ANALYTICAL NOTE

Topic: Development of Distributed Generation as a Tool for Ukraine’s Energy and Heating Security

Background: Based on the outcomes of the roundtable discussion “Resilience Under Threat: Regulatory and Economic Leverage for the Development of Distributed Generation”
Event date: March 26, 2026
Organizer: the We Build Ukraine think tank

Key participants

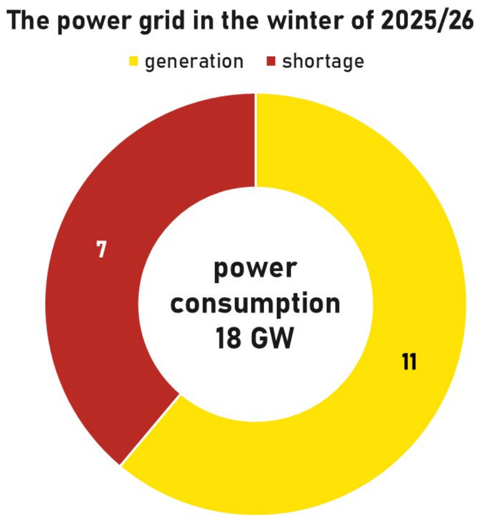
The event was attended by representatives of Ukrenergo, Naftogaz of Ukraine, the NEURC, gas distribution system operators, the Kyiv City State Administration, local communities, businesses in the distributed generation sector, investors, industry associations and municipal utilities.

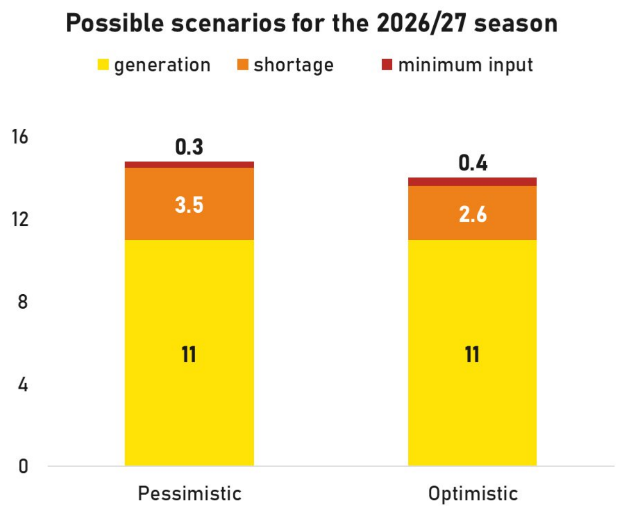
1. General context

Distributed generation should be regarded as one of the key instruments for Ukraine’s preparation for the 2026/27 heating season and as an important component of the new power system model. Given the loss of a portion of large-scale centralized generation, limited opportunities for its rapid restoration, and the persistence of high military risks, a network of smaller, geographically dispersed facilities is the most realistic path for rapidly adding new capacity to the electricity and district heating systems.

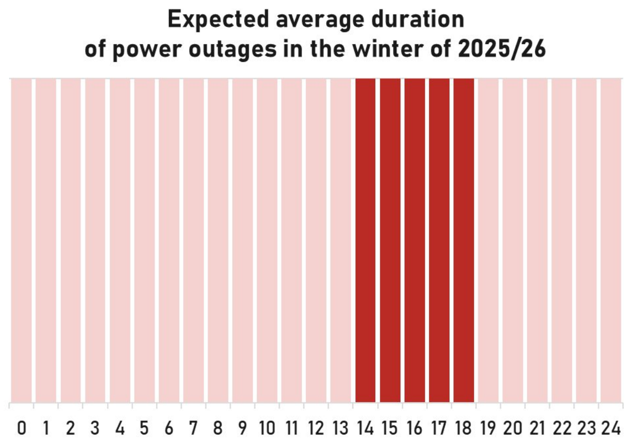
The priority direction is distributed generation in the form of cogeneration—the simultaneous production of electricity and heat. This makes it possible to simultaneously reduce the shortage of electricity and form a reserve of thermal generation for cities. For large urban heat supply systems, this is of critical importance, as in the event of damage or shutdown of large thermal power plants (TPPs) or combined heat and power plants (CHPs), entire districts, residential areas, cities, towns, and individual critical infrastructure facilities could be at risk. Cogeneration integrated into urban heating networks can serve as a backup for large CHP plants and reduce the risk of large-scale heating crises in winter.

