

MY 2022/23

# Agribusiness of Ukraine

Infographic Report

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## HOW TO READ THIS REPORT?

The full-scale war has hit the Ukrainian agricultural sector hard, but it has resisted and remains the largest industry in the economy. This year, we show how agribusiness has managed to stay afloat in turbulent times.

## DATA SOURCES:

- Aggeek.net
- Credit Agricole Bank
- DeepStateMap
- Ecosap
- EnergyMap
- Food and Agriculture Organization (FAO)
- Group DF
- Kyiv School of Economics (KSE)
- Latifundist Media (Latifundist.com, Elevatorist.com, SuperAgronom.com)
- LNZ Group
- MilkUA.info
- Ryder
- Statista
- TradeMap
- UkrAgroConsult
- United States Department of Agriculture (USDA)
- USAID Arpo
- Bioenergy Association of Ukraine (UABIO)
- General Staff of the Armed Forces of Ukraine (General Staff)
- prostir.ua
- State Customs Service of Ukraine (Customs Service)
- State Statistics Service of Ukraine (State Statistics)
- State Emergency Service of Ukraine (Emergency Service)
- State Service of Ukraine for Geodesy, Cartography & Cadastre (land.gov.ua)
- Ministry of Agrarian Policy and Food of Ukraine (minagro.gov.ua)
- Ministry of Foreign Affairs of Ukraine (MFA)
- Ministry of Environmental Protection and Natural Resources of Ukraine (mepr.gov.ua)
- National Academy of Agrarian Sciences of Ukraine (NAAS)
- National Bank of Ukraine (bank.gov.ua)
- Opendatabot
- The United Nations (UN)
- United Nations Office for the Coordination of Humanitarian Affairs (OCHA)
- The Union of Dairy Enterprises of Ukraine
- Ukrainian Agrarian Confederation
- The Ukrainian Agribusiness Club (UCAB)
- Ukroilprom
- Ukrsugar
- Central Geophysical Observatory of the Ukrainian Hydrometeorological Center
- Media data (AgroPortal, AgroRTK, AgroStartUp, AgroTimes.ua, Forbes, Healthy Soil, Landlord, AgroElita, APK Inform, ArmyInform, Ukrainian pravda, Ukrinform)



# Agribusiness















**in 2022/23 MY**



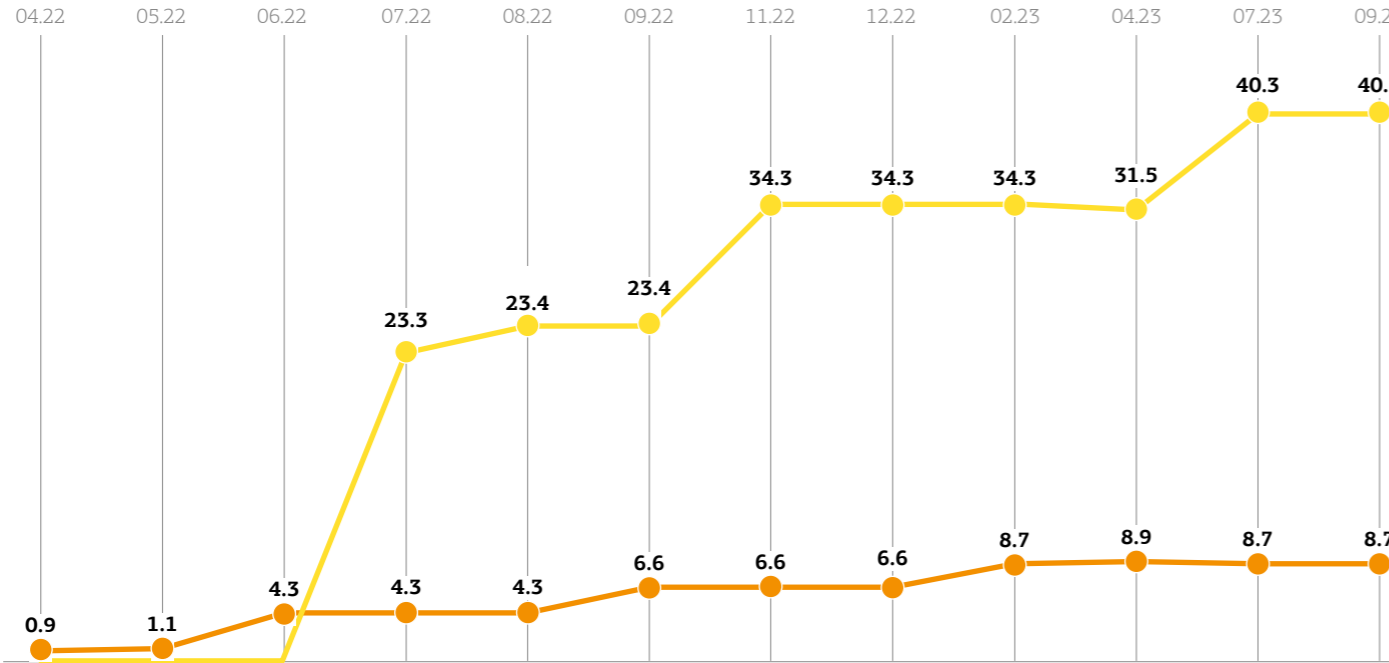
# WAR AND AGRIBUSINESS: MAJOR CHANGES AND CHALLENGES

## Stages of the full-scale war and their impact on the development of Ukrainian agribusiness

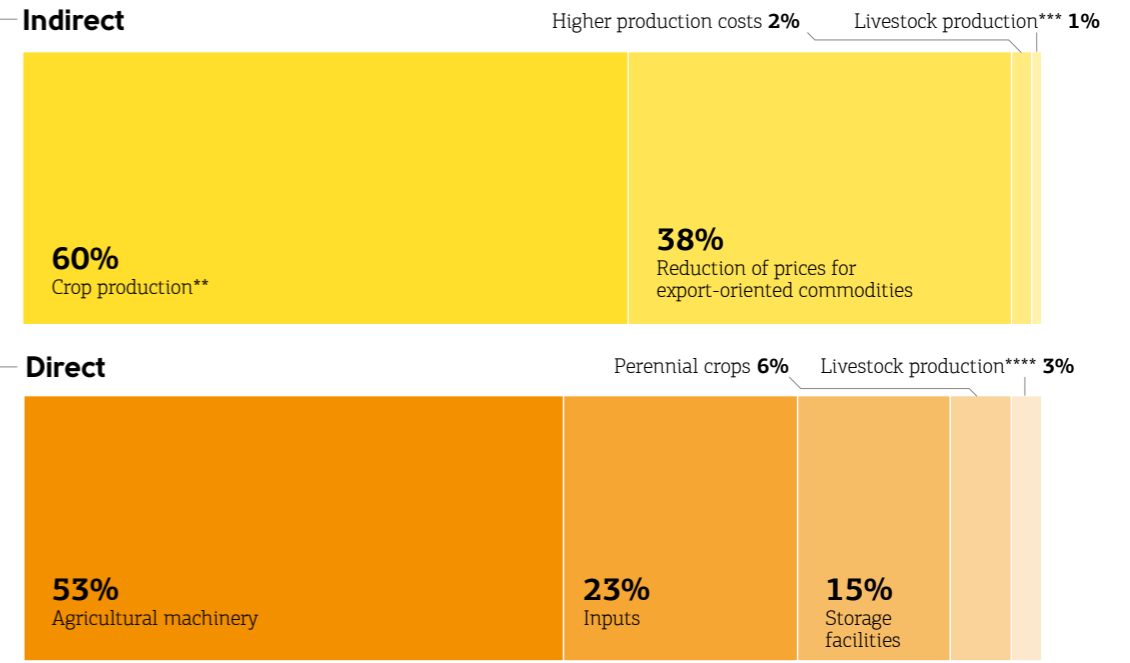
STAGE	MAIN EVENTS OF THE WAR	MAIN FACTORS AFFECTING AGRIBUSINESS	
<b>1</b> <b>First strategic defense operation</b> <b>02/24/2022 — April 2022</b>	<p>At the beginning of the full-scale war, Russia occupied 25% of the territory of Ukraine. As a result of the battles in the north of Ukraine, Russia retreated from Kyiv, Chernihiv, and Sumy regions.</p>	 Occupation and destruction of enterprises, plundering in the Russian-occupied territories.	 Russian occupation and blockade of ports, which led to a halt in exports.
<b>2</b> <b>Second strategic defense operation</b> <b>May — August 2022</b>	<p>The fighting shifted to the east and south of Ukraine. The use of artillery increased, causing damage to Ukrainian soil. The Ukrainians liberated Snake Island, allowing the ports to be unblocked and the Grain Initiative to start operating in August.</p>	 Changes in logistics routes and rising logistics costs.	 Launch of the Grain Initiative, which enabled an increase in exports.
<b>3</b> <b>Strategic offensive operation</b> <b>September — December 2022</b>	<p>Over the summer, Ukraine accumulated forces and means to conduct offensive operations in Kharkiv and Kherson regions, liberating more than 17,000 sq. km. and up to 710 settlements. In October, Russia began actively destroying Ukraine's energy infrastructure.</p>	 Mining of territories that prevents the sowing of winter crops.	 Power outages that have affected agricultural businesses.
<b>4</b> <b>Third strategic defense operation</b> <b>January — May 2023</b>	<p>Russia intensified pressure on the positions of the Ukrainian Defense Forces in the east, with prolonged battles for Bakhmut, Vuhledar, and many other settlements. Russia continued to strike at energy facilities, and prolonged power outages occurred throughout Ukraine.</p>	 Reduction of sowing areas due to the Russian occupation and mining of the territories.	 Logistics complications, blocking of the Grain Initiative.
<b>5</b> <b>Second strategic offensive operation</b> <b>June — September 2023</b>	<p>Several waves of counteroffensives by the Ukrainian Defense Forces in the south and east of Ukraine. However, they were not as fast as the previous ones because of the Russians' good preparation. Russia shelled Ukrainian infrastructure and withdrew from the Grain Initiative.</p>	 The Grain Initiative stopped working.	 Launch of an alternative corridor for agricultural exports.
		 Import ban on agricultural products from European countries.	 Shelling and destruction of port infrastructure in Odesa and Danube ports.

# LOSSES OF THE UKRAINIAN AGRICULTURAL SECTOR DURING THE WAR

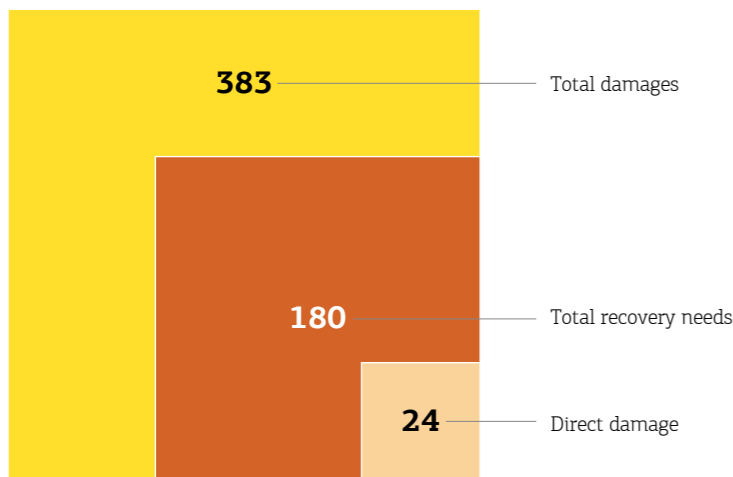
Losses of the Ukrainian agricultural sector during the war\*, USD bln



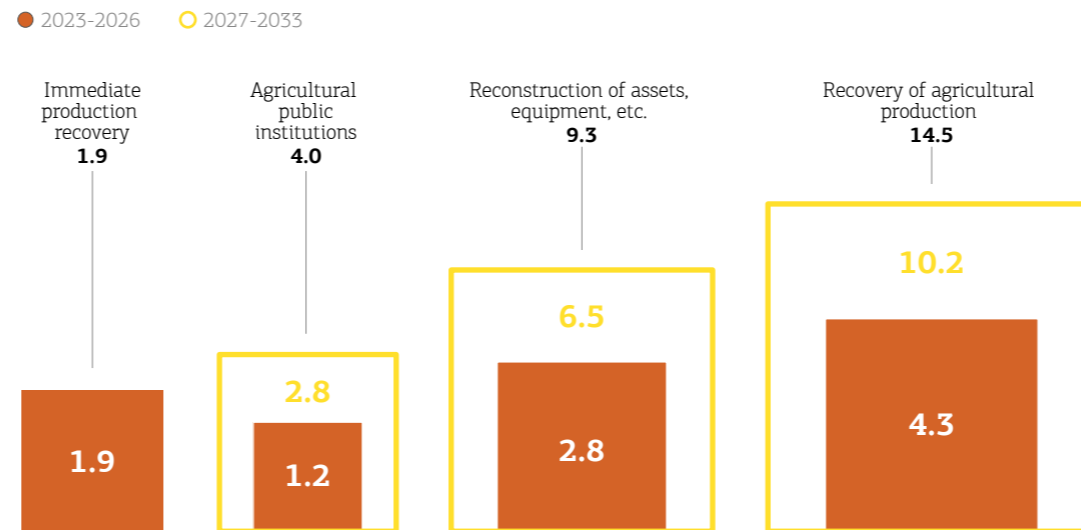
Structure of indirect and direct losses, %



Damages and needs for recovery of agriculture due to the blowing up of the Kakhovka dam, USD mln



Needs for recovery and reconstruction, USD bln



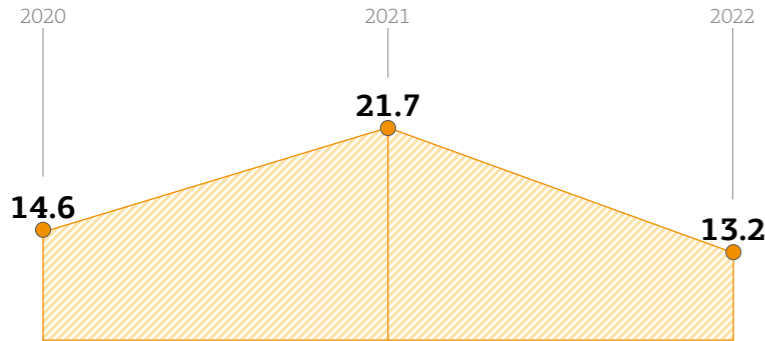
Ukrainian agriculture has lost significant amounts of resources and infrastructure as a result of the full-scale invasion. Significant losses have been incurred in elevator capacities, as the Russians destroyed, damaged, or occupied many. **Restoring the Ukrainian agriculture sector is a long process that depends on many factors,** including attracting investment and financing, stabilizing export routes, and introducing new progressive agricultural practices.

**The restoration of Ukrainian agriculture can become a driver for introducing modern agricultural technologies,** contributing to the efficient use of resources, increasing competitiveness, etc.

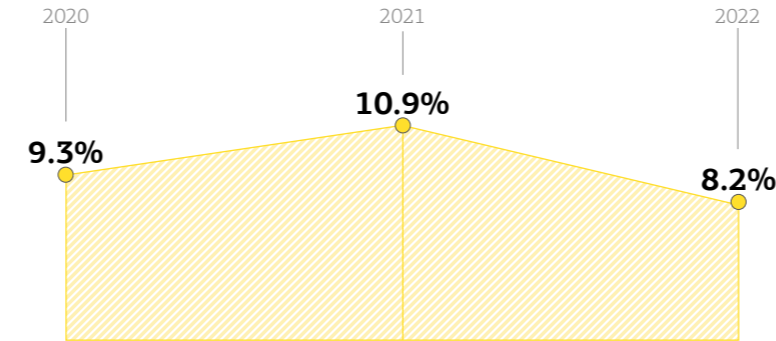
\*only months with data on losses are indicated  
 \*\*decrease in production output  
 \*\*\*reduction in production  
 \*\*\*\*death of animals and their slaughter caused by the impossibility of keeping them

## HOW THE IMPORTANCE OF AGRIBUSINESS IN THE UKRAINIAN ECONOMY HAS CHANGED

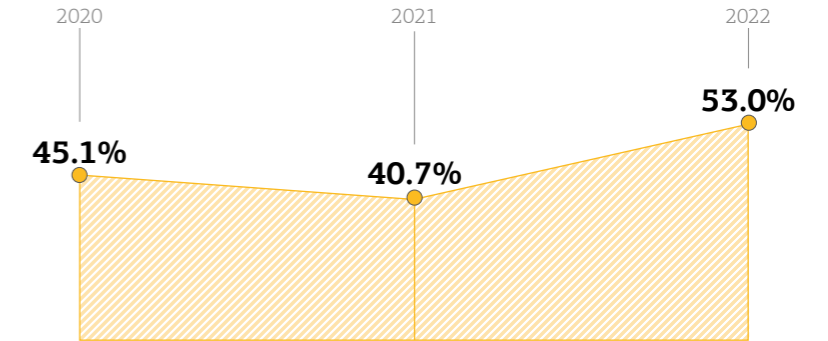
**Agricultural production, USD bln**



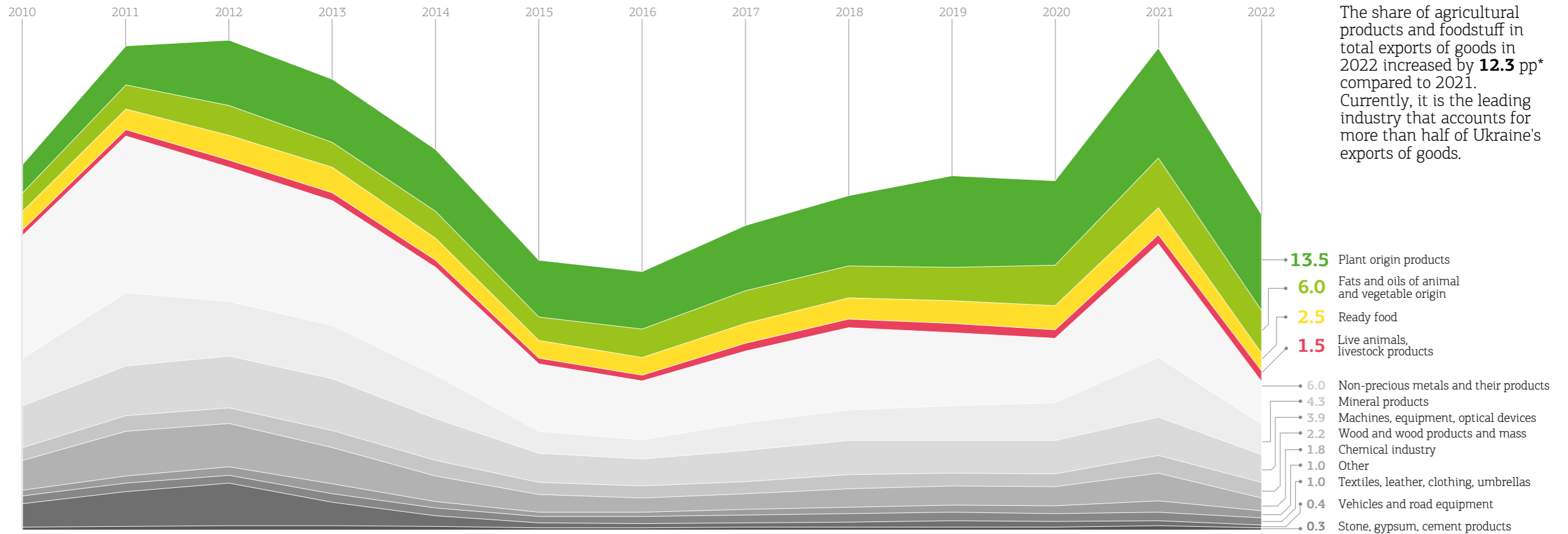
**Agricultural production, % of GDP**



**Agricultural and foodstuff exports, % of total goods exports**



**Dynamics of goods exports, USD bln**

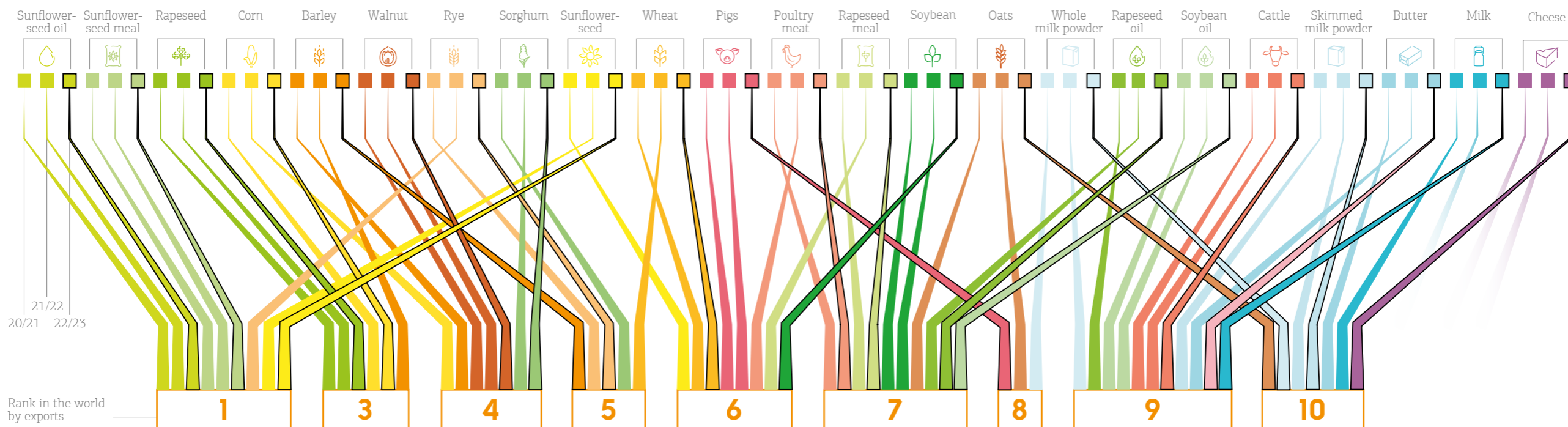


Sources: State Statistics Service, Customs Service, bank.gov.ua

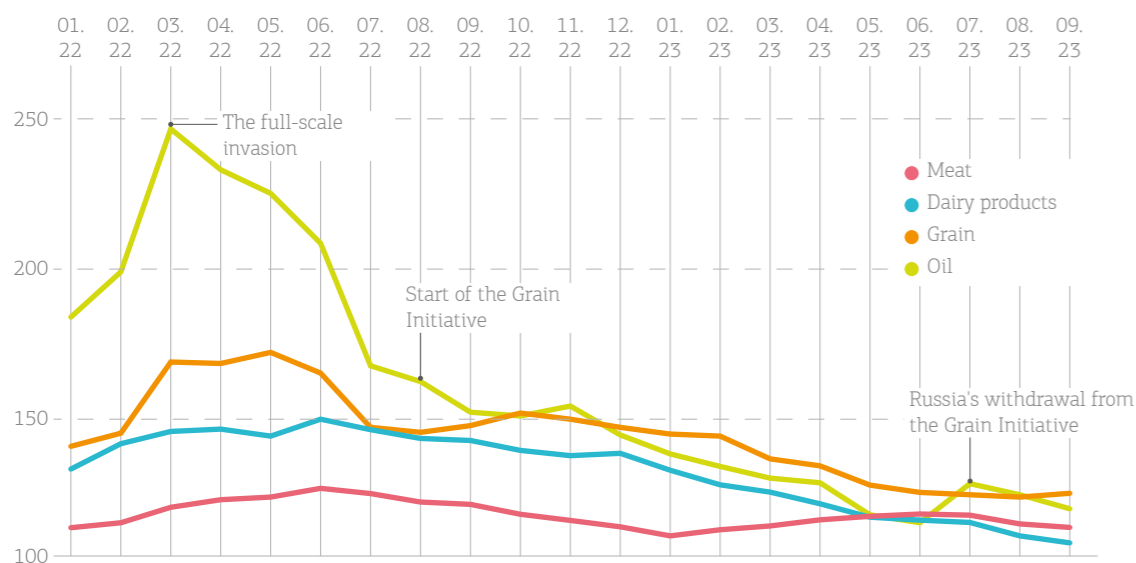
\* percentage points

# HOW THE IMPORTANCE OF AGRIBUSINESS IN THE WORLD ECONOMY HAS CHANGED

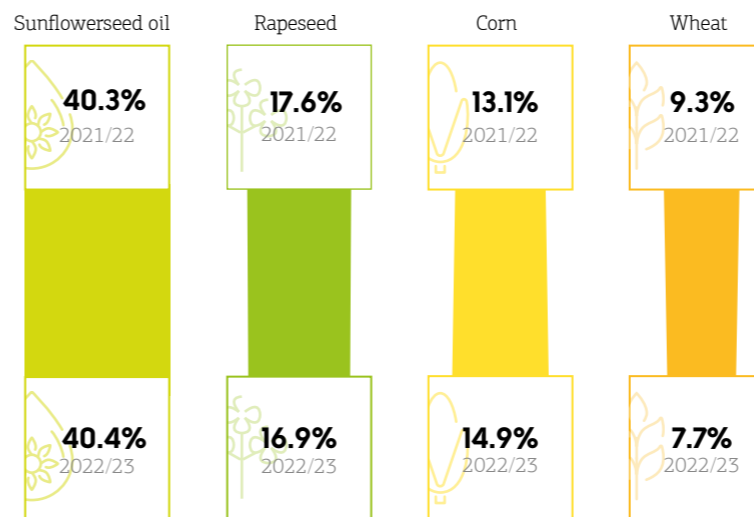
## Changes in Ukraine's position in global agricultural exports



## FAO food price index worldwide\*



## Ukraine's share in global agricultural exports, %



After the full-scale invasion, Ukraine's position in the global market changed.

Some Ukrainian products have lost their positions in global agricultural exports. **However Ukraine has mainly managed to maintain these positions and, in some cases, improve the situation.**

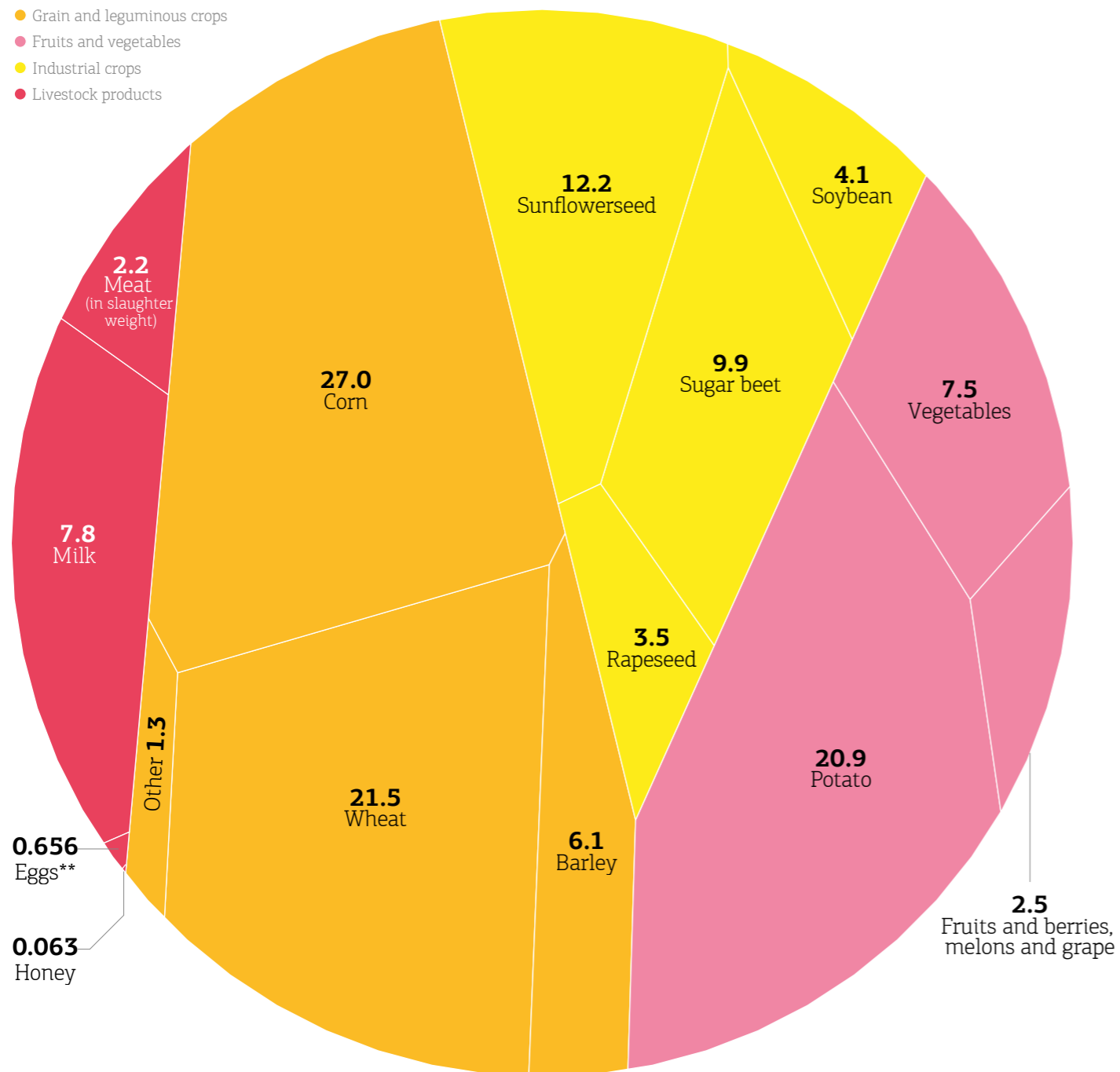
The positive change in Ukraine's position in some products was mainly due to the recovery of production and exports and improved access to the European market for some products.

