distinguishing the sphere of energy security as an object research and assessment of its condition. The difficulty of describing energy security is that that the identification of this object requires consideration of various aspects of the country's life. Each state uses its own approach to defining the term "energy security", spheres of regulation, formation of the management system, assessment of the energy level security and threat identification.

In my work, I tried to develop the structure of threats to the energy security of Ukraine. I chose 30 indicators, which are divided into 6 groups: (I) resource availability, (II) economic availability, (III) economic acceptability, (IV) energy efficiency, (V) environmental acceptability, (VI) sustainability energy sector. There can be many more indicators, however, in my opinion, I chose the main ones that can characterize each group.

For each indicator, the dynamics from 2000 to 2020 were considered, and with the help of the convolution method, the overall indicator of Ukraine's energy security was calculated and it was shown that during all the years of Ukraine's independence, this indicator was always in the critical (red) zone - below the lower threshold value. All components of the integral index of energy security of Ukraine lag behind the optimal level.

In order to improve energy security, I propose to speed up the transition to alternative types of energy. To do this, I conducted the following types of analysis: Cluster analysis of solar energy potential using the hierarchical-agglomerative method and Cluster analysis of the energy of air masses using the hierarchical-agglomerative method. After carrying out various combinations of clustering, the nearest neighbor method with the Euclidean metric was selected as the most stable. It also minimizes the sum of squares for any two hypothetical clusters that may be formed at each step.

In order to smooth out seasonal energy fluctuations, it is worth trying to combine solar and wind energy, which will increase the reliability of the system and reduce the need for energy storage systems and balancing capacities for the integration of variable alternative energy sources.

I see further research of my work in the combination of energy sources at the industrial enterprises of Ukraine that will remain after the war.