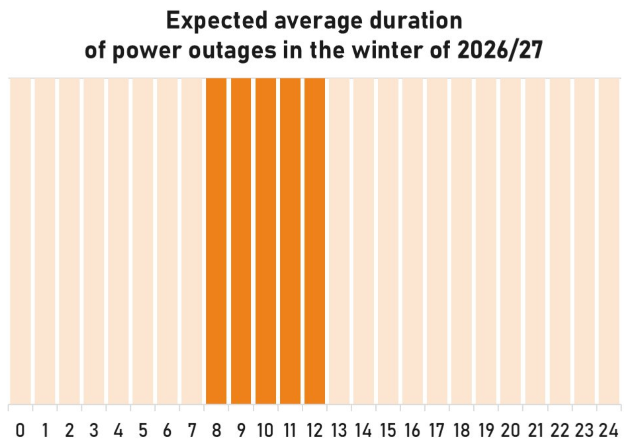
The power system currently remains structurally vulnerable. During the winter of 2025/26, available generation could cover only about 11 GW of approximately 18 GW of consumption during peak hours, and outages could last up to 14–18 hours per day. To compensate for lost capacity, the required scale of decentralized generation is estimated at up to 3 GW of gas engine and gas turbine units and up to 2 GW of energy storage systems; the estimated investment requirement is €3–3.5 billion. In the short term, until next winter, 300–400 MW appears to be a realistic minimum for new capacity additions rather than the scale required to fully meet the system’s needs.





There are about 7 months left until the start of the next heating season. Under these conditions, if the implementation of distributed generation projects that are planned or at the equipment-ordering stage is frozen due to current unprofitability and uncertainty, the generation capacity deficit during the 2026/2027 winter season could reach 2.6–3.5 GW, which would necessitate two to three stages of scheduled outages in the winter of 2026/2027 and subsequent winters.





At the same time, there is a significant medium-term structural challenge. As part of the plan to phase out coal-fired generation by 2030, there is an additional need for 2.5–3 GW of newly built gas-fired generation capacity with different operating profiles, which must be constructed, commissioned, and able to operate commercially. Therefore, the development of distributed generation is a key anti-crisis solution for the coming winter and part of the long-term restructuring of the energy system.

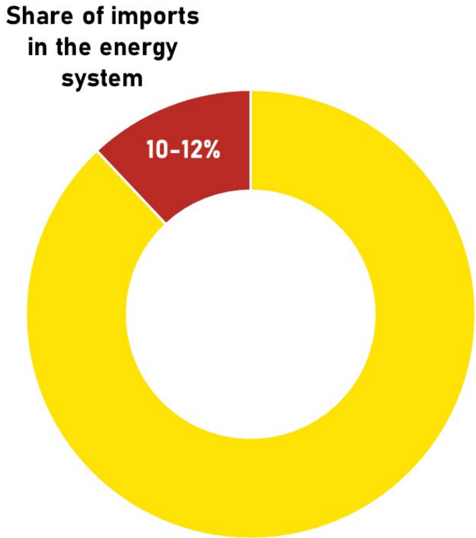
2. Key challenges and necessary solutions

The unpredictability of the gas supply and pricing framework has become one of the main barriers to launching new projects. Following changes in gas supply terms, some projects faced a market price of about UAH 27,500 and the risk of applying a penalty price (the cost of imbalances in the absence of capacity orders) ranging from UAH 42,000 to UAH 48,000. Under such conditions, the economics of gas-fired generation deteriorate sharply: at a gas price of UAH 47,000, the production cost of 1 kWh can reach UAH 12.75–20, which is unprofitable even during peak hours, resulting in a 35% net loss. This hinders investment decisions and creates the risk of postponing equipment orders and the launch of already designed new projects.

Accordingly, it is necessary to ensure a predictable gas supply model for new distributed generation facilities without retroactive changes or penalty-based pricing logic, and with the possibility of using fuel risk hedging mechanisms for a term of 2–3 years, which would create better conditions for short-term investment planning.

The lack of predictability in the electricity market also directly hinders investment. Decisions on building new capacity depend on understanding future electricity sales prices, maintaining import parity, and the stability of regulatory rules. The short duration of price caps makes it impossible to build a bankable investment model.

It is necessary to ensure a sufficient level of price caps and a plan for their revision announced in advance, aligned with import-parity assumptions and the investment cycle for new capacity.



Electricity imports support the system but do not replace new domestic generation. The share of imports in the system is estimated at 10–12%, and peak price benchmarks on external markets range from EUR 320–370/MWh, excluding cross-border transmission costs. Imports are a necessary element for managing peak hours, but they cannot be a long-term alternative to domestic generation. In the absence of sufficient domestic incentives, dependence on expensive external resources increases, while domestic capacity is not brought online on time. It is necessary to create market conditions that simultaneously preserve the ability to rely on imports during deficit hours but do not substitute for the development of new domestic generation.

