





# Year Three of Russia's Aggression

# Production and Trade Risks for Global Food Security









# Part I Investment risks in Ukraine







### **Risks of investing in Ukraine**

#### 523 1067 512 1498 915 439 1752 3093 638 483 1158 770 440 362 2074 397 2732 1031 1363

Number of alarms per oblast

#### The first rule of investors is to earn money with appropriate risk management. Hence, they prefer regions, countries and industries with safe and predictable trading conditions, and risk insurance.

In Ukraine, the closer the oblast is to the front lines, the higher the chance that its population and its infrastructure will be targeted by the Russian military. To significantly boost the Ukrainian economy, prospective investors would have to sponsor large projects such as factories, roads, power plants, etc., as they would allow the country to employ more people. These large projects would be a priority target for the enemy aiming for attrition war.

Investors without guarantees, subsidies and affordable insurance have to look elsewhere!





# Hidden problems when it comes to investing in Ukraine

Questionnaire about blackout in Ukraine during November 2022

Have you experienced any

blackouts over the past few days?



Russian rocket attacks and destruction of infrastructure is just one of many problems that the aggressor has caused in Ukraine.

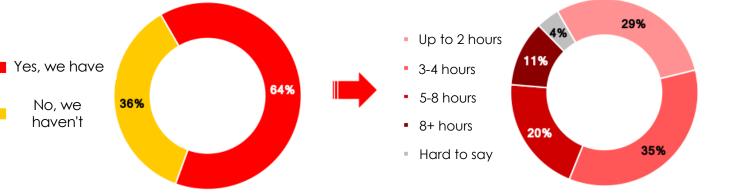
During November 2022, at least 64% of respondents experienced blackouts in Ukraine. This issue also affects businesses. Sure, smaller companies can operate using generators (at a much higher cost), but large-scale factories and companies simply cannot do so and have to shut down.

Other issues that Ukraine's businesses currently have to deal with are mass migration, mobilizations, problematic exports, expensive logistics, the poor mental state of the employees, etc.





How long was the average blackout which you experienced?









# Part II Resilient agribusiness!

Against all odds, despite all challenges: Food production and exports have survived!





What have we achieved this year?

## First – Ukraine won in the Black Sea,

and now Russian terror no longer dominates these waters.

# Normal shipping is being restored, and with each new cargo from our ports, global food security also wins.

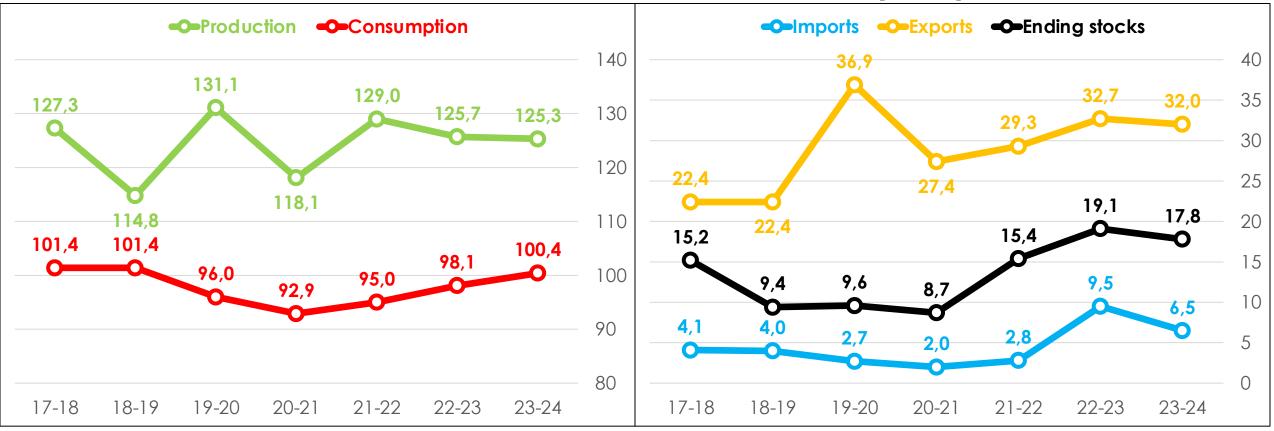
Nearly 7.5 mln t of cargo have been transported by the new export corridor we launched, having expelled the Russian navy.

Volodymyr Zelenskyy President of Ukraine to the participants of the online summit of G7 leaders (6 Dec 2023)





EU-27 Wheat Supply & Demand Forecast (mln t)



In the summer of 2023, EU countries harvested slightly less wheat than in 2022. At the same time, the European Commission expects that domestic wheat consumption will continue to grow and this will not lead to a similar increase in imports. The reason is that in the 22-23 season, a significant increase in imports was due to Ukraine, which used all available logistics routes to compensate for the conditions of seaports in the context of a full-scale war with Russia. However, in the 23-24 season, due to the active blocking of Ukraine's access to the European market by five EU-27 countries, imports and transit fell below Ukraine's supply capacities.









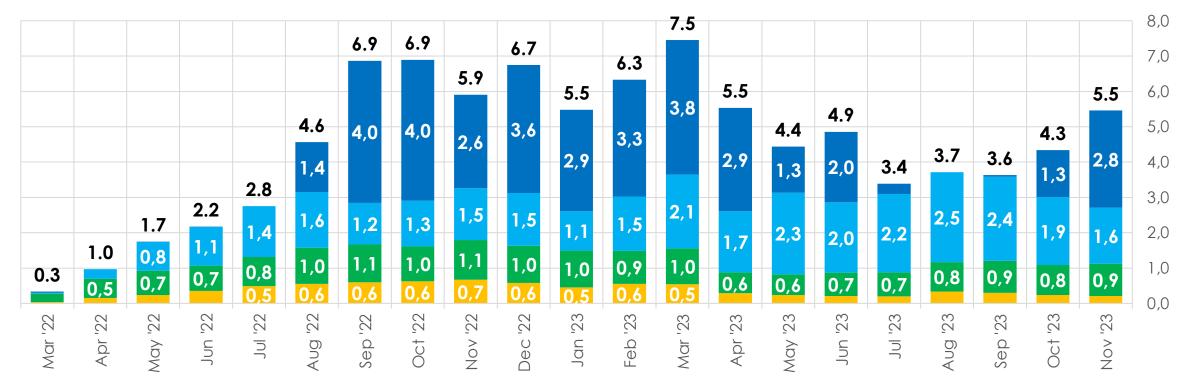
In the 22-23 season, Ukraine's exports were atypical, as the full-scale invasion and the constant risks of disruption of the Grain Corridor by Russia forced Ukraine to look for any destination available (Turkey). In the 23-24 season, Ukraine regained its presence in key markets. Wheat is exported both to EU countries that are still demanding Ukrainian wheat (Spain, Italy) and to MENA countries. Ukraine has also resumed deliveries to India, Indonesia and other Asian countries, for which Ukrainian wheat has long been an important supplier.





