

# AGRICULTURAL WAR DAMAGES REVIEW UKRAINE

## Rapid Damage Assessment Issue 2

10<sup>th</sup> of November, 2022

### INTRODUCTION: \$6.6 BILLION IN AGRICULTURAL WAR DAMAGES

There are eight months into the full-scale war aggression of the RF against Ukraine. Ukrainian agricultural producers however, continue production to ensure domestic and global food security. Winter crops harvesting campaign, including the primary staple commodity for Ukraine – wheat, is now over, and we have the first survey of the producers farming in the war-affected areas. This provides us with new insights for our damage and loss assessment.

This is the second issue of the Agricultural War Damage Review. The estimates presented in the second issue are as of the 15<sup>th</sup> of September, 2022. They are based on the rapid damage assessment methodology compliant with the ones of the World Bank and FAO<sup>1</sup>.

Damages are valued in terms of the monetary values of physical assets which are destroyed (and stolen) or partially damaged (but still suitable for repairing/recovery) due to military actions and

occupation. They reflect the destruction of tangible assets and inventories .

**TABLE 1. DAMAGES VALUE BY CATEGORY**

Category	Total Value (million \$)
Machinery	2,885.4
Storage Facilities	1,062.5
Livestock	362.5
Perennial Crops	348.7
Inputs (e.g., fertilizers, fuel)	95.4
Stored Products	1,872.0
<b>Total</b>	<b>6,626.8</b>

<sup>1</sup> GFDRR, World Bank Group, European Union, United Nations. 2017. *Agriculture, Livestock, Fisheries & Forestry. PDNA Guidelines Volume B* 49 pp. <https://www.gfdr.org/en/publication/post-disaster-needs-assessments-guidelines-volume-b-2017>

Conforti, P., G. Markova, and D. Tochkov. "FAO's methodology for damage and loss assessment in agriculture." *FAO Statistics Working Paper Series (FAO) eng no. 19-17* (2020). <https://www.fao.org/3/ca6990en/CA6990EN.pdf>

## OVERALL APPROACH

War damages are yet uncertain, for the war is not yet over. Therefore, we rely on indirect approach: defining the areas affected by the war, establishing a baseline of the resources located on these territories before the RF's invasion, and applying category-specific damage coefficients for each type of damaged assets.

To establish the category-specific damage coefficients for each type of damaged assets, we use information from the survey conducted for the World Bank's Ukraine Rapid Damage and Needs Assessment by IPSOS. The survey covers four regions of Ukraine - Kyiv, Sumy, Chernihiv and Kharkiv regions. Because territories affected by the war have similar characteristics of the damages, we use the estimates for the Kharkiv region as a proxy for the Donetsk region and estimates from the Kyiv region as a proxy for the Mykolaiv region. For all other regions affected by war (Zaporizhzhya, Kherson, and Luhansk regions), we are using the same approach as in the previous issue of the review. The Center for Food and Land Use Research webpage provides a more

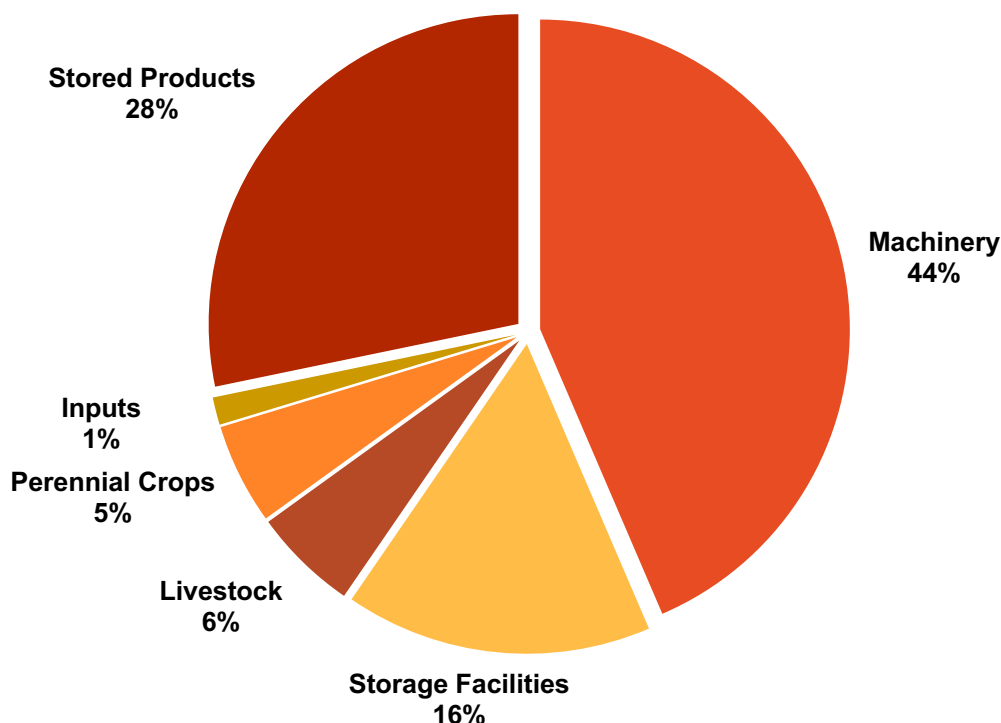
detailed description of the methodology and assumptions.

