

Winterization 2022/2023: climatic conditions analysis & infrastructure damages

Ukraine, Food Security and
Livelihoods Cluster meeting,
4th Aug 2022



Climatic conditions & infrastructure damages

Methodology

- **National scope:** review of media and official authorities reports on damages and destruction of energy and heat production infrastructure in Ukraine since 24 Feb 2022
- **Satellite data analysis:** characterize average and extreme conditions related to winterization by performing analysis of remote sensing data (start and duration of the heating period, occurrence of the cold waves)
- **Output:** factsheet #1 on winterization 2022/23

Key aspects of winterization 2022/23

Heating period

- Start and length fluctuate from year to year determining the necessary resources
- Substantial difference in space across the country's oblasts

Cold waves

- might cause heat supply disruption, affect food supply chains and limit people's mobility
- require more than average resources available that might be challenging

Information gaps

- limited access to information on heating sources
- lack of area-based assessment of individual people needs in the light of winterization

Infrastructure

- lost of control under heat and electricity plants (without major damages)
- damage of heat and electricity production and supply facilities

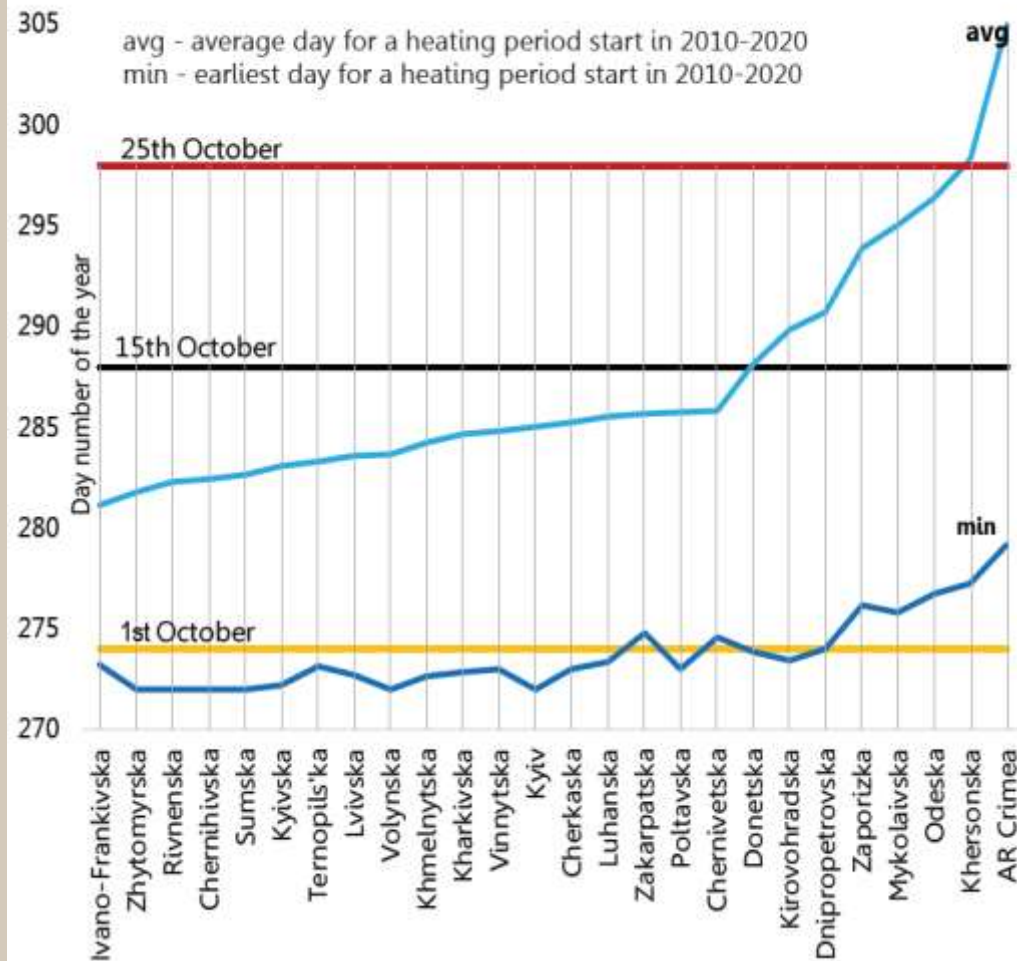
Heating period across Ukraine

Map 2. The average duration of the heating period in days. Data source: [\(link\)](#).



Data sources: Own calculation based on ERA5 Daily Aggregates (ECMWF / Copernicus Climate Change Service)

Graph 1. Beginning of the heating period in oblasts. Data source: [\(link\)](#).



