Non-paper
15 January 2026

Ukraine: Immediate Energy Restoration and Repair Needs

1. Power system: Current state

During 2025, russia used more than **1,950 missiles** and **54,600 Shahed-type** and other UAVs against targets in Ukraine as part of large-scale combined attacks, including those aimed at critical energy infrastructure. From September to December of last year, strikes on energy facilities intensified; over this period, russia launched 843 missiles and 21,500 Shahed-type and other drones at Ukraine.

Overall, since October 2025, missile attacks have **damaged** approximately **8.5 GW** of generation capacity at thermal power plants (TPPs), combined heat and power plants (CHPs), and hydropower plants (HPPs). Restored capacities were repeatedly subjected to further significant damage. Over this period, **3.6 GW** of capacity were **restored**.

The year 2026 began with two simultaneous events: a new wave of large-scale russian attacks on energy infrastructure and exceptionally severe frost that reached Ukraine at the beginning of the month.

Between 7-8 January, russia carried out a large-scale missile and drone attack targeting trunk power grid facilities in **Dnipro region**. The attack led to a complete blackout of electricity consumers in Zaporizhzhia region (over 377,000) and the vast majority of consumers in Dnipro region (over 800,000). Entire cities – Dnipro, Nikopol, Kryvyi Rih, Kamianske, and Zaporizhzhia – were left without power supply. The total disconnected load amounted to approximately 1,500 MW.

During the night of 8-9 January, in a continued large-scale attack involving missiles and drones, the russian armed forces struck energy infrastructure facilities in **Kyiv city, as well as in Kyiv and Chernihiv regions**. As a result of the strikes, more than 35% of consumers in Kyiv (predominantly in the left-bank part of the city) were left without power. Most of the city also lost heating, and water supply was disrupted in some districts. The combined lost capacity of affected CHPs in Kyiv amounts to 572 MW.

Emergency repair works, damage assessments, and fault detection in the power networks are ongoing. Energy companies report that equipment reserves have been exhausted, with no remaining stocks of power transformers or other critical equipment.

As of January 15, 2026, peak-hour electricity demand will reach **18 GW**. Domestic generation is expected to be **6.4 GW**, leaving a **capacity deficit of 5.2 GW** at peak demand. This deficit is addressed through electricity imports and stabilisation outage schedules. Electricity imports currently utilise up to **1.9 GW** of cross-border capacity.

If attacks continue at the current pace and scale, entire left-bank regions of Ukraine – home to around 15 million people before russia's full-scale invasion in 2022 – risk losing access to electricity supply.

2. Natural gas: Reserves and import requirements

In 2025, attacks increasingly targeted natural gas infrastructure, including major strikes on gas production facilities.

In October and November 2025, combined missile and drone attacks again targeted gas production. As a result, gas producers report the loss of 40% of national gas production capacity. Surface infrastructure at underground gas storage (UGS) facilities also suffered significant damage, with some equipment destroyed or requiring full replacement.

To support stable gas supply and reliable operation of the gas transmission system, the Government of Ukraine tasked Naftogaz Group with filling UGS to **13.2 bcm** by 1 November 2025. This target was met, and seasonal withdrawals began on 4 November.

Due to reduced domestic production, Ukraine will need to purchase an **additional 4.4 bcm** of imported gas to ensure uninterrupted supply during the 2025/26 heating season. At current market prices, the estimated cost is around **EUR 1.9 billion**. To date, gas purchases have already been made in excess of EUR 990 million. Additional financing of EUR 295 million is expected, while other market participants will purchase gas worth EUR 280 million. The remaining funding gap for gas procurement amounts to approximately EUR 100 million.

3. Emergency Repair Needs

3.1. Power sector equipment needs

Despite ongoing large-scale attacks, emergency repair works in the energy sector continue daily. Energy companies are prioritising the rapid restoration of critical equipment needed to maintain power system stability during the 2025/26 heating season. Because damage is continuous and repair capacity is constrained, emergency equipment needs are evolving.

