

RESILIENT CITIES

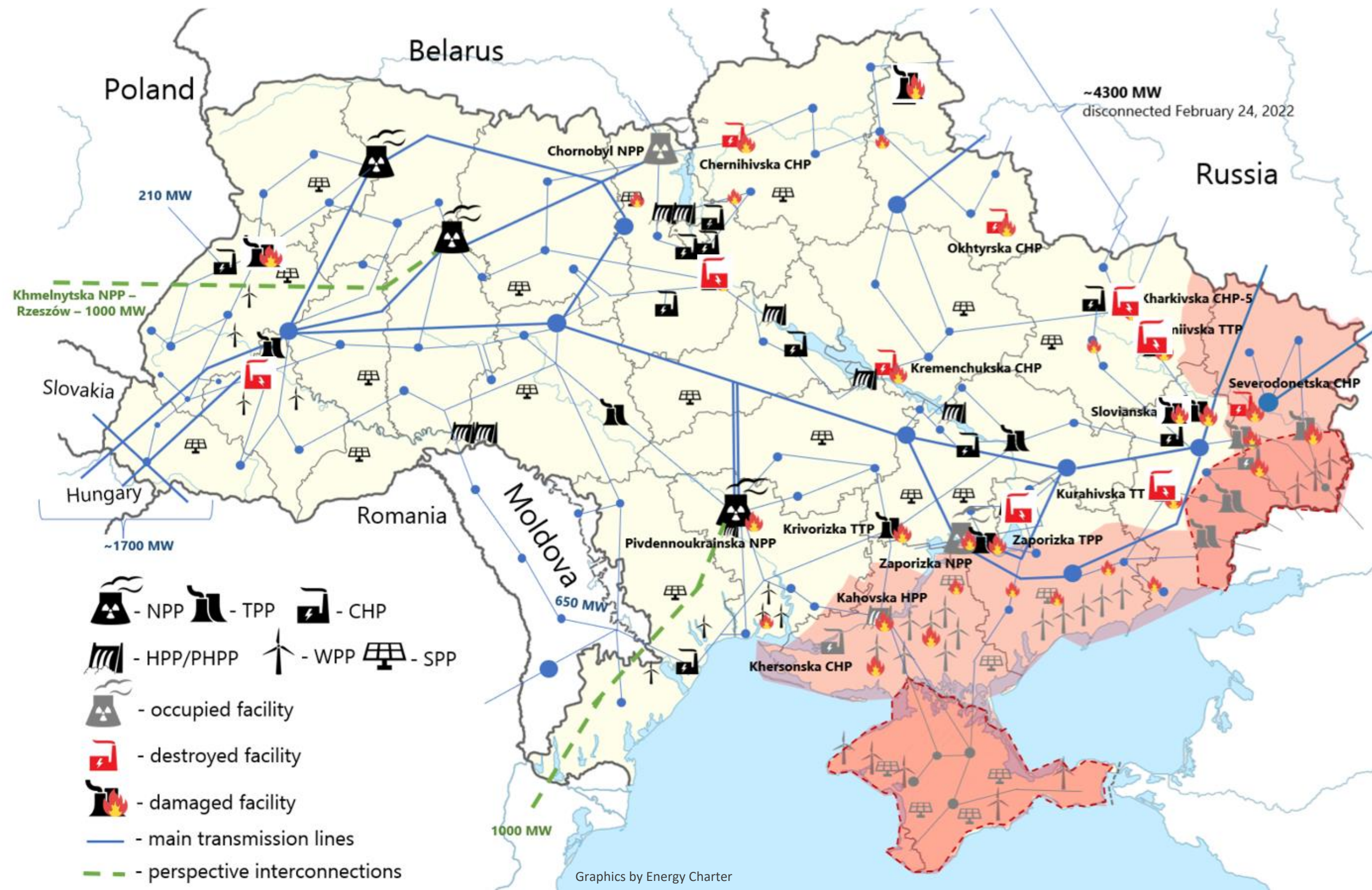
in time of war

July, 2024



© Procurator General office via Reuters

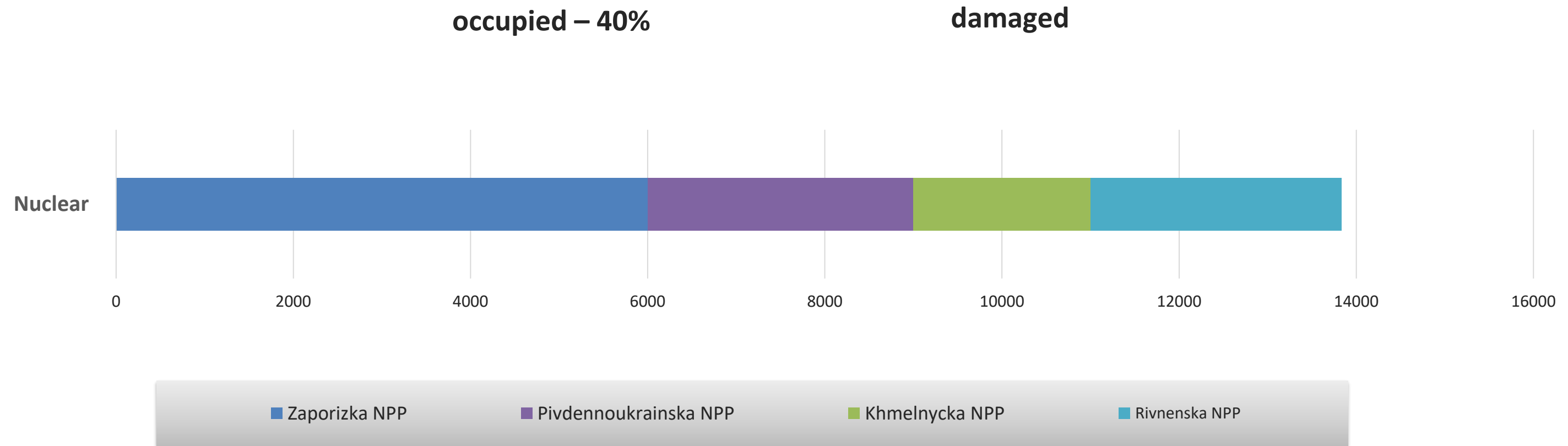
Energy System of Ukraine



Graphics by Energy Charter

Energy System of Ukraine – Nuclear

