



Strengthening Ukraine's Energy Security

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Energy Storage Coalition: Repower Ukraine with Energy Storage and Renewables, Brussels, 3
December 2024

IEA Report on Ukraine's Energy Ahead of Winter

- The IEA special report on ***Ukraine's energy security and the coming winter: an action plan for Ukraine and its partners*** was launched on 19 *September* by the Executive Director, at a joint press conference together with EC President von der Leyen
- The report provides an overview of Ukraine's energy security vulnerabilities following attacks by Russia since spring 2024, focusing on **electricity, natural gas and heating**. It examines the winter prospects and the actions that Ukraine and its partners can take to alleviate the potential for a serious energy crisis.
- The report concentrates on Ukraine but incorporates also a discussion of implications for **Moldova**, where electricity and gas supply arrangements will need to move on to a new footing as and when Russian gas transit through Ukraine ceases.
- Since then, Ukraine has repaired roughly 4.3 GW of power generation capacity, but **ongoing massive attacks by Russia** continued to target the energy system as temperatures dropped



Findings based on IEA Kyiv mission in July

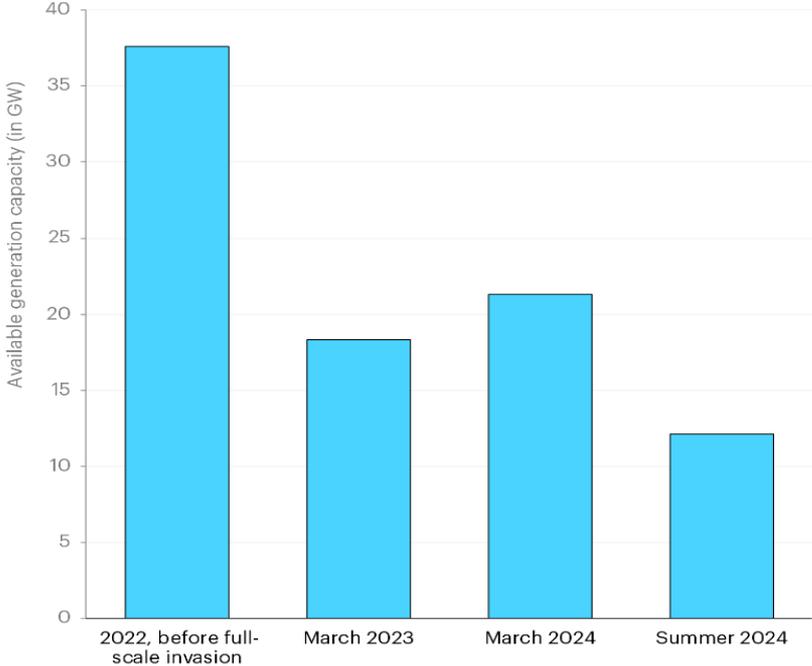
- Meetings with the Ministries of Energy, of Infrastructure, and of Environment, the Energy Community, Naftogaz, the State Agency on Energy Efficiency, Kyiv School of Economics and many others
- IEA ran two workshops:
 - power system modelling, with participants including from Ukrenergo, the Ministry of Energy, the National Academy of Science
 - battery storage, with participants from Ukrenergo, the Ministry of Energy, Guaranteed Buyer, DG ENER, DTEK, NEURC, regional DSOs
- Setting at the time: rolling blackouts daily occurrence, with many in Kyiv access to only four hours of electricity per day. Diesel generators throughout the city, with restaurants and shops using them to keep the lights on and the doors open. Daily air alerts



