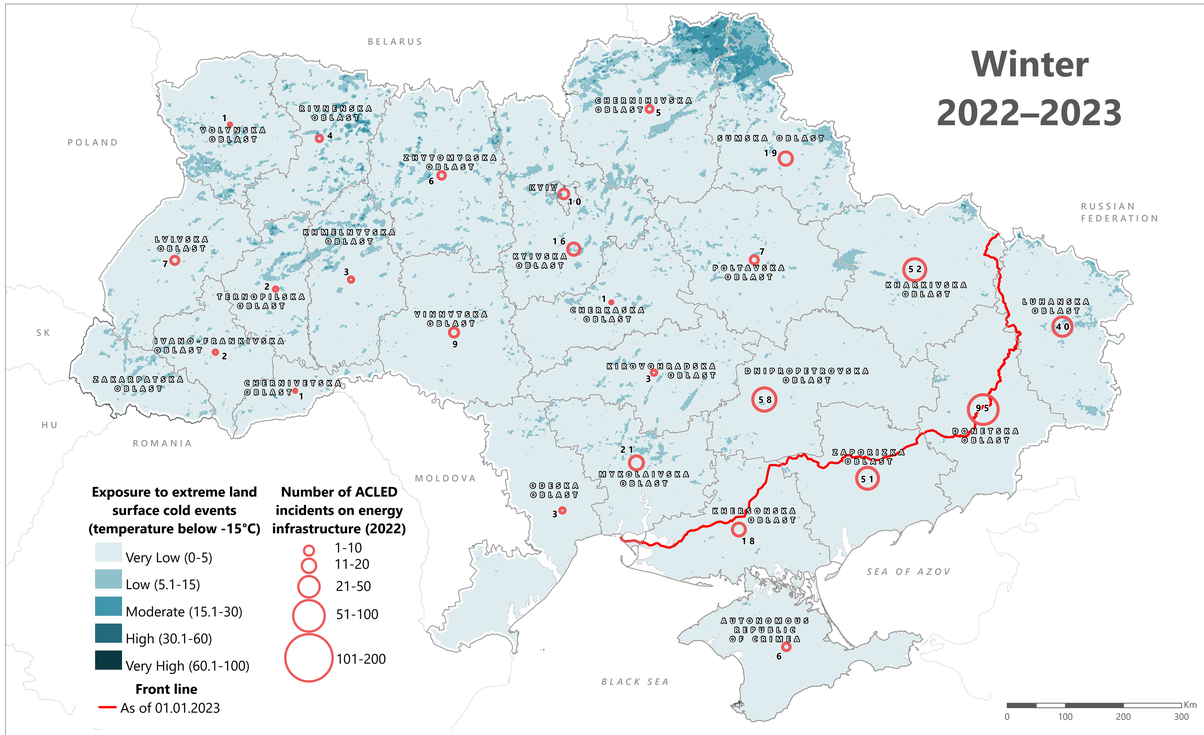
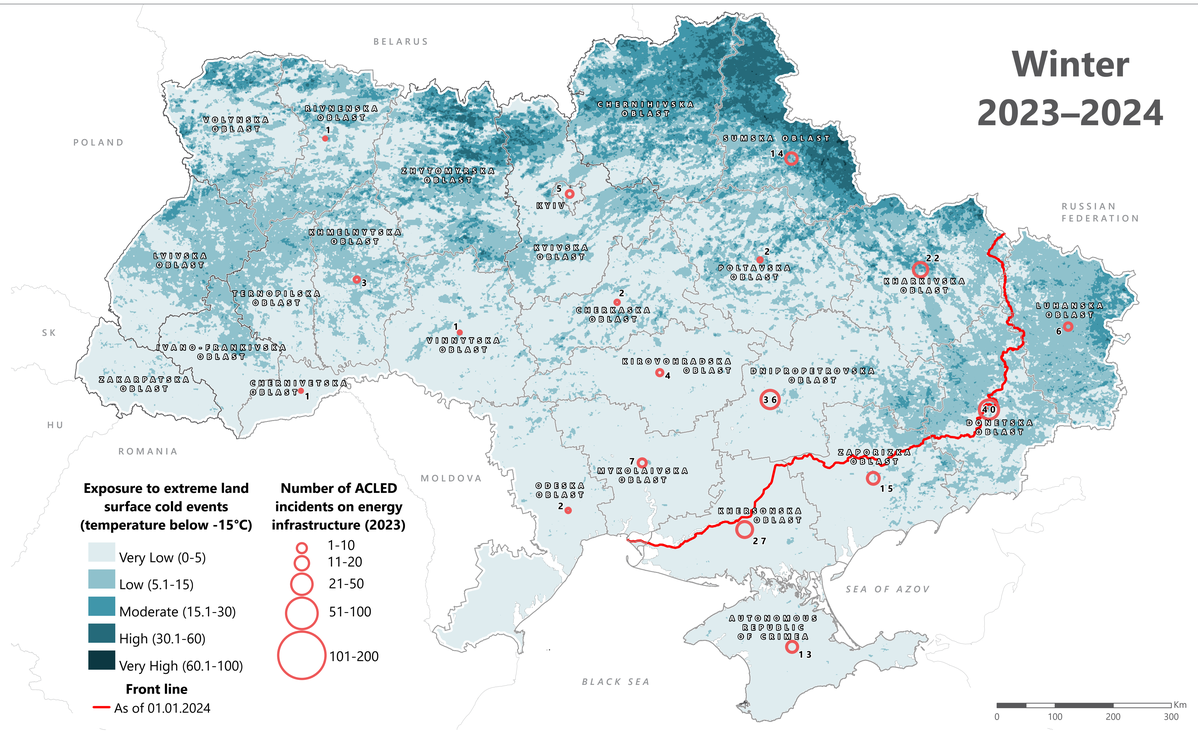
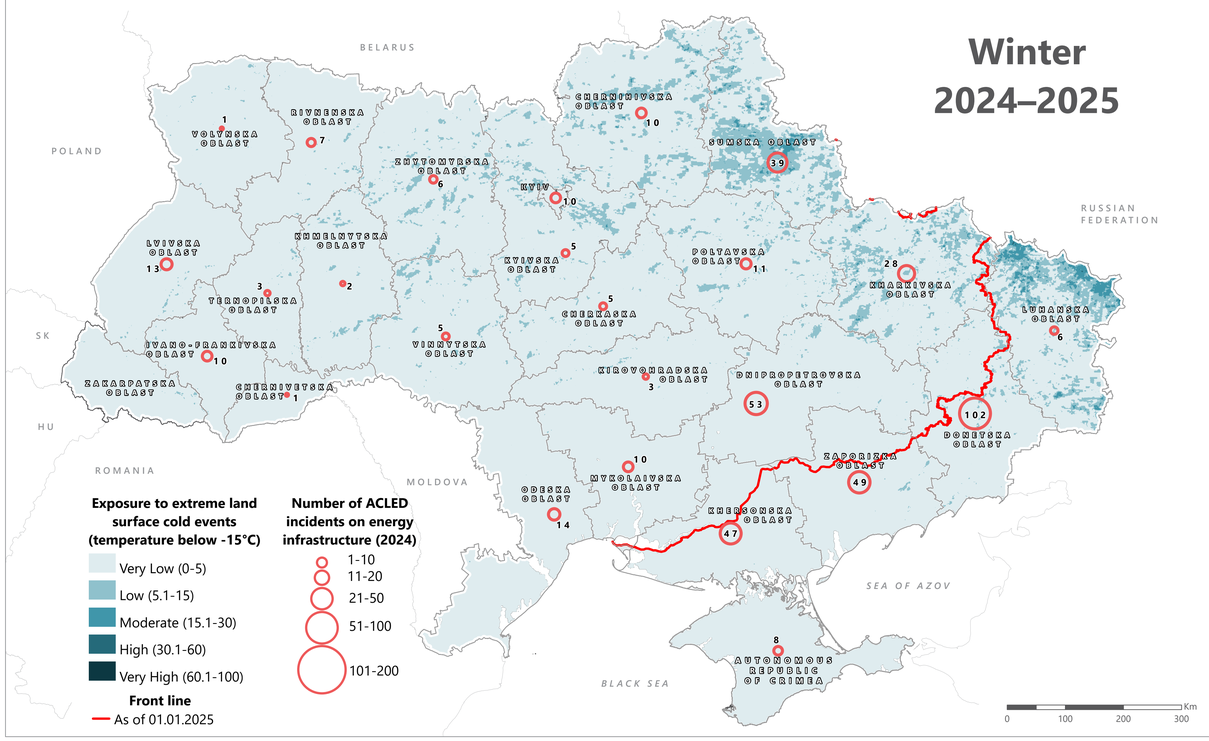
UKRAINE