Sources: USDA, FAO

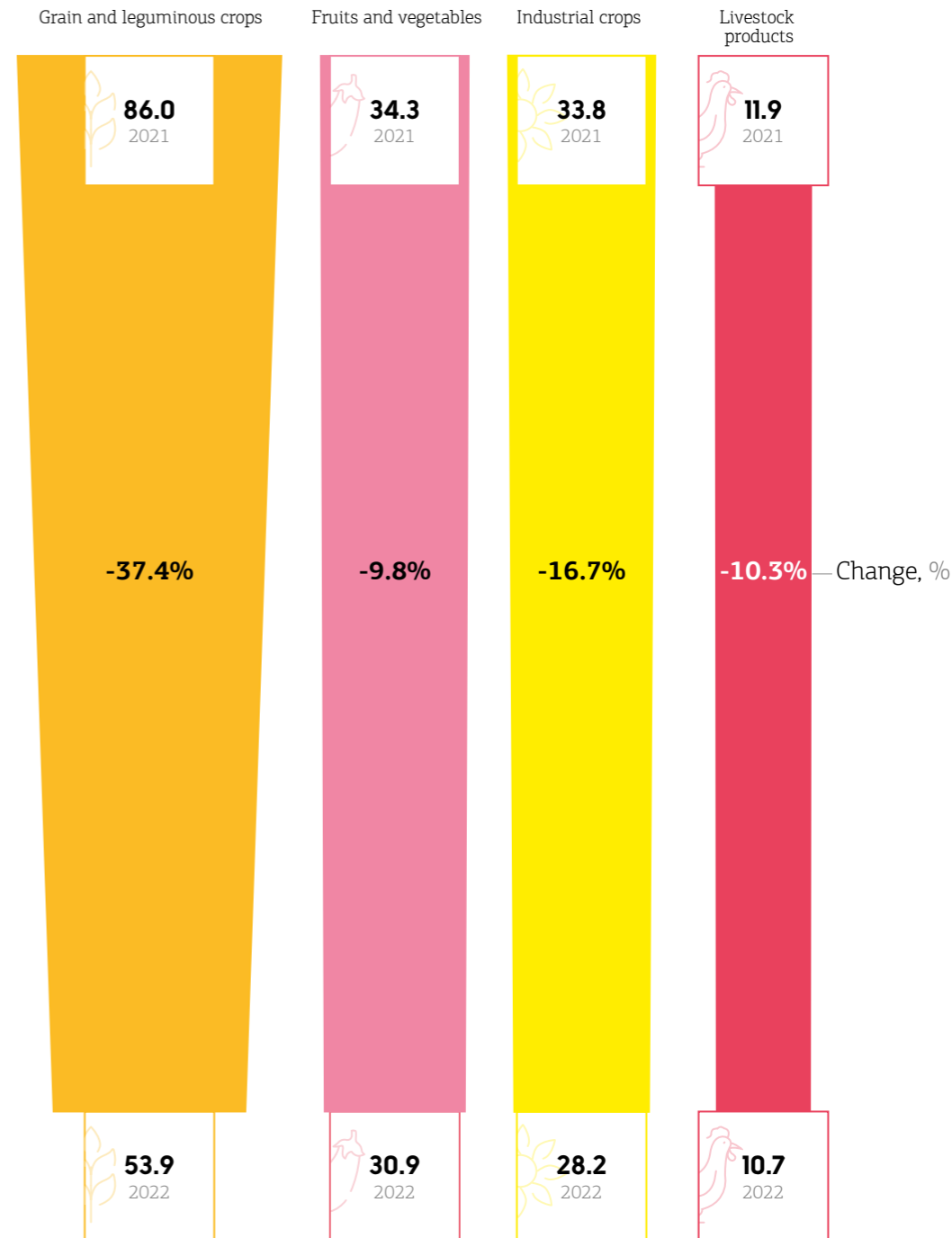
\*the 2014-2016 prices are taken as 100 points

# PRODUCTION OF THE MAJOR AGRICULTURAL COMMODITIES

Production of main types of agricultural products in 2022\*, mln t



Changes in the production of major agricultural products, mln t



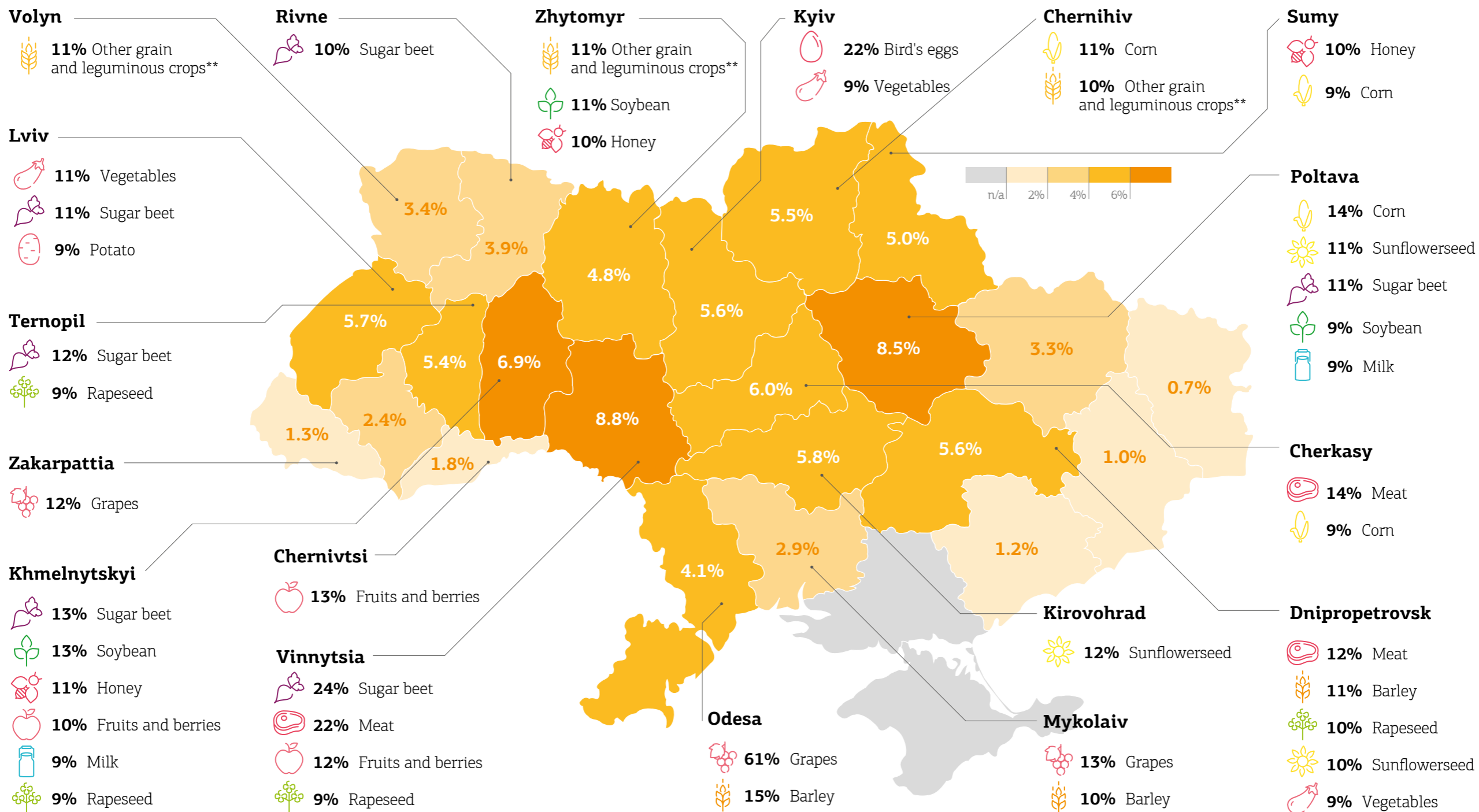
Sources: State Statistics, USDA

\*for oilseeds, grain and leguminous crops – 2022/23 MY  
 \*\*for calculations, the average weight of one egg is 55 g



# AGRICULTURAL SPECIALIZATION OF UKRAINIAN REGIONS

Share of regions in the country's agricultural production in 2022\*, % (in physical terms)

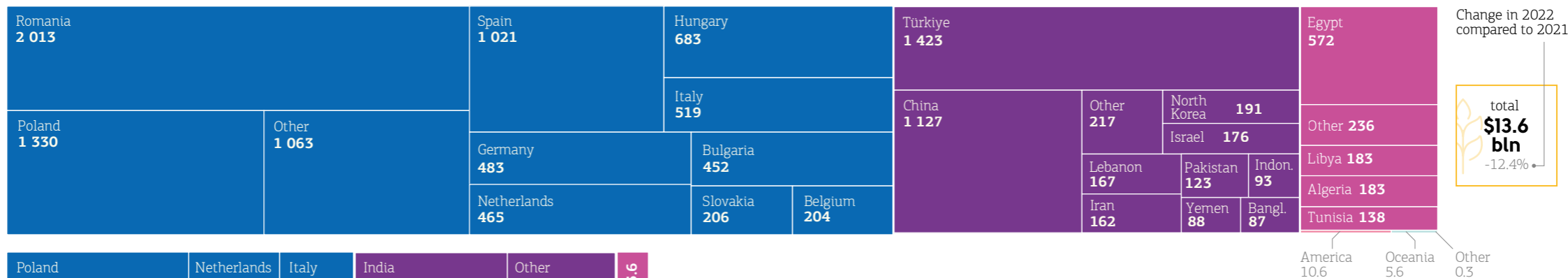


Source: State Statistics  
 \*only figures equal to 9% and above of the total production in Ukraine are indicated  
 \*\*rice, millet, sorghum, buckwheat, oats, triticale, rye

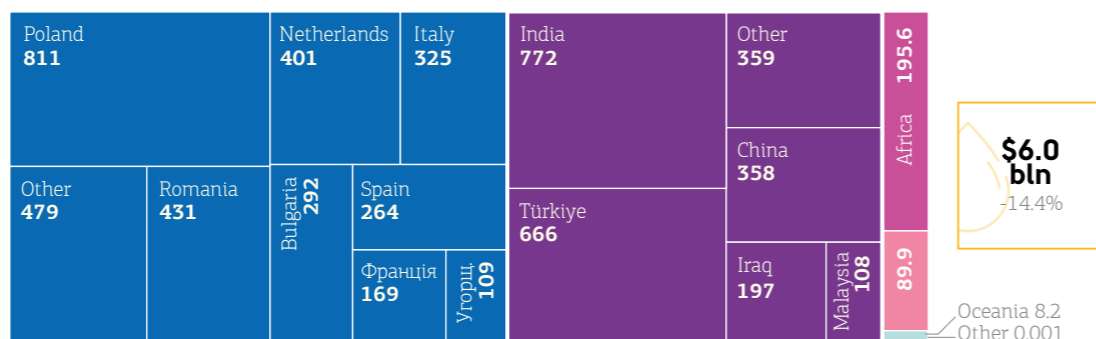
# EXPORTS OF UKRAINIAN AGRICULTURAL COMMODITIES IN 2022, USD MLN

● Europe ● Asia ● Africa ● America ● Oceania ● Other

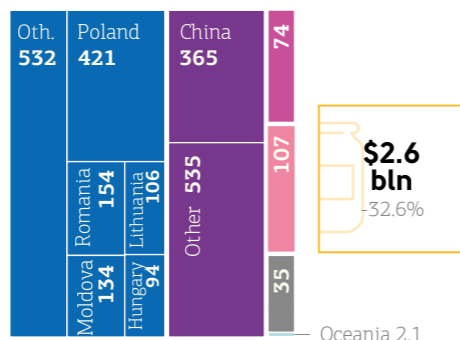
## Plant origin products



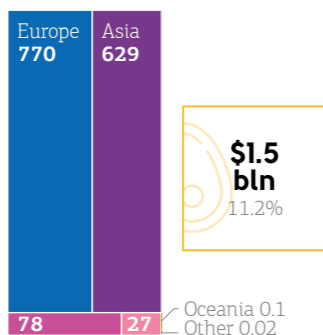
## Fats and oils of animal and vegetable origin



## Ready foods



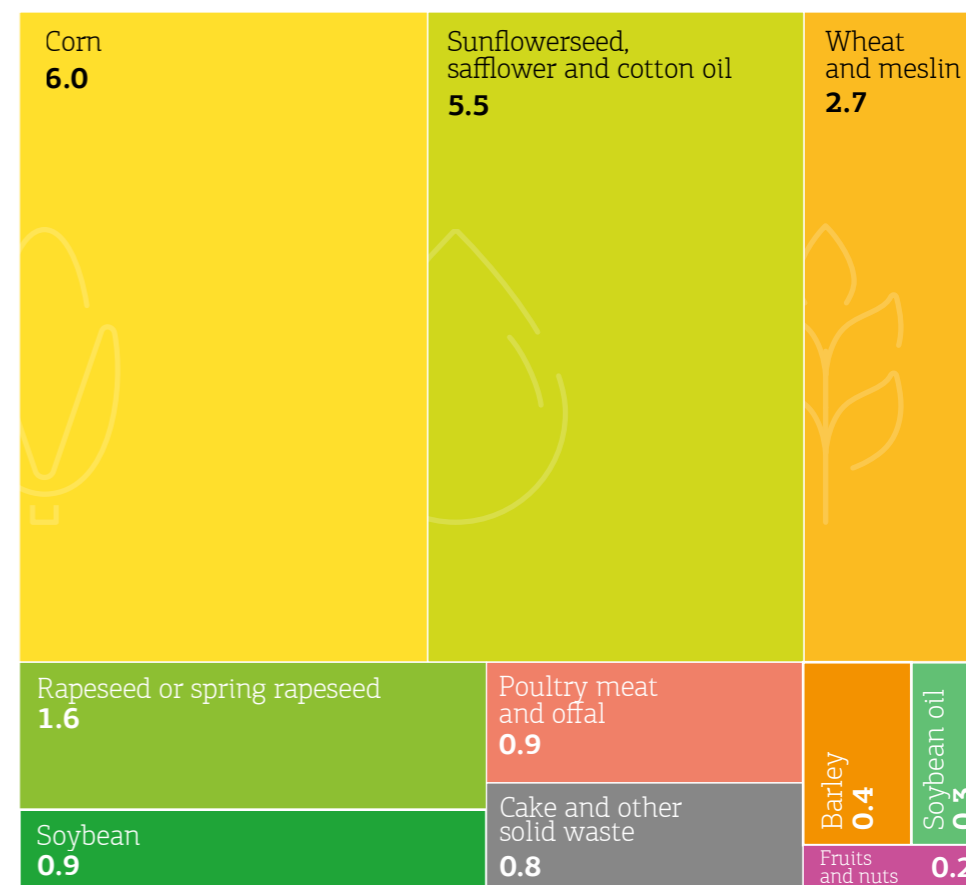
## Live animals, livestock products



In 2022, global prices for most agricultural products were quite high, so the decline in exports in monetary terms was less significant than in physical terms. **The share of European countries in the structure of agricultural exports increased due to:**

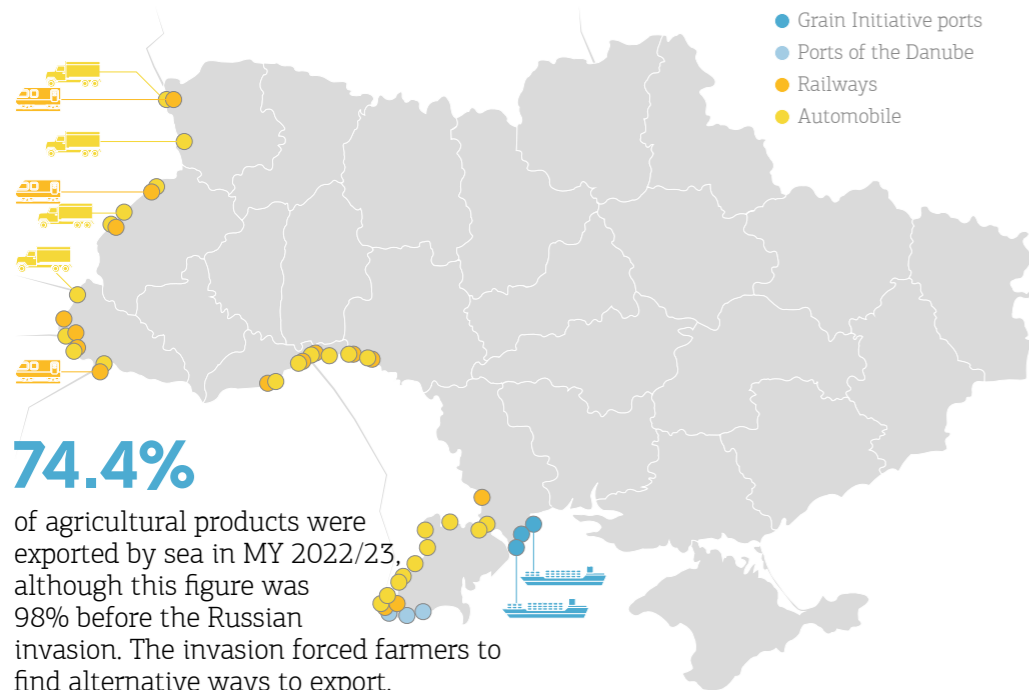
- the blockade of ports and changes in logistics routes, which resulted in products being exported to neighboring countries first rather than directly to the end consumer;
- removal of trade barriers by the EU.

## Top export products in 2022, USD bln

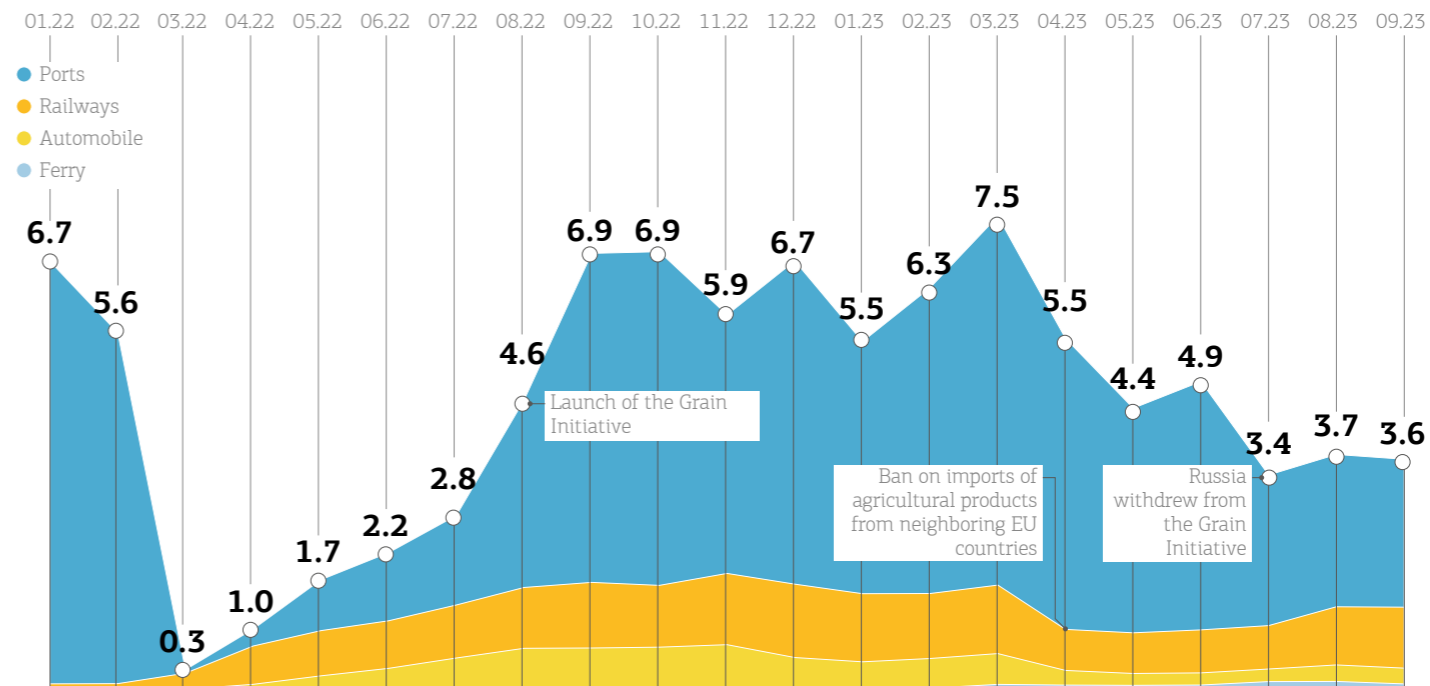


# LOGISTICS PROBLEMS AFTER THE FULL-SCALE INVASION

## Ways to export agricultural products



## Exports of agricultural products by transportation type, mln t

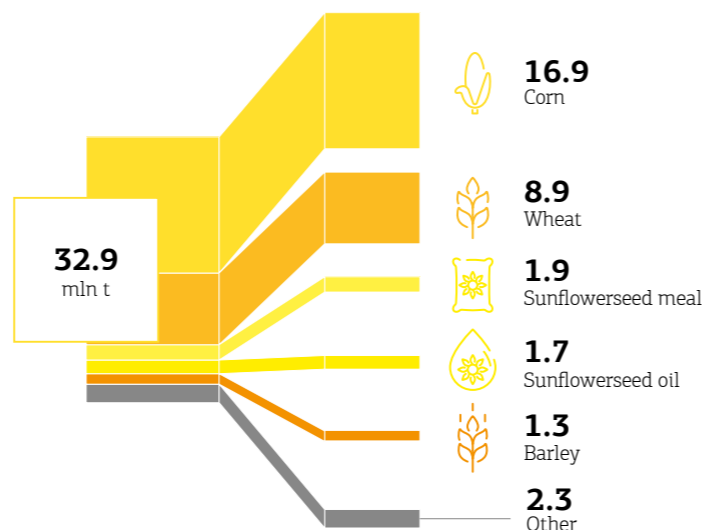


**Maritime transportation was the backbone of Ukrainian agrarians**, so the blockade of most ports hit the economy hard.

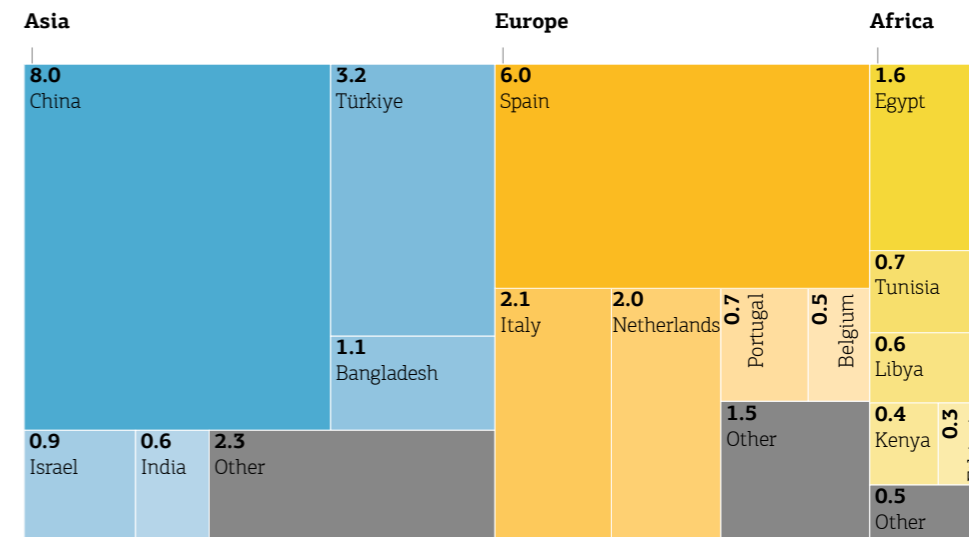
The launch of the Grain Initiative in August 2022 was crucial, as it allowed Ukraine to export more than 30 million tons of products until Russia withdrew from the agreement in July 2023. Land transportation routes partially compensated for the hit to maritime logistics, but the focus remained on port infrastructure.

After Russia's withdrawal from the Grain Initiative, the share of shipments via Danube ports and land transportation routes increased. Despite the market's adaptation to the new realities, agrarians still face significant sales problems due to the constant shelling of port infrastructure and export restrictions imposed by neighboring countries.

## Top 5 export products during the Grain Initiative, mln t

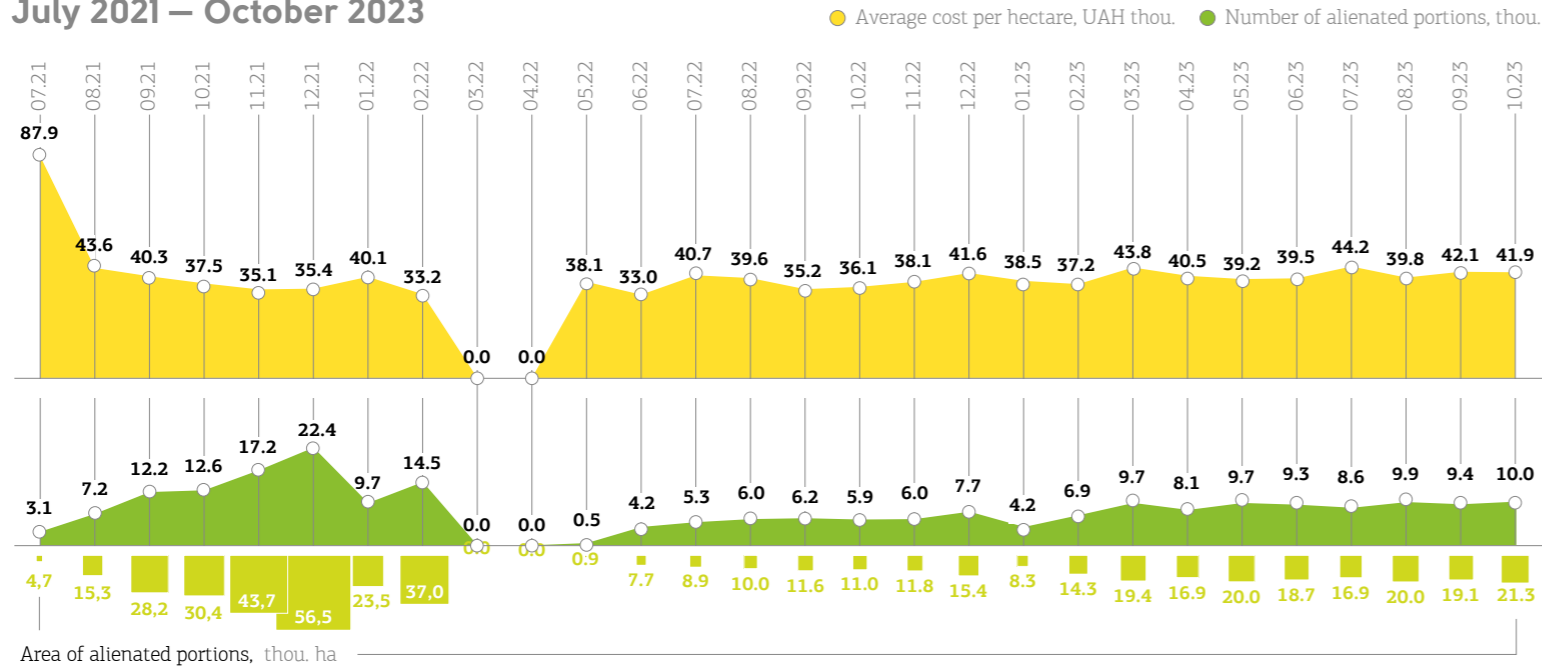


## Export destinations during the Grain Initiative, mln t

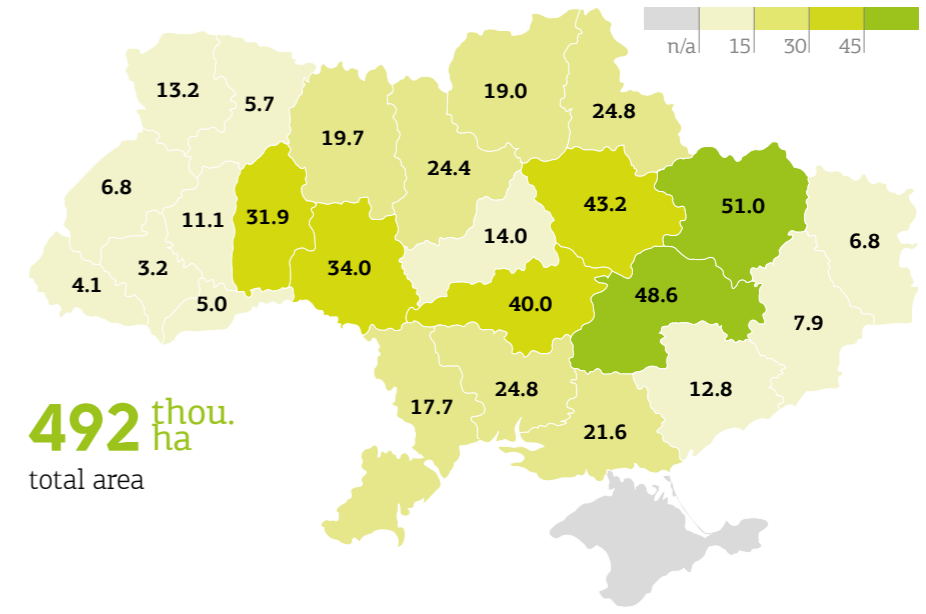


## LAND FUND OF UKRAINE

### Land market performance in Ukraine, July 2021 – October 2023



### Total area of alienated land portions by region as of 10/31/2023, thou. ha

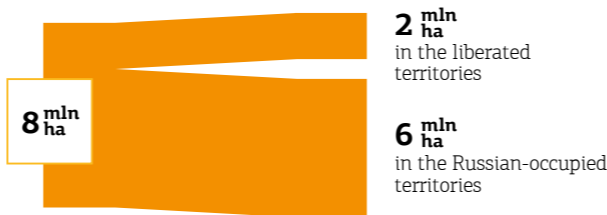


### Mined and Russian-occupied territories of Ukraine



### Needs for demining fields

#### Area of potentially dangerous agricultural land



**\$1.8 thou.**

cost of complete demining per 1 ha

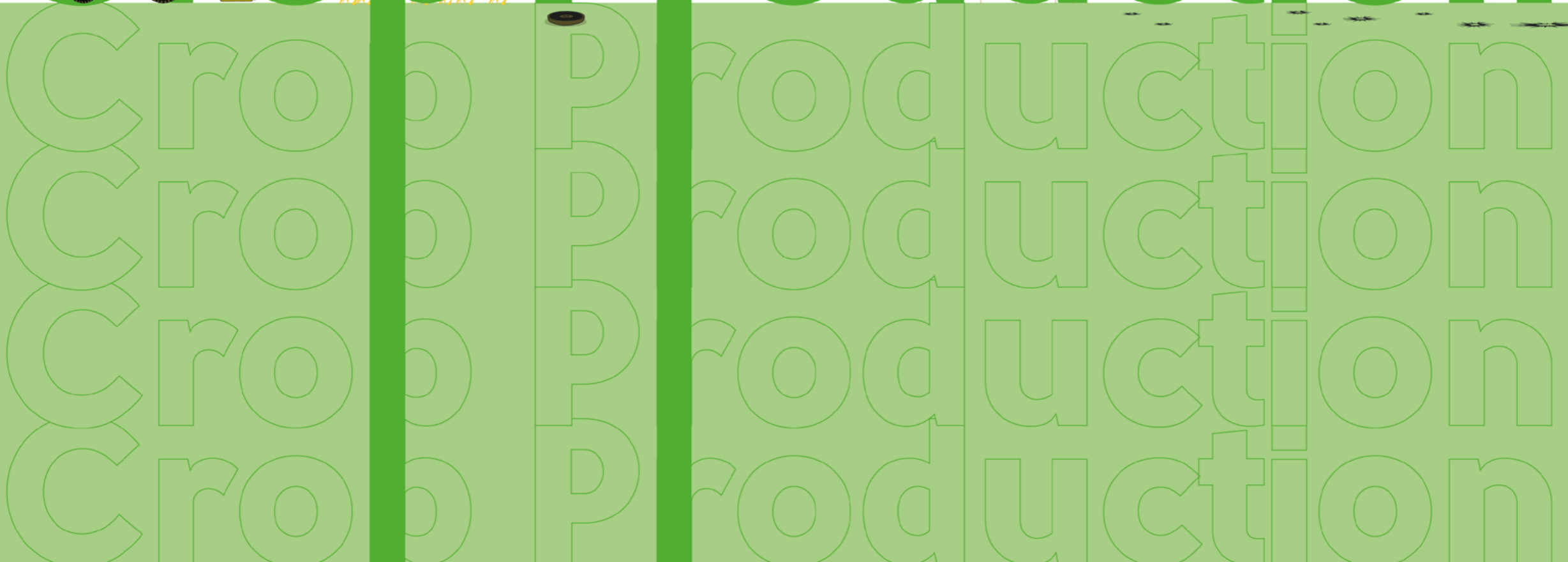
**\$250 mln**

funds needed to demine the agricultural land of small farmers fully

### Consequences of mining for the agricultural sector

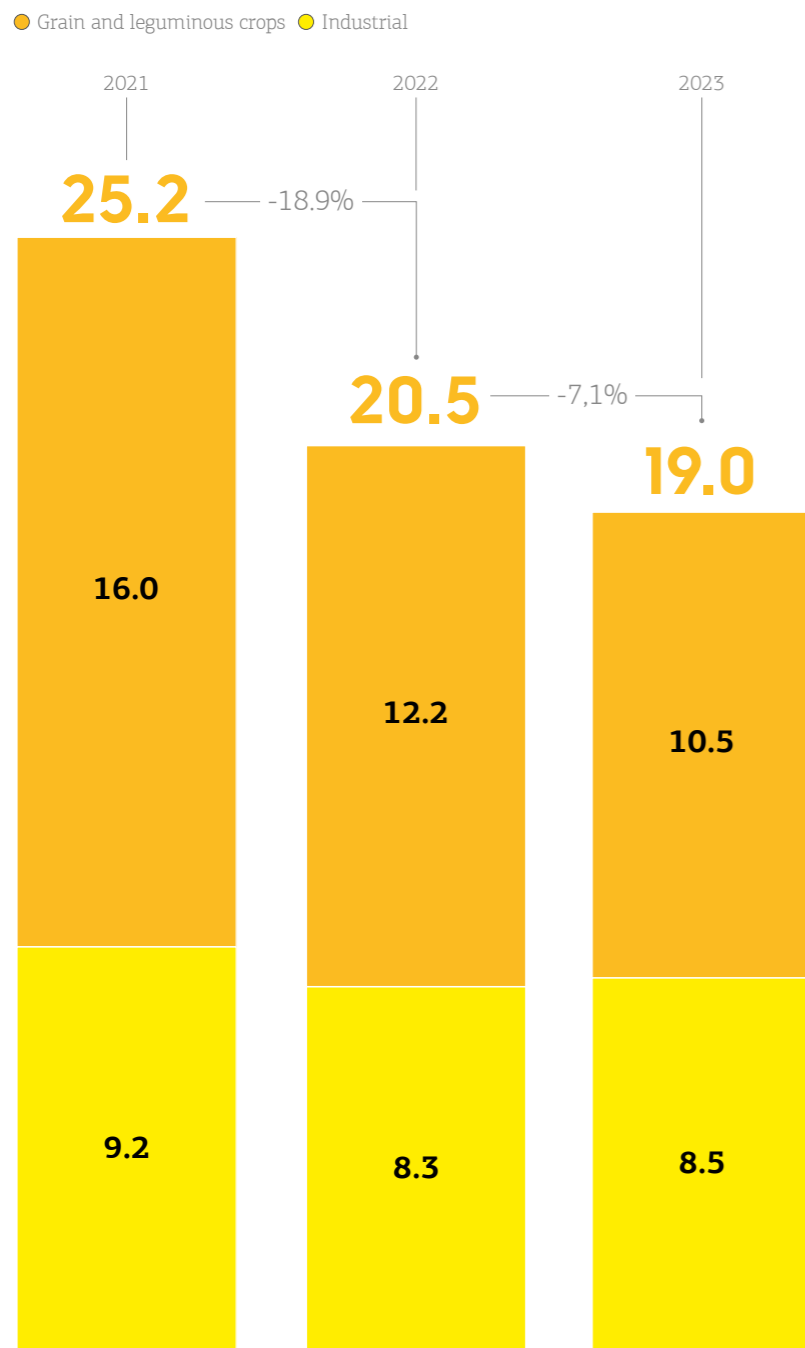
- **Crop losses.** Mined territories cannot be cultivated and harvested. This leads to a decrease in production and economic consequences.
- **Loss of agricultural machinery.** Financial costs for purchasing or repairing equipment damaged in the mined area.
- **Safety of workers.** Mined territories seriously threaten the safety of people working on mined land.
- **Environmental consequences.** Mining can lead to contaminating soil and water resources with chemicals, which will negatively impact the environment and ecosystem.
- **Spread of invasive species.** Damaged ecosystems may become more vulnerable to the spread of invasive plant species that will displace native species and exacerbate the environmental situation.
- **Reduced investment.** The situation with mines may affect agricultural and infrastructure investments, as investors may refrain from investing in an unstable region.