The Ukrainian power sector has been systematically targeted



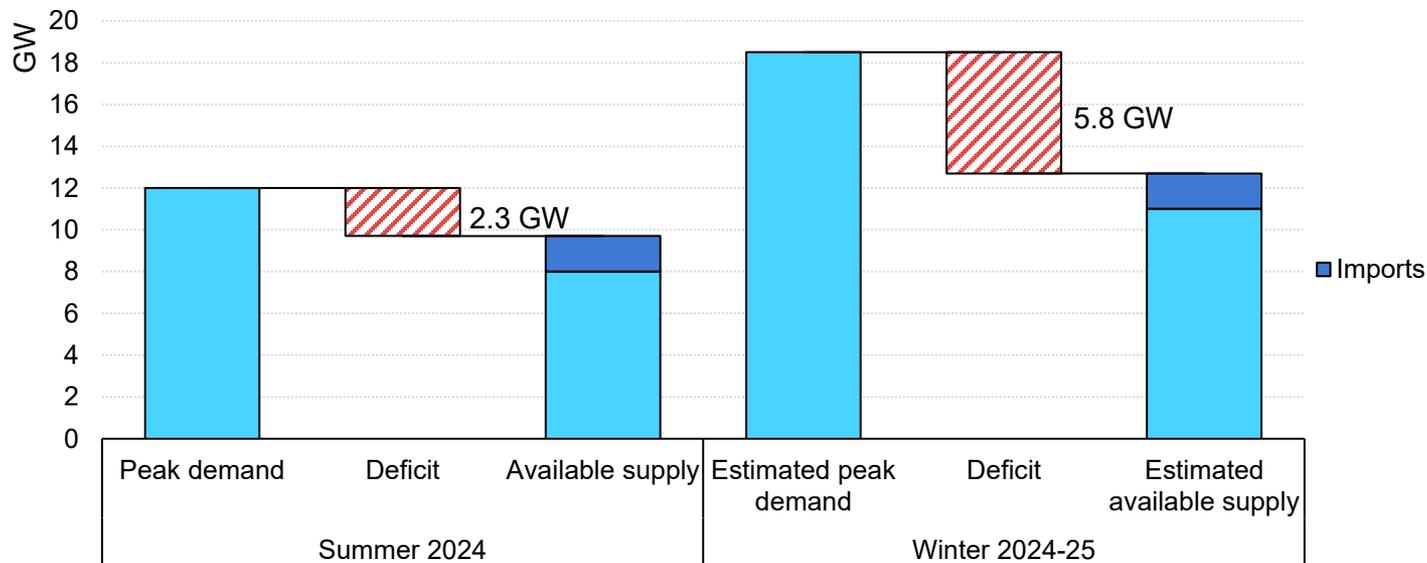
Estimated electricity generation capacity available to Ukraine at selected times



By the summer of 2024, Ukraine had only about one-third of its pre-war electricity generation capacity available, with severe damage also to transmission infrastructure; there have been additional attacks since

The electricity deficit will grow with high winter demand

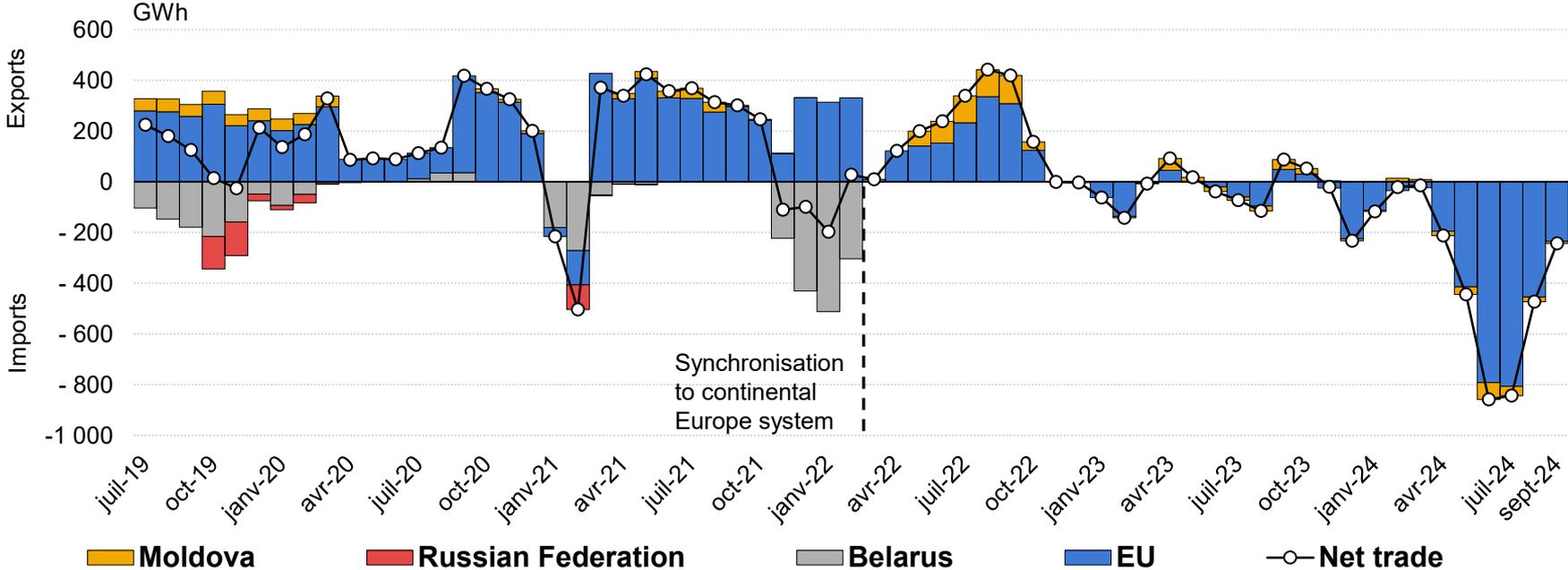
Estimated electricity deficit vs peak demand in Ukraine in summer 2024 and for winter 2024-25



The winter deficit in electricity supply deficit could reach as much as 6 GW. Rolling blackouts already mean that electricity is available only for a few hours a day in the worst-affected regions

Interconnection with continental Europe has been a lifeline

Net monthly trade of electricity of the Ukrainian power system



Interconnection with the main European system has made a crucial contribution to Ukraine’s electricity security. ENTSO-E increased firm export capacity from 1.7 to 2.1 GW for the period December 2024 – March 2025.