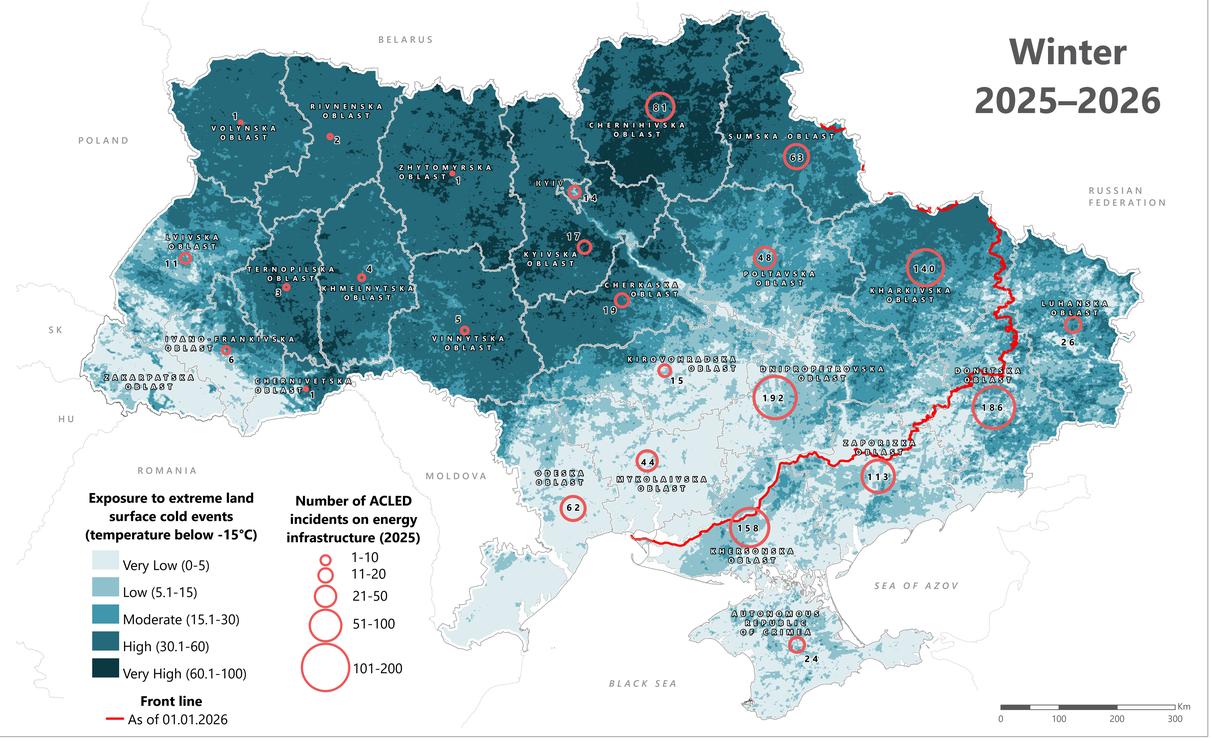
Dynamics of Extreme Cold Exposure and Attacks on Energy Infrastructure (Winters 2022–2026)