# Crop Production

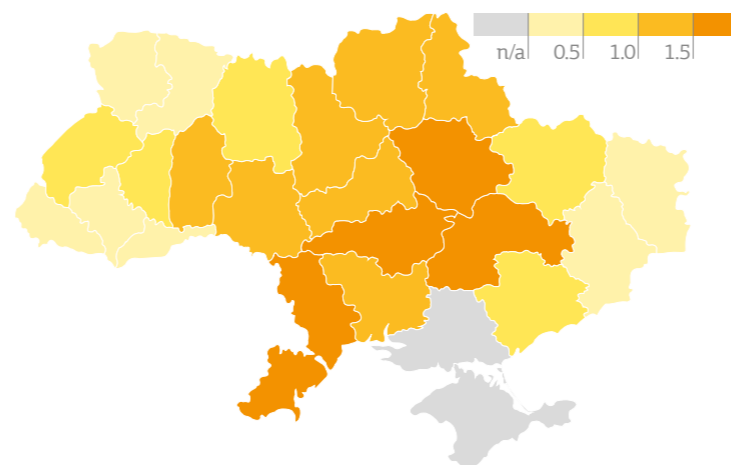


## SOWING DURING THE WAR

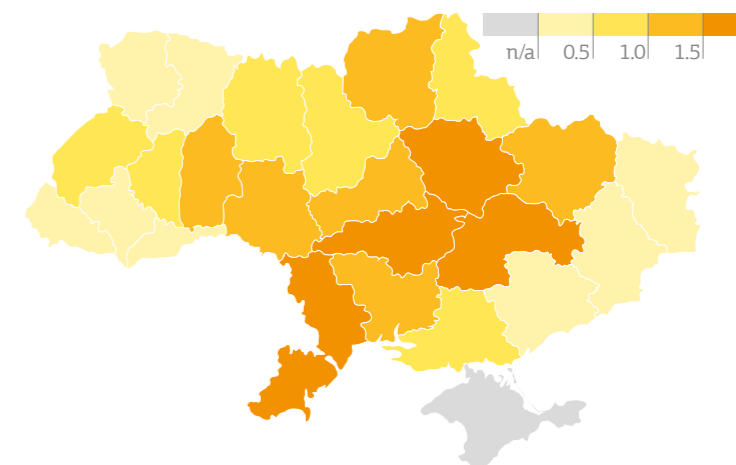
### Changes in the sown areas of major crops for the 2021, 2022 and 2023 harvests\*, mln ha



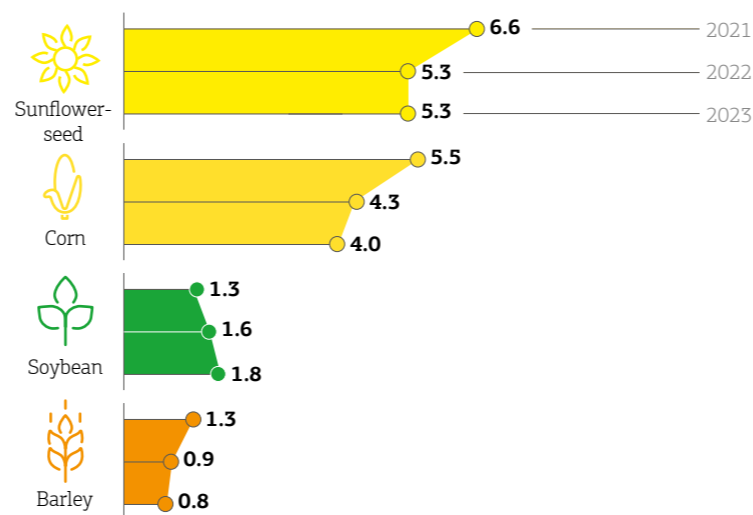
### Sown areas of major crops for the 2022 harvest, mln ha



### Sown areas of major crops for the 2023 harvest, mln ha

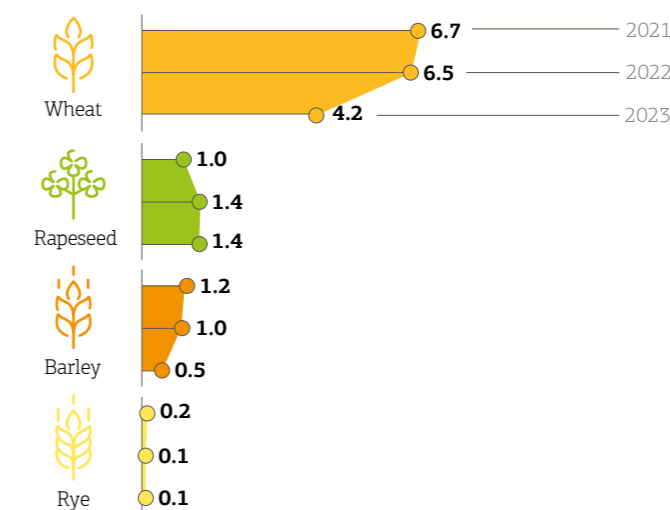


### Sown areas of major spring crops for the respective year's harvest, mln ha



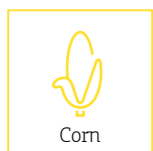
The spring crops sowing campaign in 2023 was active but no less stressful than last year. The key trends were a decrease in the area under corn, while the area under oilseeds and some industrial crops increased; mining of fields in the de-occupied territories; high fertilizer prices; and problems with the Grain Initiative, which forced some farmers to change their crop rotation.

### Sown areas of major winter crops for the respective year's harvest, mln ha

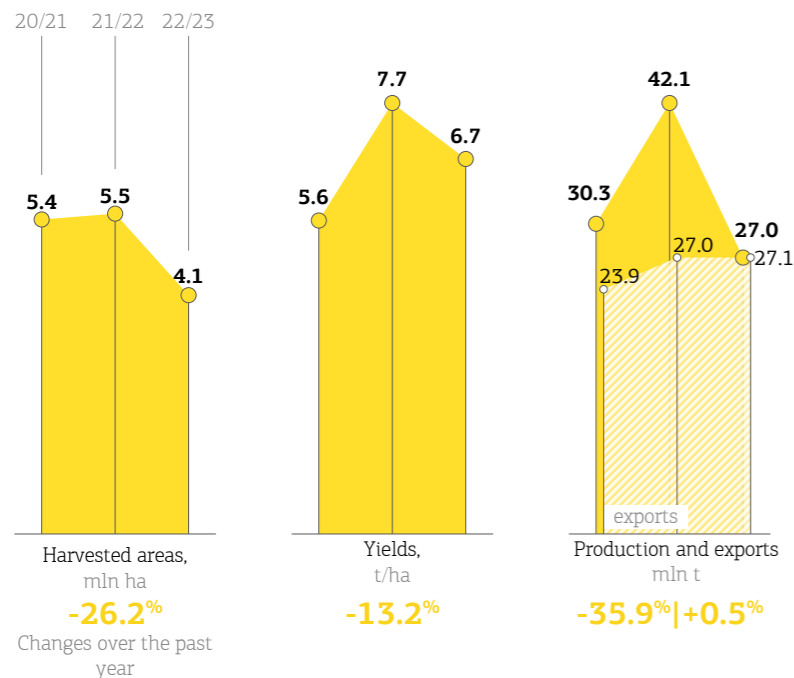


Among the main winter crops, the area under wheat and barley declined the most due to the occupation of the southeastern regions. At the same time, rapeseed acreage remains at record highs despite the war.

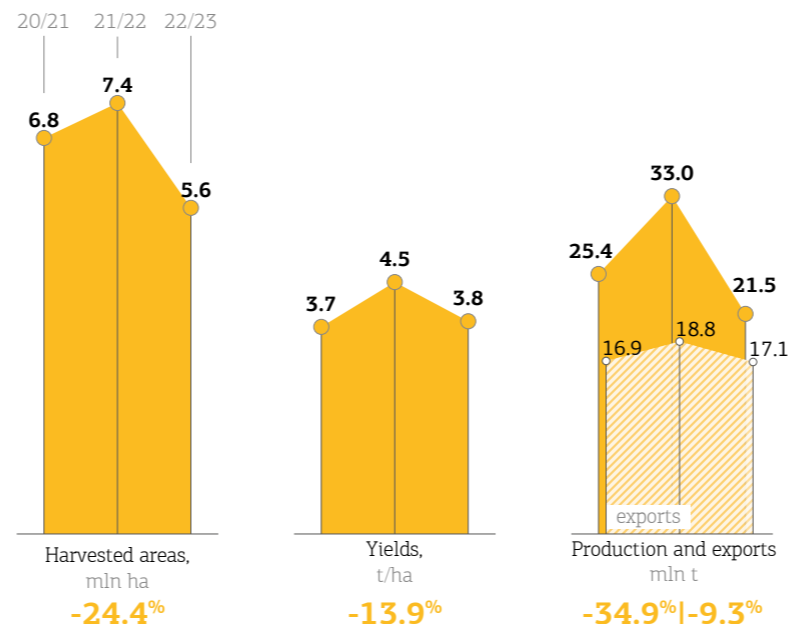
## GRAIN PRODUCTION



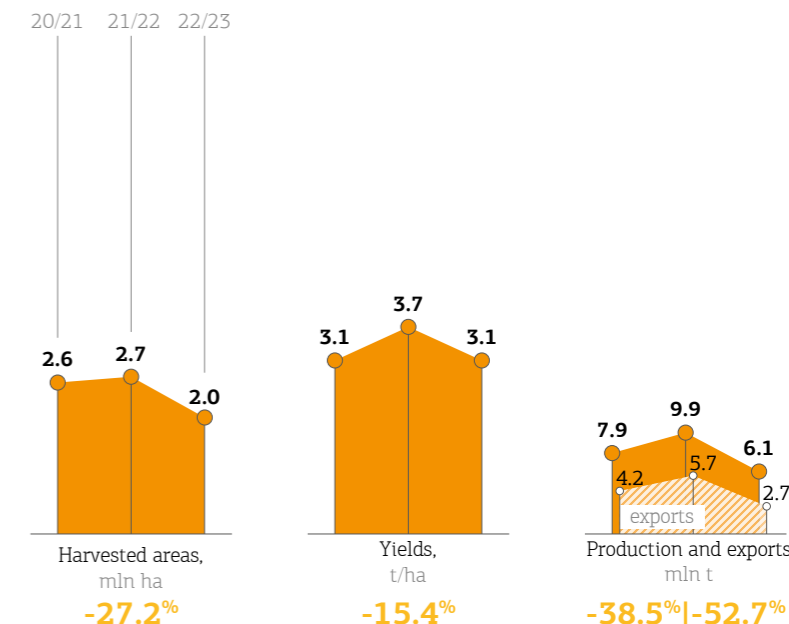
In MY 2022/23, the harvested area decreased by 25.5%, and production fell by 35.9%. However, exports grew by 3.7% due to high carryover stocks, the Grain Initiative, strong demand from China, and poor harvests in Europe.



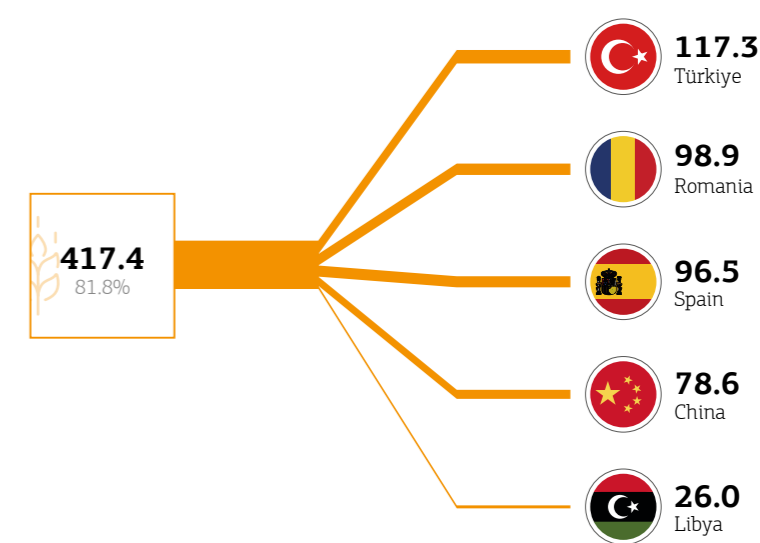
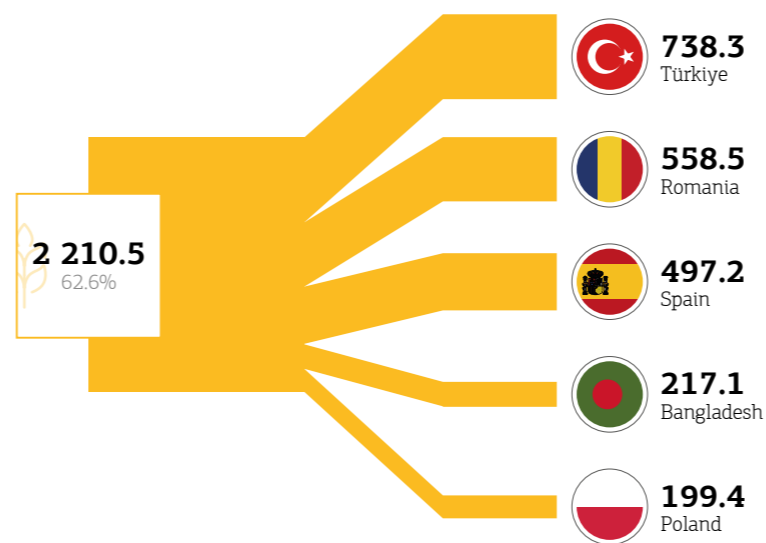
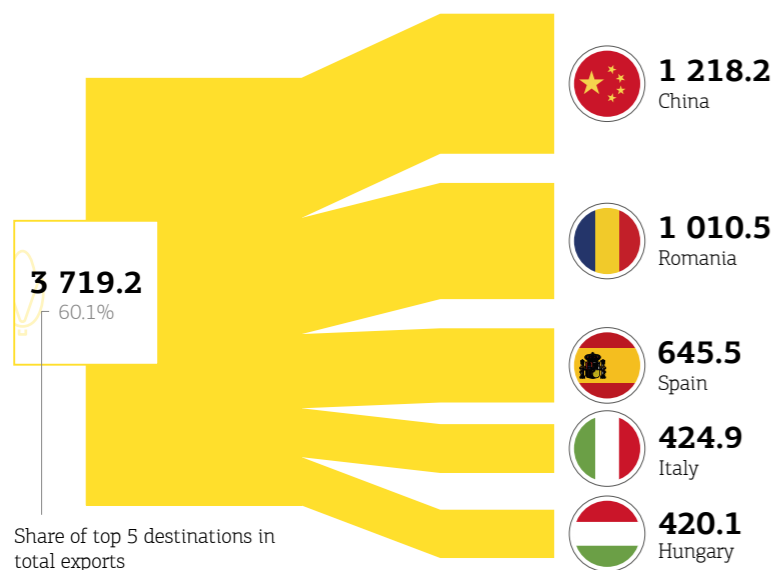
In MY 2022/23, the harvested area decreased by 24.3%, and production fell by 34.8%. Amid this decline, exports declined less significantly (-9%) due to high carryover stocks.



In MY 2022/23, the harvested area decreased by 25.9%, and production dropped by 38.4%. Exports fell by 52.6% due to the decline in production.



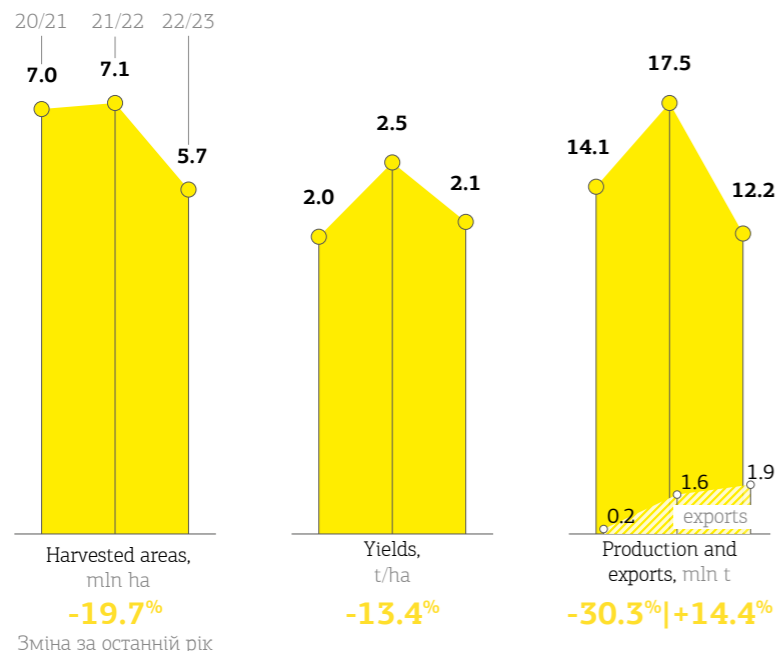
### Top 5 export destinations of major grain crops in MY 2022/2023, mln USD



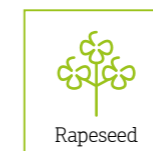
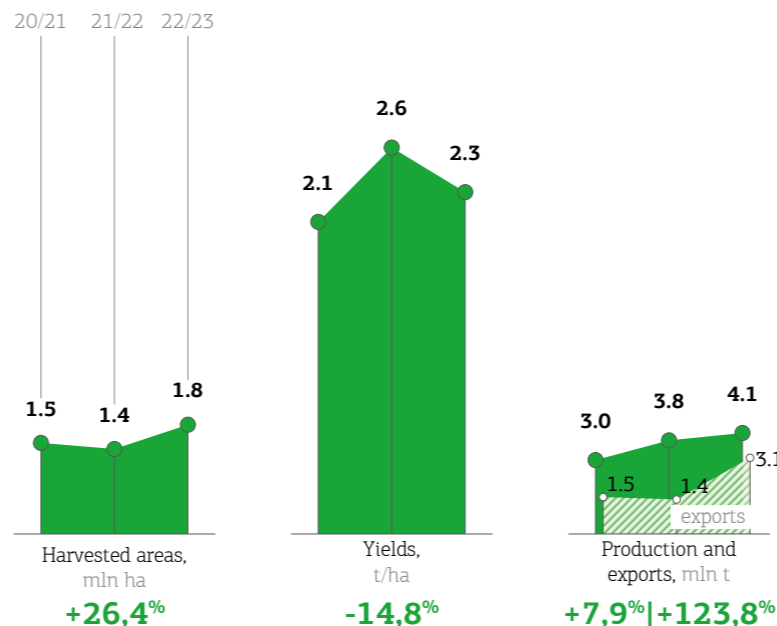
## OILSEED CROPS PRODUCTION



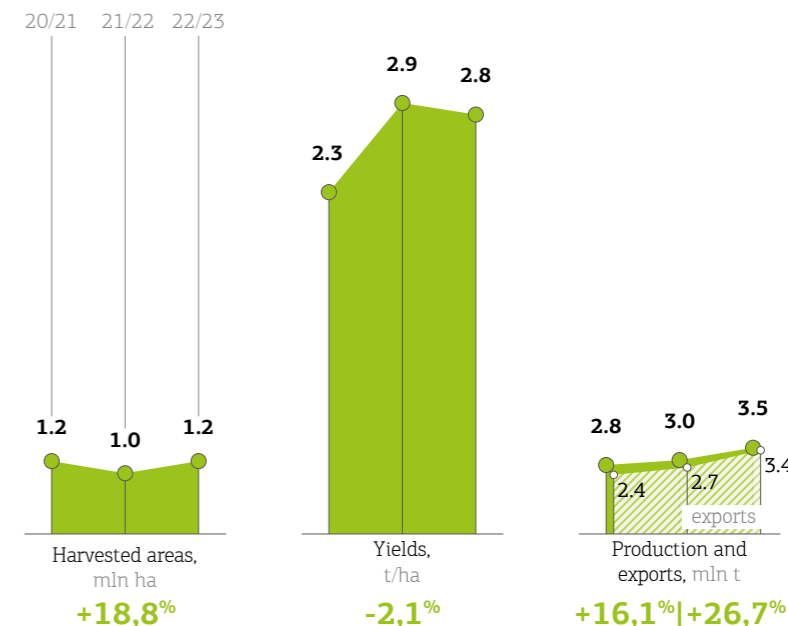
In MY 2022/23, the harvested area decreased by 19.7%, and production fell by 30.3%. Meanwhile, exports increased by 25% and reached a historic high due to the decline in domestic seed processing in the previous season.



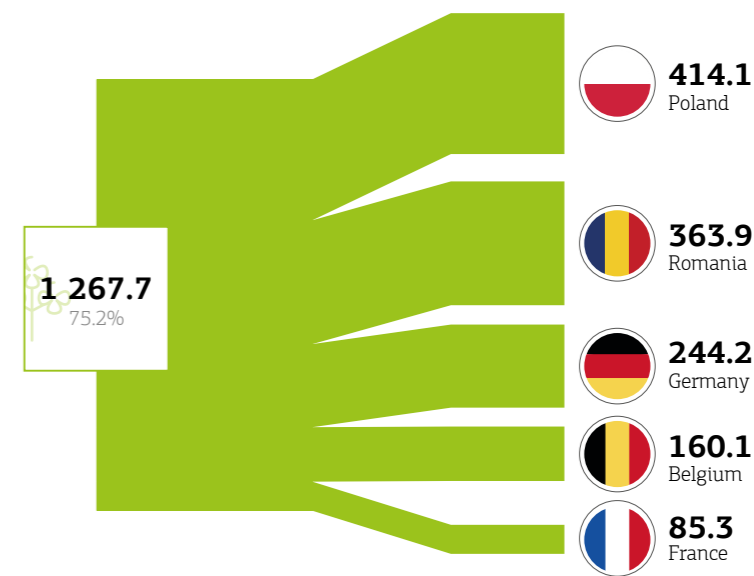
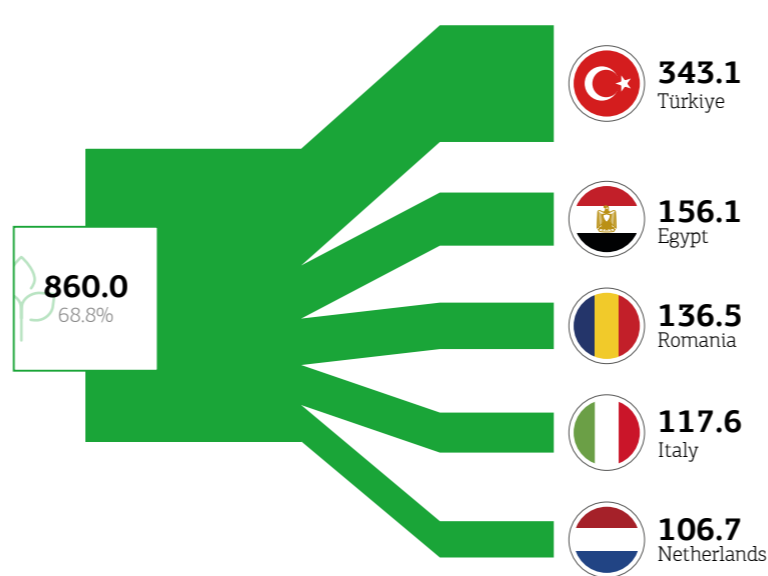
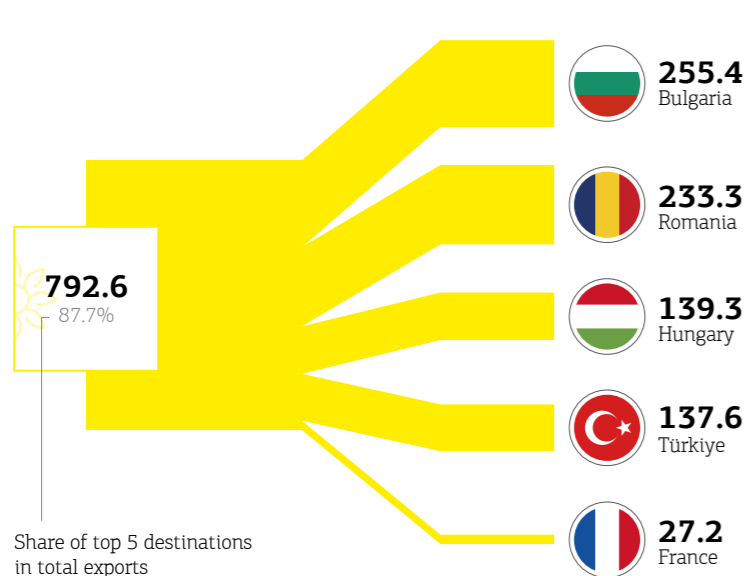
It is one of the few crops whose acreage and production increased in MY 2022/23. Exports more than doubled due to increased production in 2022 and large soybean stocks from the 2021 harvest that managed to be sold.



Exports increased, and the EU countries traditionally represented its geographical structure. The increase in Poland's and Romania's shares was due to changes in logistics routes.