Ukraine's district heating network has also been attacked

- Ukraine's extensive district heating network, which provides most of the hot water and space heating in large cities, has been repeatedly targeted by Russian forces since the 2022 invasion
- As with the attacks on electricity infrastructure, damage to heat supply is highly disruptive to the population
- Ukraine was spared catastrophic losses to its heat supply during the 2022-23 and 2023-24 winters, when attacks were more limited and the winters relatively mild.
- With the escalation of attacks against Ukraine's energy infrastructure in 2024, the risks are significantly higher this winter, especially for front-line cities in the east.

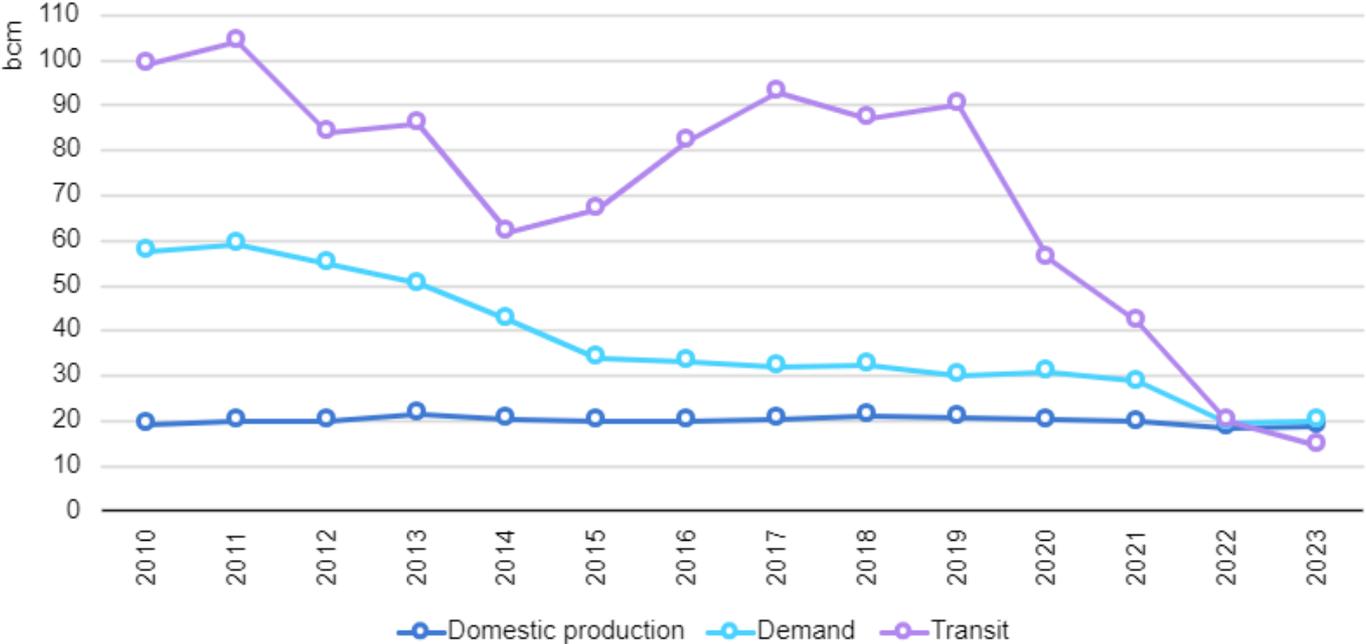
Average number of days when daily minimum temperature is below freezing



Russian transit flows via Ukraine set to come to an end in December



Natural gas production and demand in Ukraine and Russian transit flows



Unless some kind of deal is reached, transit and interconnector agreements will expire at the end of 2024

1. Bolster the **physical and cyber security** of Ukraine's critical energy infrastructure
2. Expedite the delivery of **equipment and spare parts** for repairs
3. Increase and **decentralise power supply**
4. Increase **electricity transmission capacity** with the European Union.
5. Engage consumers in **energy saving and demand response**, while continuing investments in energy efficiency
6. Prepare **back-up options for winter heating**
7. Build up **natural gas storage** levels
8. Strengthen **firm gas import capacities** from the European Union
9. Coordinate approaches to Ukraine and **Moldova**
10. Lay the groundwork for a **modern, market-based, resilient and sustainable Ukrainian energy system**, well integrated with the EU system

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