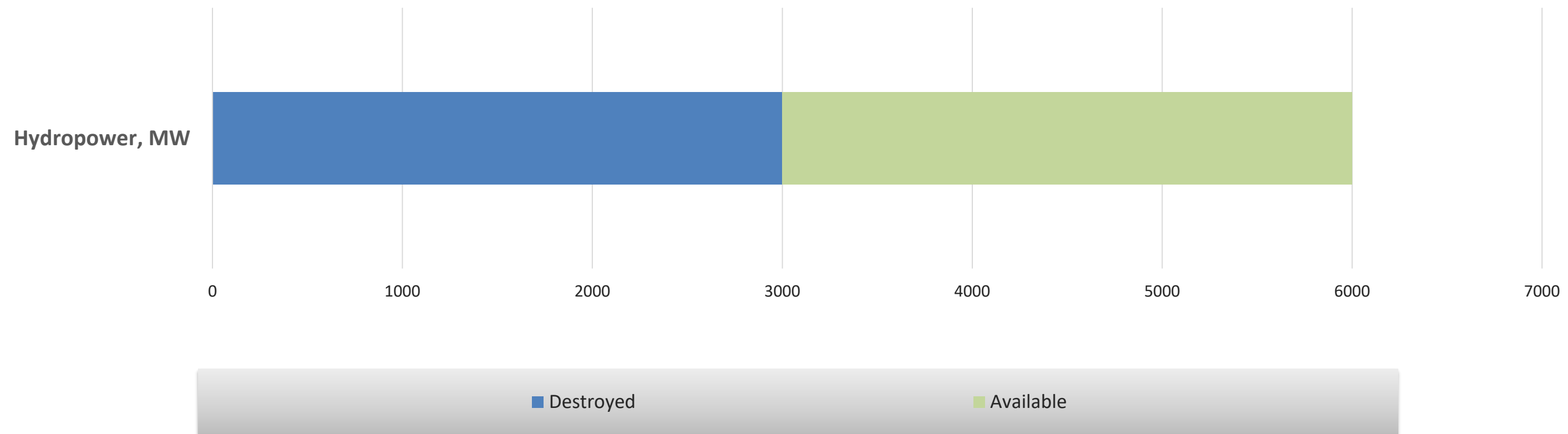
NUCLEAR POWER PLANTS



Energy System of Ukraine – Hydro

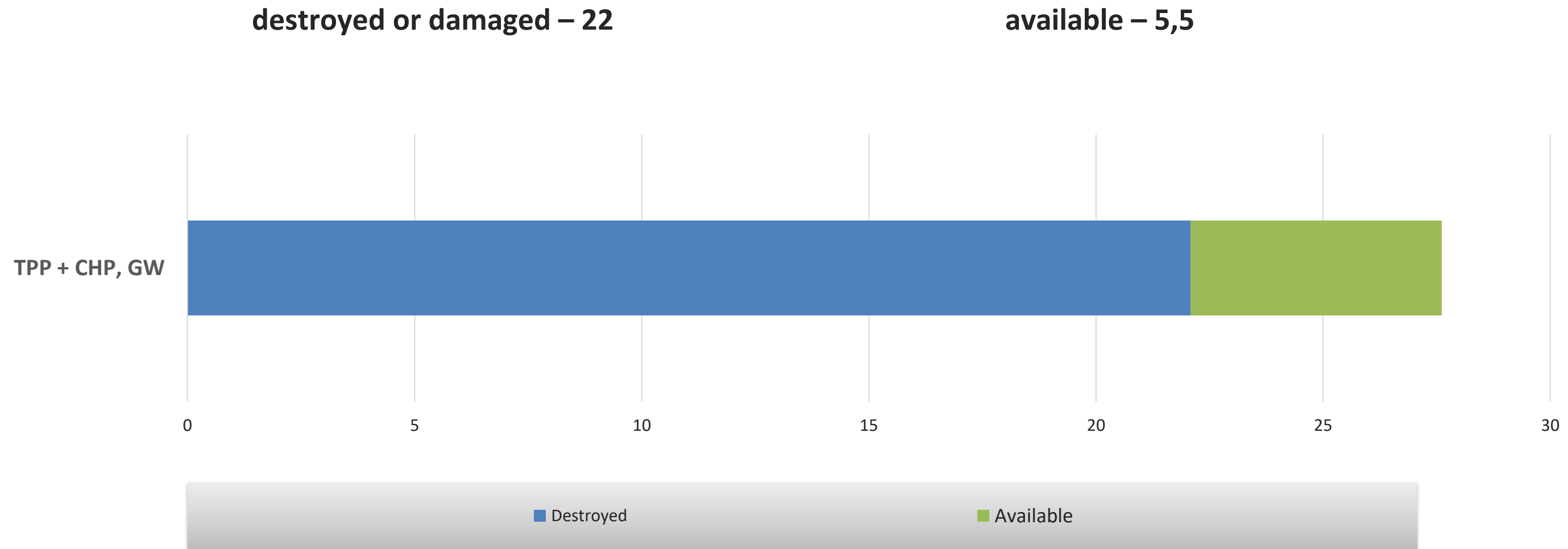
HYDROPOWER FACILITIES

destroyed or damaged



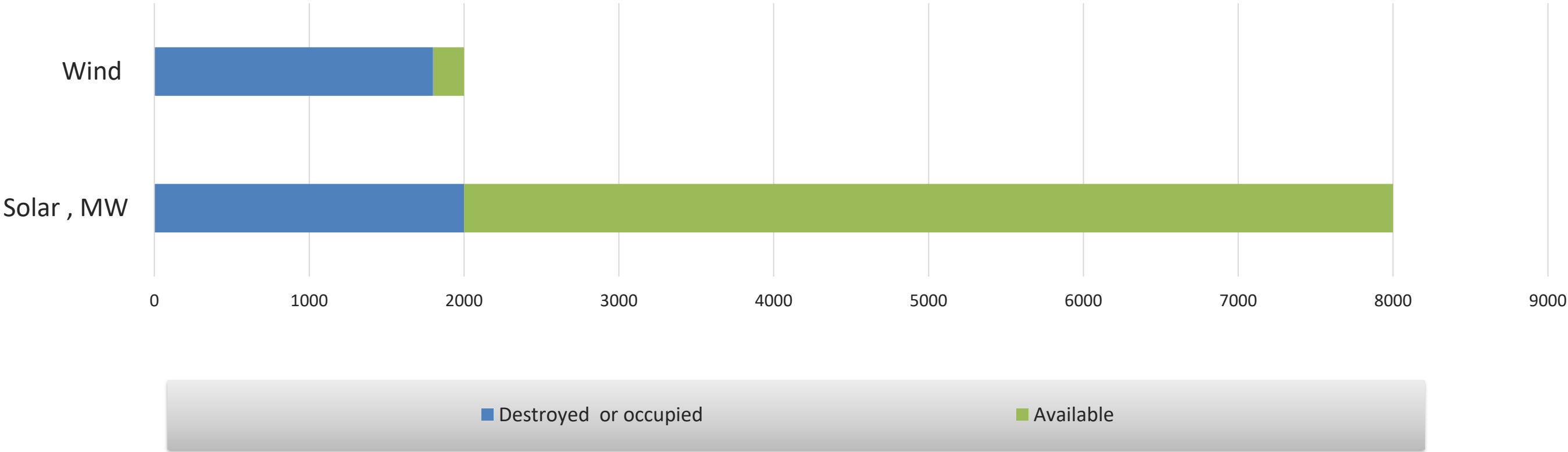
Energy System of Ukraine – Thermal