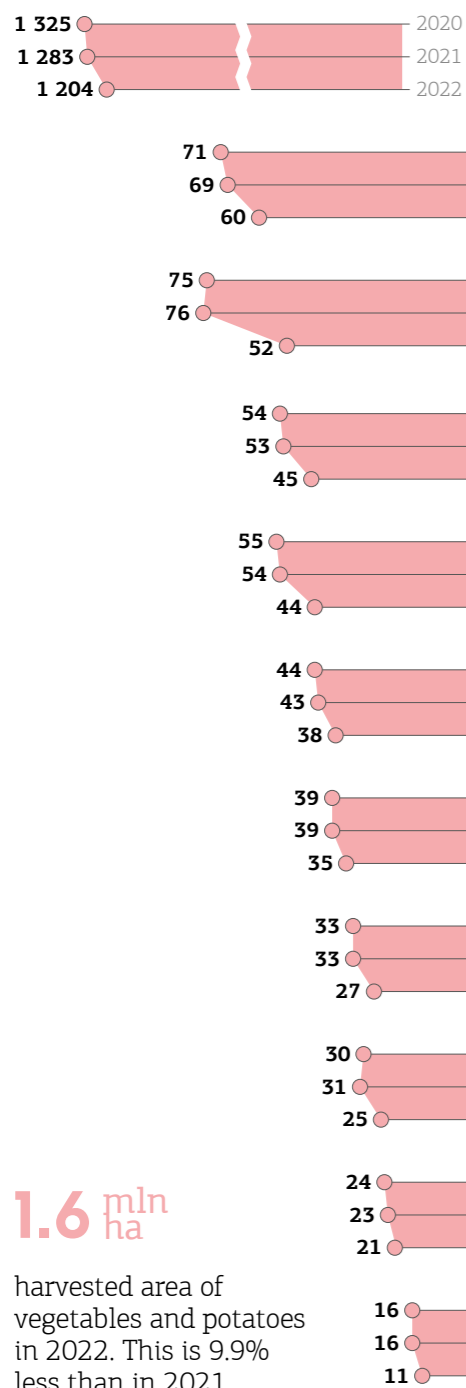
### Top 5 export destinations of major oilseed crops in MY 2022/2023, mln USD



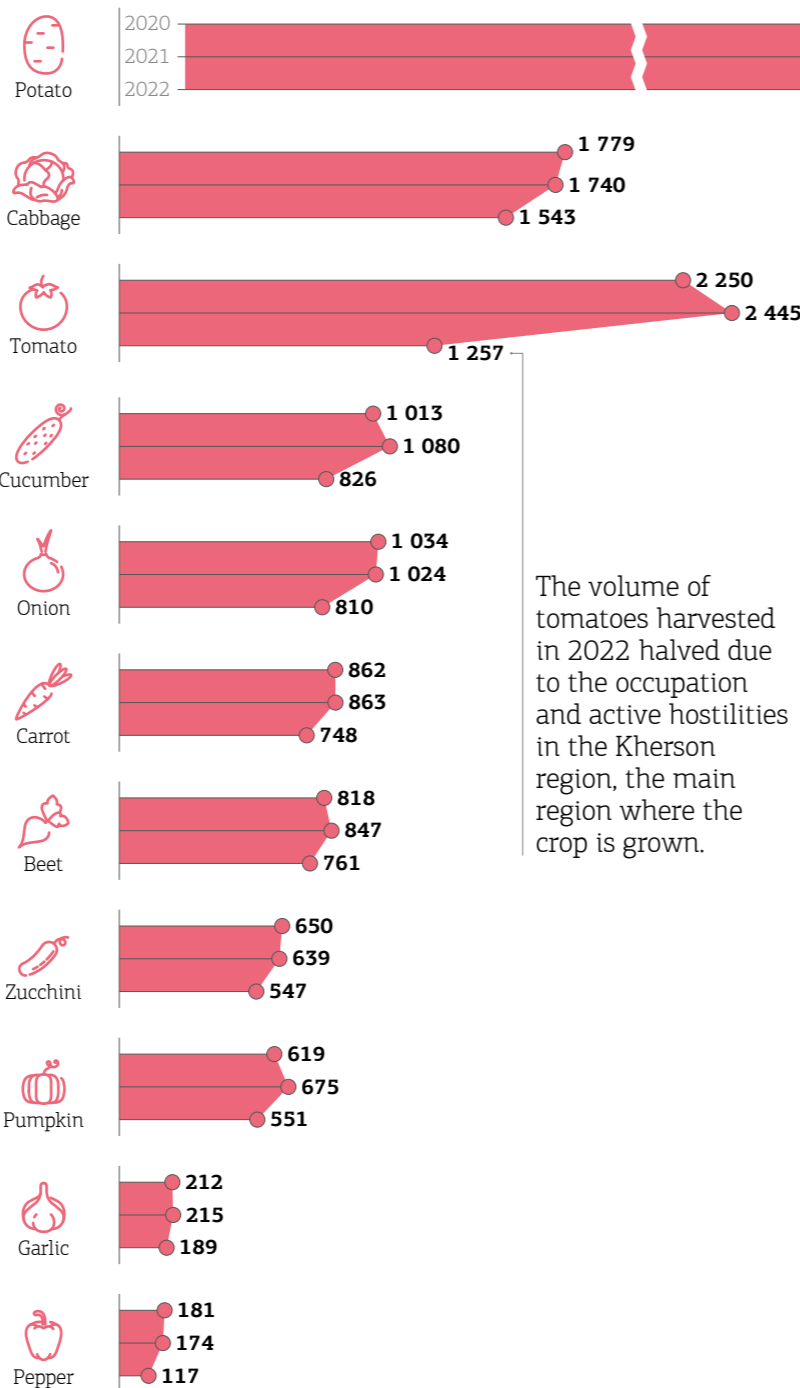


# VEGETABLES AND POTATO PRODUCTION

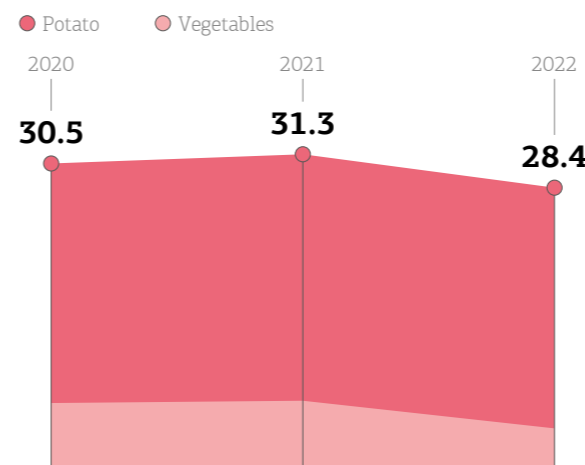
## Plantation area, thou. ha



## Production, thou. t



## Total production of vegetables and potato,



**-24.4%**

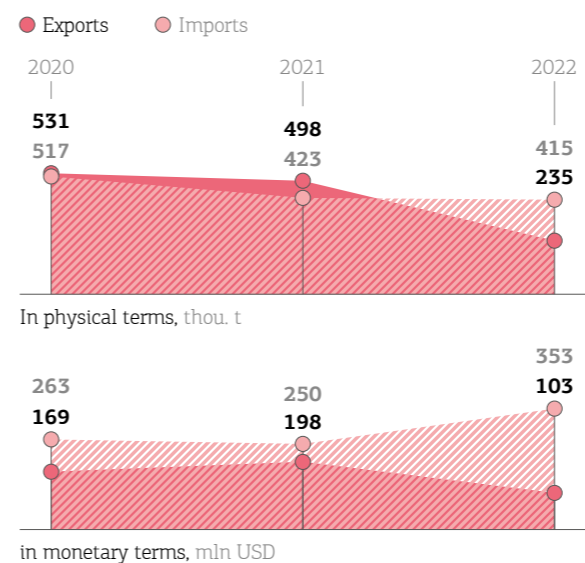
vegetable production in 2022 compared to 2021

**-2.1%**

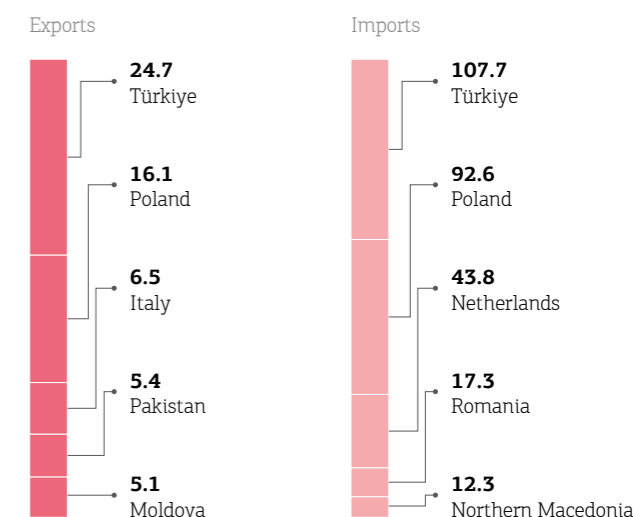
potato production in 2022 compared to 2021

A more significant decline in vegetable production is explained by the fact that the regions where they are grown are part of the regions where the hostilities are ongoing. However, the overall decline in production was partially mitigated by the reorientation of agrarians who switched to vegetable production in the face of a shortage on the domestic market.

## Exports and imports

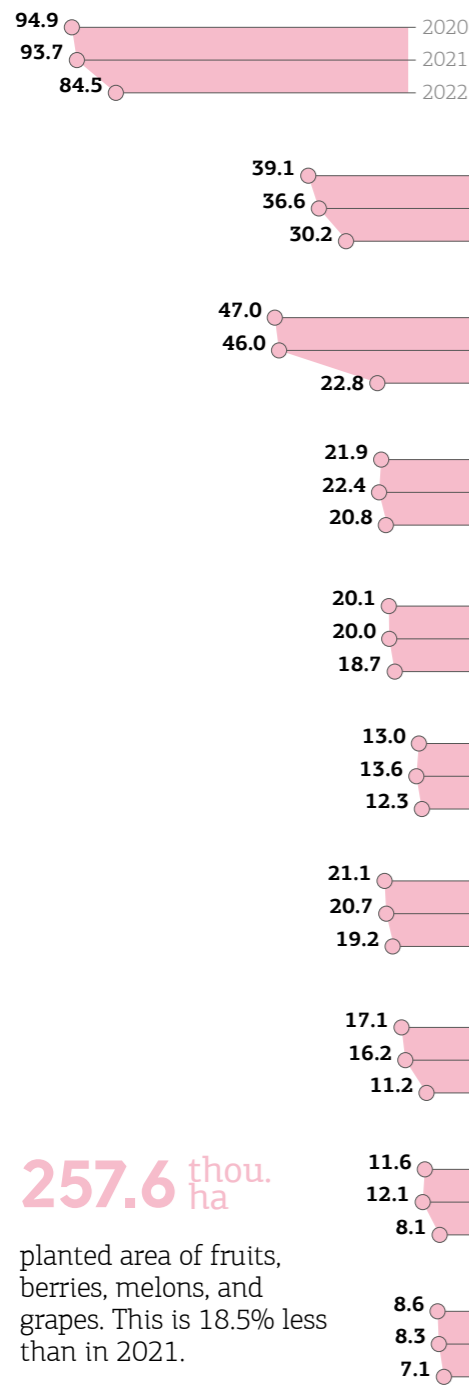


## Top 5 trade destinations in 2022, mln USD

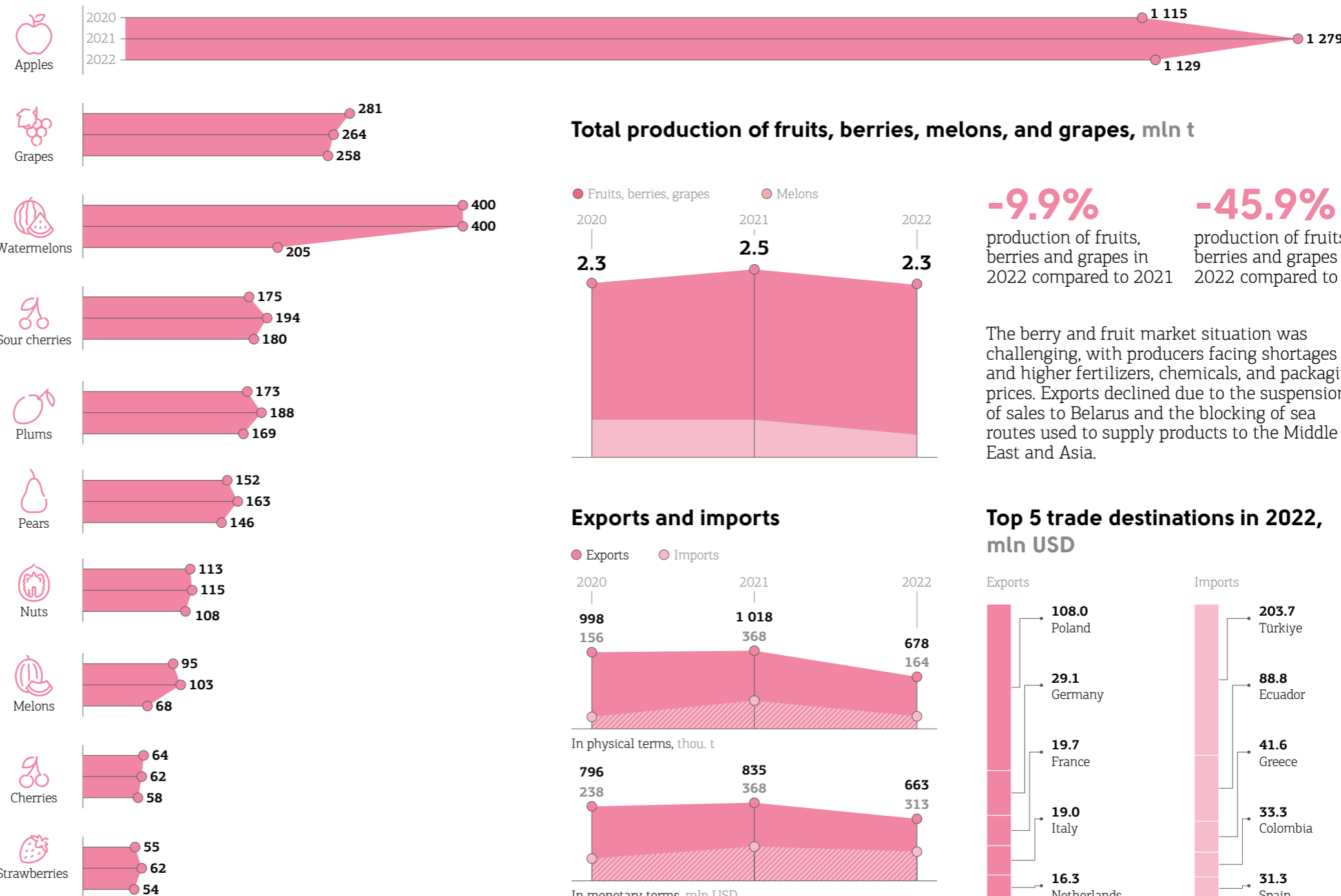


# FRUITS, BERRIES AND MELONS PRODUCTION

## Plantation area, thou. ha

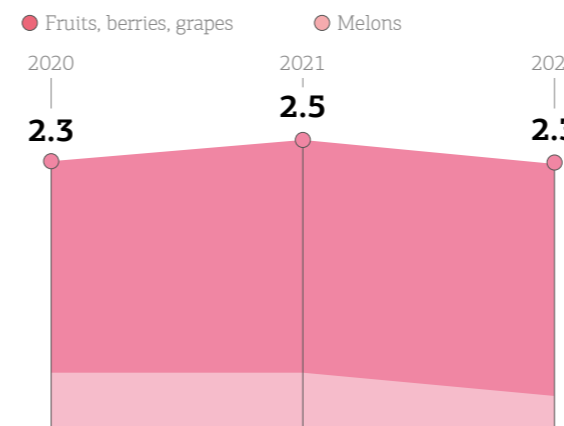


## Production, thou. t



**257.6** thou. ha  
planted area of fruits, berries, melons, and grapes. This is 18.5% less than in 2021.

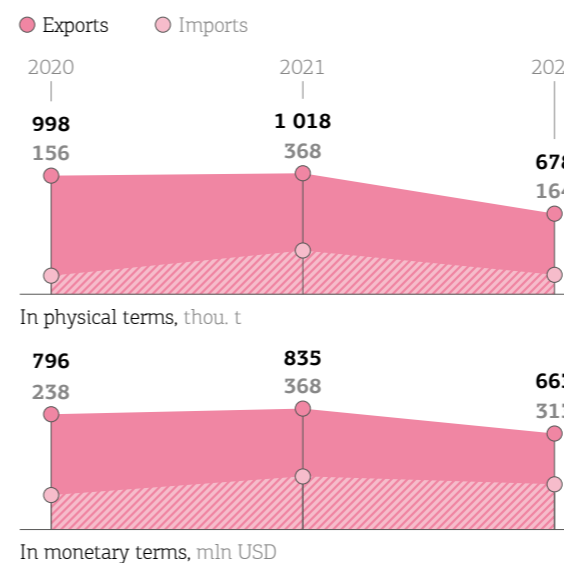
## Total production of fruits, berries, melons, and grapes, mln t



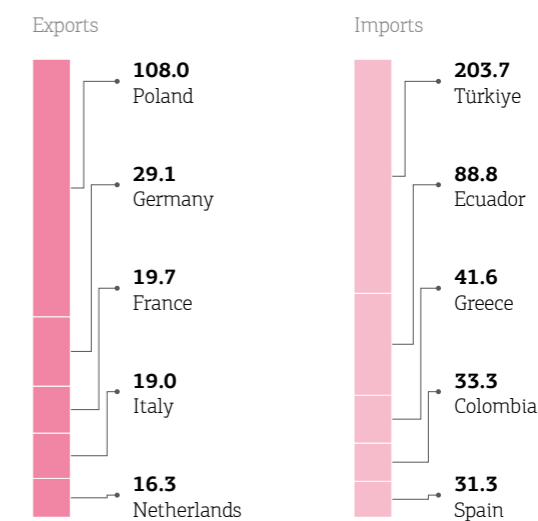
**-9.9%** production of fruits, berries and grapes in 2022 compared to 2021  
**-45.9%** production of fruits, berries and grapes in 2022 compared to 2021

The berry and fruit market situation was challenging, with producers facing shortages and higher fertilizers, chemicals, and packaging prices. Exports declined due to the suspension of sales to Belarus and the blocking of sea routes used to supply products to the Middle East and Asia.

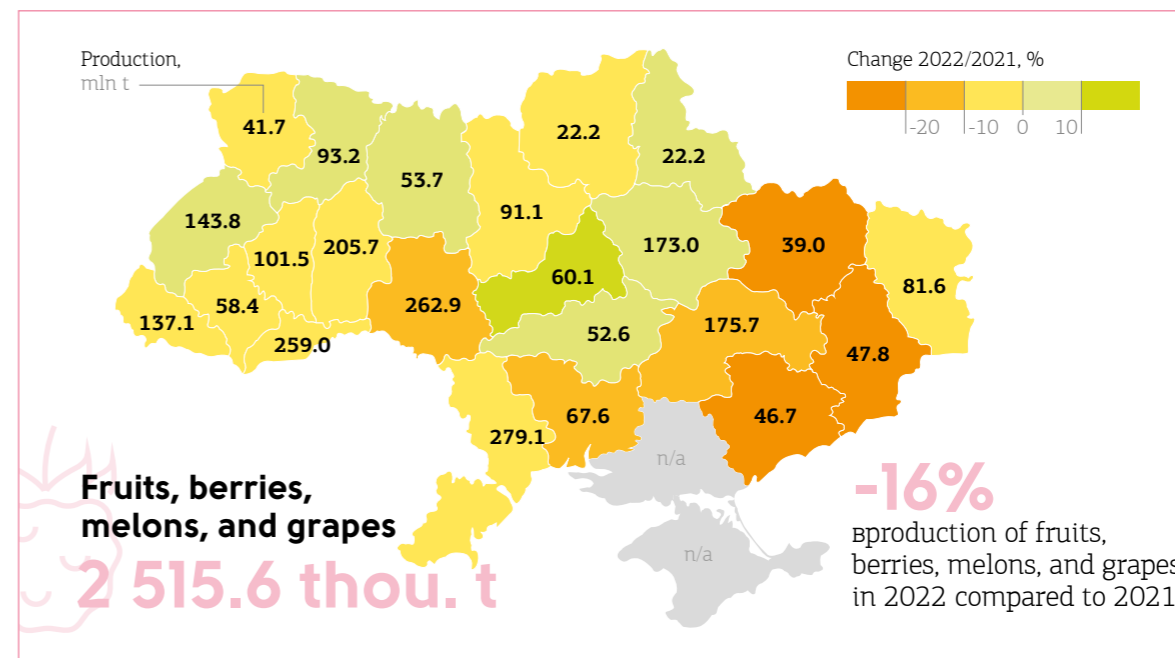
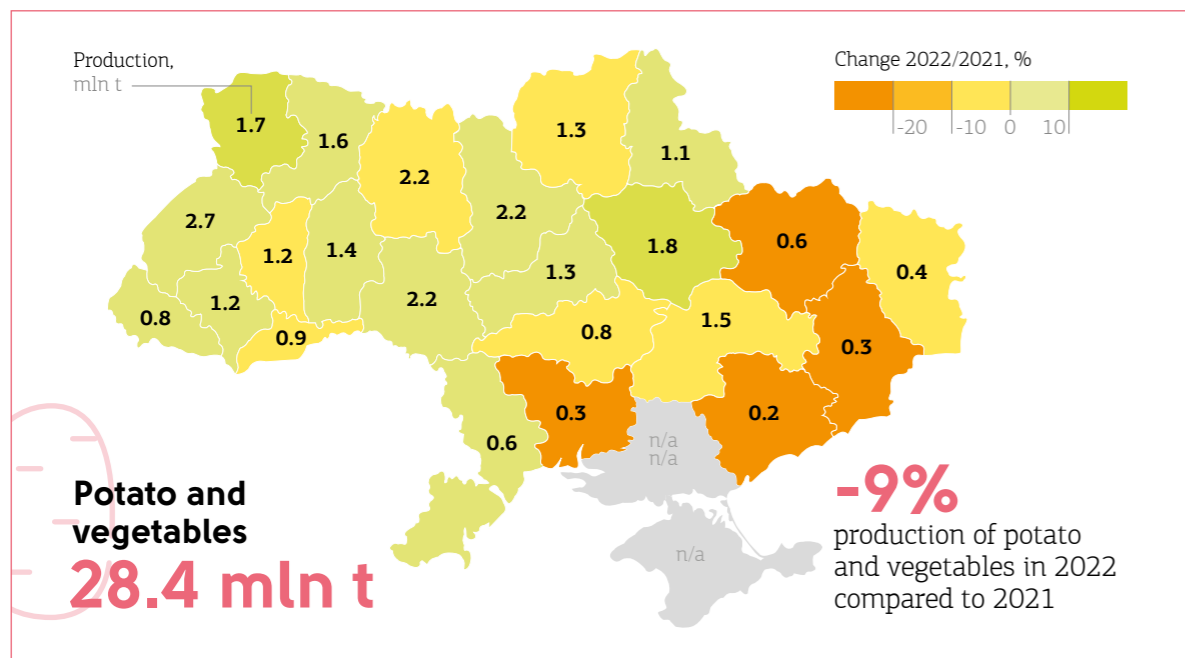
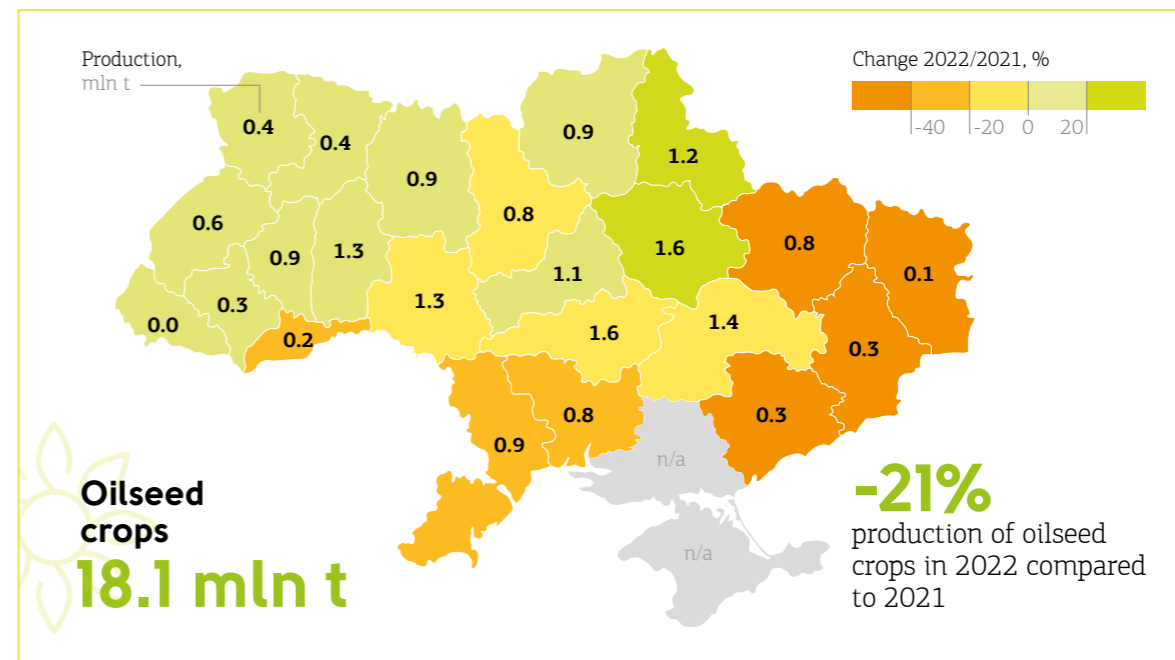
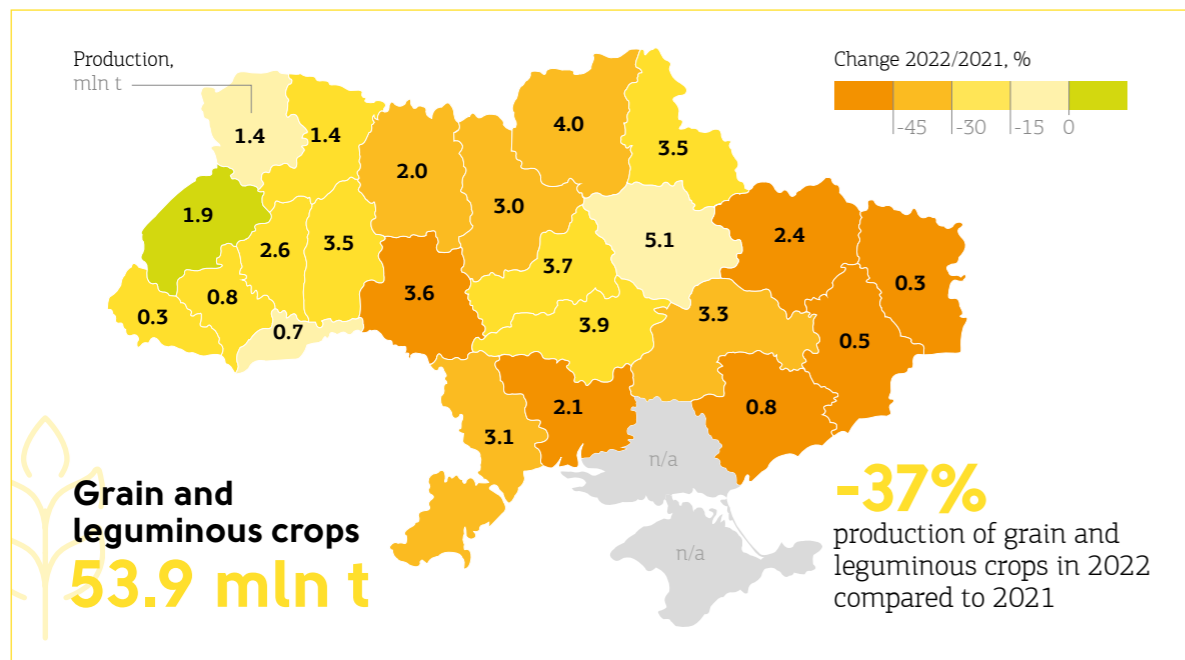
## Exports and imports



## Top 5 trade destinations in 2022, mln USD



## CHANGES IN THE REGIONAL STRUCTURE OF CROP PRODUCTION IN 2022



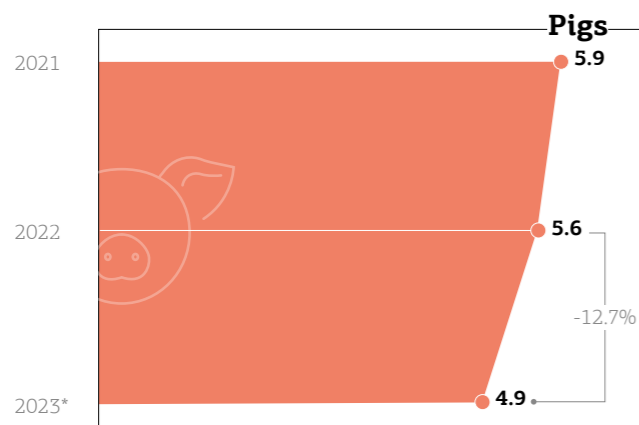
# Livestock farming



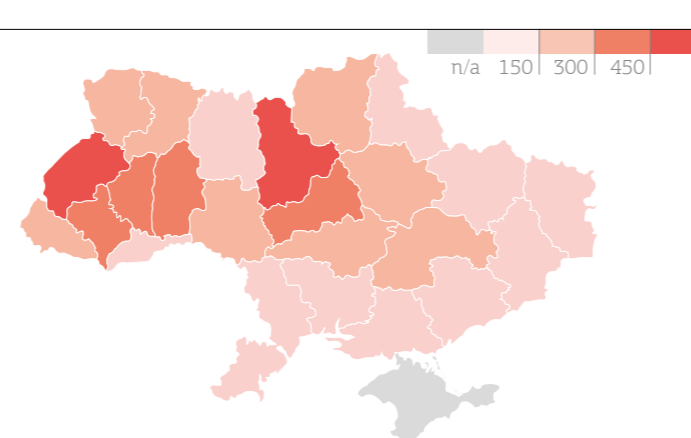
LIVESTOCK FARMING  
LIVESTOCK FARMING  
LIVESTOCK FARMING  
LIVESTOCK FARMING  
LIVESTOCK FARMING

# LIVESTOCK FARMING

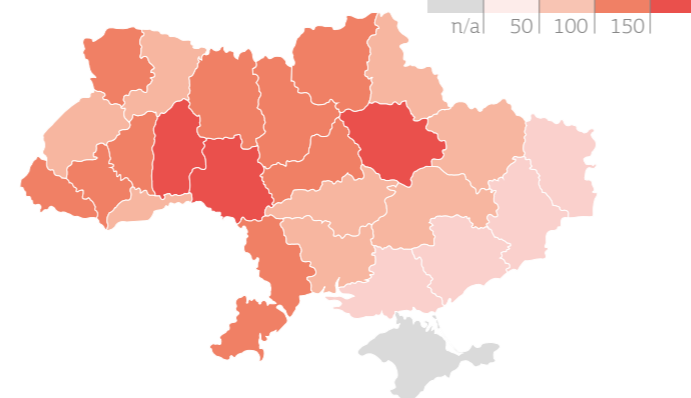
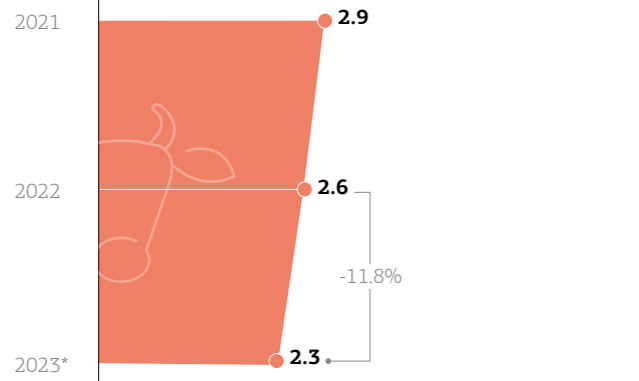
Livestock as of January 1, mln animals



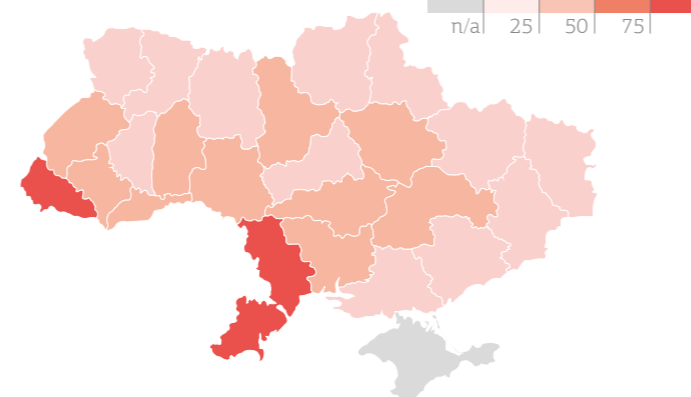
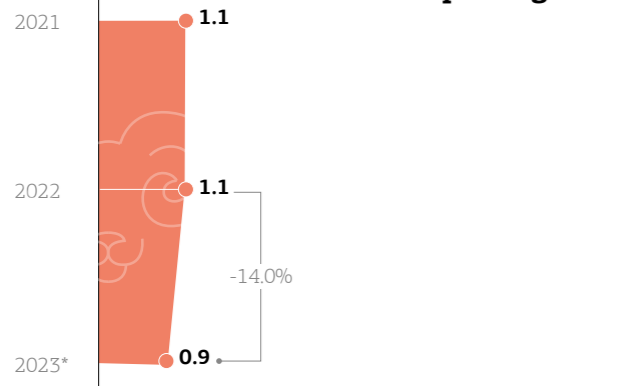
Livestock as of January 1, 2023\*, thou. animals



