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PECULIARITIES OF THE FORMATION AND IMPLEMENTATION OF THE STATE ENERGY POLICY OF UKRAINE IN THE CONTEXT OF RUSSIAN MILITARY STRIKES ON ENERGY FACILITIES

The article describes the challenges and risks of the functioning of the national energy sector in the conditions of russian military aggression against Ukraine. The features of the formation and implementation of state energy policy in the conditions of russian military strikes on energy facilities are considered. The main problems and contradictions of the formation and implementation of state energy policy in the conditions of russian military aggression against Ukraine are outlined. The main directions of improving state energy policy in the conditions of russian military strikes on energy facilities in Ukraine are substantiated.

Keywords: *public management and administration, state administration, mechanisms of state administration, state energy policy, formation and implementation of the state energy policy, energy system, energy facilities, russian military strikes.*

Problem setting. Energy is the basis for the functioning of any national economy, because not only industry, transport and utilities, but also the general security of the state depend on the stable supply of energy resources. The energy system is the foundation of

national security, economic development and social stability of the state. For Ukraine, the issue of energy stability has become critical after the start of full-scale russian military aggression in February 2022, because energy has become one of the main goals of the enemy. Massive military attacks on energy infrastructure facilities – thermal power plants, hydroelectric power plants, substations, power transmission networks – led to a deep energy crisis, which forced the state to promptly review the principles of forming and implementing national energy policy.

Scientists such as Bokov V., Kovalenko Yu., Kovalev B., Kubatko O., Lazarenko D., Marchenko O., Piven V., Yaremenko A. and others have devoted their scientific publications to the consideration of the features of the formation and implementation of the state energy policy of Ukraine, including in the conditions of russian military aggression [2; 3; 4; 7; 8; 9; 10].

However, many issues regarding the justification of directions for improving state energy policy in the context of Russian military strikes on energy facilities in order to ensure the country's energy needs under martial law in Ukraine remain insufficiently researched.

Paper objective. The purpose of the article is to analyze the features of the formation and implementation of the state energy policy of Ukraine during the period of active Russian military attacks on energy infrastructure, to identify problematic aspects and ways to increase the sustainability of the national energy sector.

Paper main body. The state energy policy of Ukraine is aimed at ensuring energy security, increasing energy efficiency, integration into the European energy space and developing renewable energy. By 2022, the main tasks were: reforming the electricity market in accordance with EU requirements; reducing energy dependence on russian energy sources; increasing the reliability of energy generation and transportation. The full-scale war made radical adjustments: infrastructure protection, energy decentralization and international support for the restoration of energy facilities came to the fore.

Since October 2022, the russian federation has been systematically using missile and drone strikes on Ukrainian energy facilities.

Thus, after a series of military defeats at the front, in particular during the counteroffensive of the Armed Forces of Ukraine in the Kharkiv region and the explosion on the Crimean

Bridge (October 8, 2022), the russian federation has resorted to terror tactics against civilian infrastructure. The goal is to avenge losses and intimidate the population by creating chaos through mass power, heat, and water outages on the eve of winter [1; 7].

That is why on the morning of October 10, 2022, from approximately 06:30 to 11:00, the russian federation carried out one of the largest missile attacks since the beginning of the war, during which, according to official data:

- about 84 missiles of various types were launched (X-101, X-555, iskander, Caliber, S-300);
- 24 iranian shahed-136 kamikaze drones were used;
- strikes were carried out in 11 regions of Ukraine, including Kyiv, Lviv, Dnipropetrovsk, Kharkiv, Sumy, Poltava, Zaporizhia, Ternopil, Rivne and Zhytomyr [7; 9].
- The main targets of the enemy strikes were power plants, substations, power lines and heat supply facilities, as a result of which:
- more than 30 energy facilities were damaged throughout the country;
- large-scale power outages occurred in many regions - millions of Ukrainians were left without electricity;
- public transport was temporarily stopped in the cities of Kyiv, Lviv, Kharkiv, Ternopil, Ivano-Frankivsk, the metro stopped working in the capital;
- water supply and communications were lost in some cities;
- According to Ukrenergo, up to 30% of all Ukrainian consumers were disconnected from the power grid for several hours or days [1; 2].

The hostile attack of the russian federation on the Ukrainian energy sector on October 10, 2022 led to the first mass introduction of emergency outage schedules in the history of our state, which later became a permanent practice during the winter months of 2022–2025.

In addition, it was from this moment that the russian federation officially switched to energy terror as a separate stage of hostilities, and Ukraine understood the need to urgently rebuild the energy system: create reserves, decentralize generation, strengthen the protection of critical infrastructure; international partners launched the Energy Support Fund for Ukraine program, which later helped restore damaged energy facilities.