The total estimated cost of emergency equipment and materials required as of today amounts to approximately **EUR 1.016 billion**, including: **EUR 516 million** for the electricity generation and gas sectors; **EUR 177 million** for electricity transmission (**NPC Ukrenergo**). In addition, there is a need for **specialized equipment** totaling **EUR 50 million**, as well as **passive and engineering protection** totaling **EUR 150 million**; **EUR 20 million** for **JSC Ukrzaliznytsia**; and **EUR 103 million** for **distribution system operators (DSOs)**.

Critical equipment needs include:

power transformers rated at 750 kV
power transformers rated at 330 kV
power transformers rated at 110 (150) kV
power transformers rated at 35 kV
high-voltage circuit breakers rated at 750 kV
high-voltage circuit breakers rated at 330 kV
high-voltage circuit breakers rated at 110 (150) kV
high-voltage circuit breakers rated at 35 kV
disconnectors (isolators) rated at 750 kV
disconnectors (isolators) rated at 330 kV
disconnectors (isolators) rated at 110 (150) kV
disconnectors (isolators) rated at 35 kV
bushings rated at 750 kV
bushings rated at 330 kV
bushings rated at 110 (150) kV
bushings rated at 35 kV
mobile substations rated at 330/110 kV
mobile substations rated at 110/35/10 kV or 110/35/6 kV
mobile substations rated at 35/10 kV
outdoor switchgear units 10 kV (complete outdoor switchgear assemblies)
diesel power generator of 5/ 7/ 10/ 12/ 15/ 20/ 50/ 100/ 200< kW
cable terminations of various types for 10(6) kV
control cables.

Despite these efforts, current equipment deliveries do not fully cover the need for emergency reserves, replacement of critically damaged EHV substations (330/750 kV), or the restoration of damaged transmission and distribution capacities.

Average Monthly Equipment Needs per DSO, located in a frontline regions:

- Approx. 3 power transformers rated at 110(150) kV
- Approx. 3 power transformers rated at 35 kV

- Approx. 2 high-voltage circuit breakers rated at 110(150) kV
- Approx. 2 high-voltage circuit breakers rated at 35 kV
- Approx. 5–6 disconnectors (isolators) rated at 110(150) kV
- Approx. 3 disconnectors (isolators) rated at 35 kV
- Approx. 3 bushings rated at 110(150) kV
- Approx. 1-2 bushings rated at 35 kV
- Approx. 2-3 mobile substations rated at 110/35/10 kV or 110/35/6 kV
- Approx. 2 mobile substations rated at 35/10 kV
- Approx. 5 outdoor switchgear units 10 kV (Complete Outdoor Switchgear Assemblies)
- Over 20 km of power cables rated at 10(6) kV
- Over 1,000 cable terminations of various types for 10(6) kV
- Over 15 km of control cables

High-risk and frontline regions where the energy infrastructure has suffered the most damage and is at high risk of repeated strikes include: Donetsk, Dnipropetrovsk, Zaporizhzhia, Kharkiv, Sumy, Chernihiv, Odesa, Mykolaiv, and Kherson regions.

To enable a rapid response to repeated attacks and minimize electricity restoration time, the Ministry of Energy of Ukraine has initiated the creation of a **National Strategic Reserve** of power transformers. The reserve is intended to ensure the prompt replacement of critical equipment in the event of massive attacks or large-scale network damage.

The emergency reserve structure includes the procurement of the following transformers:

- 63,000 kVA (150/35/10, 150/35/6, 150/10, 110/10 kV) – 21 units
- 25,000 kVA (150/35/10, 150/35/6, 110/10, 110/6 kV) – 14 units
- 4,000 kVA (35/10, 35/6 kV) – 3 units

A detailed list of equipment broken down by energy companies is available at: https://bit.ly/4h5ndNu.