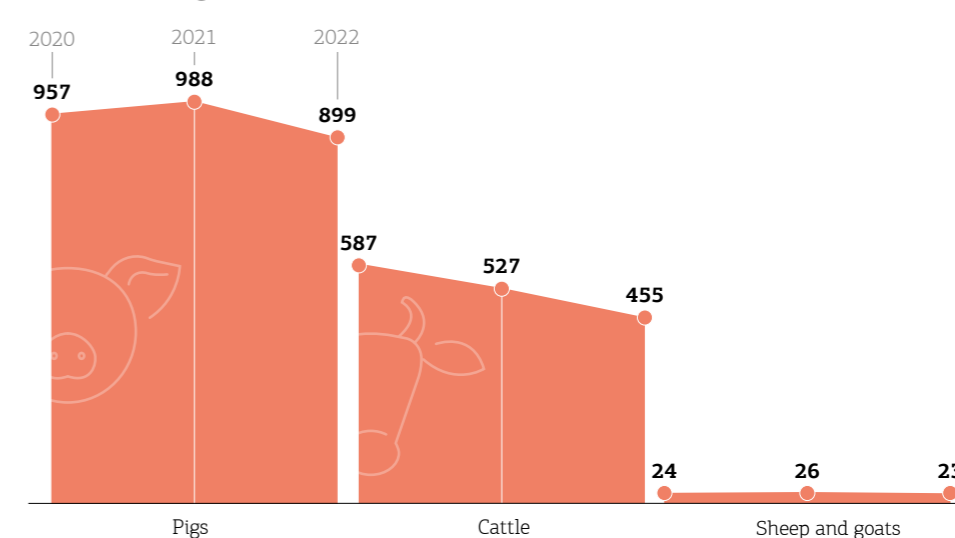
Cattle



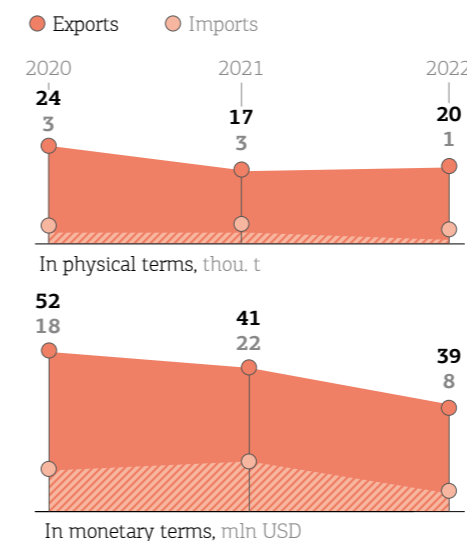
Sheep and goats



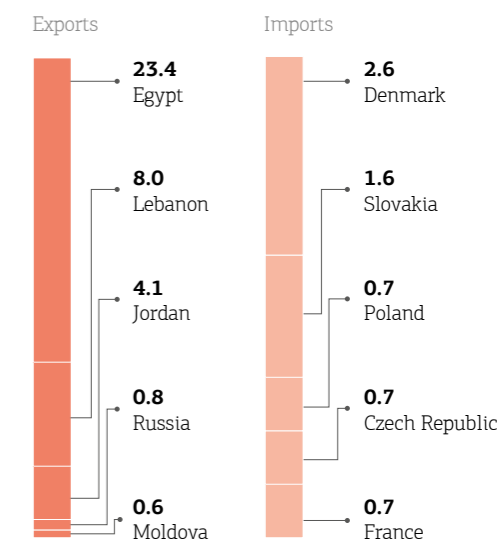
Sales of livestock for slaughter, in live weight, thou. t



Exports and imports of livestock\*\*



Top 5 trade destinations in 2022, mln USD



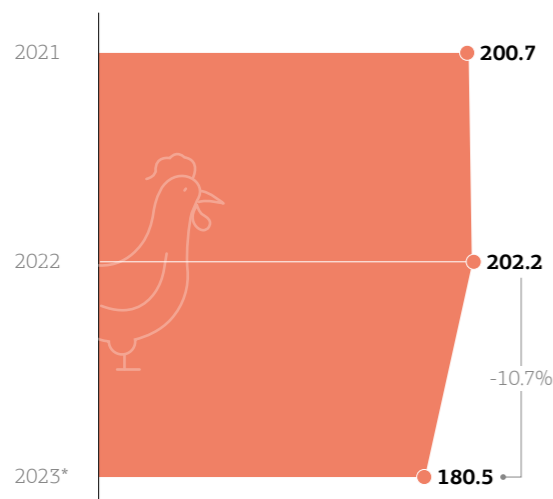
Due to the full-scale invasion, the livestock has significantly decreased. This was due to Russia's occupation of some territories and the destruction of livestock farms. Despite the decline in monetary terms, exports in physical terms increased slightly.

Sources: State Statistics, Customs Service

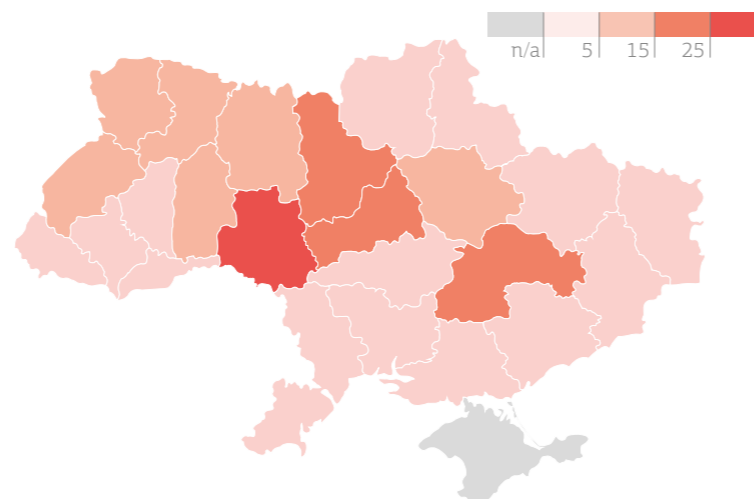
\*based on the reporting of 88% of companies and reassessment of indicators  
\*\*except for poultry

## POULTRY FARMING

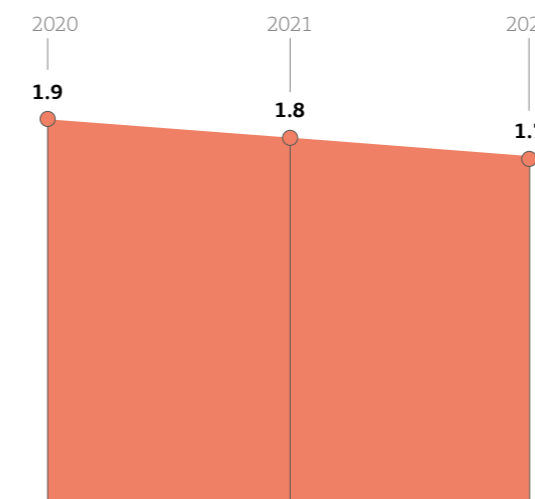
**Poultry livestock as of January 1, mln animals**



**Poultry livestock as of January 1, 2023\*, mln animals**



**Sales of poultry livestock for slaughter, in live weight, mln t**

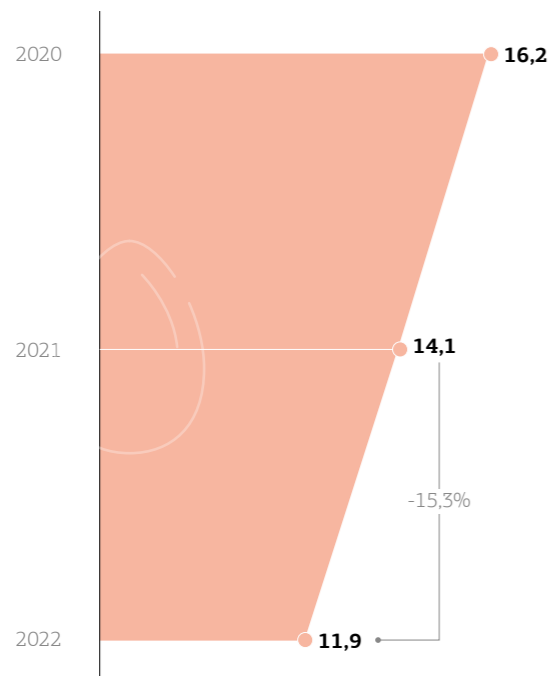


A significant portion of the poultry livestock was lost due to the occupation and hostilities in the eastern and southern regions of Ukraine.

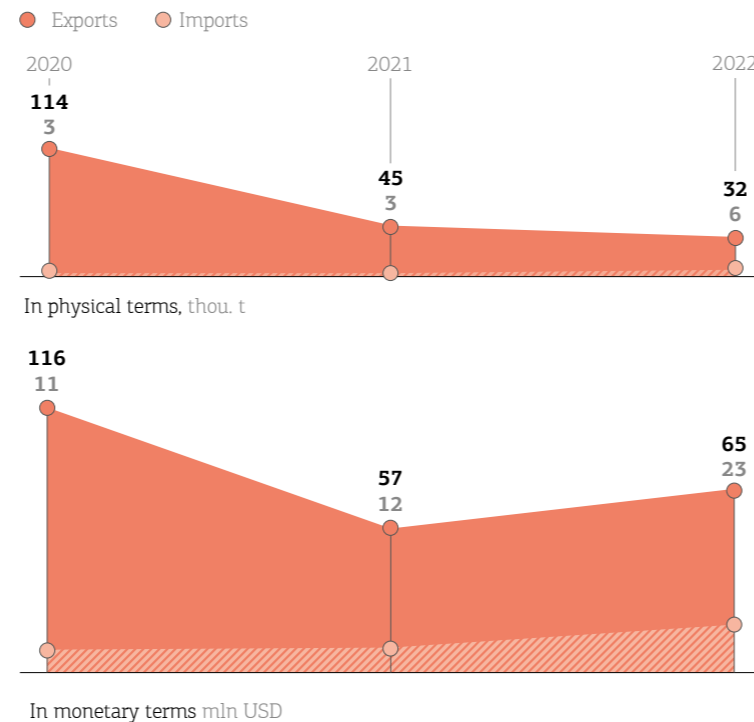
Most of the poultry farms that were not affected by the hostilities increased their livestock and established new logistics routes for export.

The poultry sector benefited from easier access to the EU market, which helped to avoid market overload and slowed the growth of domestic prices.

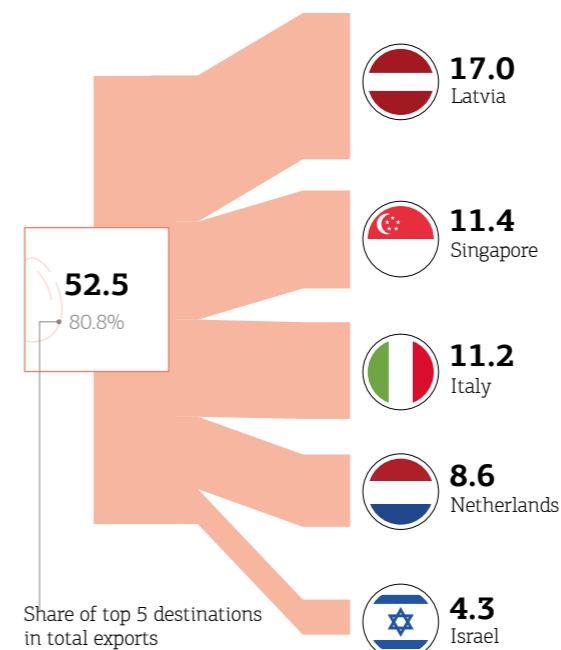
**Production of eggs, bln eggs**



**Exports and imports of eggs and egg products**



**Top 5 export destinations for eggs and egg products in 2022, mln USD**



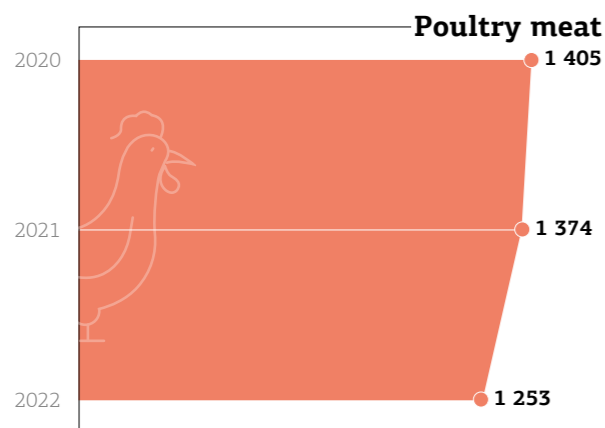
**-15.3%**  
egg production in 2022 compared to 2021

Despite the decline in production, Ukraine managed to increase exports of egg products and eggs in monetary terms by 14.6%.

In 2022, the geography of exports changed, with the EU becoming the primary market; previously, it was the Middle East.

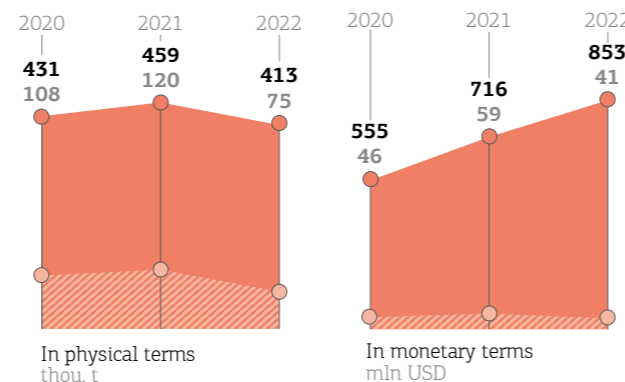
# MEAT PRODUCTION

## Production of meat, in slaughter weight, thou. t

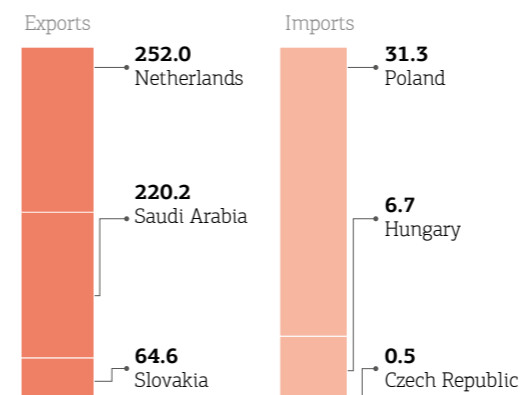


## Exports and imports of meat

● Exports ● Imports



## Top 5 trade destinations in 2022 mln USD

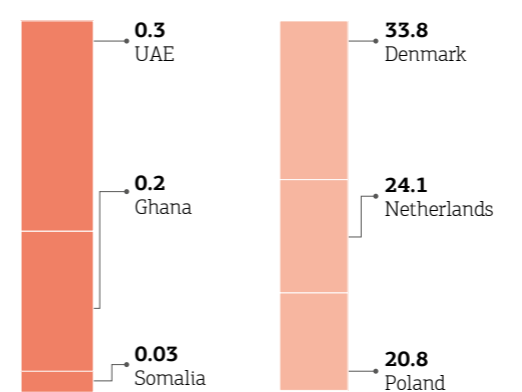
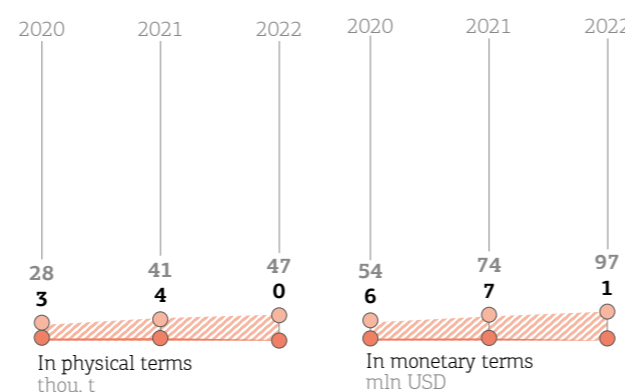
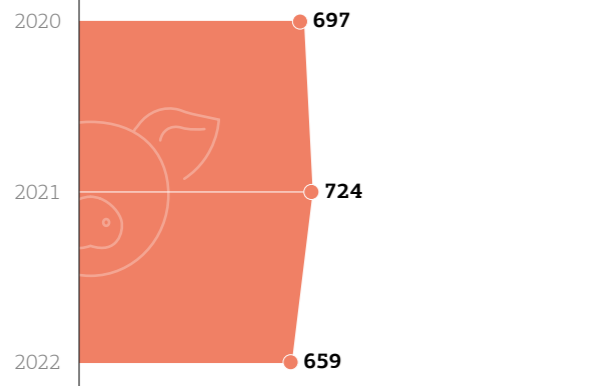


**-8.8%**

poultry meat production in 2022 compared to 2021

Exporters managed to maintain high sales abroad, primarily due to rising global prices for poultry products and easier access to the EU market.

## Pork

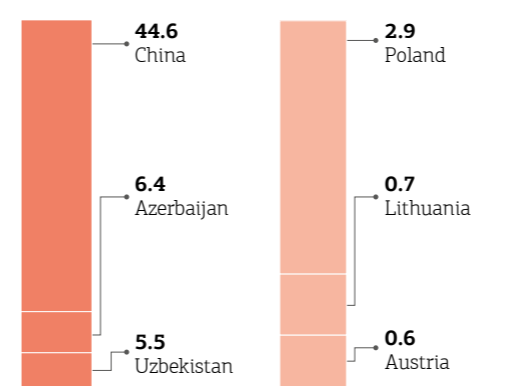
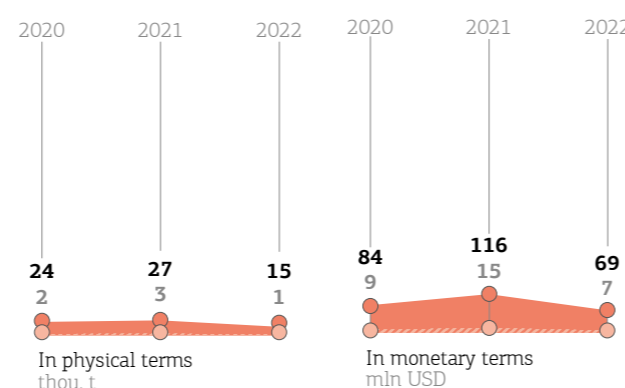
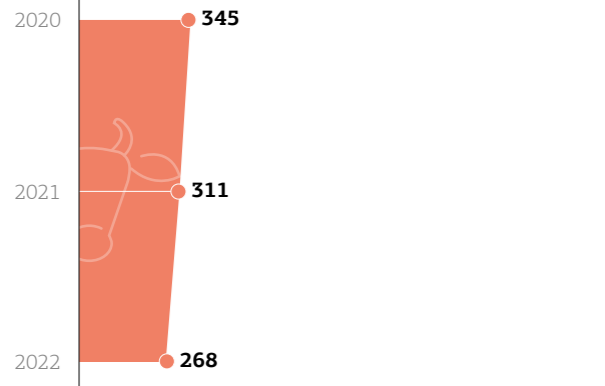


**-9.0%**

pork production in 2022 compared to 2021

Due to the decline in production, prices have risen significantly. Thus, the economic component of pig farming is now quite attractive, as pork production's profitability is higher than before the invasion.

## Beef and veal



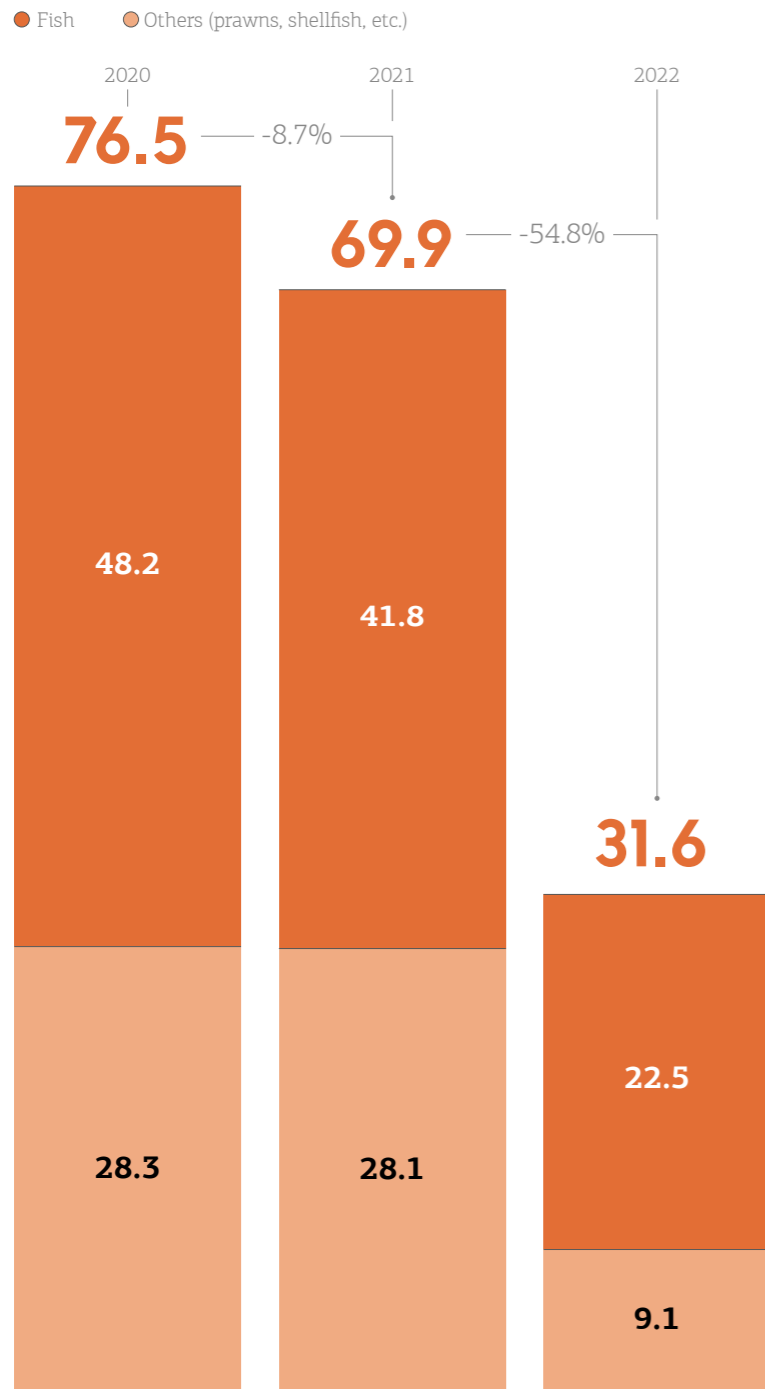
**-13.6%**

beef and veal production in 2022 compared to 2021

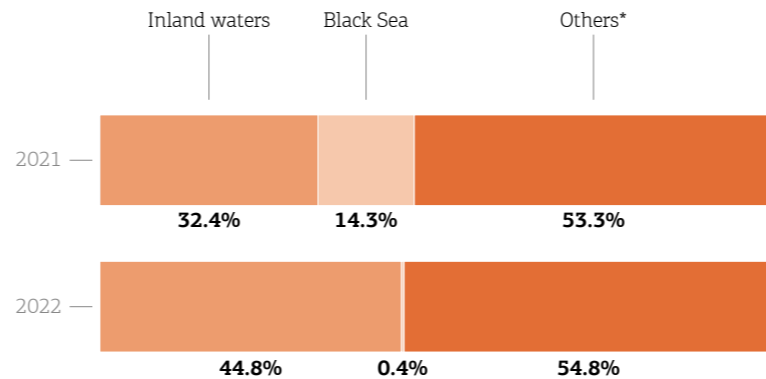
Since the beginning of the full-scale invasion, export prospects have become more complicated, but its geography has not changed; Ukraine continues to sell most to Asian countries.

# FISH INDUSTRY

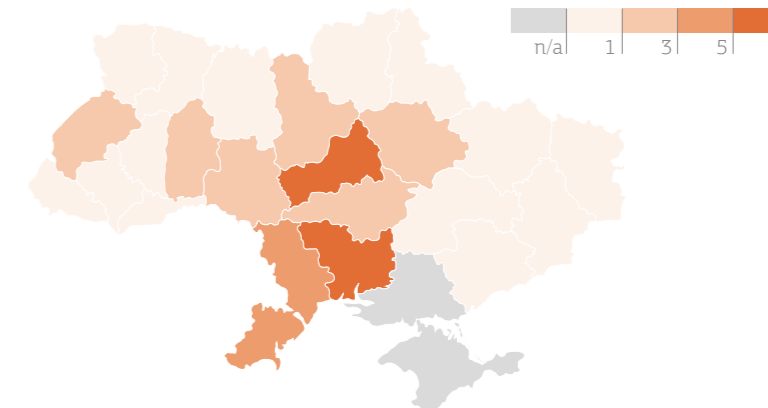
## Production of water bioresources, thou. t



## Production structure of water bioresources, %



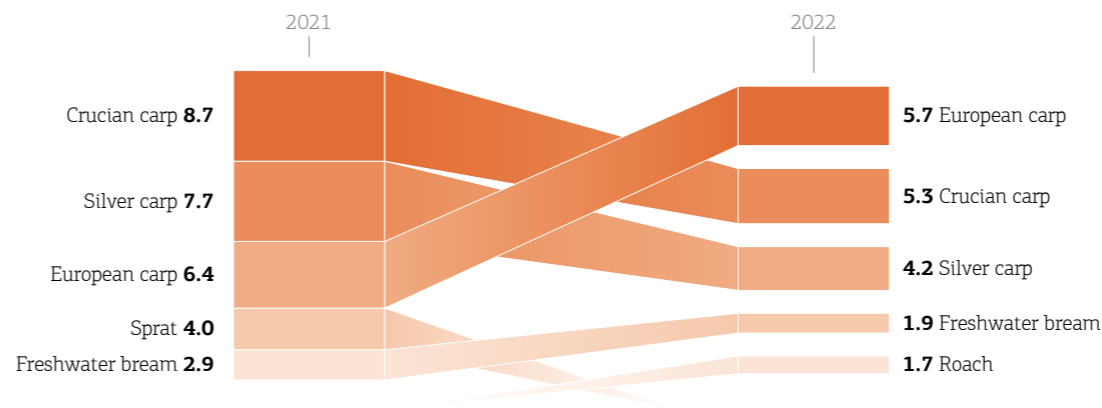
## Production of water bioresources in 2022, thou. t



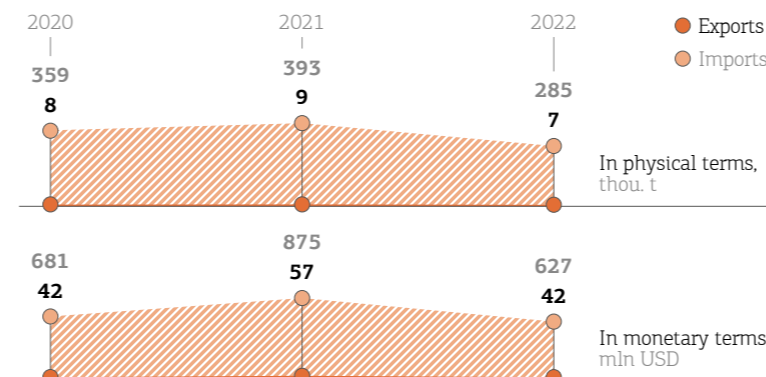
The full-scale invasion dealt a critical blow to the production of aquatic bioresources. Fishing in the Sea of Azov and the Black Sea was blocked, except in certain areas.

The blowing up of the Kakhovka dam caused a massive fish kill in the southern regions of Ukraine, which will significantly impact the production of aquatic bioresources in the future.