In the current estimation, as compared to the previous one, we transferred damages caused by unharvested winter crops (\$1.4 billion) from the damages to losses and did not include damages to the farmland and irrigation resources.

## RESULTS

As compared to the first issue, which reported \$4.3 billion of assets destruction by June 1<sup>st</sup>, the current estimate is **\$2.3 billion greater, - \$6.6 billion**, or 23% of all capital stock in Ukrainian agriculture. Comparing the damages over the same categories (by excluding the damage to the farmland resources and damage to unharvested winter crops from the previous estimates) - we see **more than a threefold increase** in the estimated damages to agricultural assets. This result is mainly caused by the emerging survey evidence demonstrating that the rate of damages is considerably higher than assumed in the previous version of our estimates.

FIGURE 1. THE STRUCTURE OF DAMAGES BY CATEGORY





## **MACHINERY \$2.9 BILLION DAMAGE**

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Agricultural machinery is the single largest category of damages that Ukrainian agriculture suffered since the beginning of the war. The estimated 84.2 thousand agricultural machinery and equipment units (11% of available before the 24th of February) are either totally or partially damaged, with the replacement costs reaching \$2.9 billion. In our calculations, we follow the "build back better" principle and assume replacement with new machinery in cases where the existing machinery is destroyed.

## **STORED PRODUCTS \$1.9 BILLION DAMAGE**

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The stored grains, oilseeds, and other agricultural outputs are the categories that are lost because of the physical damage from active hostilities and organized stealing by the invaders. Unfortunately, due to limitations in the original questionnaire, we cannot distinguish these two categories and thus present the combined estimates for the stolen and lost stored products. Based on the survey results for the Kharkiv oblast (the only oblast covered by the survey that suffered ground battles and occupation for over three months), we can conclude that the share of destroyed or stolen grain and oilseeds corresponds to the share of the farmlands in the region occupied by the RF. We then used the estimated amount of grain and oilseeds located in the region at the moment of the invasion to estimate the quantity of stolen and destroyed finished products and their value. The estimated 2.8 million tonnes of grain and 1.2 million tonnes of oilseeds were destroyed or stolen because of the invasion, with a combined value of \$1.87 billion.

## **STORAGE FACILITIES \$1.1 BILLION DAMAGE**

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The survey results demonstrated a substantial number of storage facilities (for food and agricultural products) to be damaged or destroyed, considerably more than was assumed in the previous issue of this review (\$790 million more, compared to June's estimates). The share of damaged storage facilities outweighs the share of farmlands affected by the active hostilities. While 37.5% of the Kharkiv region's farmlands and

37.4% of the region's storage capacities were under occupation at the moment of the survey – based on the survey results – 51% of storage facilities in the Kharkiv region are destroyed, with 10% more facilities - damaged.

The most probable explanation is that the storage facilities and nearby buildings could serve as hiding spots for the military equipment and thus become a target for the artillery. In this case, the storage facilities could be damaged dozens of kilometers away from the active ground battles zones.

In total, an estimated 9.4 million tonnes of storage capacity for agricultural products is either damaged or destroyed. This number of lost storage capacities does not take into account storage capacities that remain inaccessible because of the temporary occupation. The estimated repair and replacement cost for the storage facilities approach \$1.1 billion.

## **LIVESTOCK & BEEKEEPING \$362.5 MILLION DAMAGE**

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Farm animals are dying both – directly because of the hostilities and because of the farmers' inability to either access the farm or get animal feed and provide animals with needed veterinary support and care. The estimated number of animals that died because of the RF's aggression is almost 400 thousand bee families (more than 17% of all registered bee families in Ukraine), 95 thousand heads of sheep and goats, 212 thousand heads of cattle, 507 thousand pigs, and almost 11,7 million heads of poultry. The combined estimated value of these damages is \$362.5 million.

## **PERENNIAL CROPS \$349 MILLION DAMAGE**

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More than 14.3 thousand hectares of perennial crops in the affected areas are estimated to be destroyed. The costs of replanting the gardens are estimated at \$348.7 million.