### Exports of Ukrainian agricultural products by mode of transport (mln t)

■ Auto ■ Rail ■ River ■ Sea ■ Total



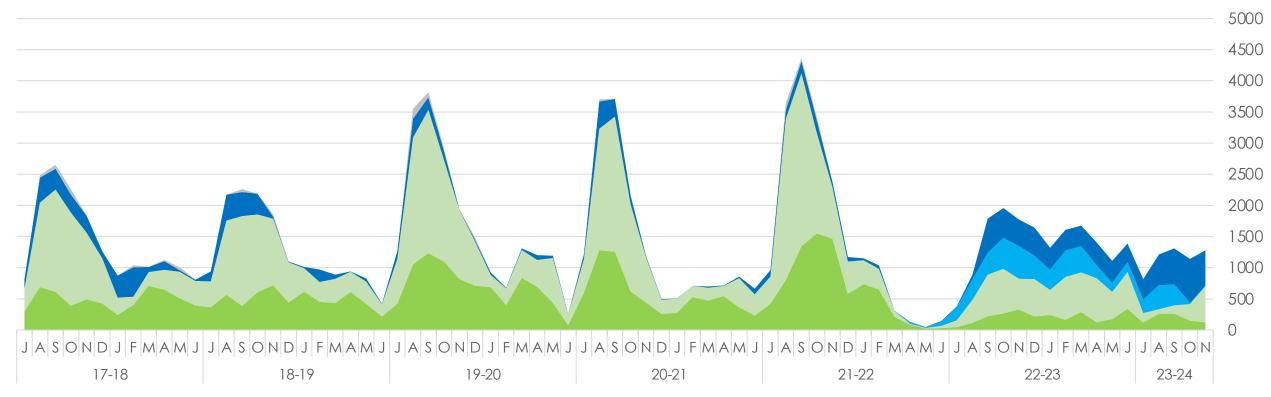
Ukraine's position in the export market is strengthening due to the gradual recovery of shipments by seaports. Other export routes are suffering. The Danube ports still account for the lion's share of Ukraine's exports (30% in November), but the cost of logistics, limited transshipping capacity and deadweight of vessels make this destination less competitive than the deep-water ports. It is important to remember that the EU-5 ban on imports of Ukrainian grain, as well as protests and border blockades, also affected the pace of exports by road/rail. Compared to the volumes that Ukraine ships by river and sea, the drop in exports by road/rail is not significant.





### Dynamics of Ukrainian wheat exports (kt)

■ MENA ■ Rest of Africa+Asia ■ EU-5 ■ Rest of Europe ■ Others



Given the current conditions (military risks, operations stoppages due to air alerts, border blockades, etc.), Ukraine demonstrates stable performance with potential for ongoing growth. Since the beginning of the full-scale invasion, the volume and geography of exports have changed. But important to note that having defeated Russia at sea, Ukraine has resumed independent maritime exports and since October is showing a rapid recovery in the share of exports to Africa and Asia.

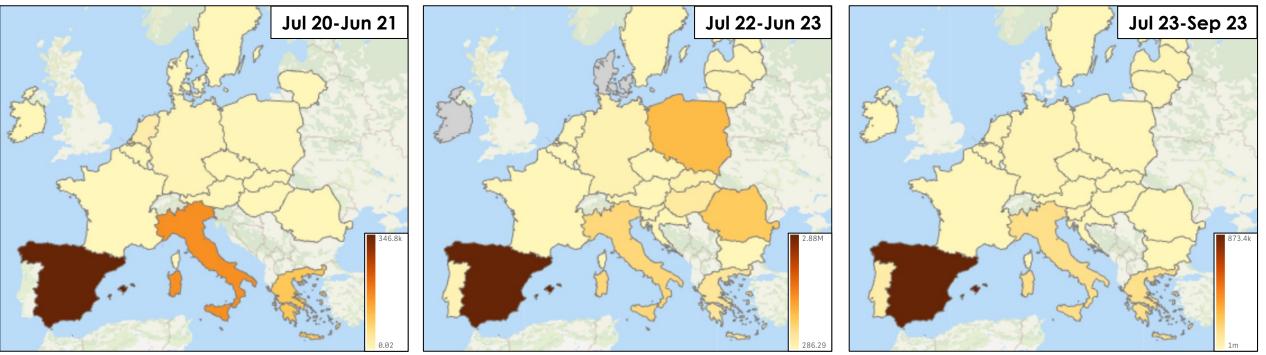
\*As Ukraine continues to transit through the EU-5, especially through the Romanian port of Constanta, Ukrainian customs statistics do not reflect the final integration customer and integration and integration and the EU, the EU-5 on chart primarily reflects transit through these countries.



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### Geography of Ukrainian wheat exports to the EU (kt)



During the "peaceful" season of 20-21 (July 20-June 21), Ukraine exported substantially less to its Western neighbors and focused on those EU countries that most require Ukrainian grain - Spain, Italy, and Greece. The 22-23 season was erratic as Ukraine searched for any way to export, as Russia initially blocked sea exports and sabotaged it after the creation of the UN Grain Initiative program.

However, the first 3 months of the 23-24 season show that by resuming the possibility of sea exports, Ukraine has regained competitiveness for its exports to traditional buyers not only in Africa or Asia, but also within the EU.

It is in the interests of both Ukraine and the EU to ensure that maritime exports continue without interference from Russia. The only winner of a new block to the functioning of one of the key sectors of the Ukrainian economy is Russia.





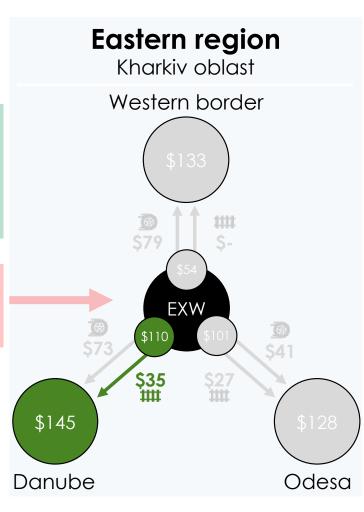


Western region Lviv-Rivne-Ternopil oblasts Western border \$133 1 \$10 \$123 EXW Danube Odesa This visualization simplifies how the selling price of corn for farmers in Western/Eastern region of Ukraine was formed in early November 2023.