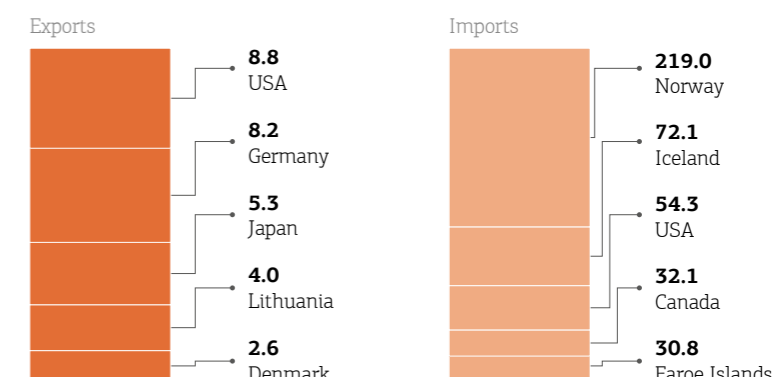
## Changes in the production structure of top 5 fish species, thou. t



## Exports and imports\*\*



## Top 5 trade destinations in 2022, mln USD



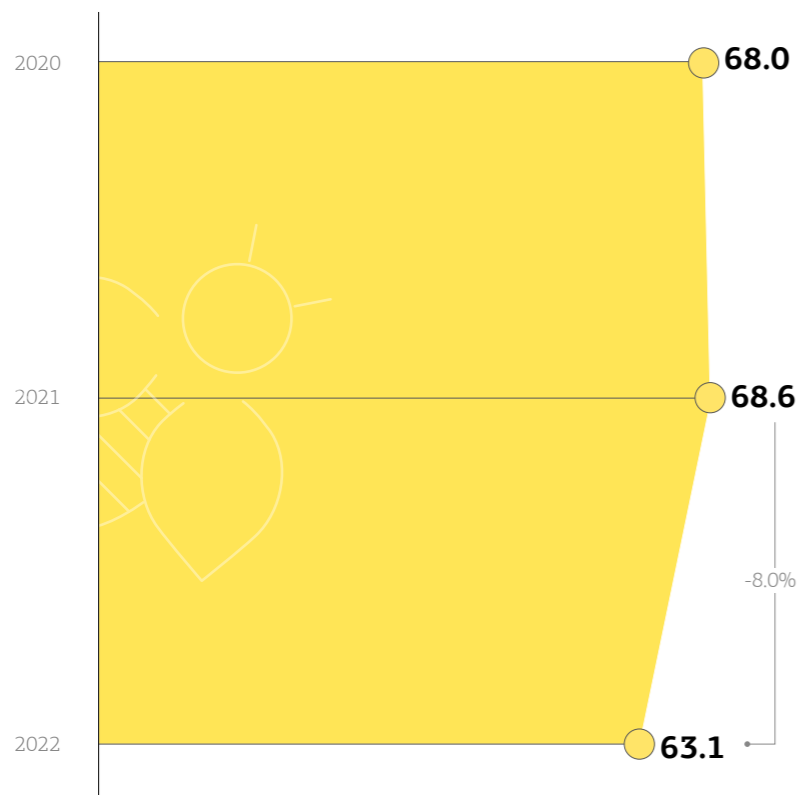
Sources: State Statistics, Customs Service

\*aquaculture, the Sea of Azov, the Antarctic part of the Atlantic  
\*\*live fish, fresh or chilled, frozen, dried, fish fillets and other meat, crustaceans, shellfish



## BEE-FARMING

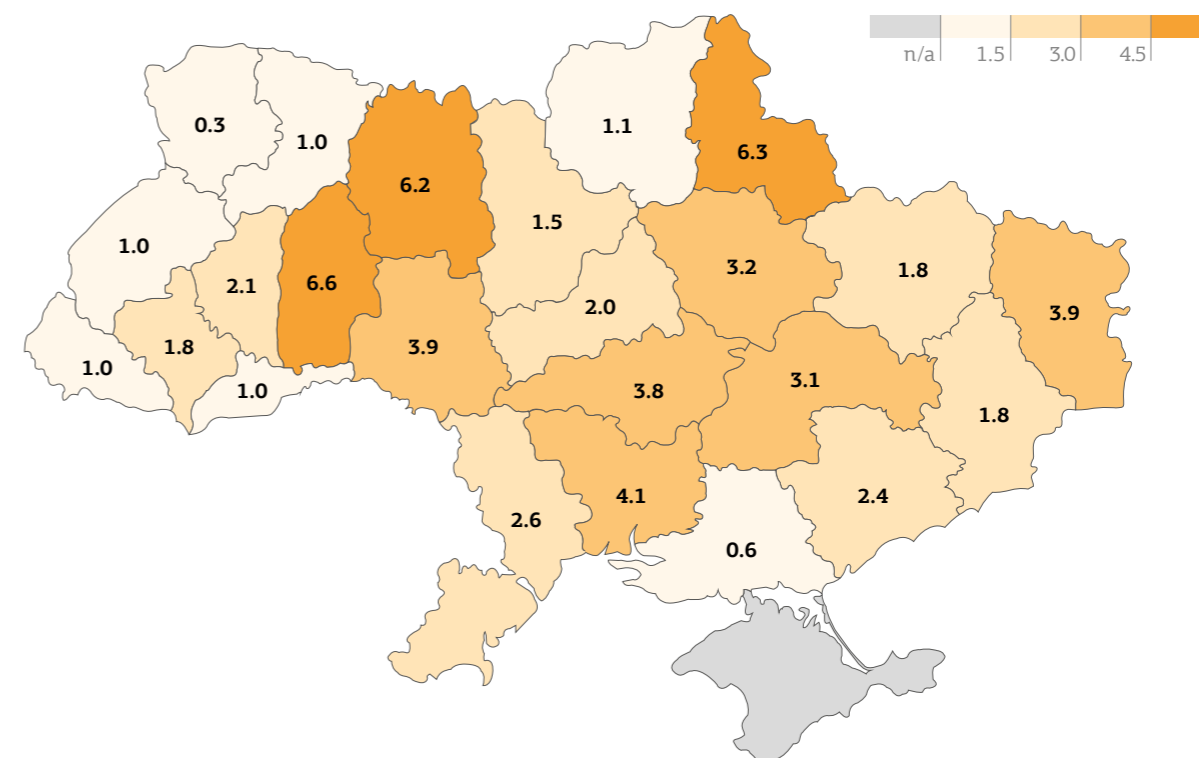
### Production of honey, thou. t



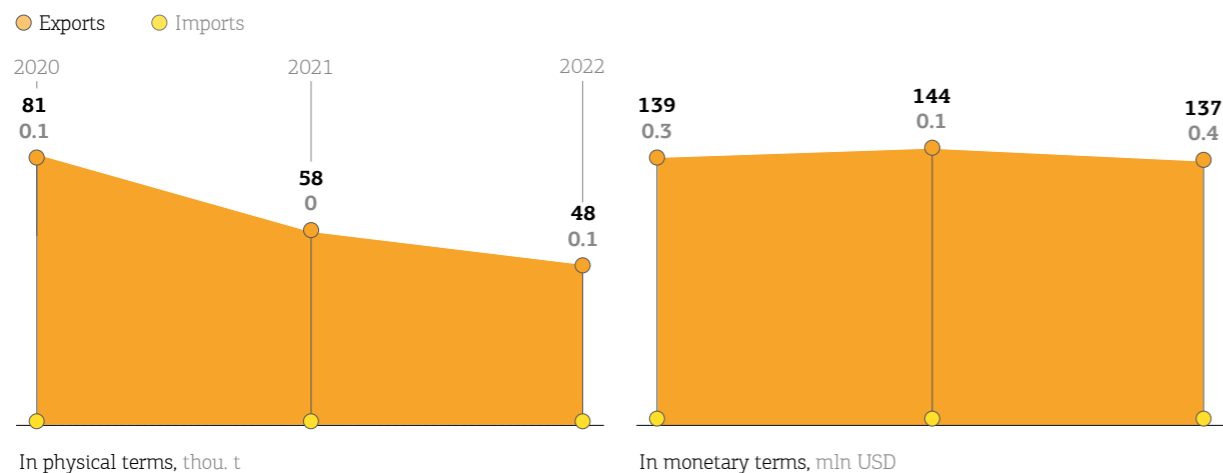
Honey production decreased in 2022, mainly due to the Russian occupation of Ukraine's southern and eastern regions.

Despite this, Ukraine remained one of the leading honey suppliers to the EU in 2022 and ranked 2nd among honey exporters to European countries.

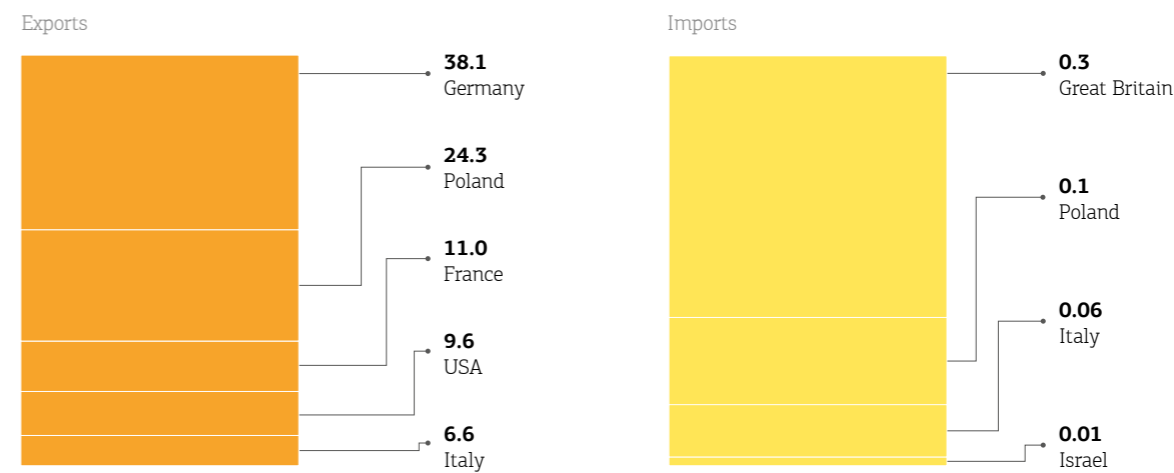
### Production of honey in 2022, thou. t



### Exports and imports

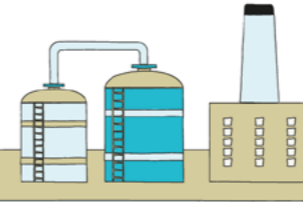


### Top 5 trade destinations in 2022, mln USD



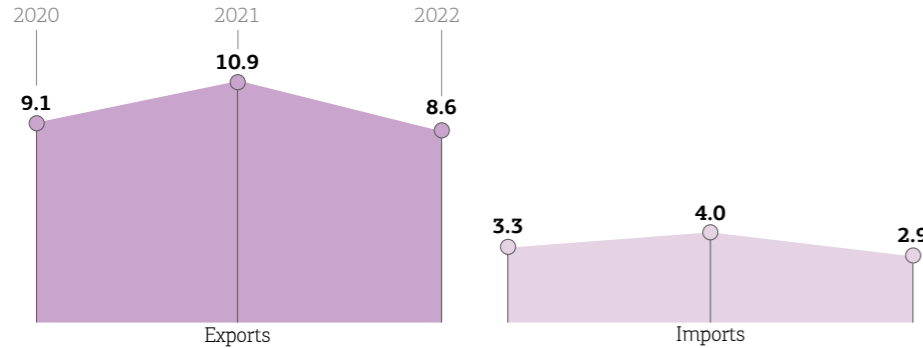
Processing

Industry



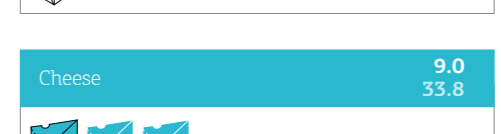
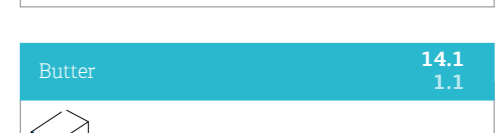
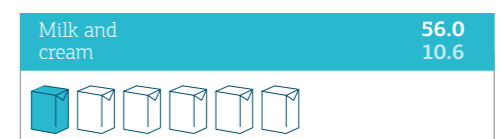
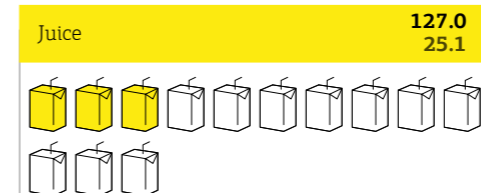
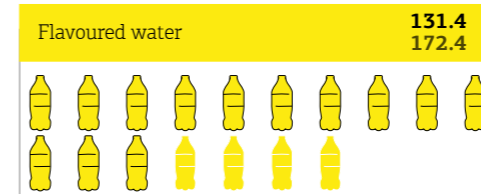
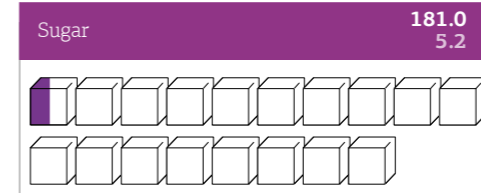
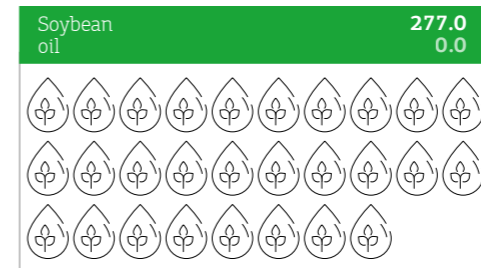
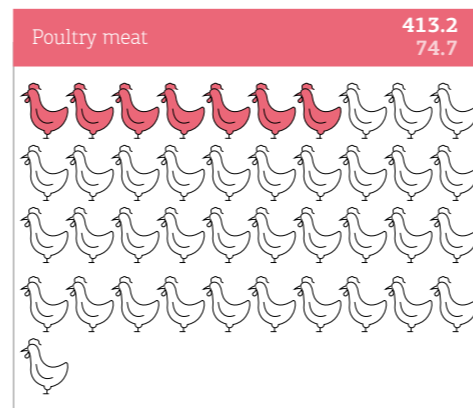
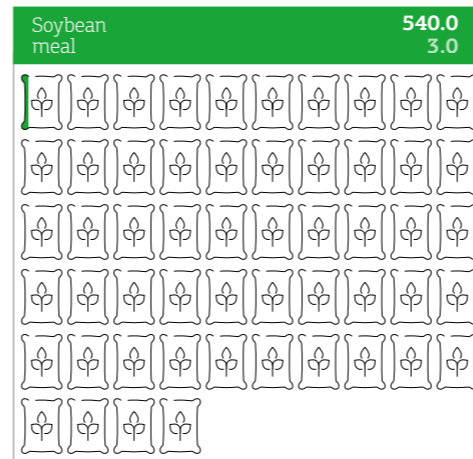
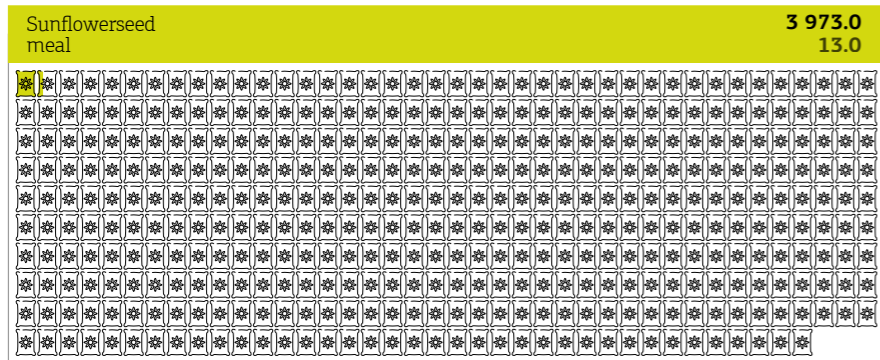
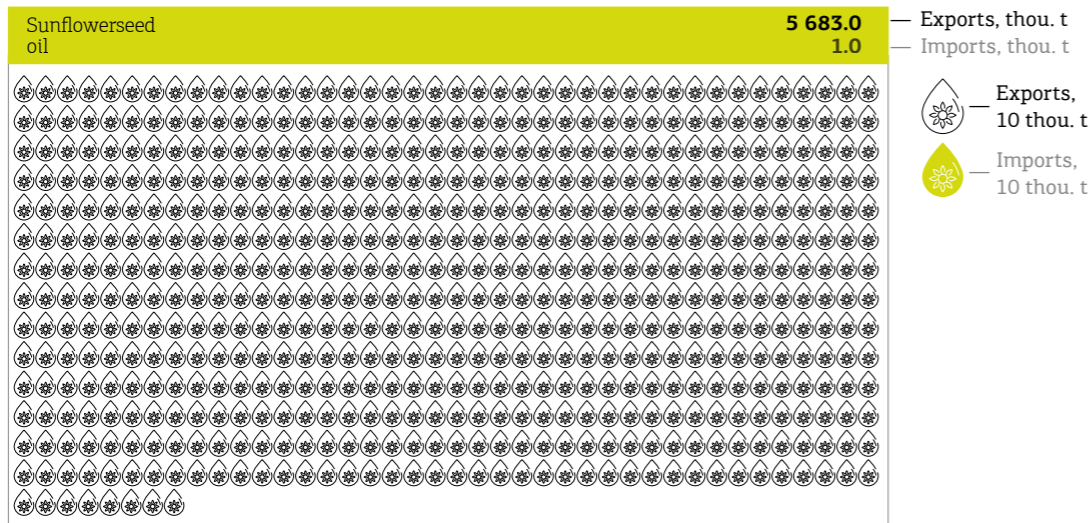
# PROCESSING INDUSTRY DURING THE WAR

## Processed products exports and imports, USD bln



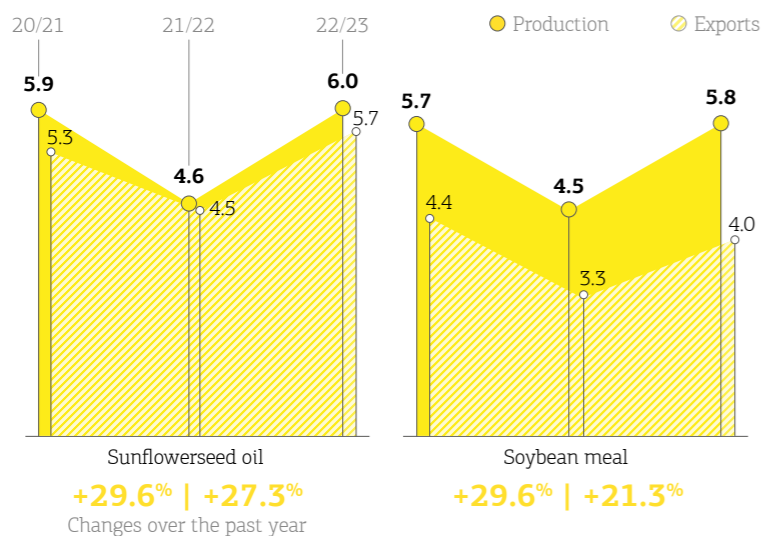
The food processing industry is strategically important in Ukraine's economy and has great growth potential. Given the blocked exports of agricultural commodities, there are rising prospects for increasing agro-processing and increasing agrarians' investments in new processing facilities.

## Exports and imports of major agricultural products in 2022\*, thou. t

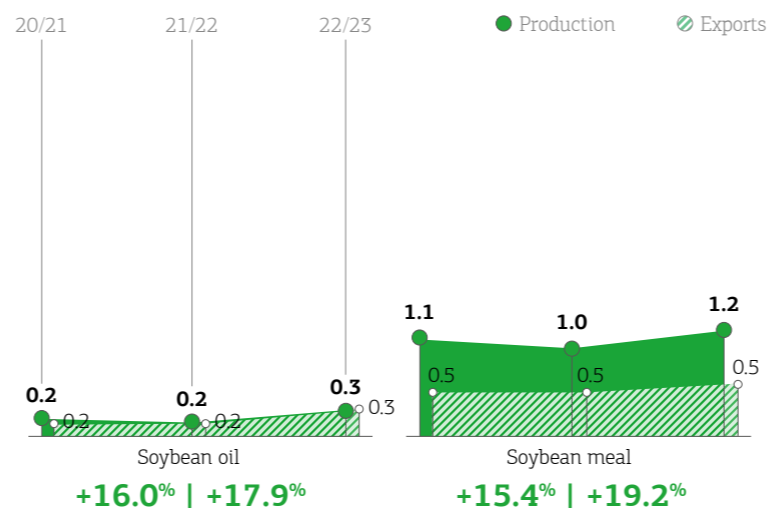


# VEGETABLE OIL INDUSTRY

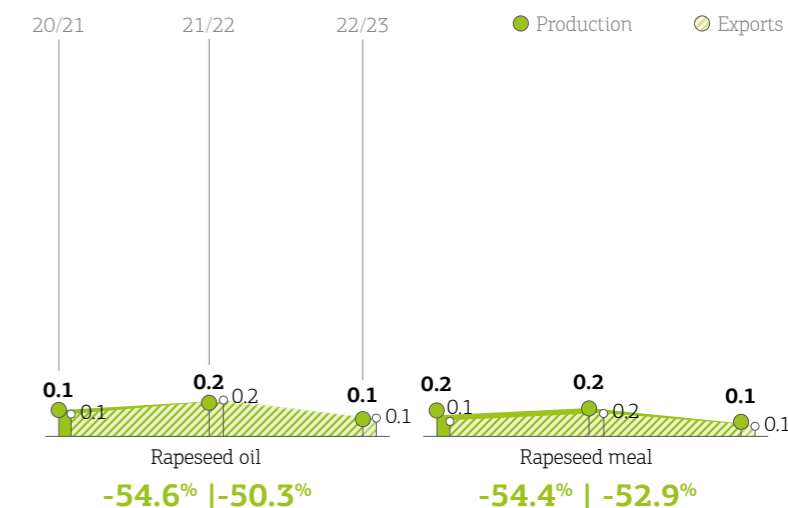
## Production and exports of oils and meal, mln t



Production and exports were boosted by the launch of the Grain Initiative, which helped increase supplies to China and India.

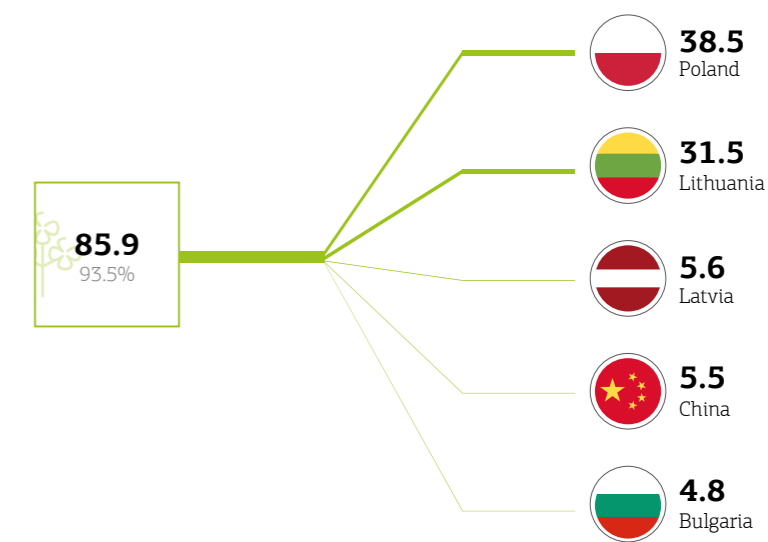
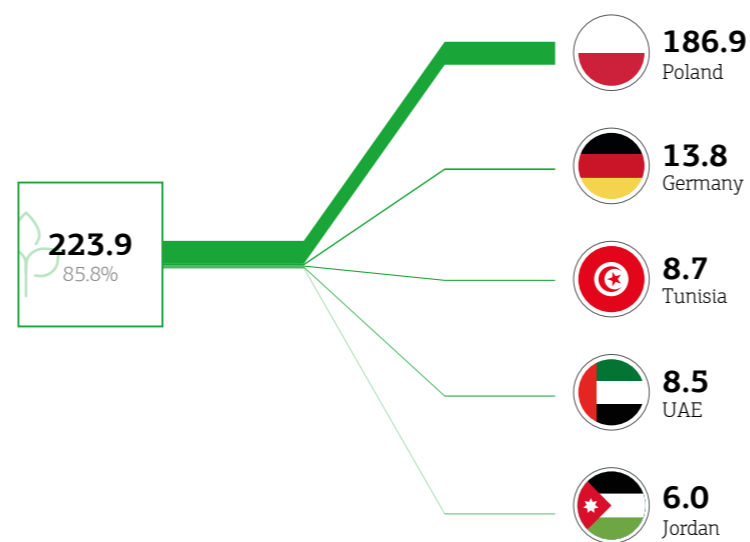
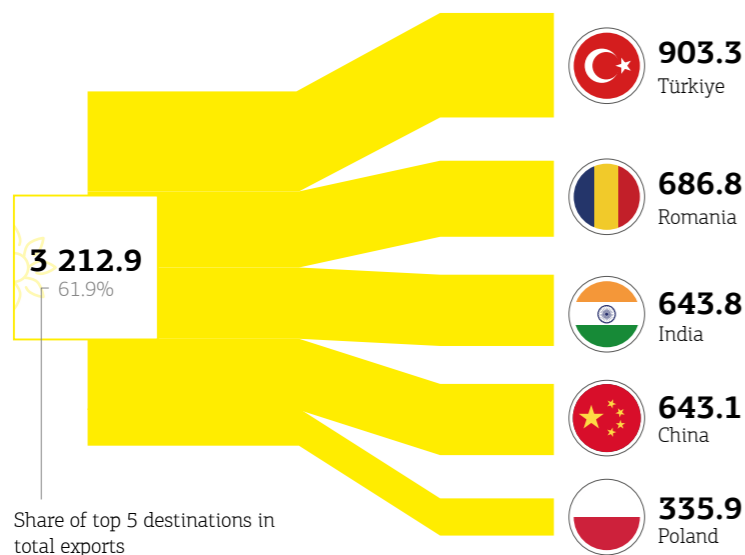


While demand for Ukrainian products was preserved in neighboring countries due to their competitive prices, processing volumes increased as manufacturers ramped up their production capacities.



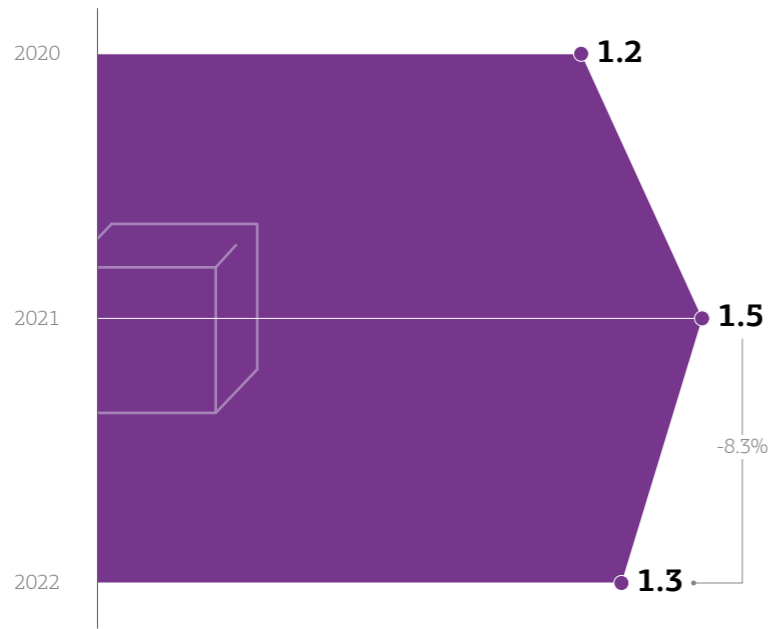
Rapeseed oil production and exports in MY 2022/23 decreased by more than half. One of the reasons is active sales of rapeseed to the EU for further processing.

## Top 5 export destinations of oils in 2022/2023 MY, mln USD

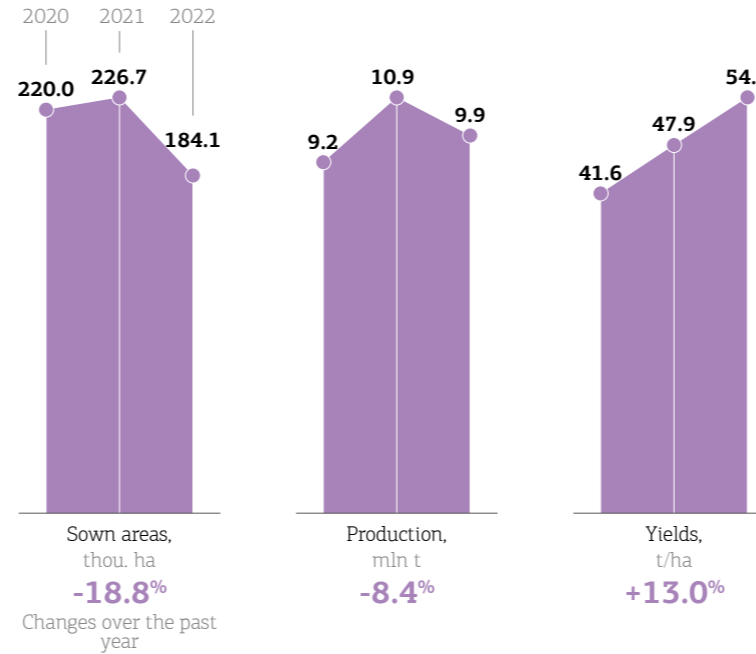


# SUGAR INDUSTRY

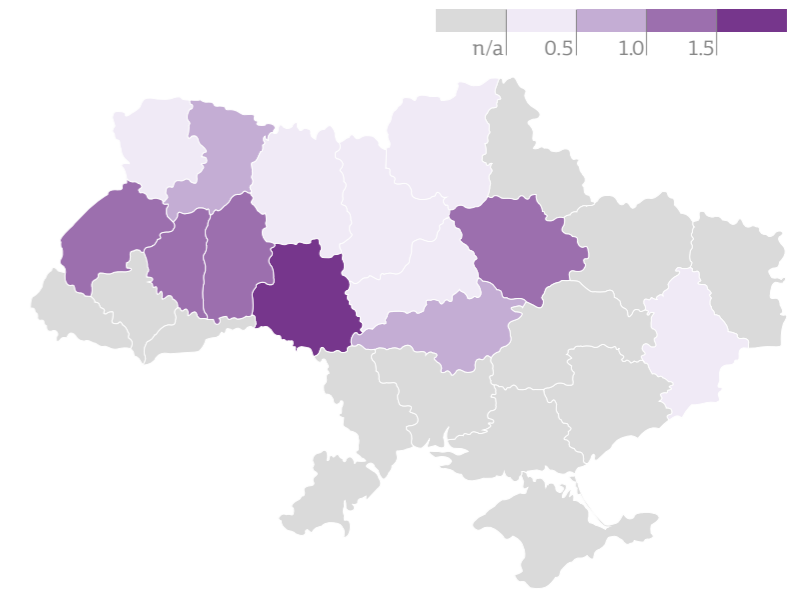
## Production of sugar, mln t



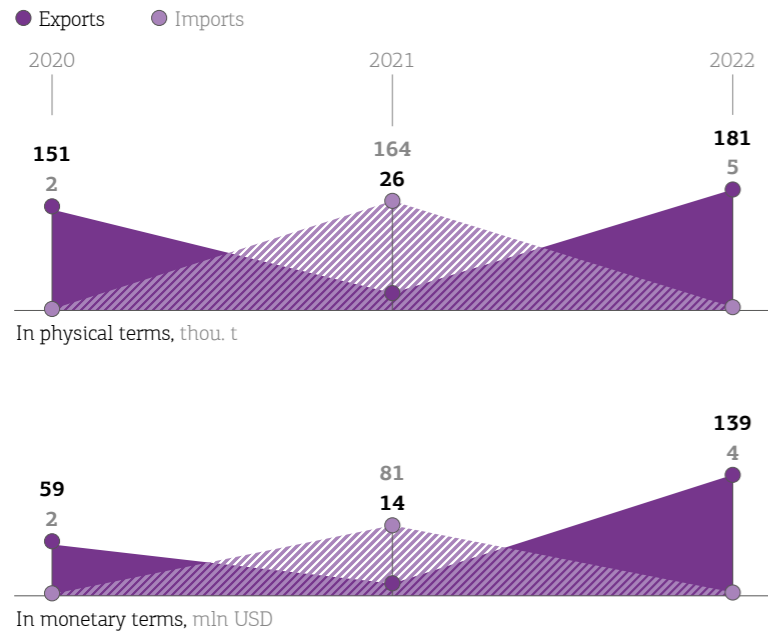
## Production of sugar beet



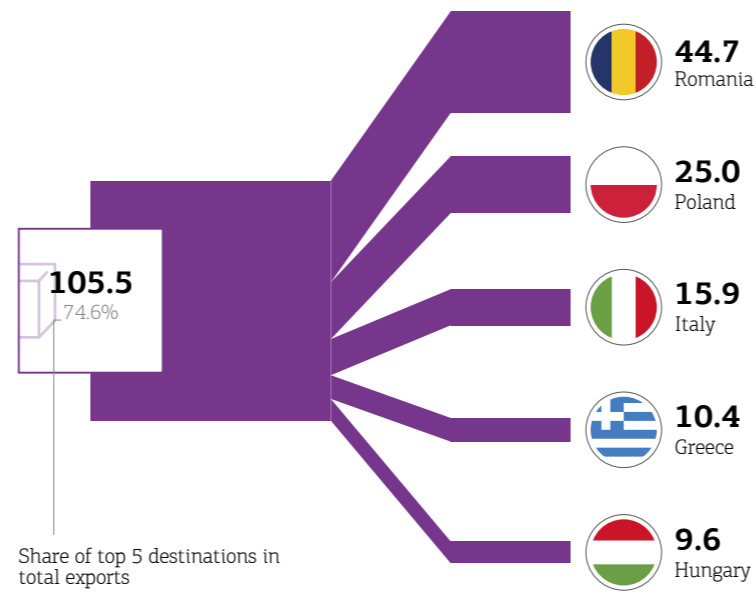
## Production of sugar beet in 2022, mln t



## Exports and imports of sugar



## Top 5 export destinations of sugar in 2022, mln USD



## x7-fold

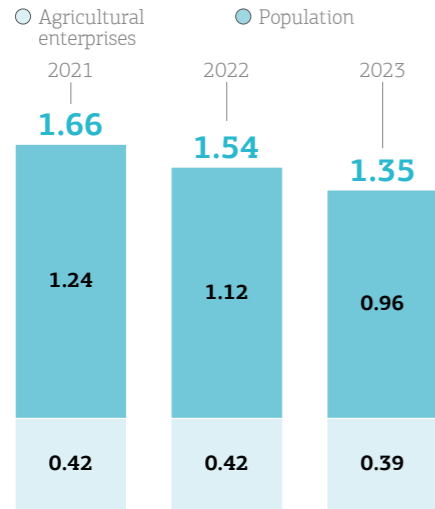
increase in sugar exports in 2022 compared to 2021

The geography of sugar exports has changed due to logistical difficulties caused by the war and the EU decision that allowed Ukraine to ship sugar to European countries without tariff quotas and duties. Last year's poor harvest and a drop in sugar production in the EU contributed to increased exports to the EU.