## **INPUTS \$95.4 MILLION DAMAGE**

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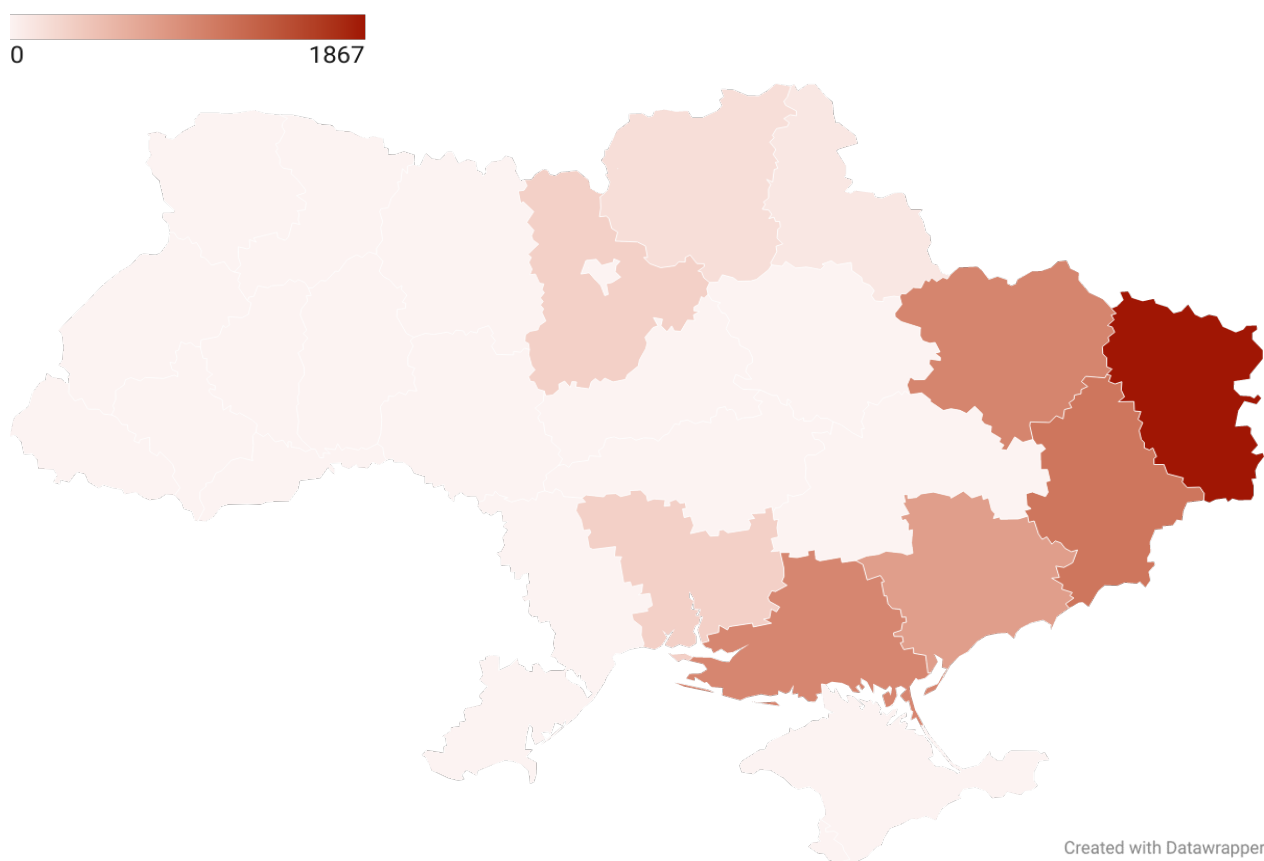
Agricultural inputs are being damaged and stolen, and given the survey construction, we cannot distinguish these two categories. In total – 0.6 thousand tonnes of

crop protection measures (CPMs), 124 thousand tonnes of fertilizers, and 11.5 million liters of fuel were damaged and stolen.

The combined cost of damaged/stolen inputs is \$95.4 million.

The relatively low number of damaged/stolen CPMs and fuel is primarily explained by a low stock of these inputs at the moment of the RF invasion. Only 21% of the fuel and 29% of CPMs needed for the sowing campaign were in stock at the beginning of the invasion (according to the Ministry of Agrarian Policy and Food's survey, the survey does not cover the temporarily occupied territories).

## Regional distribution of damages to Ukrainian agriculture



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### Authors:

Roman Neyter, Mariia Bogonos, Oleg Nivievskyi  
and Valentyn Litvinov

KSE Center for Food and Land Use Research  
agrifood@kse.org.ua  
kse.ua

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