Farmers in Western region of Ukraine find it profitable to sell towards the EU border due to relatively high purchase prices (\$133) and relatively low logistics costs (\$10 by auto). But given the protests of Polish/Slovak farmers/transporters, the perspectives of this direction have deteriorated significantly since November.

At the same time, farmers in Eastern region of Ukraine would have to spend on logistics more than half of the selling price at the EU border.

For Ukrainian villages, the availability of sea/river exports is not a matter of profit, but of survival.











# Part III

# Financial support to the Ukrainian agriculture sector

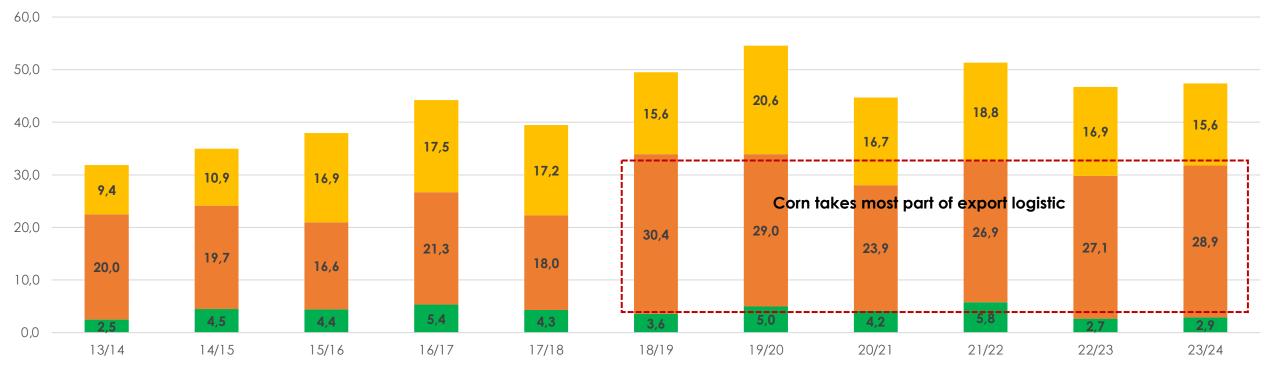
Diversification and Processing as partial solutions to the export problem





### Export potential for main cereals by marketing year, mln t

■ Barley ■ Corn ■ Wheat



In Ukraine an increasing number of market participants are interested in further processing.

- A new industrial park is being built for deep processing of corn in Khmelnytskyi oblast;
- Plan to build a plant for deep processing of grain in the Ivano-Frankivsk oblast;
- The construction of the fifth industrial park has started in the Vinnytsia oblast.

Processing is not only a high added value, but also a reduction in the volume of cross-border transportation, optimization of logistics routes and reduction of product transportation costs.





Harvested area by main crops in Ukraine, mln ha ••••Wheat + Corn + Barley Sunflower + Soybean + Rapeseed 16,0 15,0 14,4 14.4 14,3 13,7 13,7 13,7 13,3 Huge drop due 13.3 14,0 to the war 12,0 10,3 9,6 11,1 9,3 9,3 10,0 8.3 8,0 7,9 7,6 0,8 6,0 Less grains more oilseeds 4.0 2013/14 2014/15 2018/19 2019/20 2020/21 2021/22 2022/23 2023/24 2015/16 2016/17 2017/18

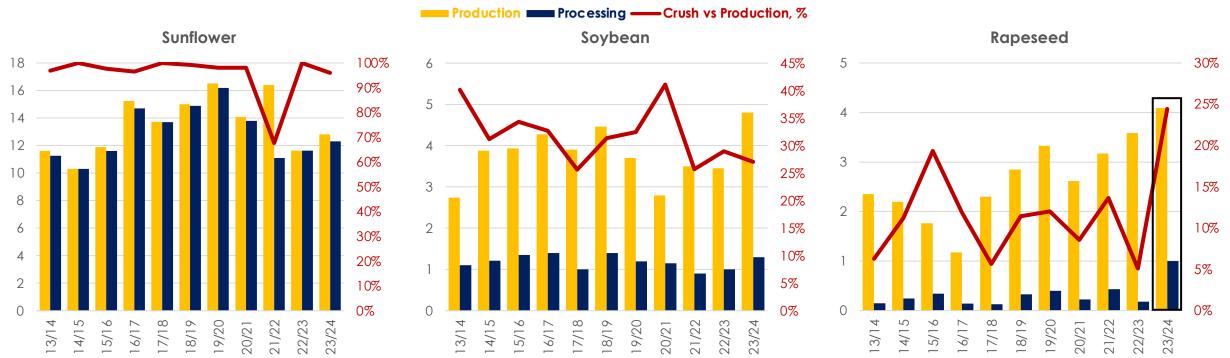
Ukrainian farmers continue to decrease planting of cereal crops, in particular wheat and barley, due to a significant decrease in the average level of their profitability after the outbreak of a full-scale war. Instead of these crops, farmers prefer winter rapeseed (as a possible alternative for winter planting), and also increase the area under spring crops (sunflower, soybeans). In wartime conditions, the farmer primarily focuses on more profitable and less expensive crops (per 1 hectare). Also due to internal logistics problems, it is much easier to work with oilseeds than with cereals (less yield per hectare, but higher prices). The longer this situation continues, the more the trend towards abandoning wheat and barley will intensify. European Union's Horizon 2020 research and

