

Elevators and granaries are the foundation of the grain market

In the face of closing borders, grain storage has become even more important. It is possible to ensure the preservation of grain for up to six months only at elevators. Elevators are designed not only for storage, but also for drying, finishing and calibrating grain. Thanks to their large storage capacity they make possible to store in there the grain destined to exportation and are in fact the facility from where the grain is dispatched for export. Due to the destruction of the Black Sea grain terminals (the largest in the country in terms of capacity) and the blockade of the Black Sea ports after the escalation of hostilities in Ukraine on 24 February 2022, grain is currently sitting in granaries and elevators, which would normally stand empty at this time in anticipation of the new harvest. Ukraine is expected to have a surplus of about 20 million tonnes of grain (domestic consumption is about 33% of total production) ([link](#)). Without access to ports, grain exports have fallen to 2 million tons per month (approximately 33% of last year's volume) ([link](#)).

The blockade of grain exports causes a pressure on storage capacity that is further exacerbated by the several missile attacks targeting also grain silos. As the harvest season begins, the results of this damage and particularly grain storage are becoming more pressing issues with the power to affect future agricultural seasons as well ([link](#)). Therefore the farmers will be threatened with a financial crisis, been unable to sell the harvest which will lead to a reduction of winter crops of the next season by up to 60% ([link](#)). Unblocking the operation of the river ports on the Danube made it possible to export two-thirds of Ukrainian grain to Romania. But these resources are not enough to restore exports to the level of 2021. The Danube Canal will work as long as island Zmiiny is under the control of Ukrainian authorities ([link](#)). On 23 July, the UN, Ukraine and Turkey signed an agreement on unblocking exports for grain through the Black Sea. The first shipments of Ukrainian grain began on 23 July from three Ukrainian ports-Odesa, Yuzhne, and Chornomorsk-which will allow the export of millions of tons of grain at a moment when the summer grain harvest has already begun. The contract signed under this agreement will be valid for 120 days from the date of signing and will be automatically extended if neither party notifies that they want to terminate it. If the ports stay open, it is estimated that there should be sufficient time for farmers to recover enough funds from exports in order for them to afford to sow next year's crop starting in September ([link](#)). However, since when the agreement was signed, there has been an attack on Odesa ([link](#)).

Ukraine has 1,378 grain elevators across the country

As of June 13, roughly 22% of Ukraine's farmland is under occupation, including 28% of winter crop areas and 18% of summer crops ([link](#)). The area of agricultural land that was sown during spring field work 2021-2022 is 14% less than in the previous year ([link](#)). In 2022, under the threat of a global food crisis, Ukrainian farmers increased the cultivation area for wheat by 2%. On the other hand, due to conflict, the sown areas for key food crops corn and sunflower decreased by 29% and 16%, respectively, in the past spring. Sunflower and corn sowing campaigns were most affected in the same oblasts in which the most granaries were destroyed or occupied ([link](#)). On the territories affected by ground hostilities and occupation in Zaporizka, Donetsk, Kharkivska, Mykolaivska, Khersonska and Luhanska oblasts sowing was disrupted, which led to significant decrease in the areas under spring crop (corn, sunflower), as seen on the map on page 2 ([link](#)). However, in some regions, like Zhytomyrska oblast, less affected by hostilities the wheat sown area increased by 26.2% and the elevator capacity decreased due to the destruction of the Ovrutsky elevator ([link](#)). It is estimated that, at a national level, for the upcoming harvest, farmers need space for 10 to 15 million tons of grain. This quantity is equivalent to about 24% of the crop expected for the year 2022/2023. In case of lack of elevator capacity, priority will need to be given to the most demanding oilseeds ([link](#)).

Impacts of the conflict on elevator capacities

Agricultural fields, farming equipment, and storage infrastructure have been damaged or destroyed since the start of the escalation. Before then, the grain elevators across the country had a total capacity of over 57 million tonnes, sufficient to store on average over 80% of total cereal production ([link](#)). All storage capacity for Luhanska, Donetsk, and Khersonska oblasts (about 3.8 million tonnes) has been lost due to occupation ([link](#)). Further reduction in capacity due to occupation and destruction can be observed in Zaporizka (where 88% of capacity was lost), Odeska (56%), Mykolaivska (51%), Kharkivska (44%) ([link](#)). In addition to the damages provoked by artillery, there have also been reports of theft of agricultural products from storage facilities in occupied territories. Grain, oilseeds and mineral fertilizers have been reportedly illegally exported from the Pologiv elevator (140,000 tonnes have gone missing) in the Zaporizka oblast and the Snigurivsky elevator (80,000 tonnes) in the

Repair of metal silos can go up to \$250/tonne

Mykolaivska oblast ([link](#)), as well as Novooleksiivsky elevator (66,500 tonnes) in Khersonska oblast ([link](#)). Fifteen thousand (15,000) tonnes of sunflower and 10,000 tonnes of grain were removed from the granaries of the Luhansk region. ([link](#)). Attacks on grain terminals further aggravate Ukraine's already severe export crisis. Because so much grain in Ukraine is intended for export, many storage sites are located near the Black Sea ports, making large amounts of grain at risk due to the geography of the conflict.

