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## The bombing of Ukraine's Kakhovka dam affects all of us

### ***Бомбардування Каховської греблі торкнулося всіх нас***

*Керуючий директор американо-української компанії з декарбонізації "Еней" С. Джаянті зазначає, що екологічні та гуманітарні наслідки підризу Каховської ГЕС вже катастрофічні, адже десятки тисяч людей втратили свої домівки. Мільйони людей не мають питної води: Херсонська, Миколаївська, Дніпропетровська та Запорізька області покладалися на греблю та її резервуар для води, як і Крим. Щонайменше 150 метричних тонн нафти та незліченну кількість хімікатів просочилися в річку Дніпро на шляху до Чорного моря. До нього приєднається більше від затоплених заправок, заводів та очисних споруд. С. Джаянті зазначає, що руйнування Каховської ГЕС завдасть ще більших збитків і без того напруженому сільськогосподарському сектору України. Він також додав, що за кордоном будуть відчуватися стрибки цін та скорочення поставок сільськогосподарської продукції та промислових товарів.*

<https://time.com/6285811/ukraine-kakhovka-dam-bombing-impact-essay/>

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The June 6 bombing of Ukraine's Kakhovka Hydroelectric Dam, almost certainly an act of Russian aggression, is going to affect your life more than you think. The consequences for agricultural and commodities markets will be inflationary, the fallout could be literally radioactive if the Zaporizhzhya Nuclear Power Plant loses access to water, and the implication is that Russia is inching steadily closer to the unimaginable, possibly even the use of nuclear weapons.

Sixteen months into what has become a drawn out slog of numbing trench warfare in Ukraine's east, many people around the world have dulled to the daily missile and drone counts out of Kyiv and reports of muted counteroffensives. It is almost impossible for a human in the modern world to maintain attention for this long. But in a war that has seen several escalations worthy of global attention—the Bucha massacre, the bombing of a Mariupol maternity hospital, the Azovstal Steel Works siege, the sabotage of Nord Stream, the abduction of Ukrainian children, to name a few—the destruction of the Kakhovka Dam is a shocking development. You should care.

#### A Look at the Destruction of the Nova Kakhovka Dam in Ukraine

The environmental and humanitarian consequences are already catastrophic. Tens of thousands of people have lost their homes. Thousands are stranded in 12 foot-deep flood zones. Millions have no potable water—Kherson, Mykolaiv, Dnipropetrovsk, and Zaporizhzhya oblasts relied on the dam and its reservoir for water, as did Crimea. At least 150 metric tons of oil and countless volumes of chemicals have leaked out into the Dnieper River en route to the Black Sea. More will join it from flooded gas stations, factories, and sewage facilities. Pictures of dead Ukrainian fish piled by the millions are already viral. There is so much more.

Read More: [Here's Everything We Know About the Nova Kakhovka Dam Attack](#)

These are tragedies of the purest form. But these impacts aren't going to be suffered beyond the immediate geographical area. What will be felt abroad are the price hikes and supply crunches for agricultural products and industrial commodities.

The global inflation of 2022 that was caused by the Russian invasion of Ukraine has eased, or at least the rate of inflation has declined. That situation was triggered by a perfect storm of COVID fiscal and monetary policies, China's lockdown, post-COVID supply chain crunches, Russia's manufactured energy crisis, and the impact of the war on Ukraine's agricultural sector. The world wasn't prepared then for the food shortages and ensuing price surges that resulted, however predictably, from the brutal invasion of

one of the most important agricultural countries by another one of the most important agricultural exporters.

The world was again caught off guard when the Kakhovka Hydroelectric Dam was detonated this week. Ukrainian grain exports are still more than 40% lower than before the war, leaving little give in supply chains and markets globally. The Dnieper River is a critical transit route for the export of Ukrainian wheat, barley, corn, rapeseed, and sunflower oil. Concerns about continued supply of these commodities and the possibility of shortages in import markets sent prices soaring as news of the dam's collapse hit global markets. Wheat rose 2.4% to \$6.39 per bushel, corn by more than 1% to \$6.04 per bushel, and oats by 0.73% to \$3.46. These price increases will contribute to tight markets around the world and thus to inflation.

Meanwhile, the Kakhovka Dam's destruction will further damage Ukraine's already strained and struggling agricultural sector. Farmers need land and water to plant and harvest. For a vast swath of Ukraine's most fertile regions, the loss of the Kakhovka Reservoir will mean they cannot expect a productive crop. According to the Ukrainian Ministry of Agriculture, 10,000 hectares (25,000 acres) of agricultural land will be flooded to the west of the Dnieper River, and many times more on the Russian controlled eastern side.