nnovation programme under grant agreement n 10100075





### Production of main oilseeds vs domestic crush, mln t

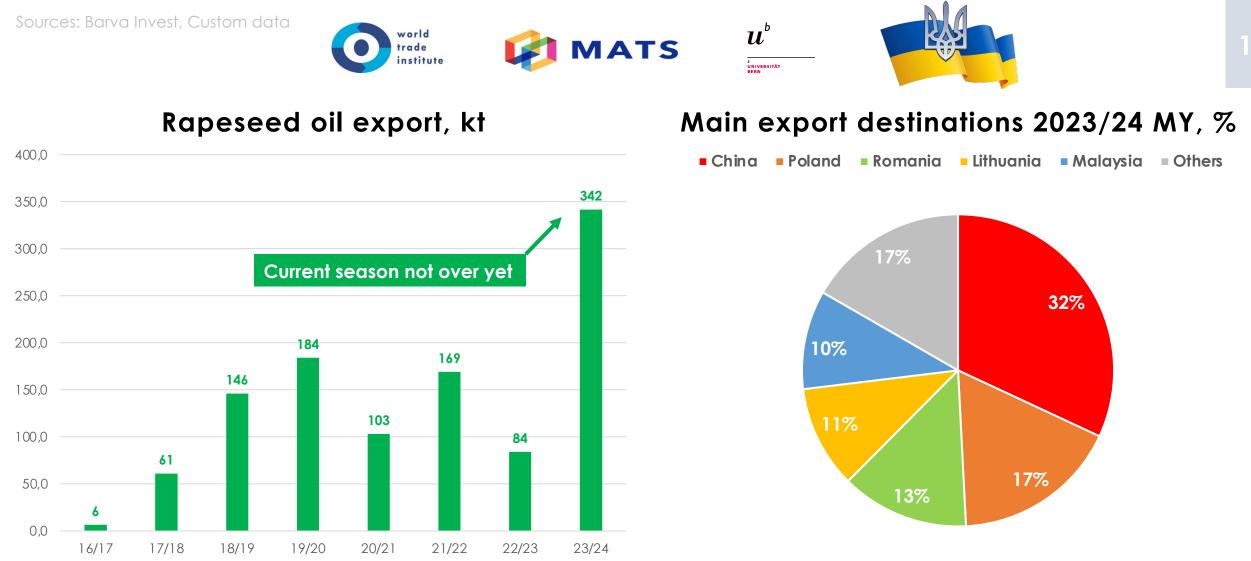


About 97-99% of the total **sunflower** harvest is processed domestically. The only exception is MY 2021/22 (the start of the war). In the domestic market, Ukraine has sufficient processing capacity for this crop, a well-functioning infrastructure and an established market.

**Soybean processing** is stable. Increase of soybean harvest requires more export capacities. Representatives of the agricultural industry themselves are often skeptical. The processing industry in the world's largest soybean producer countries often found insufficient demand at home or abroad. In the United States, the processing industry exists on a semi-mandatory basis, where the government forces business to produce biofuels from soybeans and corn or pay others to do so (RINs). Brazil has the world's largest soybean harvest, but processing has not gained traction. Argentina is the world's largest exporter of soybean meal, but primarily because of the high export duty on soybeans.

Rapeseed production and processing in Ukraine grow rapidly. This year's record harvest will be mostly crushed and exported (see also next slide).



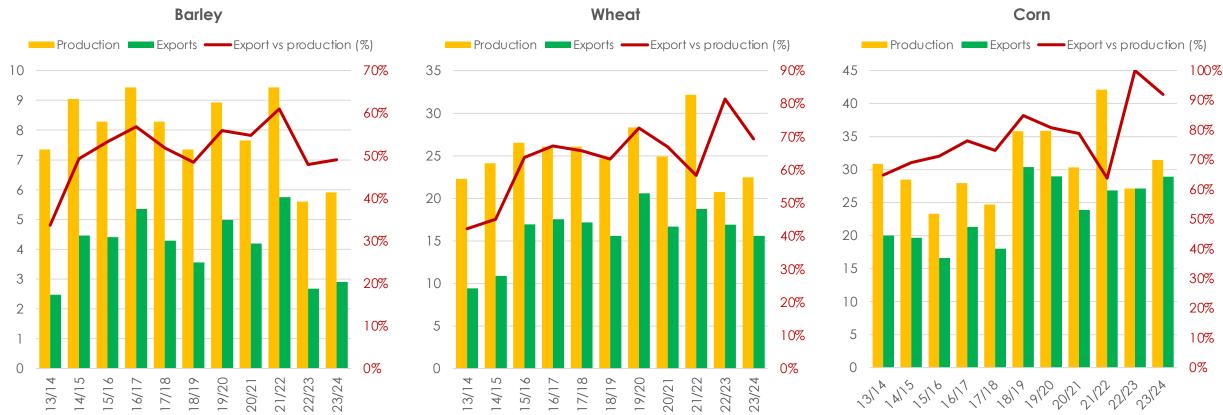


Rapeseed proved to be the most interesting and promising for Ukrainian farmers. In October 2023, the level of gross crush margin for rapeseed reached 80-110 \$/t. This has significantly increased the interest of processors in this crop and processing volumes can reach a record 1.0 mln t (almost 25% of the gross harvest - which is also a record). This was partly due to the shortage of sunflower itself last summer (carryover stocks were rapidly declining); the processing factories can't stand idle, so this increased buying of rapeseed, which appeared on the market in July – 2-3 months earlier than sunflowers or soybeans.





### Production of main grains vs export potential, mln t



Barley and wheat production is rapidly declining – selling price of grains is far less that oilseeds. Given Ukrainian main challenge is to export millions of tonnes, grains are much less profitable. During the war, not only wheat production suffers, but also domestic consumption. The need for exports, and therefore for logistics, remains significant. New milling and processing plants are appearing in Ukraine, but there is low demand for processed products (flour, bran, etc.). Corn remains the only grain that most farmers do not plan to grow less.









# **Part IV - Technical Annex**

- Agribusiness for Ukraine and Ukrainian agribusiness for the EU
- Ukrainian Food Security Struggle
- Ukraine's victory is important for global food security









# Agribusiness for Ukraine Ukrainian agribusiness for the EU











# Ukraine is a global agricultural powerhouse

"Ukraine is a global agricultural powerhouse, and farmers in its EU neighbor states are already feeling the pressure" Ukraine has long played a significant role in the global agricultural market.

- ✓ Just two decades ago, Ukrainian grain exports could feed 40 million people, and in 2021 more than 400 million.
- In 2019-2021, Ukraine accounted for almost 10% of global wheat exports, 15% of corn exports, 15% of barley exports, and almost 50% of sunflower oil exports.

