

RUSSIA IS THREATENING EUROPE BY TARGETING UKRANIAN ENERGY

Implications of the Russian-Ukrainian War

Some neighborhoods are beyond repair



Russian missile attacks start day in Ukraine

Kyiv said Moscow used missiles and unmanned aerial vehicles (UAVs) in airstrikes that started in the morning



- Oct. 8 Kerch Bridge blast
- Cities hit by Russia's Oct. 10 airstrikes

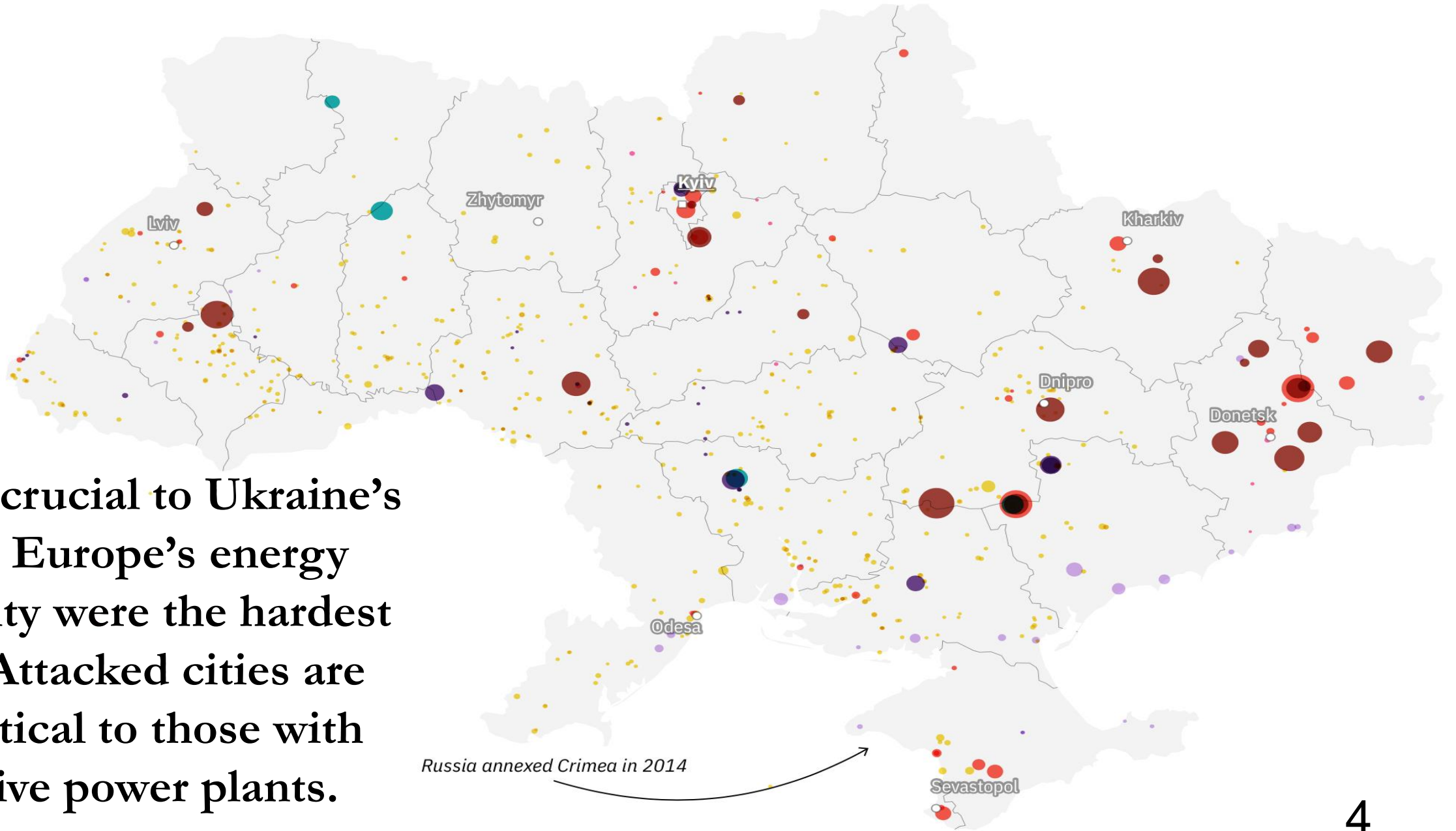
Oct. 10, 2022



Critically damaged 30% of Ukraine's energy infrastructure

Active/partially active power plants (size represents capacity, MW)

● Coal ● Gas ● Oil ● Onshore wind ● Solar PV ● Hydro ● Biopower ● Nuclear



Cities crucial to Ukraine's and Europe's energy security were the hardest hit. Attacked cities are identical to those with active power plants.