The system needs not just new generation, but dispatchable generation that provides value to the grid. In the coming months, gas-fired generation is needed primarily to cover the morning peak for about 2 hours and the evening peak for about 3–5 hours. At the same time, some of the new facilities lack sufficient flexibility, and their integration into ancillary services, balancing, and dispatch arrangements remains inadequate. It is necessary to update the rules for dispatching distributed generation, including requirements for telemetry, maneuvering modes, participation in system services, balancing, and interaction with the TSO and DSO, separately for the summer and winter periods.

Cogeneration is not yet sufficiently integrated into urban heating security planning. Distributed generation is often viewed primarily as a source of electricity, although it is cogeneration that enables the creation of a reserve for centralized heat supply systems. For large cities, this is not merely a market issue but also a matter of preventing situations where residential areas could be left without heat in winter due to damage to large CHP plants. Priority must be given to cogeneration projects integrated into urban heating networks and capable of serving as a backup for large CHP plants, providing heat to critical infrastructure, social infrastructure, and residential areas.

The deployment of distributed cogeneration facilities is critical for getting through the winter of 2026/2027, especially for cities with centralized heat supply systems that depend on large centralized heat-generation assets at thermal power plants (TPPs) and combined heat and power plants (CHPs). Such distributed generation serves as a backup solution for heat supply in the event of the loss of facilities that produce thermal energy from centralized sources.

The full project implementation cycle remains excessively slow. Even when investors are interested, projects are stalled by lengthy land-related procedures, tender procurement processes, design, construction, connection, commissioning, and permitting requirements. It is necessary to simplify the full cycle of project implementation, including the possibility of direct procurement of both equipment and works and services necessary for its installation, as well as to preserve or functionally replace special simplified modes for critical infrastructure facilities.

Procurement rules do not meet the needs of critical infrastructure. Current procedures often do not allow for the rapid procurement of equipment that is technically compatible, certified, and safe for use in energy and heating infrastructure. Special or simplified procurement procedures must be established for gas distribution system operators, district heating companies, water utilities, municipal enterprises, and other critical infrastructure entities so that they can promptly procure compatible and technically suitable equipment, taking into account the availability of such equipment and domestically produced equipment and materials.

Issues regarding the technical quality of equipment, service, and work safety remain insufficiently regulated. Additional barriers include problems with technical documentation and certificates for imported generating equipment, its compliance with Ukrainian network parameters, a lack of service support, and the fact that some occupational safety regulations have not been adapted to wartime conditions. It is necessary to strengthen requirements regarding the technical quality of equipment, the mandatory availability of complete technical documentation, service support, and compatibility with Ukrainian grids, as well as to adapt occupational safety regulations to work carried out during the aftermath of shelling.

War risks significantly reduce the investment attractiveness of projects and complicate the process of securing financing. For some new energy facilities, war risks are the decisive factor preventing projects from securing financing or making them acceptable to investors. It is necessary to consider insurance instruments for capital investments and war risks for new energy facilities, especially where physical protection is expensive or technically complex.

The sector’s development is insufficiently linked to the long-term transformation of the power system. Short-term solutions are primarily focused on getting through the coming winter; however, the need for new generation capacity must also be considered within the context of replacing coal-fired thermal power plants and shaping a new power system structure by 2030. The development of distributed generation must be planned not merely as a crisis-response tool for a single winter, but as part of a medium-term plan to replace coal-fired generation with new gas-fired, flexible, semi-peak, and partly baseload capacity.

4 critical measures:

1. A key prerequisite for bringing new generation online is ***policy predictability***. A clear and public schedule for decisions on gas and tariffs is needed, along with a stable pricing model free of punitive pricing distortions and harmonized rules between the gas and electricity markets. This should make investment models more predictable.
2. It is necessary to ***move to a simplified framework for the construction of critical energy infrastructure***. This involves minimizing approvals, implementing a “design-build” approach, ensuring rapid access to land, and limiting excessive interference in the implementation of projects critical to the power system.
3. ***Procurement must be adapted to support rapid recovery***. Simplified procedures should be extended and applied to projects under community resilience plans, allowing for comprehensive turnkey procurement and limiting the public disclosure of sensitive information.
4. ***Local-content requirements and market rules need to be revised***. Exemptions for critical equipment should be broader and longer-lasting, and market rules should account for the seasonal nature of power generation. The priority is predictability in decision-making, which allows projects to be launched on time