THERMAL POWER PLANTS + CHP



Energy System of Ukraine – RES

RENEWABLES



Energy System of Ukraine – Overall

Total Capacity, GW

Installed capacity before war, GW

Peaking consumption

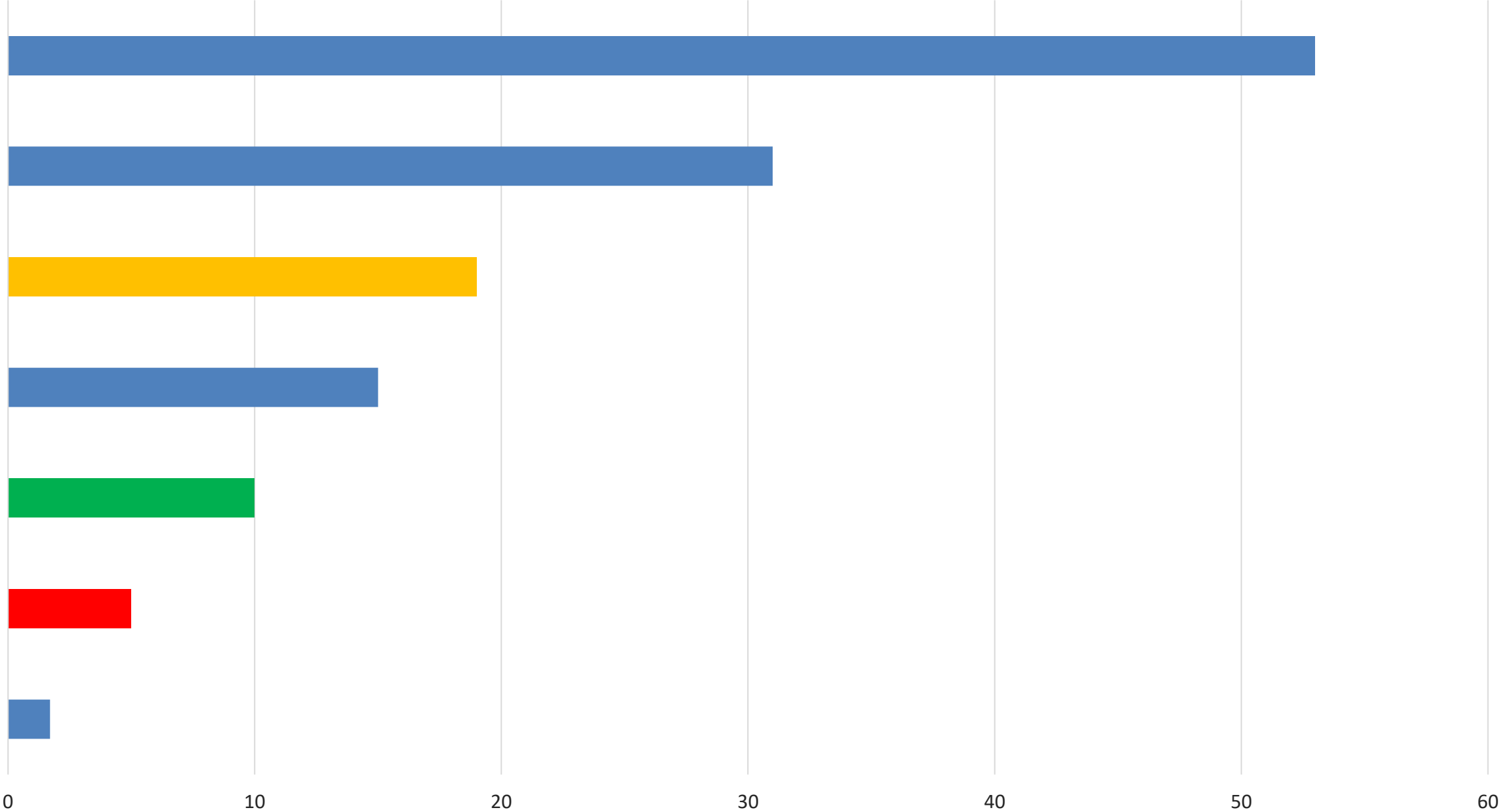
Available in 2022/23