### But this is a half-truth...

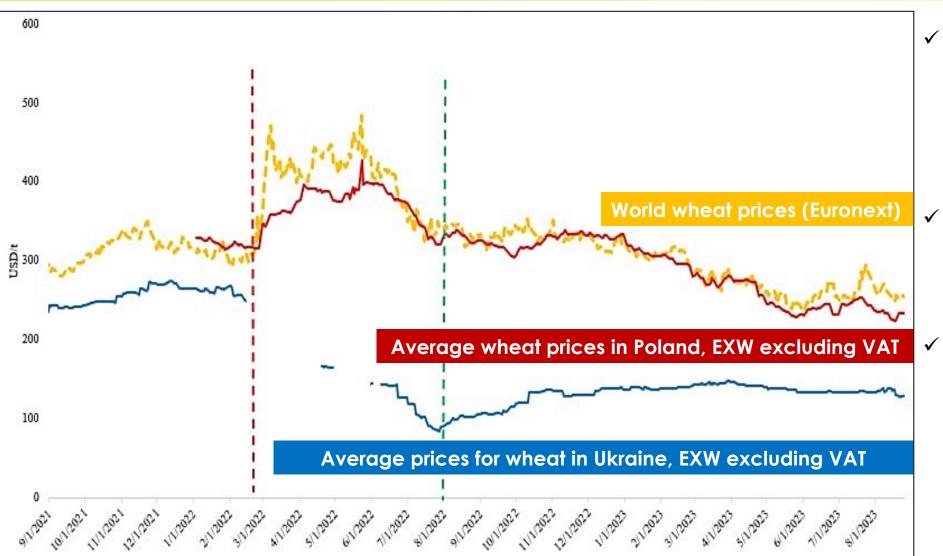
# ...because before the full-scale Russian invasion Ukraine was <u>an independent</u> <u>global agricultural powerhouse</u>.

- ✓ More than 95% of exports were shipped through the seaports of the Black and Azov Seas. Currently, a significant part of Ukraine's port capacities are under Russian occupation (including Crimean ports since 2014) or in close proximity to the war zone.
- ✓ Most of the traditional markets for Ukrainian agricultural products are far outside the EU.
- ✓ The EU-5 is introducing and expanding bans on imports of Ukrainian agricultural products, blocking the border and increasing procedural barriers. At the same time, since the beginning of 2023/24 MY, Russia has increased the supply of grain crops to the EU by 2.3 times to 2.23Mmt. Russia continues to capture traditional Ukrainian overseas markets (for example, oil exports to African countries may increase by 1.5 times in 2023).

	Exports of main Ukrainian agricultural products in 2020/21 MY			
		Total	To the EU	
	Wheat	16.7MMt	~660Kmt	
	Barley	4.2Mmt	~60Kmt	
	Corn	23.9Mmt	6.9Mmt	



# **Difference between prices for Polish and Ukrainian farmers**



- Polish farmers now have almost twice as much revenue. Ukraine is at war, logistics is very expensive, risks, limited export opportunities, etc.
- The dynamics of Polish prices generally corresponds to the dynamics of world prices.
- This refutes the claims about the dramatic impact of the influx of Ukrainian agricultural products on the market of the EU-5 neighboring Ukraine.

Sources: Ministry of agrarian policy and food of Ukraine, The State Customs Service of Ukraine, KSE , open sources









# The agricultural sector for Ukraine

### Before the full-scale Russian invasion in 2021:

- ✓ Agriculture accounts for about 20% of Ukraine's GDP (including related industries along the value chain) and more than 40% of total export earnings.
- ✓ Agricultural producers provide the local population with almost 100% of their consumption of staple crops and vegetables and at least 80% of their meat consumption.
- About 15% of Ukraine's total population was employed in agricultural production
- ✓ The foreign trade turnover of agricultural products and foodstuffs increased by 24% compared to 2020, reaching over \$35.4 billion, or 25.1% of Ukraine's total foreign trade in goods.











# Ukrainian Food Security Struggle

...but Ukraine's strategy to ensure food security for 1 billion people worldwide will take a very long time!







# **Consequences of the full-scale Russian invasion**

- ✓ Approximately 36% of pre-war grain cultivation in the country was directly affected by the conflict.
- ✓ The overall losses in the Ukrainian agricultural sector are already estimated at \$40.2 billion, with direct losses accounting for \$8.7 billion.
- ✓ In 2022 The revenues of the agricultural sector and related industries have decreased by 10% to 30% due to the war.
- ✓ 44% of producers report a dramatic increase in the cost of production, and every fourth respondent mentions production reduction or cessation due to the war. More than 150,000 farmers/workers in the food system were directly affected by the war and/or forced to migrate.
- 1/3 of agricultural companies have left the market. Another 10-20% will follow the same path by the end of 2023/24 MY, given the current conditions and significant pressure on producers. About 2,653 agricultural entities have suffered losses. More than 90% of small farms suffer losses.

In 2022, the number of operating enterprises in the field of agriculture, forestry and fisheries **decreased from 51.8 thousand to 35.6 thousand, i.e. by almost a third (-31.4%)**.

This is **the largest decline since 2012**, which at the same time exceeds the corresponding figure for the economy as a whole (-29.6%). The number of individual entrepreneurs in the industry decreased by 11.3%.

Sources: Ministry of Economy of Ukraine, The National Institute for Strategic Studies, KSE, UN, World Bank, GLOBSEC, open sources







## Ukraine - the most mined country in the world

- ✓ 174,000 km<sup>2</sup> of Ukraine's territory (almost 30%) is potentially contaminated with mines and explosive devices. This is the total area of such countries as Belgium, the Netherlands, Switzerland, Slovenia and Denmark!
- ✓ In different regions 5-10% of contaminated lands (13,000 km<sup>2</sup>) require technical survey, and 2-8% of mine clearance (9,000 km<sup>2</sup>).
- ✓ About 20% of agricultural land is not available for cultivation as a result of the war compared to 2021.
- 4,700 km2 of agricultural land in the liberated territories need to be surveyed and demined.

#### Since the beginning of the 2023:

- More than 257,000 ha of land have been surveyed as part of the priority demining of agricultural land.
- ✓ Almost 195,000 ha returned to farmers for economic exploitation.