3.2. Natural gas sector equipment needs

The total cost of the most critical equipment and materials for the natural gas sector is estimated at more than **EUR 431 million.**

Urgent emergency equipment needs of the Gas TSO of Ukraine and Naftogaz Group include:

- Compressor Ariel KBK/4 CU (3-stage reciprocating compressor) with engine – 2 units
- Compressor Ariel KBE/4 CU (2-stage reciprocating compressor) with engine – 2 units
- Compressor Ariel KBK/4 CU (1-stage reciprocating compressor) with engine – 2 units
- Gas processing unit (packaged equipment for gas treatment) – 2 units
- Gas turbine unit with a capacity 16 MW – 8 units
- Gas turbine unit with a capacity 13 MW – 3 units
- Gas turbine unit with a capacity 6 MW – 16 units
- Gas turbine unit with a capacity 8 MW – 6 units
- Gas turbine unit with a capacity 2-3 MW – 3 units
- Gas motor compressor unit with a capacity 2-3 MW – 12 units
- Gas motor compressor unit with a capacity 1.1 MW – 1 unit
- Gas processing unit Titan 130 – 1 unit
- Gas processing unit Centaur 40 – 3 units
- Compressor Ajax DPC 2804 – 4 units
- Compressor Caterpillar + Ariel – 1 unit
- Turbine Taurus 70 or similar – 4 units.

This equipment is required to improve UGS operating efficiency and support reliable operation during the 2025/26 heating season.

3.3. Ukrainian Railways equipment needs

Ukrainian Railways has increasingly been targeted by attacks intended to disrupt national logistics. Since the start of the full-scale invasion, **more than 100 traction substations** have been damaged, several of them repeatedly. These facilities are part of Ukraine's critical infrastructure.

The frequency of air strikes exceeds manufacturing and delivery timelines for replacement transformers, many of which require custom production due to traction voltage standards.

To restore damaged infrastructure, Ukrainian Railways reports an immediate need for **around 120 transformers** across all voltage classes.

4. Funding from the Energy Support Fund of Ukraine (UESF)

4.1. UESF: Emergency Restoration

Energy companies continue to submit procurement needs to be financed through the UESF. As of 15 January 2025, the reported **funding gap** remains high and amounts to **EUR 156.8 million**. The table below summarises submitted needs by company and sector:

Ukrainian company	Total Estimated Amount SR, EUR
Natural gas sector	
JSC Ukrgazvydobuvannya	24 180 000
TOTAL Gas sector	**24 180 000**
Electricity sector	
JSC DTEK Westenergy	55 804 272
PJSC Centrenergo, Trypilska TPP	36 963 851
JSC DTEK Dniproenergo	31 454 433
LLC DV Oil & Gas Production Company	3 757 832
SSE Chornobyl NPP	2 306 563
LLC DTEK Tiligulska Wind Power Plant	1 600 000
PrJSC Kharkiv CHPP-5	730 800
TOTAL Electricity sector	**132 617 751**
TOTAL	**156 797 751**

4.2. UESF: Physical Protection

Strengthening the physical protection of energy infrastructure remains a priority for the Government and the Ministry of Energy. Energy companies are implementing a second level of physical protection, but internal resources are insufficient. As of 15 January 2025, the reported funding gap under the Fund for physical protection measures is **EUR 13.1 million**.

Ukrainian company	Total Estimated Amount SR, EUR
LLC Gas Transmission System Operator of Ukraine	13 152 000
TOTAL	**13 152 000**

In addition, companies have informed the Fund of further needs, including gabions, concrete blocks, sand/granite rubble, barrier mesh, soft containers, materials for protective structures, and rapidly deployable modular civil protection shelters for 15-20 people.

4.3. UESF: Distributed generation

Russian attacks continue to increase the value of local gas-based generation solutions. Distributed gas generation and cogeneration can sustain critical services when centralised plants or key network elements are damaged.

Government efforts are focused on energy-deficit regions and communities, taking into account gas availability and grid connection requirements.