Available Dec 2024

Availble Jul 2024

expected deficit

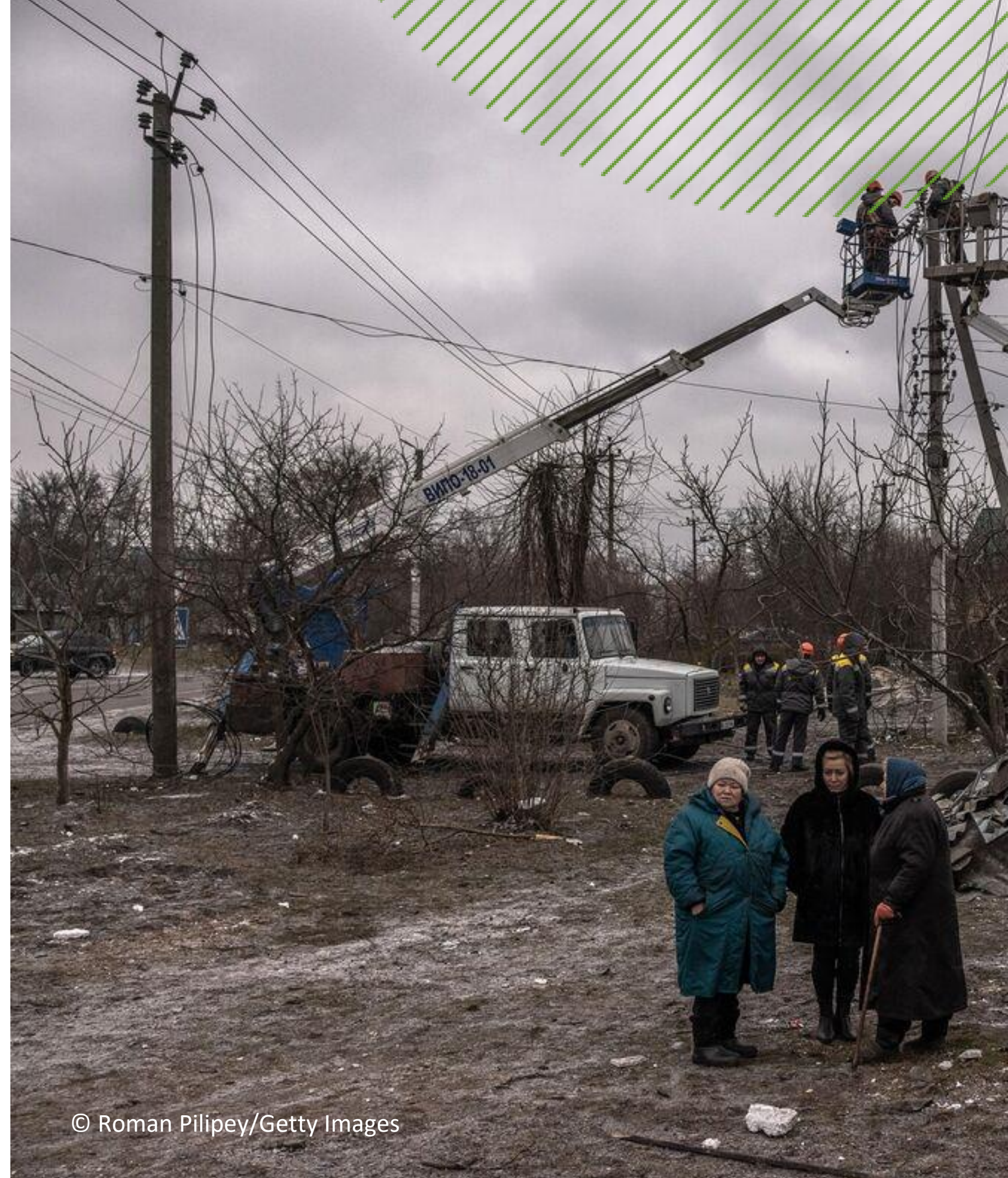
Import max



Resilience as urgent long-term task

Lack of **electricity** jeopardizes the city, primary task – to ensure functioning of:

- Hospitals
- Water supply
- Sewerage
- Communication systems
- Heat supply
- Mobility
- Public buildings, Social care



Water supply challenges

- Need to install reserve generation.
- fuel, logistics.
- Chemicals for water treatment.
- Spare parts, frequency regulators.
- Tanks for water storage and transportation.
- High operation costs vs. reduced consumption.
- Lack of costs for resilience measures.
- Growing installations of PV systems for water supply.
- High costs of generators use.
- Low tariffs, not covering costs.