"The scale of mining in Ukraine is much more serious than in Afghanistan or Somalia, and it will take years to clear the entire territory"

### Paul Heslop the UN Mine Action Program Manager in Ukraine

The most difficult thing to estimate is the duration of the demining process. Currently, <u>the most pessimistic estimate</u> is that it could take <u>757 years!</u>







# The "survival season" for Ukraine's agricultural sector – at what cost?

Input prices (in US\$)	2021	2022	2023				
Seeds:							
Wheat seeds elite (UA varieties)	269	448	384				
Barley seeds (farm saved)	123	208	176				
Hybrid corn seeds	140	162	145				
Hybrid sunflower seeds	175	198	180				
Rapeseed seeds	175	194	180				
Soybean seeds 1 repr.	768	832	768				
Fertilizers:							
Ammonium nitrate	383	821	547				
Urea	490	979	700				
Potassium chloride	639	1,277	912				
Ammonium phosphate	703	1,405	1,004				
NPK 10:26:26	766	1,533	1,095				
Chemicals:							
Roundup Max 45%	8.7	10.2	9.4				
Follicure 25%	31.7	37.4	34.5				
Fuels:							
Diesel fuel	0.9	1.9	1.3				
Diesel engine oil	1.4	2.6	2.0				
Transmission oil	1.5	2.8	2.2				
Lubricant consistent	1.8	3.4	2.6				

- Input spiked in 2022, following Russia's invasion. They declined in 2023 but still stayed much higher than in 2021. Farmers reduced the input application rates to reduce production costs.
- The success of 2021 created resources for resilience in 2022. This fact should be considered when comparing 2021 with 2022 and 2023. <u>2023/24 MY "the survival</u> <u>season" for Ukraine's agricultural sector</u>.
- ✓ Land rent in 2022 in UAH was the same or slightly higher than in 2021. In 2023, land rents increased by about 5-10% due to demands of landowners.
- ✓ Most operators were unable to increase wages/salaries in 2022 and kept them at the 2021 level in the UAH term. In 2023, many increased their labor expenses by 10-20% to partially compensate for inflation and UAH devaluation and to motivate workers.

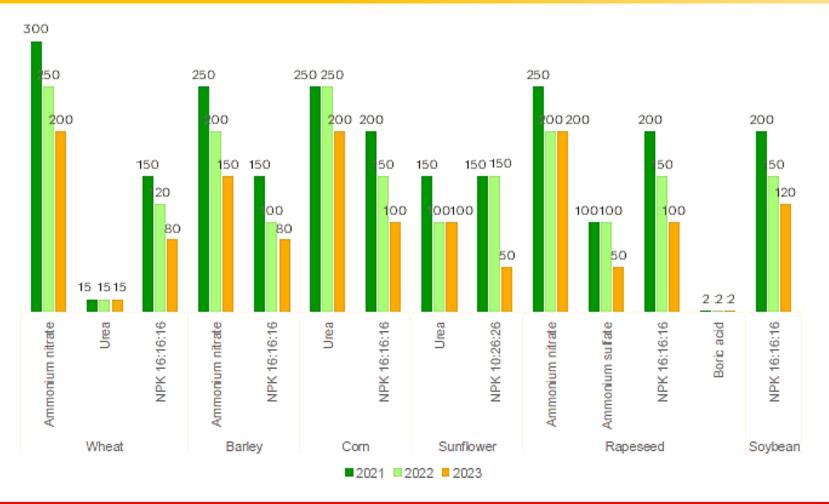




# Application of inputs before/during the war

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Issues with **import logistics for inputs** have also been a **big challenge**.

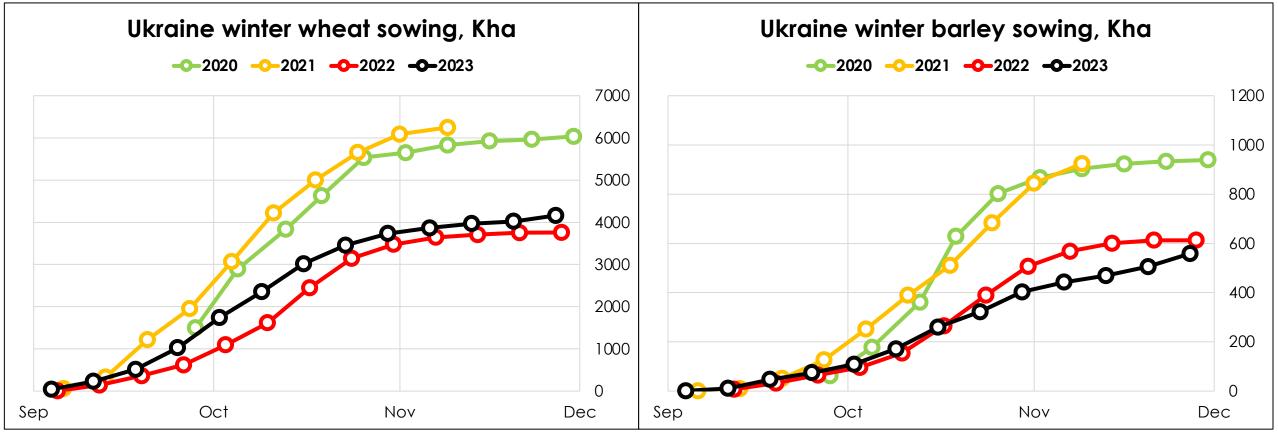
Combined with **high energy prices** in 2022, it caused additional costs for fuel, fertilizers, and chemicals.

**Fuel supply** was especially **problematic** during spring-summer 2022.

In 2023, the situation for most farm inputs has stabilized, but didn't reach the pre-war levels.

The application rates for seeds remained largely unchanged, though their quality is reported to worsen.
The application rates for fertilizers have declined significantly for all crops over 2021-2023.





As a result of the drop in profitability, there is a reduction of the planted area with cereal crops, even in those oblasts that were not affected by active hostilities. Farmers are trying to sow more and more oil crops that allow them to get at least some profitability. Sown areas of rapeseed in the next season may become a record for the entire history, and winter cereals are assigned the role of a predecessor in crop rotation. Also, for the second year in a row, there is an undersupply of required amounts of fertilizers due to low grain prices and limited import routes.