As a result of these changes and the sufficient supply of sugar in MY 2022/23, Ukraine regained its position in the global sugar market.

## DAIRY INDUSTRY

### Cows livestock by category of owners, as of January 1, mln animals



### Production of milk, mln t

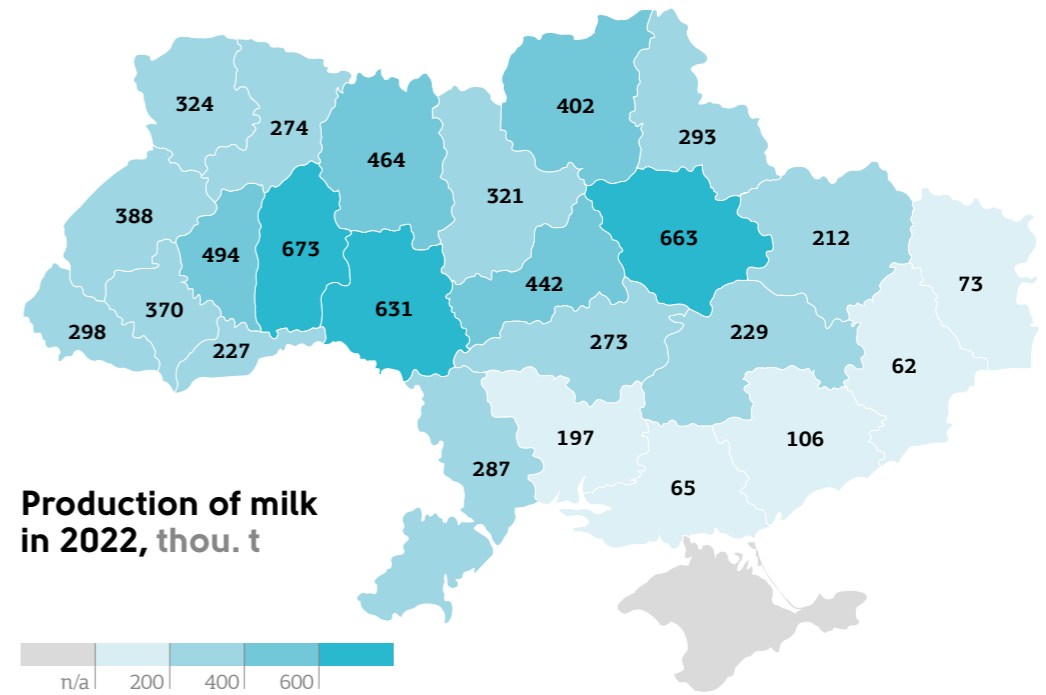


**-10.9%**

milk production in 2022 compared to 2021

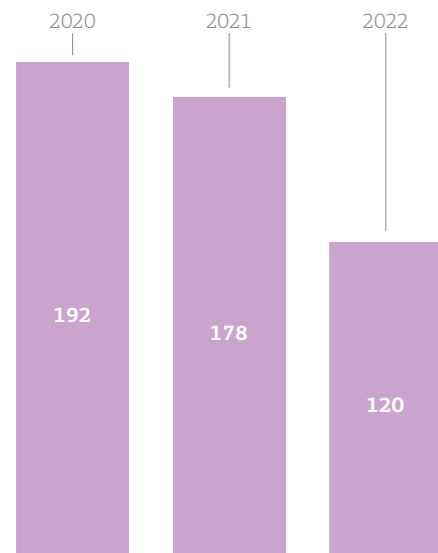
Despite several problems in the industry (rising costs, declining livestock, lower consumer demand, and complicated logistics), dairy producers managed to end the year with a slight decrease.

The industry was supported by rising prices for milk and dairy products on both domestic and foreign markets. At the same time, exports of dairy products even increased due to improved access to the EU market and favorable global prices.

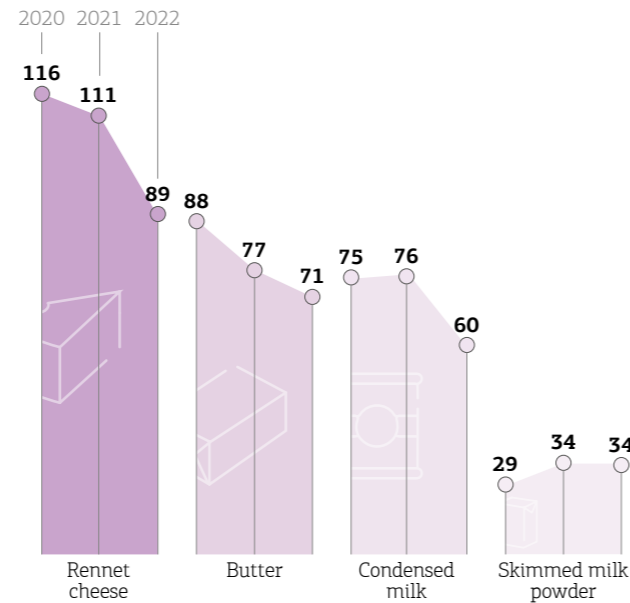


### Production of milk in 2022, thou. t

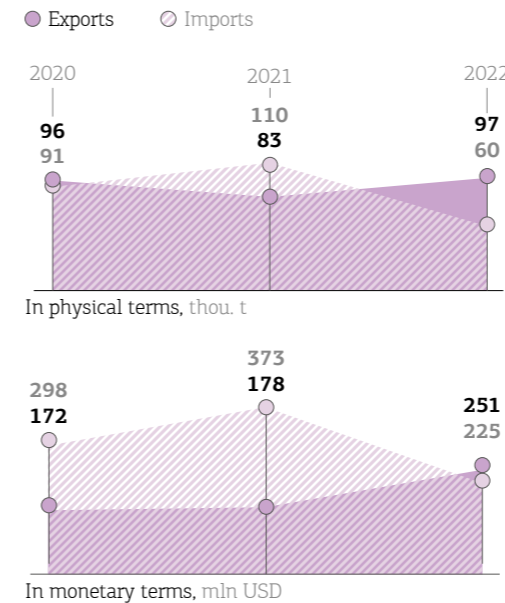
### Number of milk processing enterprises, pcs.



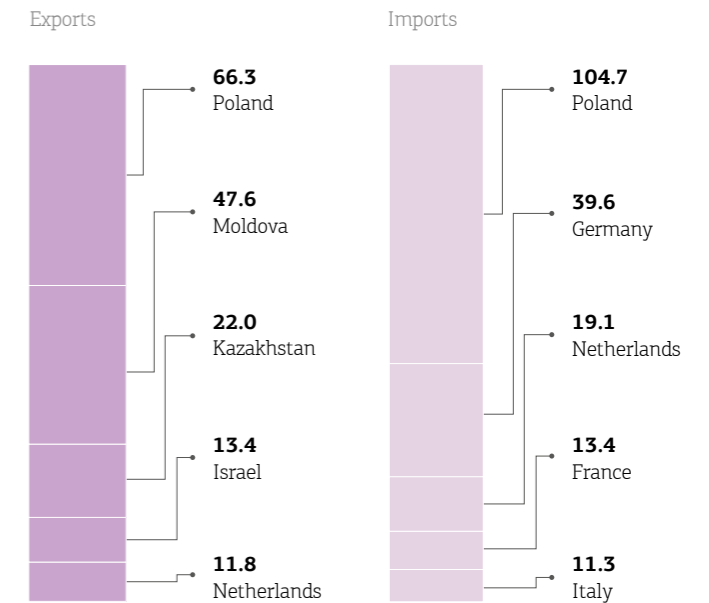
### Production of dairy products, thou. t



### Exports and imports of dairy products



### Top 5 trade destinations for dairy products in 2022, mln USD



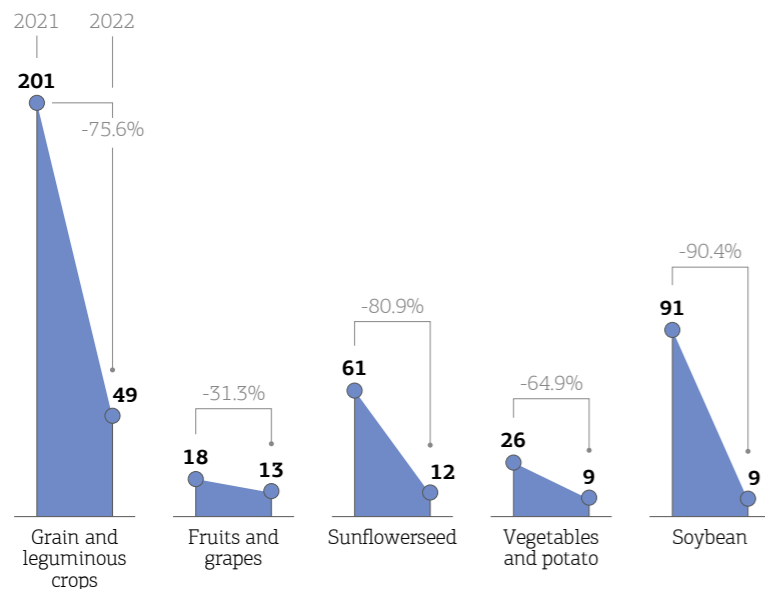
# Infrastructure



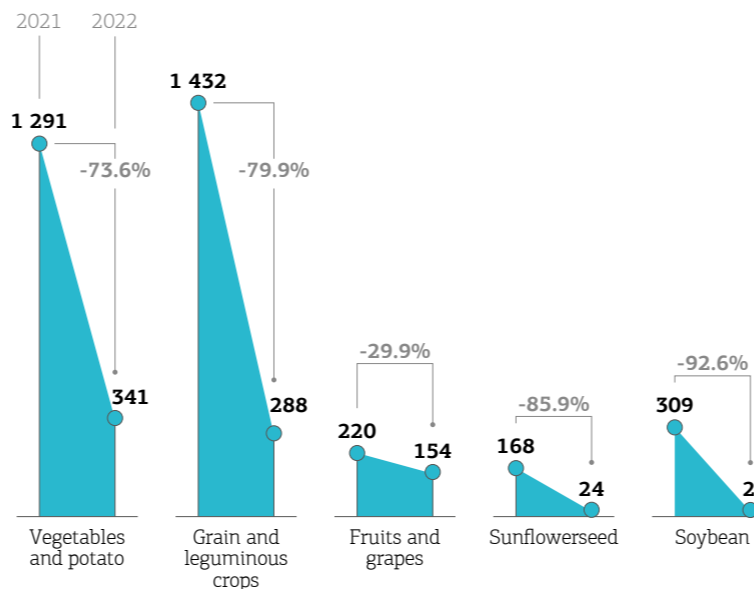
# IRRIGATION OF AGRICULTURAL LAND DURING THE WAR

## Production of crops on irrigated lands

Harvested area, thou. ha



Production, thou. t



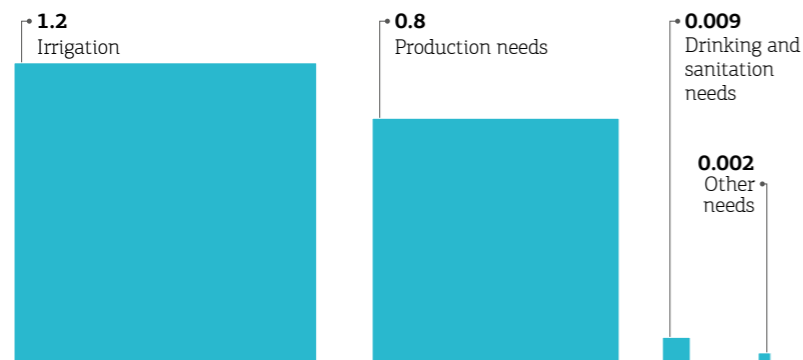
Irrigation in the agricultural sector has been problematic long before the full-scale war. According to the National Academy of Agrarian Sciences of Ukraine, up to 60% of arable land was not receiving enough water, negatively affecting yields.

After the invasion, the problem became even more acute. By the end of 2022, **the area of major crops under irrigation decreased by 77.1%, and production from these lands decreased by 75.7%.**

**On June 6, 2023,** Russia committed the most significant act of ecocide since the beginning of its full-scale invasion of Ukraine – **blowing up the dam of the Kakhovka hydroelectric power plant.** The reservoir provided energy, drinking water, river transport the south of Ukraine, and, most importantly, irrigation of agricultural land.

## The impact of the Kakhovka HPP dam blowing up on the Ukrainian agricultural sector

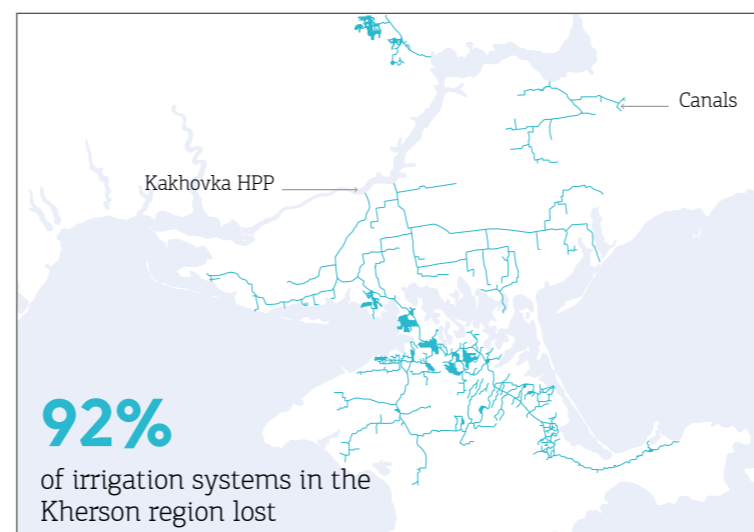
Water use from the Kakhovka reservoir before the blow-up, bln m<sup>3</sup>



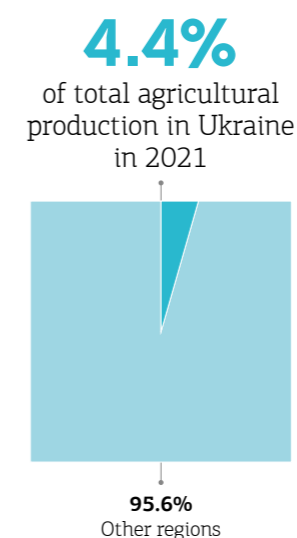
**584 thou. ha**

agricultural lands the south of Ukraine were supplied with water from the reservoir

Irrigation canals in the south of Ukraine that took water from the reservoir and remained dry



The importance of Kherson region for the Ukrainian agricultural sector



The specificity of this region is that agriculture is only possible here with regular irrigation.

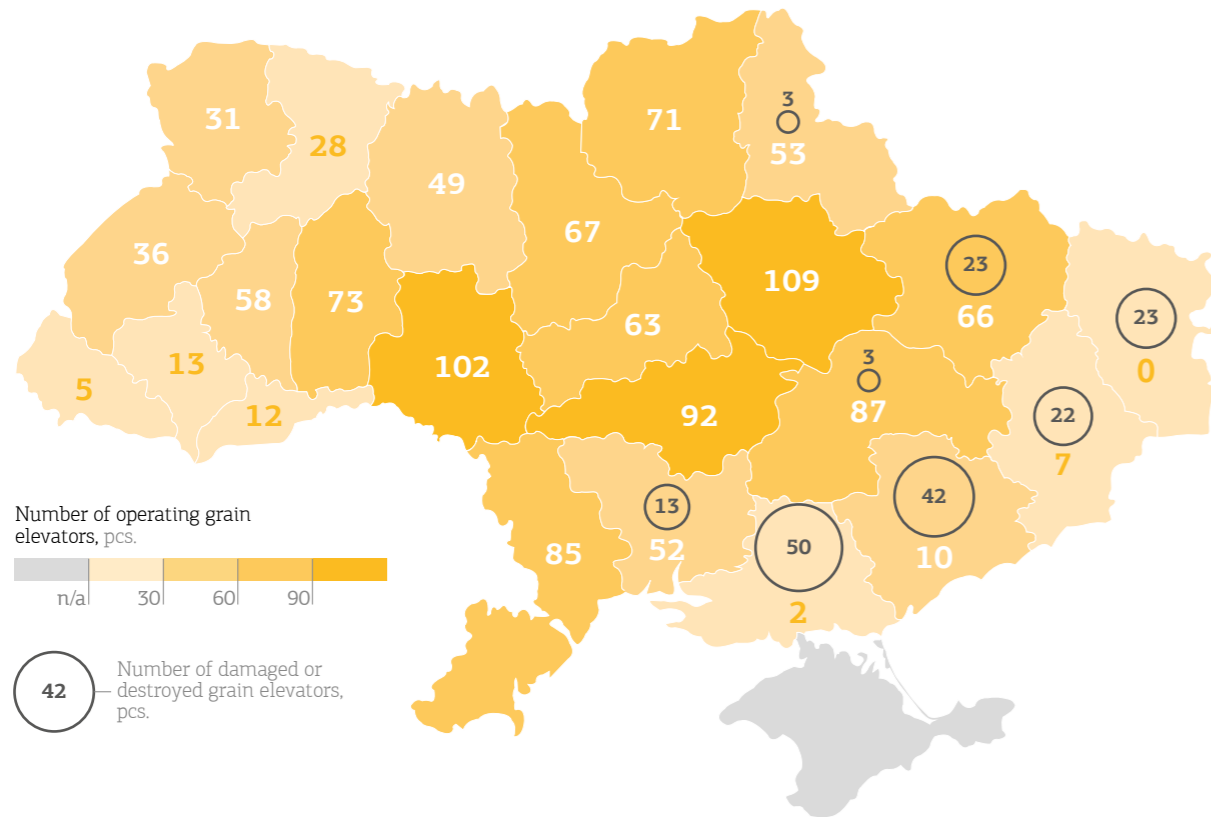
Before the blowing up, the Kherson region's agricultural land area was about **2 mln ha.** Now, they are unusable because **85%** of them are soils requiring constant irrigation.

According to rough estimates, partial restoration of the irrigation system will cost **€4.5 bln.**

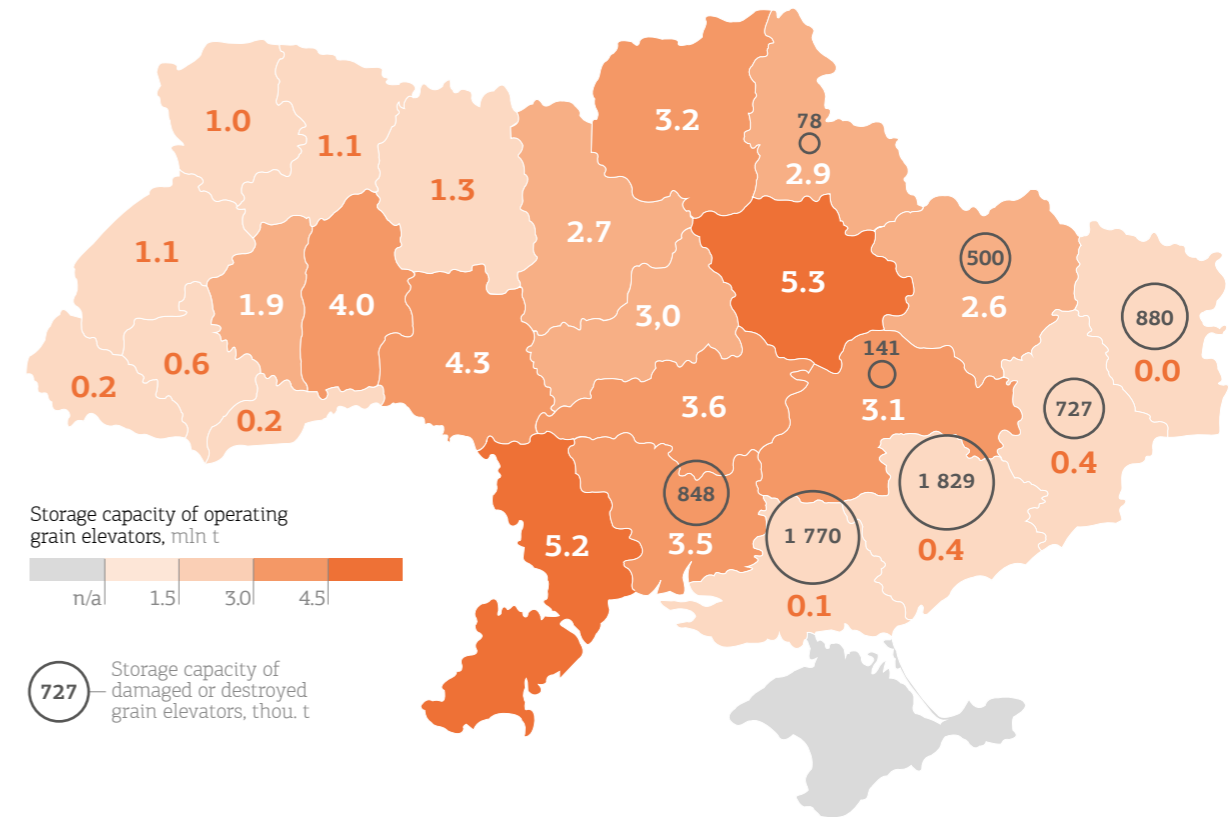


## GRAIN STORAGES

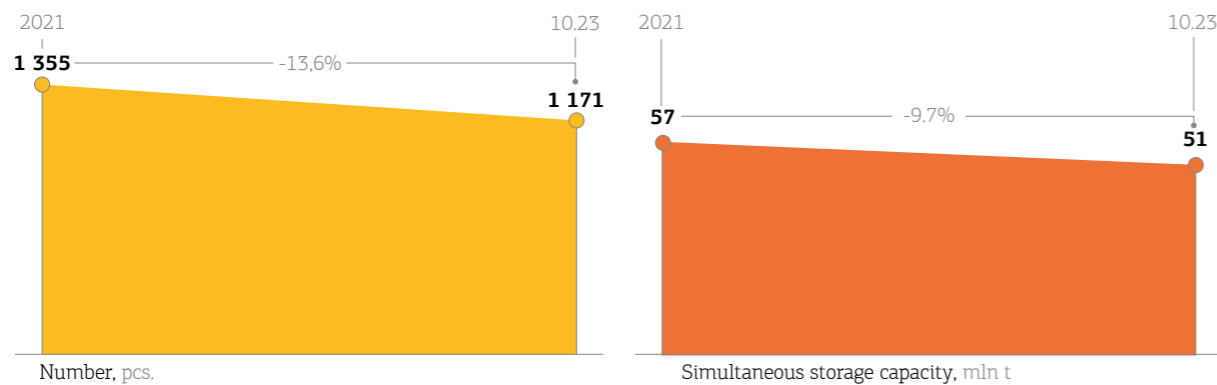
Number of grain elevators as of October 2023, pcs.



Total storage capacity as of October 2023, mln t



Changes in the number and storage capacity of grain elevators due to the full-scale invasion

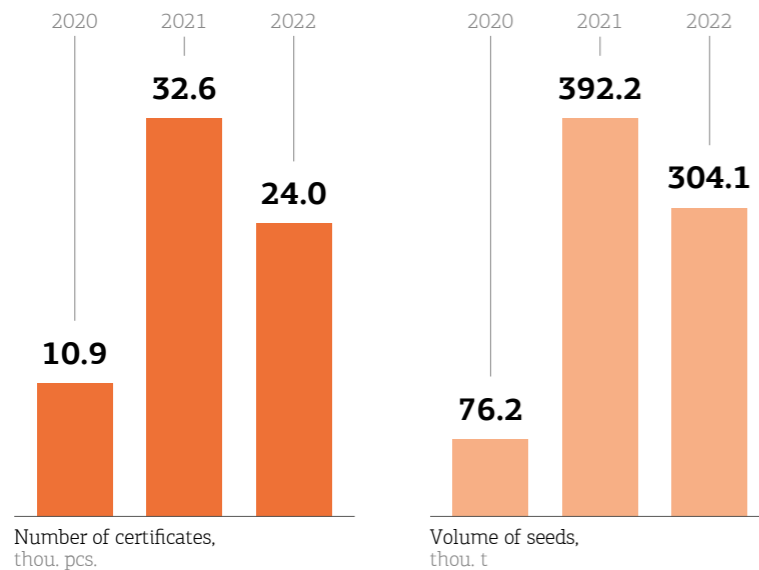


Grain elevator infrastructure during the war

- Occupation.** In the territories temporarily occupied by Russia, farmers have faced theft of their products and misappropriation of their facilities.
- Destruction and damage.** Due to the hostilities and shelling of infrastructure, many grain elevators suffered irreparable damage, but some of them managed to resume their operations.
- Risks with sale and purchase.** In the frontline regions, large traders do not buy agricultural products due to increased military risks and difficulties in delivery.
- Increase in the cost of services.** Power outages often led to the need to reorient to alternative sources. Agrarians faced an increase in the price of grain drying.

## SEEDS

### Issuing of certificates for planting and market quality



**-26.5%**

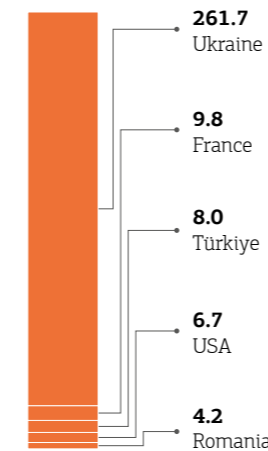
number of certificates in 2022 compared to 2021

**-22.5%**

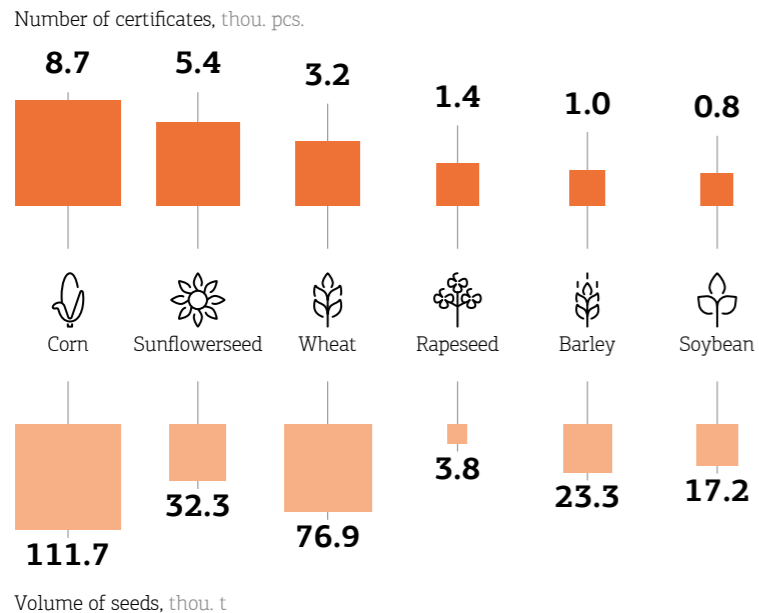
volume of certified seeds in 2022 compared to 2021

Since the beginning of the full-scale invasion, international partners have been supporting farmers by providing them with seeds, and domestic companies have been developing their breeding, which has helped them to conduct sowing campaigns.

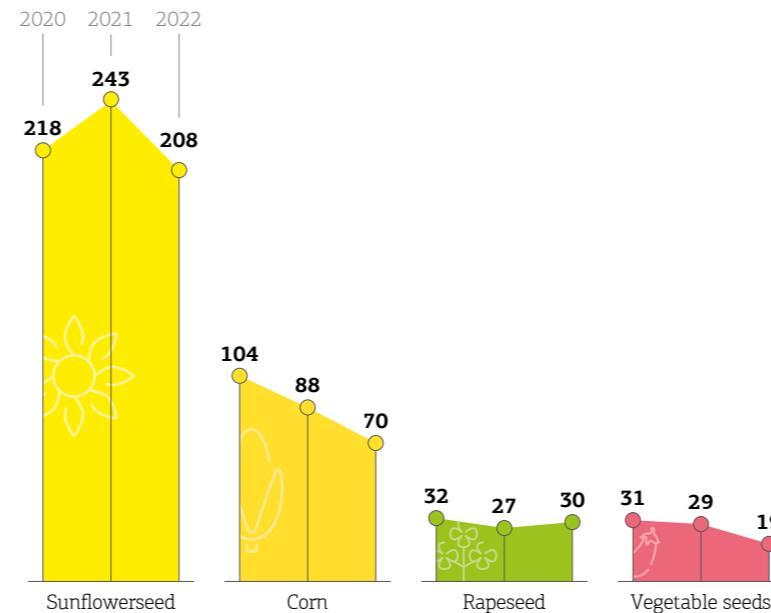
### Top 5 destinations of origin of certified seeds in 2022, thou. t



### Certified seeds for planting and market quality in 2022 by crops

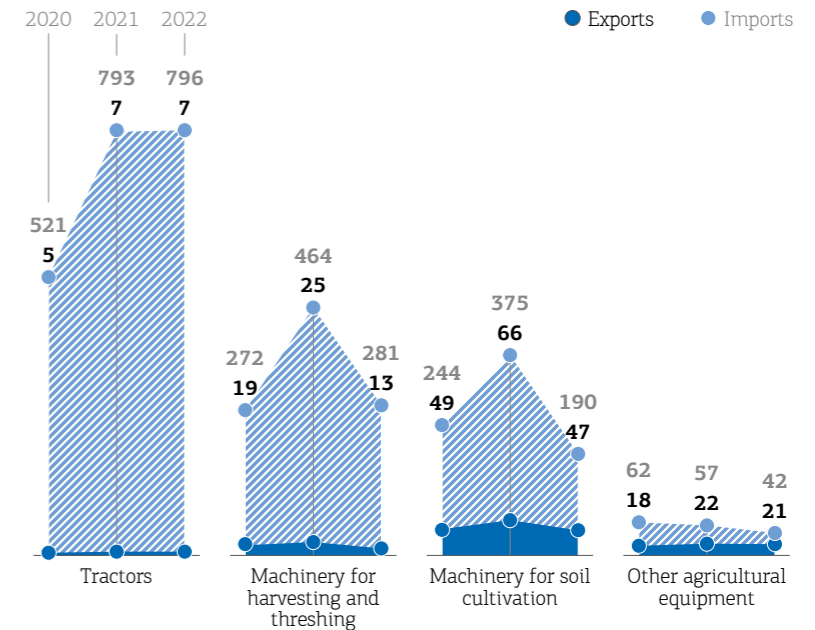


### Imports of seeds for sowing by major crops, mln USD

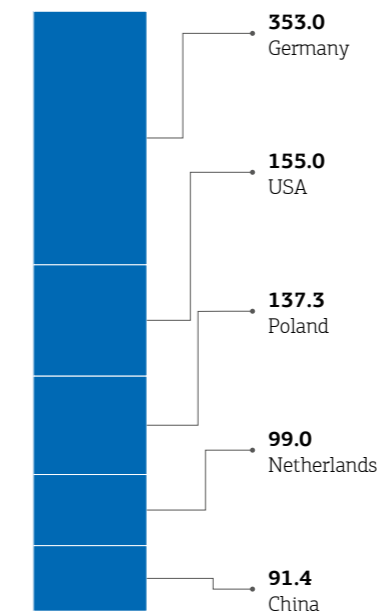


## AGRICULTURAL MACHINERY

### Exports and imports of agricultural machinery, mln USD



### Top 5 destinations for agricultural machinery imports in 2022, mln USD



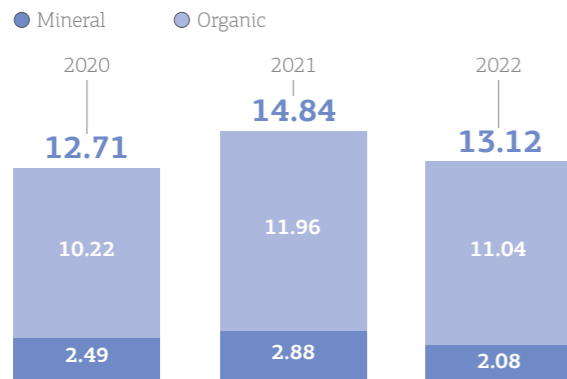
**In 2022, Ukraine significantly reduced imports of agricultural machinery.**

This is due to:

- reduced demand due to the occupation, hostilities, and falling profits of agricultural producers, especially in the territories temporarily occupied by Russia
- complication of logistics routes for the supply of machinery;
- a significant rise in the price of agricultural machinery;
- the increased application of used, lower quality, cheaper machinery.