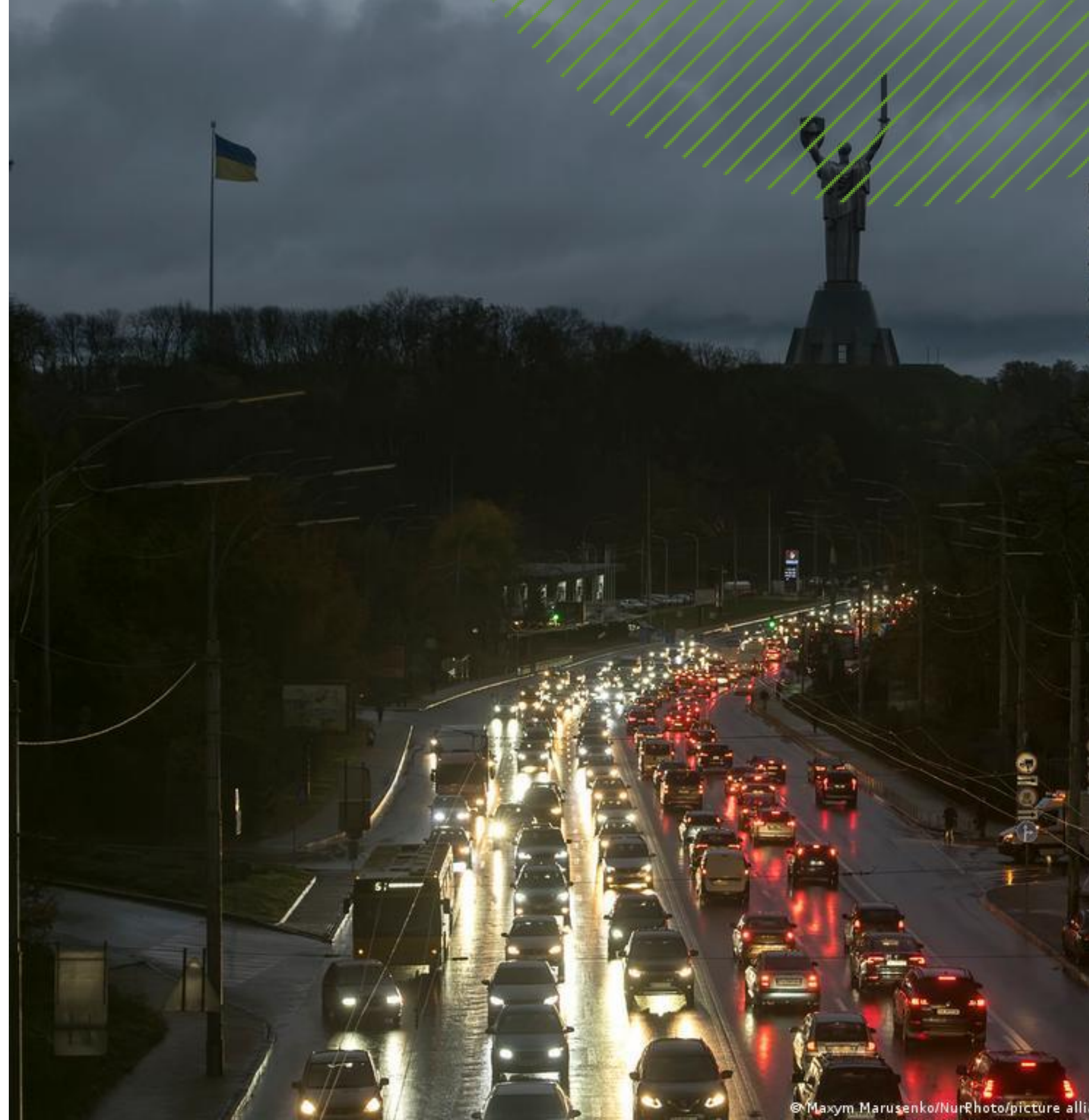


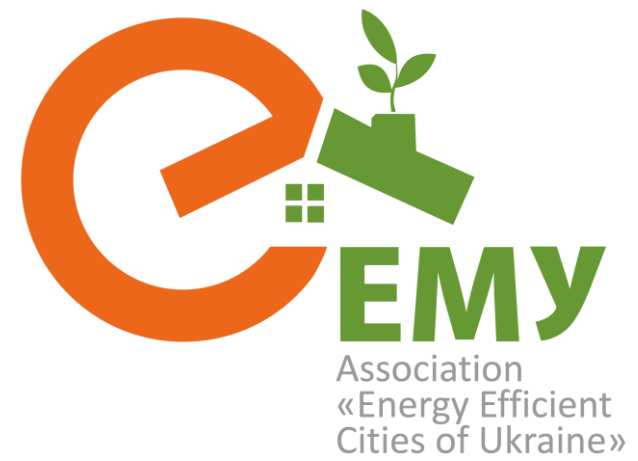
Heat supply challenges

- Need to use gas-based systems.
- Install reserve generation for DH.
- Fuel logistics for generators.
- Need of electricity for buildings systems.
- Limited opportunities for buildings with individual heating.
- Garage-made solutions bring security risks.
- Lack of additional security expenses in tariff.

Electricity supply challenges

- Lack of necessary equipment.
- Slow installation of distributed generation equipment.
- Lack of balancing capacities.
- Increased dependence on fossil fuel.
- Lack of qualified labor.
- Need of additional gas.





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