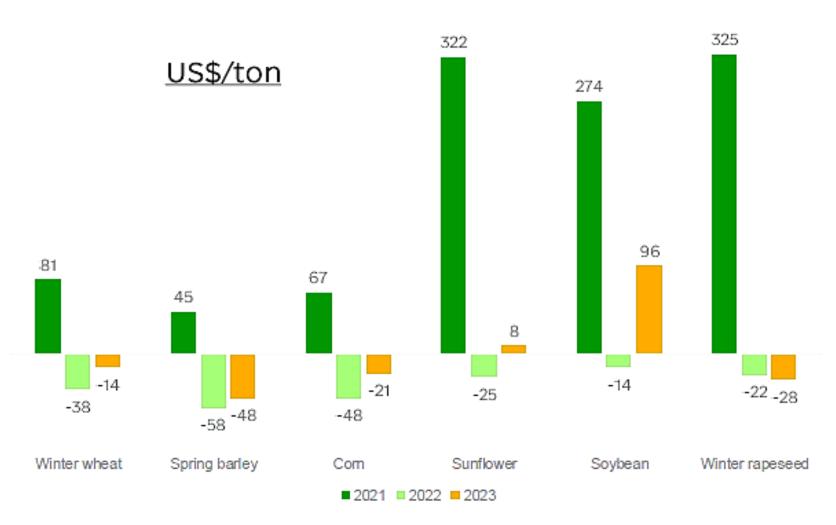
Sources: Ministry of agrarian policy and food of Ukraine, UCAB, open sources



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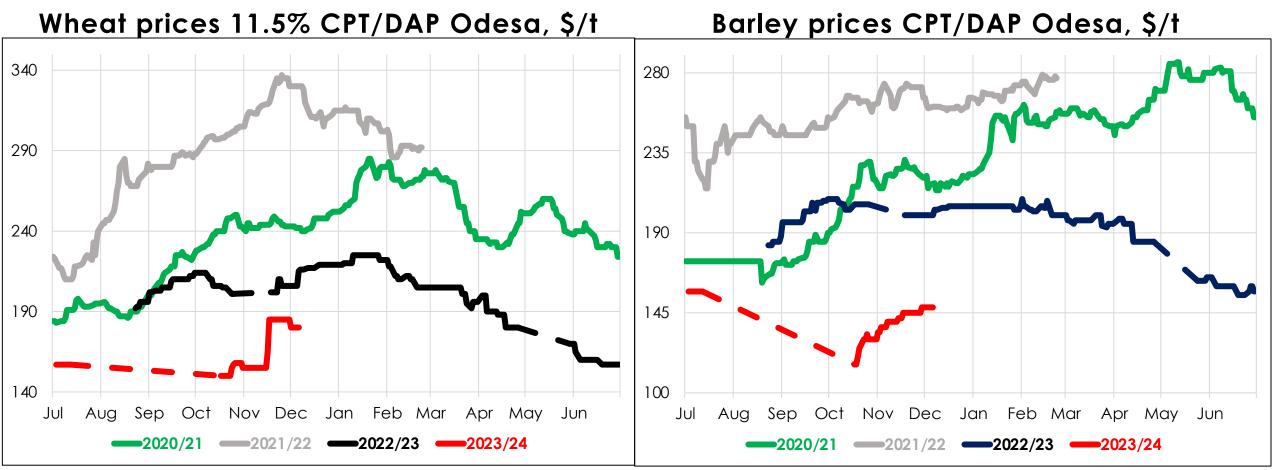
trade institute

- The average profitability of grain production in 2021 ranged from \$45/ton for barley to \$81/ton for wheat. Oilseed profitability ranged from \$274/ton for soybeans to \$322/ton for sunflower seeds.
- ✓ In 2022, the production of all types of grains and oilseeds was unprofitable.
- Losses from the production of grains and oilseeds are projected to decrease in 2023, but the production of grains will remain unprofitable.
- Only soybean production is projected to generate profit in 2023, though soybean is planted only on 11% of total grain and oilseed planted area. Sunflower seed production is projected to generate a very small profit in 2023.





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Due to war-related higher export logistics costs and high risks associated with the war, prices on the Ukrainian market fell to record low levels, and Russia's blockade of seaports and its subsequent violation of the Grain Agreement led to significant export restrictions and deprived Ukrainian producers of the opportunity to sell their grain. The increase in production and logistics costs ultimately led to a drop in the profitability of all grain crops except soybean.









# Ukrainian Wheat remains unprofitable for the second year

	2021	2022	2023
Costs, \$/ha	37	46	37
Seed	218	269	145
Fertilizers	66	78	62
CPP	43	73	50
Fuel and lubricants	24	20	23
Wages (production staff)			
Taxes on wages	13	10	12
Repair of fixed assets	47	55	50
Depreciation of fixed assets	72	72	72
Administrative expenses	72	65	68
Land rent	148	111	119
Unified tax of group 4			
(agriculture)	10	6	6
Contractor services	28	34	29
Total costs, \$/ha	777	839	672
Yield (gross), t/ha	5,4	5,3	5,2
Elevator services, \$/t	10	10	9
Yield (net), t/ha	5,2	5,1	5,0
Total costs, \$/t	159	175	144
Price at an elevator (center			
of Ukraine), \$/t without VAT	240	137	130
Profit/loss, \$/t	81	-38	-14

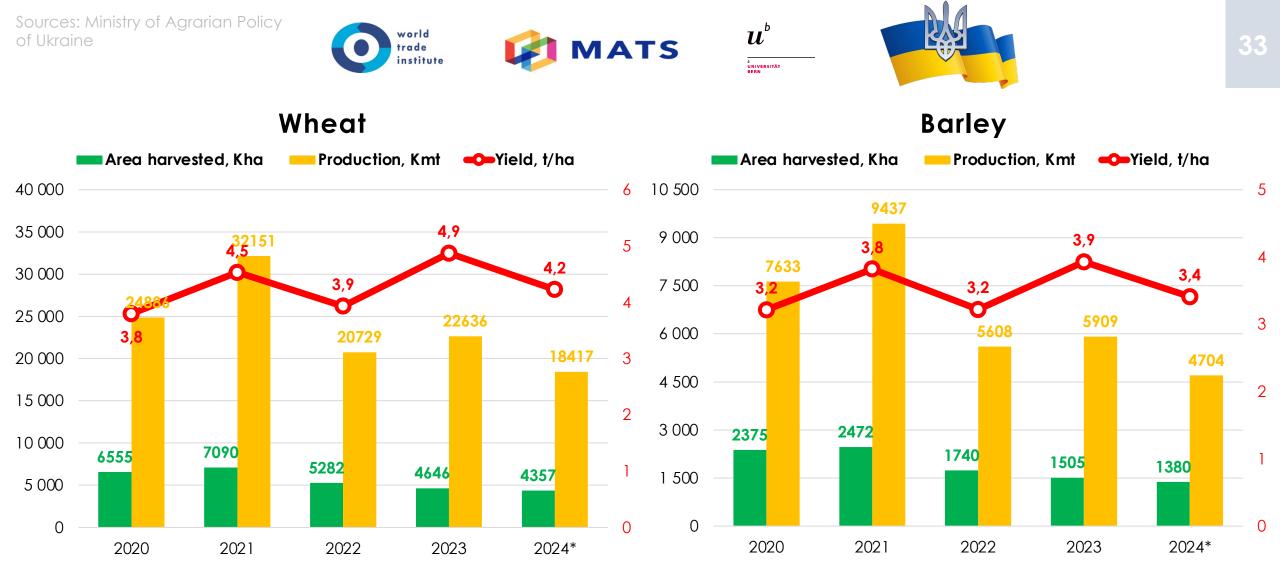
Farmers mainly use saved seeds. In 2022, they bought about 10% of new varieties from originators. In 2023, the purchased new seeds decreased to 5% of total seed use.