- Monday's shelling was the most intense since the early days of the war
- Deliberately targeted energy and other critical infrastructure
- September 19th attack on Ukraine's Southern nuclear power plant at [Yuzhnoukrainsk](#).
- September 12th attack on Ukraine's second largest thermal powerplant – major cities faced blackouts



Before the war, the Ukrainian energy sector was one of the most developed in Europe.

one of the largest electricity generation capacities in Europe (~60 GW)

top-3 natural gas producers (~20 bcm)

had the largest underground gas storage in Europe (32 bcm)

Largest Nuclear power plant in Europe: Zaporizhzhia

- Ukraine has proved oil reserves of 400 million barrels, and produces around 74,000 barrels per day
- Its natural gas reserves are around 39 trillion cubic feet (tcf), compared to its own domestic consumption of about 1 tcf per year. (Russia supplied the with 3.3 tcf per year)
- Second to France in nuclear power generation

Ukraine's nuclear electricity production

In 2021, **more than half** of Ukraine's electricity was produced with nuclear power. Its Zaporizhzhia Nuclear Power Plant - **Europe's largest facility** - was captured by Russian forces in March. The UN's IAEA warns that damage to the plant could **lead to a nuclear disaster**.



Station blackout: loss of electric power.

- Nuclear plants rely on electricity to run cooling pumps and control systems.
- If power from the electric grid is lost, diesel generators produce backup power
- Loss of power from both the grid and the diesel generators results in station blackout
- the condition that caused the radioactive releases at Fukushima, even though the reactors there had shut down.

Winterization

- Blankets, warm clothing
- Generators
- Setting up „hot spots” in community centers
- Setting up „warm rooms” in every 5-10 houses to keep at room insulated
- Food supply
- Red zones with active fight
- Liberated areas
- Major cities
- Rural areas
- IDP centers
- All parts of Ukraine are affected due to the damages of energy infrastructure

Implications of weaponizing dependency including energy

strong energy chokehold on both Ukraine and the EU

Market disruptions and broken market

The EU and neighboring countries are under tremendous financial, political and societal pressure

- European unity is in question
- Intend to cease support for Ukraine
- the EU member states, and the neighboring countries' economies are on the rocks
- Europe is on energy diet itself- unable to sell surplus or share 9

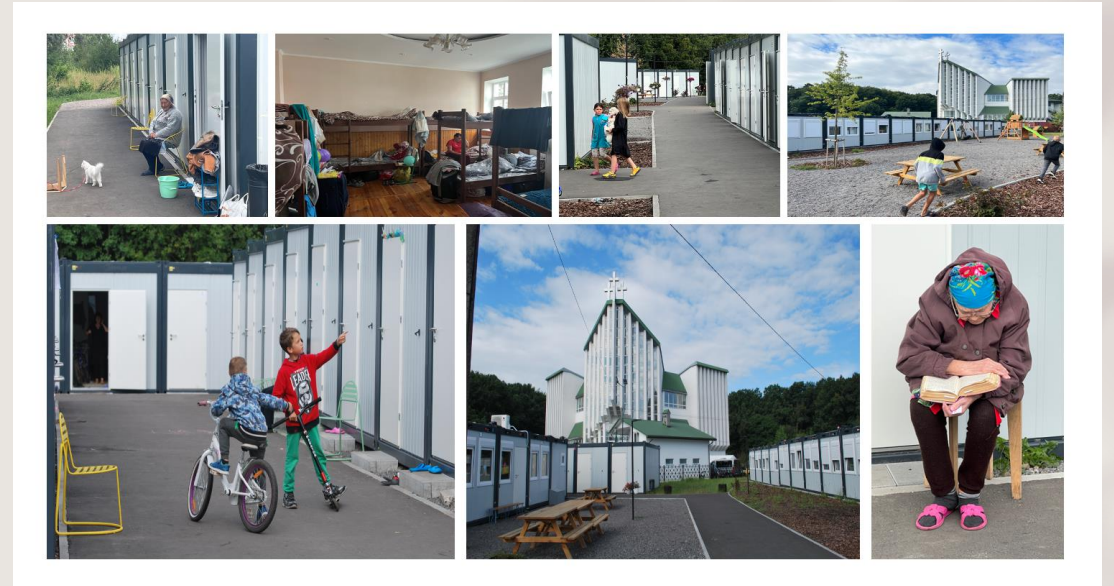
Implication on refugee outflow and internal movements in Ukraine

IDP movement is from East-West direction intensifies

Due to the lost perception of safe western regions people are expected to leave the country to Europe

Energy disruptions and infrastructure shelling could intensify this situation

- Nuclear threat is an additional fear factor itself
- Given it has been an important part of energy generation, could be another trigger factor
- Due to the shelling more houses will be beyond repair
- Shortages of winterization supplies



Thank you for your attention!