For Humanitarian Purposes Only
Production date : 26 March 2026

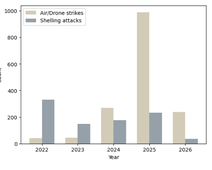








Number of ACLED incidents on energy infrastructure (February 2022- February 2026)



This series of maps shows the overlap between severe winter conditions and attacks on energy infrastructure across four winters in Ukraine, highlighting regions where populations face dual threat of extreme cold and energy shortages. While earlier winters show moderate cold exposure, Winter 2025–2026 indicates a sharp increase in "Very High" (more than 60%) exposure, especially in northern and eastern regions. Energy infrastructure incidents remain concentrated along the frontline and in eastern oblasts, where severe cold overlaps with the highest frequency of attacks.

Methodology: The percentage of days with land surface temperature (LST) below −15°C during the cold season is calculated in GEE using MODIS dataset. The number of such days is summed and divided by the total number of winter days to calculate the percentage of days experiencing extreme cold conditions. Quantitative percentage ranges for each qualitative exposure category were set manually to represent a uniform distribution of data. In mountainous areas, high cloud cover reduces observations, distorting results. Frontline is based on DeepState data at the start of each year and may include generalizations due to the fluid situation. ACLED data were aggregated at the oblast level and include only energy infrastructure-related events in Ukraine.

Data sources:
Percentage of days with land surface temperature below -15°C (GEE code); Armed Event Data: ACLED (Data on attacks on Ukrainian energy infrastructure); Front line: DeepStateMap.live; Administrative boundary: OCHA.
Coordinate System:WGS 1984 Web Mercator Auxiliary Sphere
Contact: mapping.ukraine@impact-initiatives.org

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by REACH partners, associates or donors mentioned on this map.

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