Most of the fertilizer applications 2021/22 season were done before the end of February 2022 with high rates of application. In 2023, fertilizer application rate declined by at least 20%.

**The cost of logistics** skyrocketed in 2022 and declined in 2023 due to the lower diesel price and lower volumes for export, but after the Black Sea Grain Initiative suspension, it started to grow again.

 $\checkmark$  Losses are made from sales on both local and export markets.

	2021	2022	2023
Option 1. To the ports of Odessa			
Logistics to the port, \$/t	26	48	21
Price at the port (CPT), \$/t	270	197	166
Profit/loss, \$/t	85	-26	1
Option 2. To the port of Constanta			
Logistics to the port, \$/t		141	78
Price at the port (CPT), \$/t		289	216
Profit/loss, \$/ton		-27	-5
Option 3. To the ports of Gdansk/Gdynia			
Logistics to the port, \$/t		140	74
Price at the port (CPT), \$/t		287	213
Profit/loss, \$/ton		-28	-5



Due to the reduction of sowing areas and decrease of fertilizers application, a further decrease in wheat and barley production in Ukraine can be expected next year. The main potential for restoring prices on the Ukrainian market and, accordingly, ensuring the profitability of farmers lies in the provision of safe and predictable sea connections, which will reduce logistics costs and ensure the supply of necessary production inputs. Therefore, Ukraine should have free access to maritime logistics in order to preserve its food production potential and ensure stable food exports to the world market.







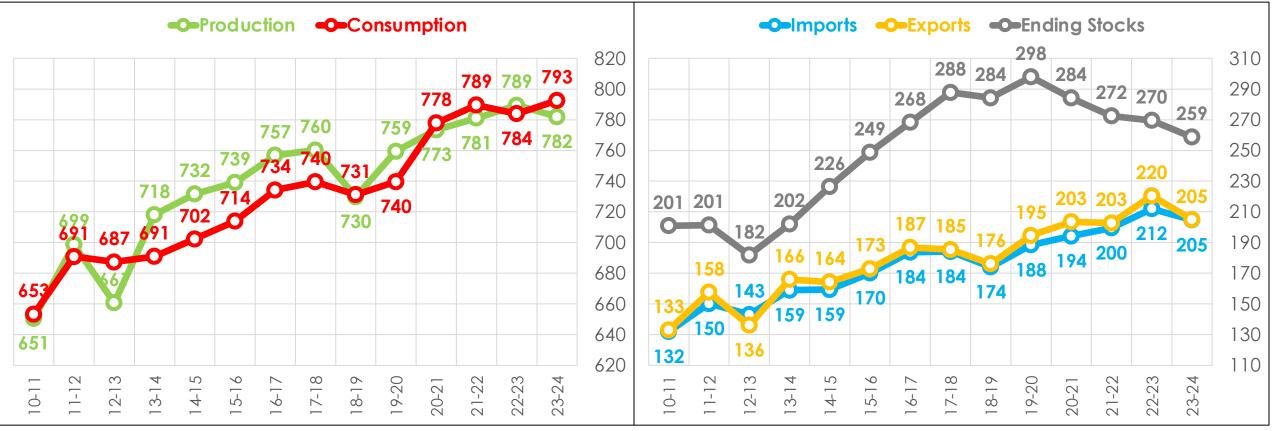


# Ukraine's victory is important for global food security





World Wheat Supply & Demand Forecast (mln t)



In the 23-24 season, most of the key wheat exporters harvested less than planned.

Current USDA forecasts suggest that global consumption will continue to increase and will exceed seasonal wheat production. As a result, global stocks will continue to decline for the 5th consecutive season.

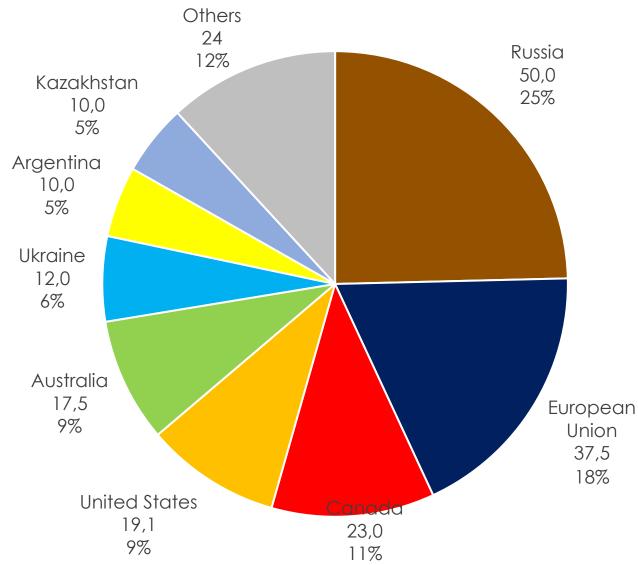
Given that every year the world becomes increasingly dependent on imported wheat supplies, each crop shortfall in the next coming seasons will increase the risks to global food security.







### Forecast of wheat export in the season 23-24 (mln t)



#### Yes..

Thanks to a large domestic harvest and stolen Ukrainian grain, Russia has dominated the export market for many months, putting pressure on world prices.

But the available supply is not unlimited. The Russian government has introduced an export quota that will take effect from mid-February to the end of June. Russia is also envisaging export restrictions if domestic stocks drop to 10 mln t.

#### But..

Even in the current situation, Ukraine remains among the top wheat exporters.

This is important not only because of the supply of millions of tonnes of grain.

The function of the price is to rationalize the balance of supply and consumption. Since the 2023-24 season was a lackluster world harvest, while consumption continues to grow, importers' understanding that Ukraine is able to supply its grain partially offsets the negative global effects.

Ukraine needs a strong and united World. The World needs a strong and unified Ukraine.