Thus, the massive Russian shelling of Ukraine on October 10, 2022 became the first stage

of the campaign to destroy Ukraine's energy infrastructure, which showed how vulnerable the country's centralized power supply system is, how quickly the life of entire cities can be paralyzed, and at the same time - the high resilience of Ukrainian energy workers, who restored electricity supply to most regions of Ukraine within a day.

Subsequently, russian military strikes on Ukrainian energy facilities continued, and the most destructive of them were the following [1; 3; 4; 5]:

- On December 28, 2022, there was a massive damage to the energy infrastructure in the Kharkiv region, Kyiv region, Odesa region and Ivano-Frankivsk region, as a result of which about 1 million consumers were disconnected from electricity.
- On March 22, 2024, there was a large-scale coordination of strikes on generation capacities and transmission networks;
- On May 8, 2024, there was a massive air strike on several thermal power plants and electricity transmission networks;
- On August 26-27, 2025, there were drone strikes in six regions (Sumy, Poltava, Donetsk, Chernihiv, Kharkiv, Zaporizhia), which led to significant damage to the energy supply system.
- On October 14, 2025, network overload, as a result of previous strikes on the energy system, caused blackouts in the city of Kyiv and other regions;
- On November 8, 2025, a large-scale missile and drone strike was carried out on energy infrastructure (over 450 drones and 45 missiles (cruise and ballistic) on energy facilities and power lines. Thermal power plants were hit, as well as critical substations that provide energy transmission from nuclear power plants, resulting in a blackout across the country, and later emergency power outages were introduced in several regions (in particular, Kyiv, Poltava, Kharkiv) [8; 10; 11].

Special attention should be paid to russian strikes on substations that provide power to the Khmelnytskyi NPP and the Rivne NPP. After all, targeted military strikes occur on key high-voltage lines, and their damage forces nuclear generation to temporarily reduce production in order to avoid the risks of emergency situations and cascading outages in the system. That is why, after another hostile strike on the energy sector in November 2025, Ukraine appealed to the IAEA with a demand to urgently convene the Board of Governors

in order to form mechanisms to prevent russian attacks on critical infrastructure and increase international pressure on nuclear and radiation safety issues [6].

As already noted, the above-mentioned hostile attacks on Ukraine's energy system are aimed at paralyzing the work of the national economy, creating a humanitarian crisis, and undermining the morale of the population.

The main consequences of massive russian military strikes on Ukrainian energy facilities include:

- damage to over 50% of generating capacity during peak periods of attacks;
- long-term outages, especially in the winter;
- disruption of the balance in the energy system, especially between generation and consumption;
- restoration of damaged facilities becomes a long-term task, since the equipment is complex, import-dependent, and hostile attacks are repeated;
- reduction in electricity exports to Europe, which negatively affects Ukraine's foreign exchange earnings;
- significant increase in the load on nuclear energy - the main source of stable electricity supply in Ukraine.

Unfortunately, despite the significant experience of the war in eastern Ukraine since 2014, the state was only partially ready for large-scale targeted attacks on the energy system, which began in the fall of 2022. Among the main reasons for this, organizational, technical, financial and strategic factors can be distinguished, namely [1; 4; 6; 11]:

• the illusion of relative security until 2022, because before the full-scale invasion, the energy infrastructure of Ukraine was not considered the main target of russian aggression. Even after the occupation of part of Donbas (where large thermal power plants were located), the prevailing opinion was that russia would focus on front-line facilities, rather than on civilian energy. As a result, sufficient protective structures for substations, transformers, and distribution points were not created, system scenarios for energy terrorist attacks and large-scale accidents were not developed, and backup power sources and spare transformers were limited or outdated;

• outdated material and technical base, because the Ukrainian power system has largely

preserved the structure of Soviet times: centralized architecture (several large nodes instead of dozens of local systems, which made the system very vulnerable - a strike on several substations could disable an entire region); outdated equipment, without redundancy, and some transformers have been operating for more than 40–50 years; automatic control systems did not have full digital duplication and could not quickly switch energy flows in the event of an enemy attack);

• insufficient level of air defense (APA), because at the beginning of the massive attacks in the fall of 2022, Ukraine had a limited number of modern air defense systems. The russian federation simultaneously used dozens of missiles and drones flying in different directions. Because of this, some of the missiles were not detected or shot down in time, energy facilities located far from large cities (thermal power plants, substations) did not have their own local air defense systems, and there were also a lack of short-range systems to cover individual energy facilities;