As of 15 January 2025, **35 key projects** are at different stages of implementation, including: **15 projects financed** for a total of EUR 225.1 million (319.7 MW); and **2 projects** worth EUR 173.8 million **partially financed** for EUR 91.6 million (total capacity 212.4 MW).

In southern Ukraine, damage to high-voltage substations (220–750 kV) and distribution networks (110–150 kV) has created bottlenecks in the 330–750 kV transmission grid, limiting the ability to meet demand in energy hubs around **Odesa**. In this context, additional gas-generation units are prioritised to strengthen energy security and grid stability.

Projects requiring financing (**around 550 MW**) are summarised below.

Ukrainian company	Total Estimated Amount SR, EUR
PJSC Ukrnafta	66 123 533
JSC Odesa CHP	47 600 000
PJSC Kharkiv CHPP-5	47 550 000
JSC Ukrainian Railways	38 760 001
PJSC Trypilska TPP Centrenergo	25 800 000
PJSC Zmiivska TPP Centrenergo	25 800 000
LLC Euro-Rekonstrukcia	16 210 000
JSC Sumyteploenergo	13 875 980
JSC Kherson CHP	11 300 000
Teplokomunenergo (Chernihiv CHP)	7 237 600
LLC Kramatorskteploenergo	1 007 484
PrJSC Cherkasy Khimvolokno, Cherkasy CHP	486 740
TOTAL	**301 751 339**

4.4. UESF: Special-purpose vehicles and equipment

The total unmet need for automotive and special equipment is estimated at **EUR 36.3 million**. Commonly requested items include forklifts, excavators, truck cranes, telescopic handlers, aerial work platforms, trucks with crane arms, and other specialised equipment for emergency repairs and rubble removal.

5. RES deployment for private households

In response to russian attacks, the Government of Ukraine has intensified efforts to expand distributed generation, including renewables. On 7 June 2024, the Government adopted Resolution No. 673 approving a state financial support programme for individuals installing renewable energy systems in their households.

The programme supports the deployment of hybrid power supply systems (including batteries) by households. It is implemented by the Business Development Fund (Ukraine), a state-owned financial institution (100% state-owned, represented by the Ministry of Finance). Loans are provided through authorised banks.

As of 15 January 2026, authorised banks have issued **4,153 loans** worth **EUR 29.10 million**, enabling the installation of **36.08 MW** (including batteries). Due to limited funding, banks are unable to issue new loans for all received applications.

In October, the Cabinet of Ministers adopted a resolution introducing a **new program implementation mechanism**, namely compensation of 30% of the loan principal. The new mechanism is not yet operational, steps are currently being taken to secure the financing required for its launch.

Totally, for continued program implementation in 2026, the estimated additional funding requirement is at least **EUR 13 million**.

6. Strategic priorities

Despite persistent threats, Ukraine's energy system continues to operate. Government priorities are structured around three pillars:

Pillar I: Protection & Resilience

- Active Defense Capabilities
- Passive Infrastructure Protection
- Critical Repairs & Operational Readiness

Pillar II: Energy Supply & Continuity

- Building and maintaining strategic natural gas reserves
- Developing joint products on the Trans-Balkan pipeline
- Increasing electricity transmission capacity

Pillar III: Decentralization & Modernization

- Renewable Energy and Storage Development (households, SMEs, public institutions, healthcare and education facilities, larger investors via de-risking facilities)
- Expansion of distributed gas generation.

7. Additional information:

Investment Atlas

- More than **150 energy projects**
- **Total investment requirement:** ~$1.6 billion
- **Project coverage:** Power generation, grid development, heat supply, energy efficiency
- **Stage of readiness:** Projects span from concept to feasibility, with clear logic and long-term needs.

Investment Catalogue

- Projects by **Ukraine's leading energy companies**
- Highlight **high-priority investment** opportunities
- Aim to enhance **the stability and reliability** of power supply, strengthen **critical infrastructure**, and accelerate the integration of **RES**.