Destroyed elevator capacity overview

Since 24 February, at least 25 grain saving objects, such as a elevators, grain terminals and agricultural warehouses, have been destroyed, severely damaged or occupied. The largest of the destroyed elevators was the Mlybor elevator in Chernihivska oblast, with a simultaneous grain storage capacity of 102,000 tonnes ([link](#)). Combining just the fifth largest destroyed elevators accounts for a combined 476,000 tons of grain storage across the country (see table) ([link](#)).

Five largest destroyed elevators in Ukraine since 24 February, 2022

Elevator	Capacity (tonnes)	Oblast
Mlybor	102,000	Chernihivska
Kostyantyniv	100,000	Mykolaivska
Vyazum	100,000	Sumska
Ovrutsky	98,000	Zhytomyrska
Nibulon	76,000	Dnipropetrovska

These large elevators are not the only ones that have been damaged. To name a few key examples, in Dnipropetrovska oblast, a grain hangar, a grain warehouse and two elevators were destroyed by rocket fire ([link](#)). A bomb in Luhanska oblast completely destroyed the Rubizhne-Agro elevator complex, where a laboratory with the most modern equipment was installed, and which could store 30,000 tonnes of grain ([link](#)). During a rocket attack in Odeska oblast, the premises of the "Artsyzhlib" plant were damaged, destroying, among other things, the silo of an elevator where 5,000 tonnes of grain were stored ([link](#)). The situation in the currently occupied territories of Zaporizka and Khersonska oblasts is critical with respect to elevator capacities. In the Zaporizka oblast, the operation of four grain warehouses, with a combined capacity of 251,000 tonnes and three elevators: Orikhiv (57,000 tonnes), Vasylkivsky (36,800 tonnes) and Tokmak (47,400 tonnes) stopped completely due to the conflict ([link](#)). In the Khersonska oblast, the elevator of the "Bilokrynytsk Grain Products Combine" (52,000 tonnes) was significantly damaged and the

operation of two grain warehouses, with a combined capacity of 96,800 tonnes, stopped completely due to the conflict. On April 22, 2022, the "UkrTransAgro" Grain Terminal, which contained 30,000 tonnes of grain, was completely destroyed in the Mariupol Seaport ([link](#)). On June 4, Russian troops launched a missile attack on the Nika-Tera specialized marine terminal in Mykolaiv, on the territory of which Ukraine's second largest grain terminal is located - 210,000 tonnes. The warehouses of the elevator with grain meal burned for 2 days ([link](#)). On June 28, the occupiers fired at two more large grain terminals in Mykolaiv, which belong to the international companies Vittera and Bunge Ltd. Vittera's grain terminal had a total storage capacity of about 150,000 tonnes, with a combined shipment capacity about 3 million tonnes for soybeans, sunflower, and wheat. Bunge Ltd had a storage capacity of 3 million tonnes ([link](#)). On July 7, two agricultural hangars were damaged and 35 tonnes of grain were destroyed as a result of rocket fire in Odeska oblast ([link](#)). An estimated 3.9 million tonnes of storage capacities could be at least partially damaged because of the war. By 8 June, the damages to storage facilities were estimated at 272.4 million dollars ([link](#)).

Opportunities

- Despite the military situation in Ukraine, new elevator facilities are being built or reconstructed in the [Ternopilska](#), [Poltavska](#), [Lvivska](#), [Vinnytska](#), [Ivano-Frankivska](#), [Volynska](#) and [Chernivetska](#) oblasts.
- In preparation for harvest, agrarian enterprises in Poltavska, Chernihivska, and Kharkivska oblasts are already restoring damaged elevators and resuming operation in previously suspended sites.
- In order to promote the construction of additional elevators, the Ministry of Agrarian Policy and Food of Ukraine has simplified all procedures for obtaining land, construction, creation of storage facilities ([link](#)).
- Due to the instability of prices of gas industry, elevators in Central and Western Ukraine are actively switching to alternative fuel (automatic solid fuel systems that work on waste of own production (wood pellets, sunflower husk, grain waste)), which will stabilize the resource-intensive grain drying process in the market of elevator services ([link](#)).
- The US government and Poland's Ministry of Agriculture have committed to help create grain storage networks along the Ukrainian border to help preserve the harvest and ensure future supplies to world markets ([link](#)).
- Grain storage experts named alternative methods of grain storage in conditions of port blockage: grain storage in polymer sleeves, modular and ring grain warehouses ([link](#)).

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Agrarian sector in proximity to conflict - 24 Feb. to 15 July 2022: Damage to elevator capacities

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