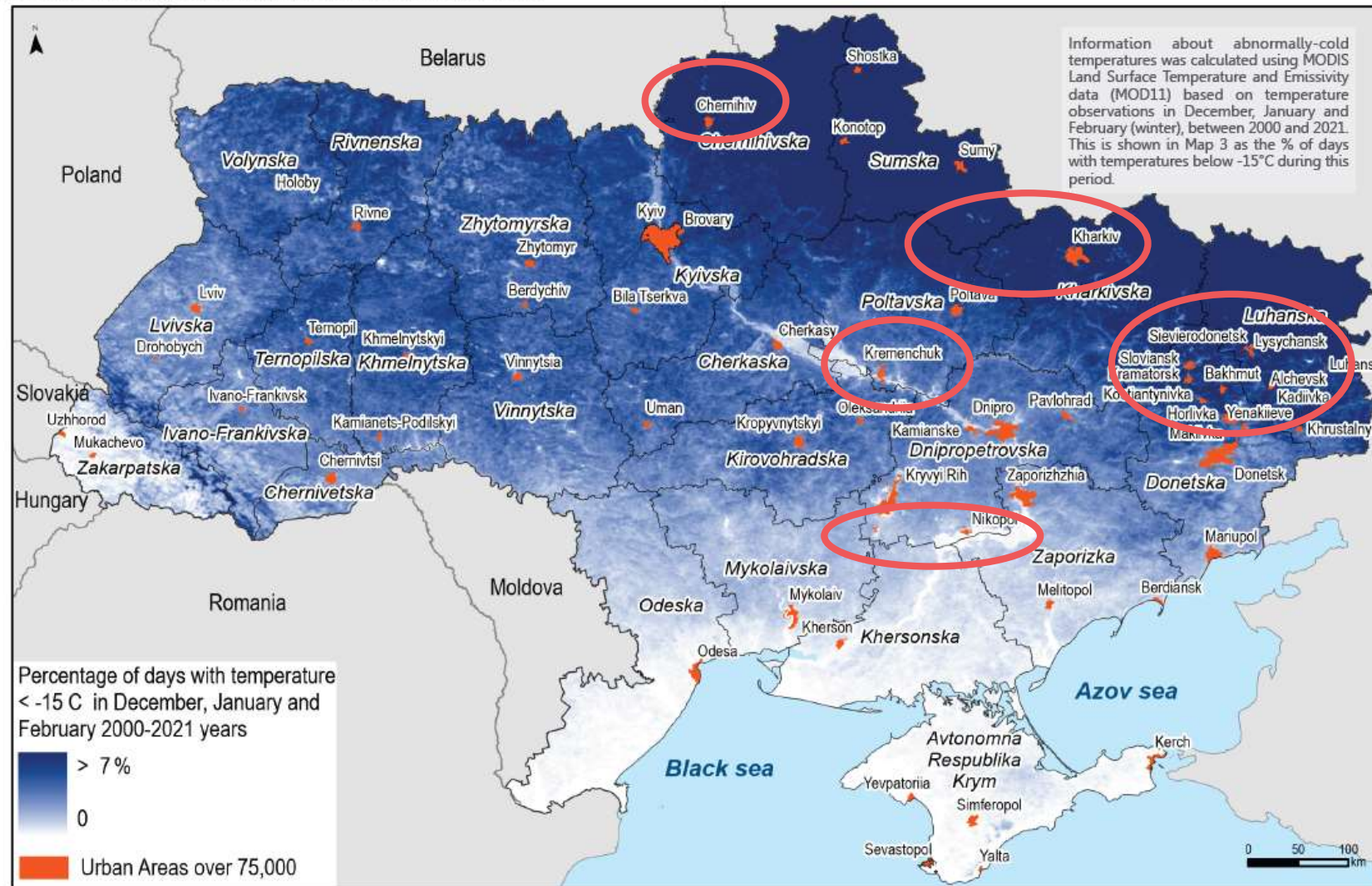
Winter conditions overview

During the last years (2010-2020) the number of frost days in Ukraine on average was 105 days

Ukraine experienced cold waves in 2006, 2012 and 2017 with a record 884 people died in 2006

The most damages of heat production and supply infrastructure experienced northern and eastern oblasts of Ukraine which also are prone to more frequent and prolonged cold waves

Map 3. Percentage of days experiencing cold waves in Ukraine (2000-2021)



Suggested mitigation approaches

- Ensure vulnerable groups can access financial support for heating
- Provide shelters for the homeless and raise awareness of them
- Ensure warning system in place to warn residents of cold waves
- Increase awareness of home heating best practices, especially during failure of the mains supply

Key takeaways

- Sumska and Kharkivska oblasts are the most vulnerable to low winter temperature due to a combination of more severe climatic conditions and considerable damage to infrastructure and private houses caused by hostilities
- Many cities in Luganska and Donetska oblast as well some cities damaged by rocket attacks (Kremenchuk, Chernihiv, Okhtyrka) might face substantial challenges in preparation to the next heating period
- Also, winter conditions in the western mountain region might last longer than average in Ukraine because of harsher climatic conditions



Other key findings

- Only one thermal power plant remained operational in Donetska oblast
 - Four heat energy production plants are severely damaged
 - Power plants close to the conflict line are under dense shelling and have been or might be stopped
 - Transportation of fuel for energy plants on occupied areas was terminated
- Other disruptions (water supply, pipeline & powerline damages) might impact winterization
 - Private apartments and public facilities in Central and Eastern Ukraine along the Kyiv city rely more on central heating systems → are more vulnerable to their damage

FACT SHEETS

Follow all IMPACT activities in the Ukraine Crisis [here](#)

Agricultural monitoring products

- [Winterization 2022/23 #1](#)
- Winterization #2 (TBD)

THANKS FOR YOUR ATTENTION!



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