• lack of sufficient decentralization of the energy sector, because by 2022 the majority of electricity in the country was produced at large thermal power plants and nuclear power plants, and small local stations ("distributed generation") were developing slowly. This led to the fact that: it was impossible to quickly replace the capacity lost as a result of the strikes; many settlements did not have autonomous sources (for example, diesel generators, solar panels); the development of "green" energy took place without taking into account security needs - without protecting facilities, without energy storage, etc.;

• the presence of significant bureaucracy and lack of strategic planning, as a result of which coordination between government structures (Minenergo, Ukrenergo, regional administrations) at the beginning of enemy attacks was insufficient; there was no single energy security crisis center that would quickly make decisions on priorities for repairs, switching networks and protecting facilities; funding for backup equipment was scattered between different programs;

• dependence on imported energy equipment, because after the destruction or damage of facilities, it turned out that most of the key elements (transformers, turbines, high-voltage switches) had to be purchased abroad, and the supply took months. This made it impossible to quickly restore damaged lines and stations;

• insufficient attention to cyber security in the energy sector, because by 2022, the cybersecurity of energy systems was not at the level of NATO or EU standards, and during the war, numerous cyber attacks on Ukrenergo dispatch systems were recorded, which were accompanied by physical strikes. As a result, without sufficient preparation for such dual threats (cyber + missiles), the energy system turned out to be more vulnerable;

• human factor, as a significant part of specialists left or were mobilized, which led to a shortage of technical personnel, and communication with the population regarding emergency shutdowns was chaotic at the beginning, which created panic [2; 3; 5; 10].

In the face of the constant russian threat, the state is implementing a number of anti-crisis and strategic measures aimed at preserving Ukraine's energy system and ensuring its sustainability by:

• restoring and operationally stabilizing the energy system through: appropriate mobilization of repair teams and creation of emergency equipment stocks; deployment of autonomous power supply systems for hospitals, water supply facilities, military units, etc.; procurement of generators and transformers with the support of international partners (USA, EU, Japan, Canada);

• decentralizing the country's energy system, namely: stimulating the development of small power plants and microgrids; supporting local generation projects on solar, biogas and wind installations; implementing energy storage systems (battery storage) that provide backup power;

• further developing Ukraine's international integration in the energy sector, namely: successful synchronization of the national energy system with the European ENTSO-E network (2022), which allowed for mutual support in the event of electricity shortages; expanding cooperation with the European Energy Community and receiving technical assistance for the modernization of energy networks;

• formation and implementation of state programs in the field of energy efficiency and social support for consumers, namely: continuation of energy saving programs for households ("warm credits", Energy Efficiency Fund, etc.); development of mechanisms for compensating for electricity costs for low-income consumers; encouragement of enterprises to switch to their own generation and energy management;

• further reform of the public administration system in the energy sector, namely: strengthening the role of the Ministry of Energy in crisis planning; introduction of new standards for cyber protection of energy facilities; updating the "Energy Strategy until 2050" taking into account existing military risks and threats.

Thus, Ukraine had some strategic preparation for energy challenges, but the scale and systematic nature of russian attacks exceeded any previous scenarios. The main reasons for the lack of readiness of the energy sector were: the centralization of the energy system, technical obsolescence, weak infrastructure protection and limited resources for modernization. At the same time, it is worth noting that after the first waves of attacks, the state and business quickly adapted – reserves were created, air defense was strengthened, cooperation with partners was established, which made it possible to avoid a complete collapse of the energy system in 2022-2025, including in the winter period.

Conclusions of the research and perspective of further development in this direction. Thus, russian aggression has become the most serious test for the energy system of Ukraine in its entire history. However, it was these events that became the impetus for a deep transformation of the state's energy policy. russia's energy strikes have become an unprecedented challenge for Ukraine. They have shown the vulnerability of the centralized system, but also its ability to self-recover. State energy policy in wartime has acquired an anti-crisis nature: the main goal is to ensure the stability and continuity of energy supply. The events of 2022–2025 have demonstrated the need to modernize, decentralize and strengthen the defense capabilities of the energy infrastructure. Ukraine has demonstrated a high level of professionalism, solidarity and adaptability - and this is what has become the key to the survival of the energy sector even in the most difficult times.

Today, Ukraine faces a dual task: to ensure uninterrupted energy supply in conditions of military threats and at the same time lay the foundations for post-war recovery and the transition to a sustainable, modern energy system of the European model. And the main priority is to create a sustainable, flexible and environmentally safe energy system, capable of operating even in crisis conditions. Only under such conditions after the war, Ukraine has every chance to become a regional leader in the field of "green" energy, in ensuring the sustainability of the energy system and integrate into a single energy space of Europe.

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