Many areas that have not flooded will lose irrigation. At least 31 irrigation systems in the Dnipropetrovsk, Kherson, and Zaporizhzhia oblasts—regions—are disrupted. Collectively, this means that 584,000 hectares (1,443,096 acres) have lost water, which will in turn reduce Ukraine's harvest by approximately 4 million tons of grains and oil crops based on 2021 yields, valued at \$1.5 billion. That's on top of the 40% lower exports already experienced, a drop which considerably contributed to the world's 2022 inflation rates of 9% and above. No one knows how low the water levels will go, but there is nothing to prevent the reservoir from completely emptying out, so the affected area will continue to grow.

Similarly, the Dnieper River and its abutting oblasts are some of Ukraine's most important industrial centers. Iron smelting and steel production require water in the manufacturing process, and surrounding factories have now lost the Kakhovka Reservoir as a source. Both Ukraine's Metinvest and ArcelorMittal have numerous plants and factories in the affected areas. As of June 7, ArcelorMittal had suspended crude and rolled steel production there, and Metinvest was already operating at 35-45% capacity. This will exacerbate the already problematic situation caused by Russia's February 24, 2022 invasion, which resulted in a drop in Ukrainian steel production of 70.7%, to 6.26 million tonnes and greatly contributing to European and global supply chain crunches and accordant price increases.

The inflationary spike from the agricultural and commodity disruptions in Ukraine will certainly not cause price increases equivalent to those of 2022, not least because the energy crisis impacts are already—still—at play. But there will be pressure on food and steel, at very least, and prices will rise worldwide. A disruption like this could derail the progress governments are beginning to achieve in tamping down 2022's inflation surge.

Another reason you should care about the bombing of the Kakhovka Dam is the elevated risk of a nuclear disaster. The loss of the Kakhovka Reservoir puts the besieged Zaporizhzhye NPP at greater risk of a meltdown because it relied on the dam for water to cool the reactors and spent fuel. This first became a concern in early 2023 when satellite footage showed that Russian troops were experimenting with intentionally draining the Kakhovka Reservoir. This, and other evidence including Russia's systematic targeting of the Zaporizhzhye NPP, leaves pretty much all observers but Russia convinced that Russia itself blew up the dam on June 6. Nuclear terror appears to be the goal.

The Zaporizhzhye NPP, the largest nuclear plant in Europe, is a VVER-1000 pressurized light water reactor. This means that a Chernobyl-style meltdown is not possible (the core has water inside, not graphite), but the risk of a Fukushima Daiichi-style cooling system failure has been carefully monitored by the International Atomic Energy Agency (IAEA) since Russia started hitting the NPP with rockets and

drones in early 2022. Russian troops now occupy the plant, which Ukraine has turned off to reduce the likelihood of a disaster amid repeated Russian strikes on the transmission lines that power the plant's cooling system. For several periods since the invasion, the NPP has run on back up generators, and it can use its own power for short periods of time if power grid access and generators simultaneously fail. Thus far, this hasn't happened.

But the Kakhovka Dam bombing has increased the risk of a problem developing because the loss of the reservoir means there is no water to cool the NPP even if there is power to run the cooling system. The IAEA said on June 7 that there is no immediate danger, however. If the water levels in the reservoir fall below 12.7 meters (41.67 feet), the lowest level at which water can be pumped upstream to the Zaporizhzhye NPP, there are alternate sources that can be used to source cooling system water. Nonetheless, the IAEA is currently stockpiling water at the site in case of need.

This need may arise quickly. On June 6 the rate of loss of water in the Kakhovka Reservoir was estimated to be 35 cm/hour (13.77 inches) by the Russia-installed "mayor" of the Zaporizhzhia oblast, Vladimir Rogov. In just the first 24 hours water levels dropped by 2.5 meters (8.2 feet), according to Ukrhydroenergo. The reservoir's maximum depth is 26 meters (85.3 feet), so it appears to be losing almost a tenth of its water per day. If the water runs out completely, and the IAEA cannot secure sufficient alternate sources, there is a real risk of a nuclear meltdown that could have regional consequences. Ironically, the lack of the Kakhovka Reservoir may keep any nuclear disaster relatively contained because it would prevent the spread of radioactive material by water, as happened with the Fukushima meltdown.

Finally, if Russia was willing to blow up a dam that threatens tens of thousands of lives and millions of tons of agricultural produce (and also risks a nuclear meltdown), one must accept that there may be no red lines for Vladimir Putin. A man with no compunction who wields a large nuclear arsenal is a threat that everyone everywhere should care deeply about stopping. You should be scared. Beyond the humanitarian, ecological, economic, and other consequences of the bombing the Kakhovka Dam, this inconceivable escalation in the attacks on civilian infrastructure should make it very clear that nothing is off the table in his assault on Ukraine. The consequences of this proving true will affect all of us.