## FERTILIZERS

### Application of mineral and organic fertilizers, mln t

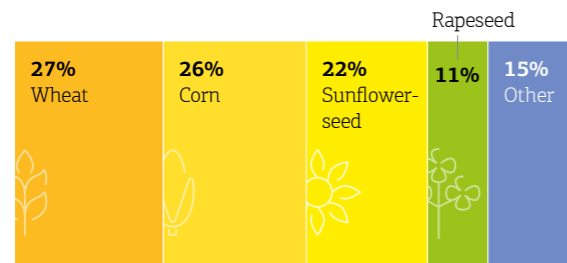


**-11.6%** mineral and organic fertilizers application in 2022 compared to 2021

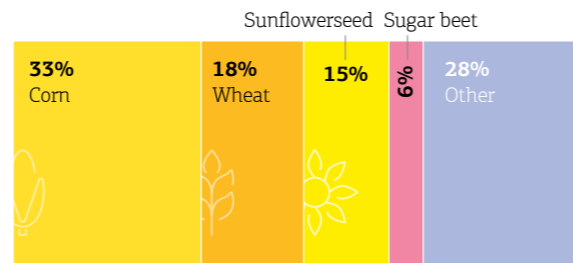
The main reasons for the decrease in fertilizer application were:

- rapid price growth;
- reduction of sown areas;
- a significant shortage of phosphorus and potassium due to the cessation of supplies from Belarus and the closure of sea supplies.

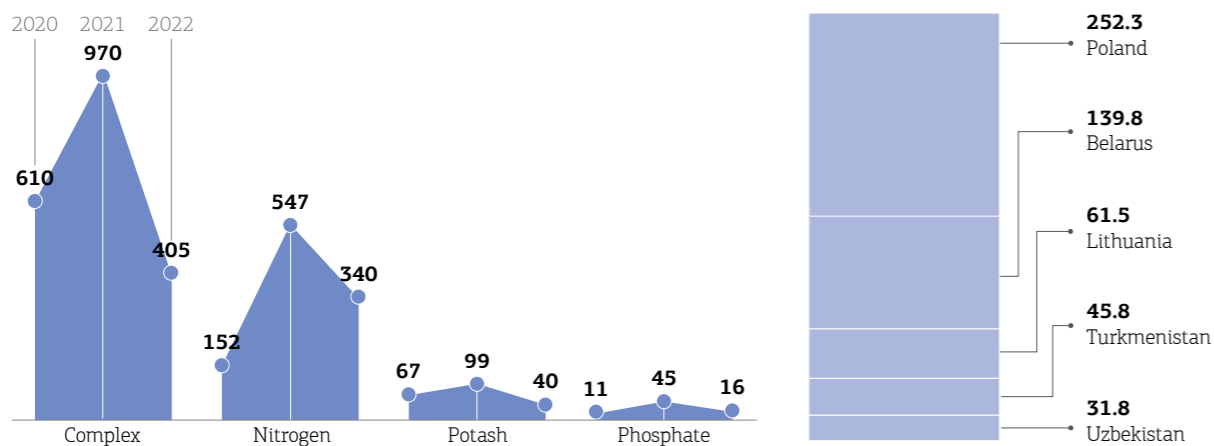
### Application of mineral fertilizers by crops, %



### Application of organic fertilizers by crops, %

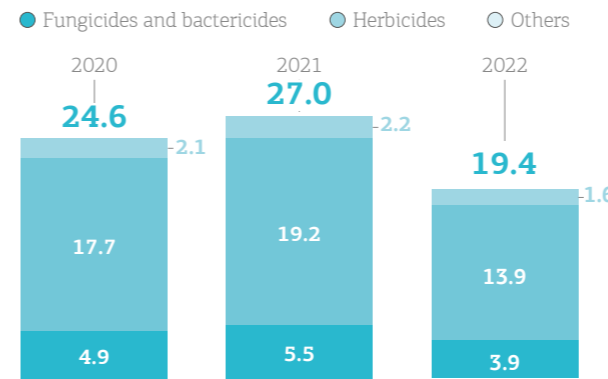


### Imports of mineral fertilizers and top 5 imports destinations, mln USD



## PLANT PROTECTION PRODUCTS (PPPS)

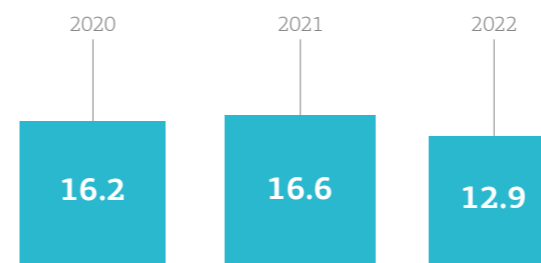
### PPPs application by types, thou. t



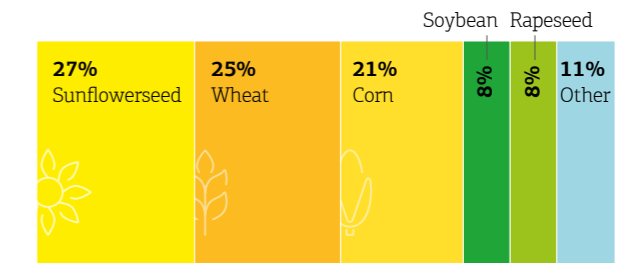
**-27.9%** PPPs application in 2022 compared to 2021

The blockade of seaports and Russian occupation dealt a significant blow to the market. At the first stage of the 2022 season, there were enough PPPs, but after supply failures and changes in acreage, there was a shortage of some products and a significant price rise. Another problem was the difficulties associated with the accumulation of last year's harvest, which remained in storage, causing farmers to lack funds.

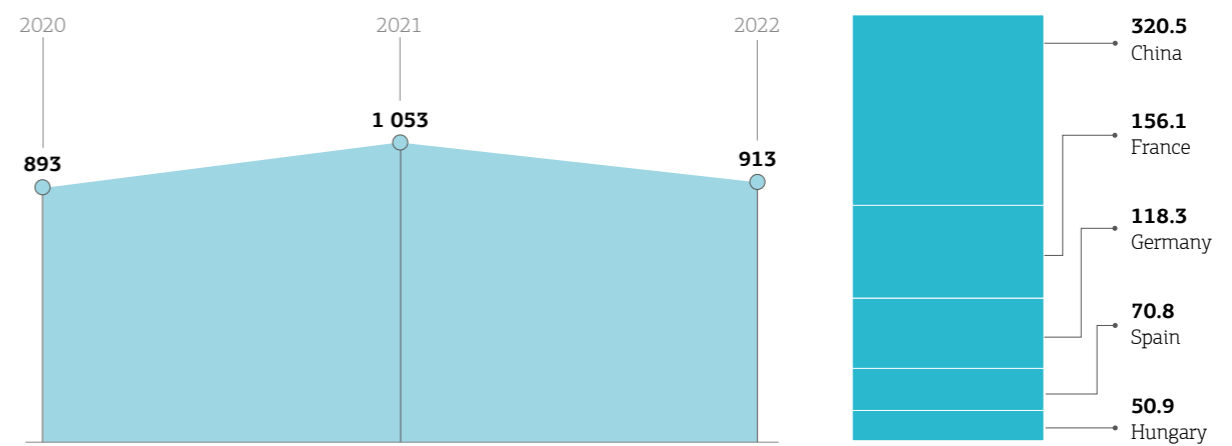
### Area of PPPs application, mln ha



### Application of PPPs by crops, %



### Imports of PPPs and top 5 imports destinations, mln USD

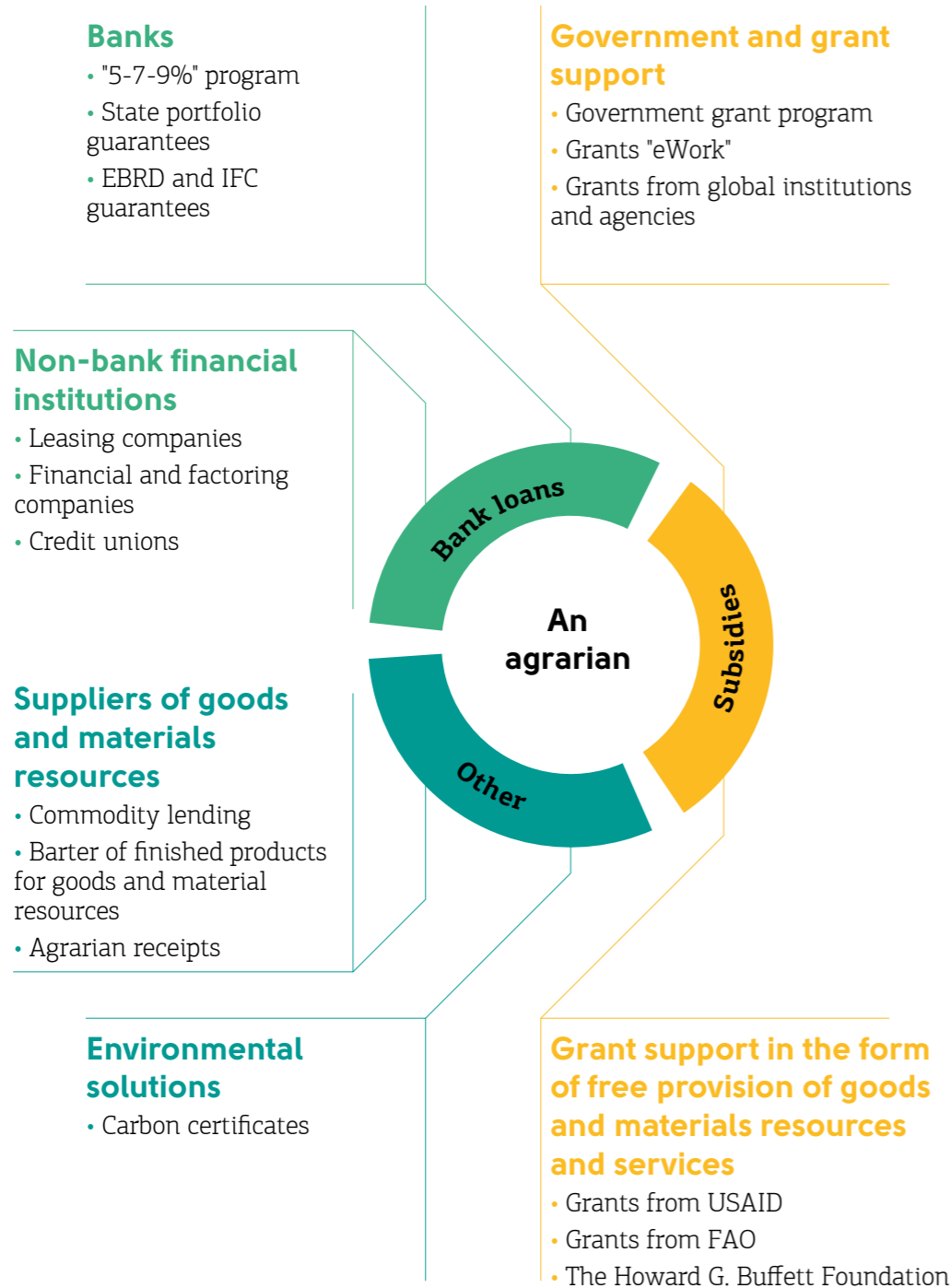


# Finahnces and resources



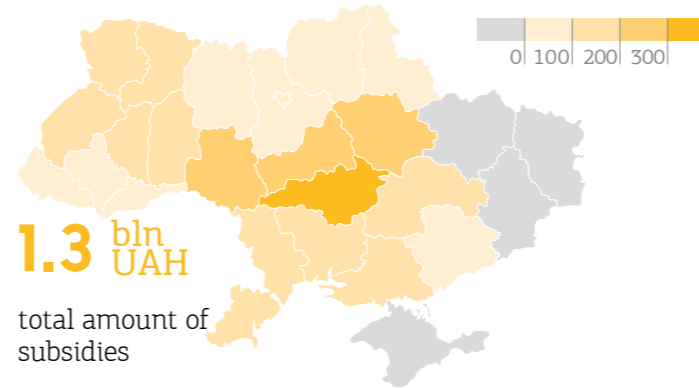
# FUNDRAISING TOOLS, GOVERNMENT AND GRANT SUPPORT

## Practical tools and directions for fundraising

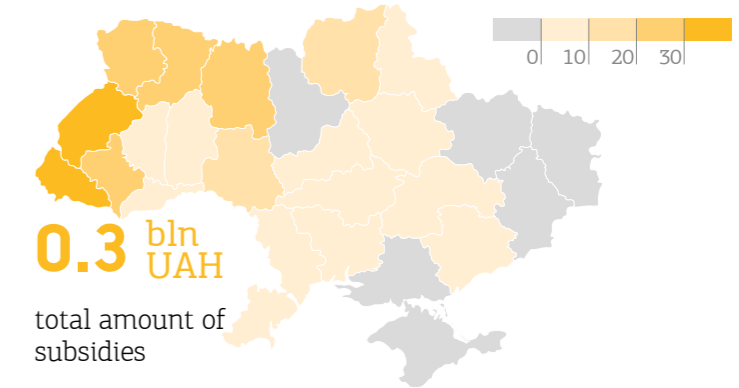


## Farms that got financial assistance through the personal account of the State Agrarian Register in 2022

Number of subsidies for growing plants

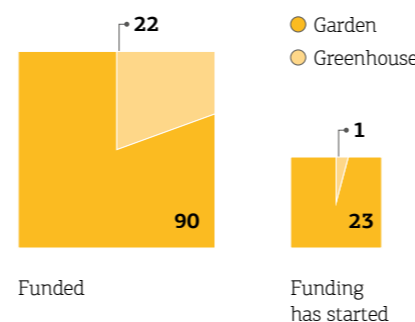


Number of subsidies for cow breeding

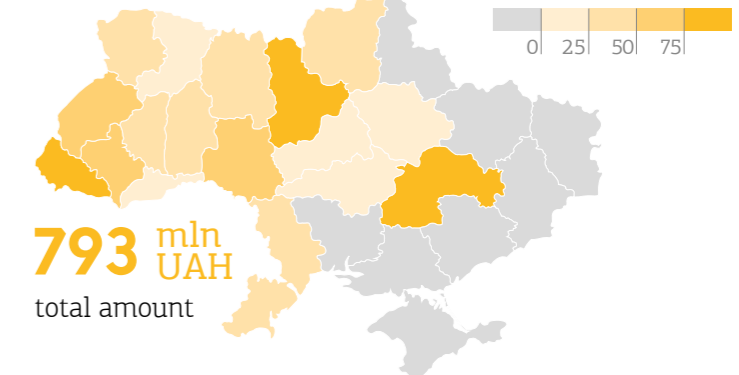


## Grants "eWork" for the development of horticulture and greenhouse farming, June 2022 – November 2023

Distribution of grants, number



Amount of grants, mln UAH



## Areas of USAID Agro's assistance to Ukrainian agrarians

### 1 Development of productivity and access to market:

- development of value chains.

### 2 Improvement of the services for the agricultural sector:

- fintech and digital solutions;
- robotic and unmanned technologies;
- renewal of agribusiness.

### 3 Improvement of the regulatory environment:

- land reform and spatial planning;
- hydrotechnical reclamation reform;
- support in times of war.

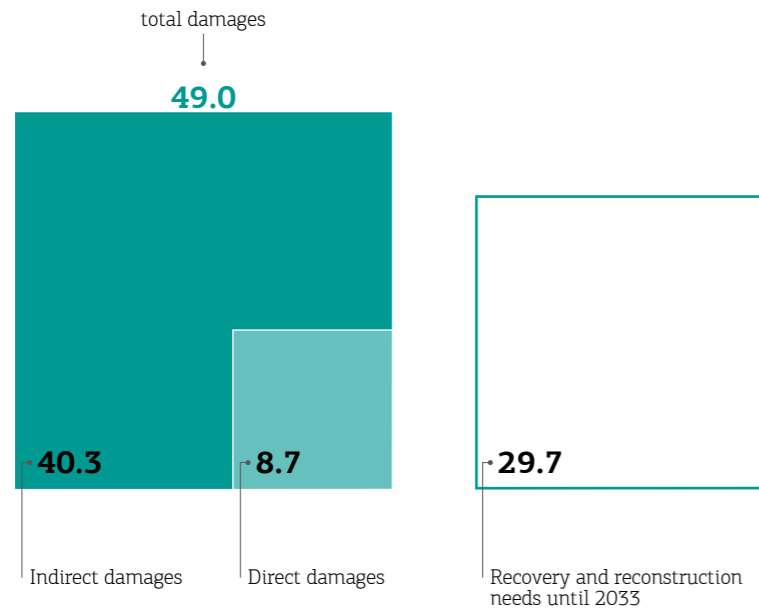
1.5 bln UAH  
amount of announced grant funds in 2022-2023\*

Sources: Aggeek.net, minagro.gov.ua, Opendatabot, USAID Agro, prostrir.ua

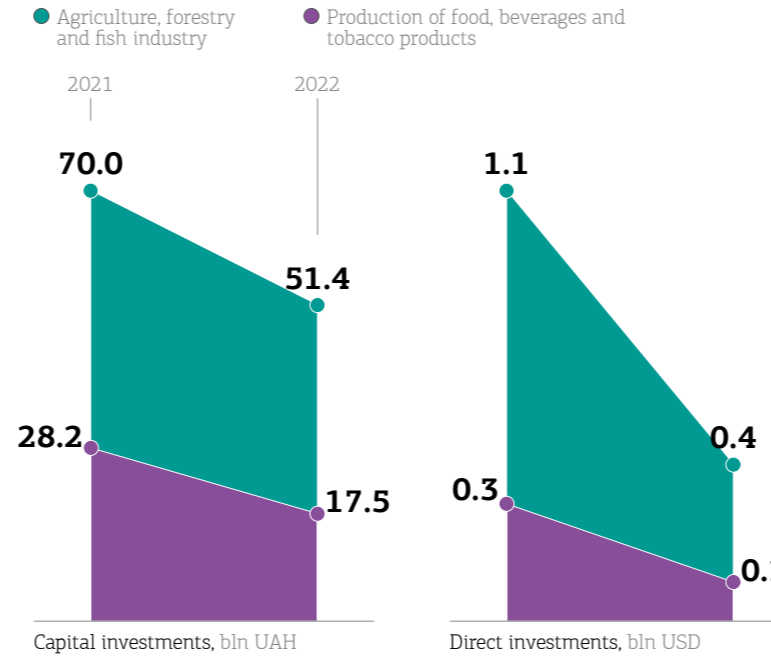
\*as of 11/09/2023

## RECOVERY NEEDS, INVESTMENTS

### Damages caused to the Ukrainian agro-industrial complex and needs for recovery, bln USD



### Investments in the Ukrainian agro-industrial complex



**-29.8%**

capital investments in 2022 compared to 2021.

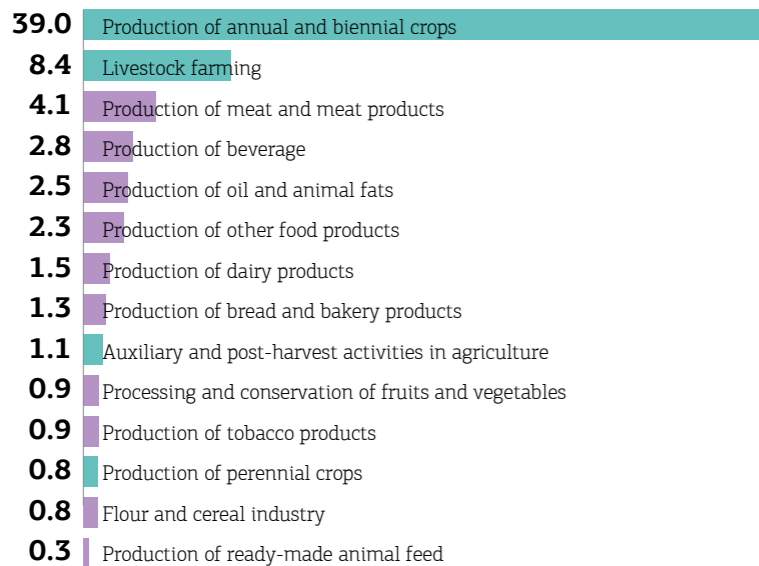
**-66.6%**

direct investments in 2022 compared to 2021.

The full-scale invasion of Russia led to a significant drop in capital and direct investment in the agricultural sector. The decline in direct investment was primarily due to a decrease in the volume of equity investments, which can be explained by investor concerns.

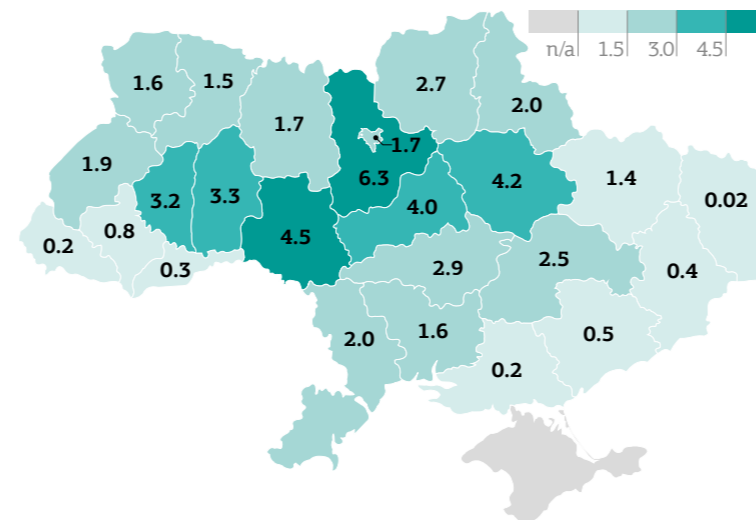
The decline in capital investment was due to a significant decrease in acquisitions and the creation of new assets due to military risks. As a result, the Ukrainian agricultural sector needs new investments for recovery and reconstruction now more than ever.

### Capital investments by type of activity in 2022, bln UAH

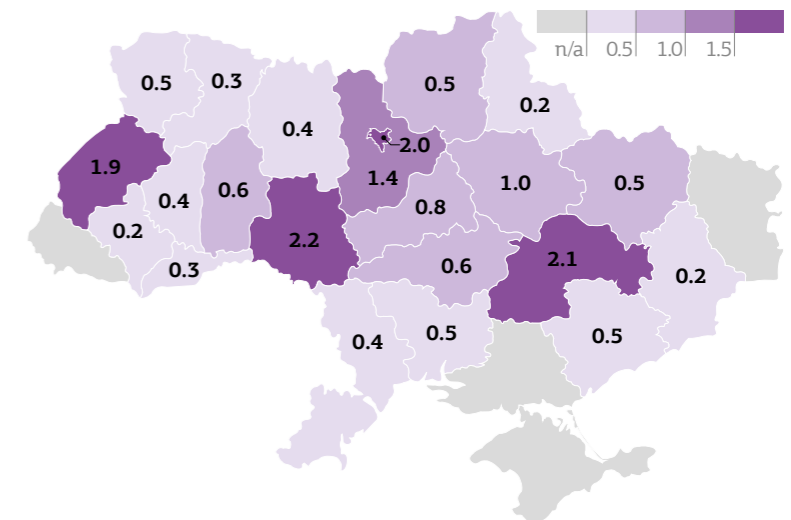


### Capital investments in 2022, bln UAH

#### Agriculture, forestry and fish industry

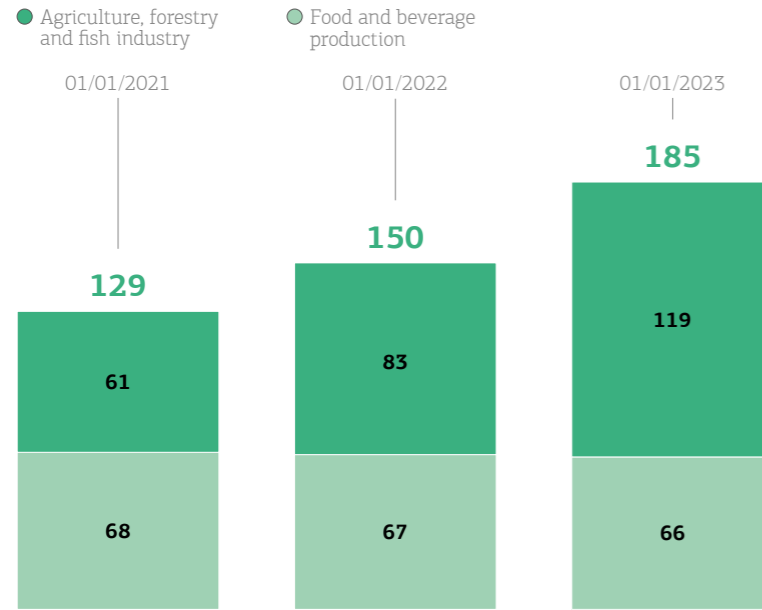


#### Production of food, beverages and tobacco products

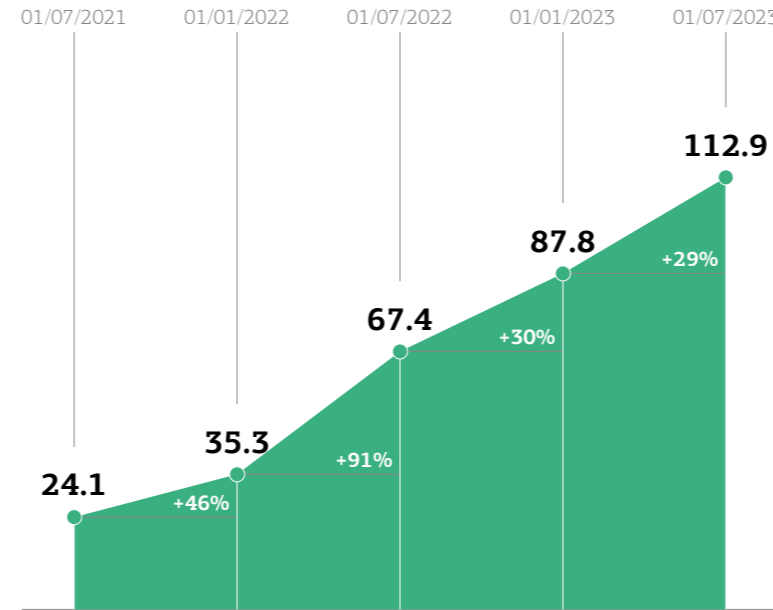


# AGRIBUSINESS CREDITING

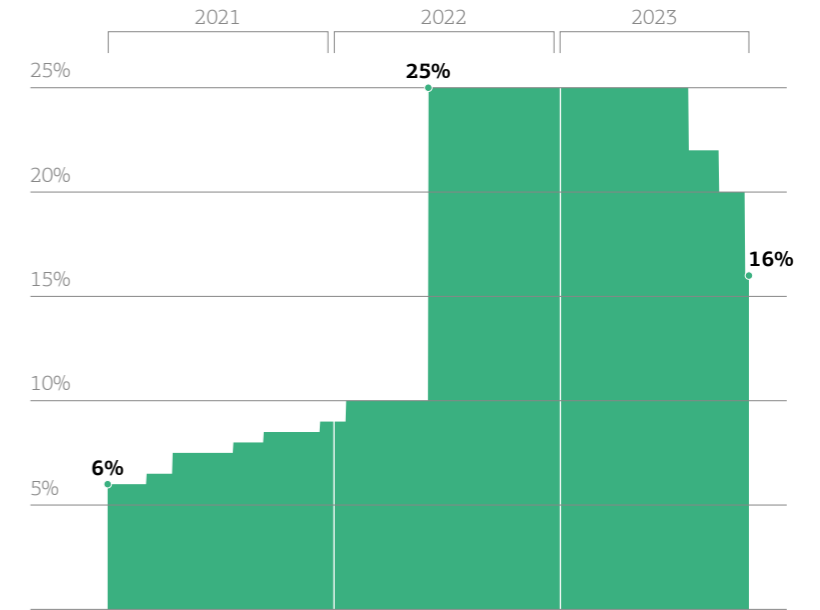
## Crediting of agricultural enterprises and food industry, bln UAH



## Amount of the credit portfolio of agricultural enterprises under the "5-7-9%" program\*, bln UAH

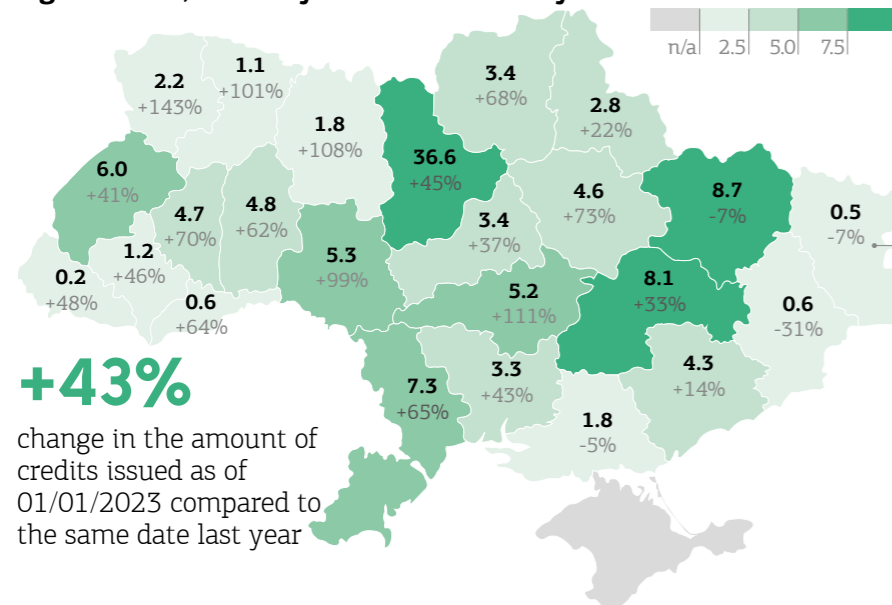


## Key policy rate of the National Bank of Ukraine, %

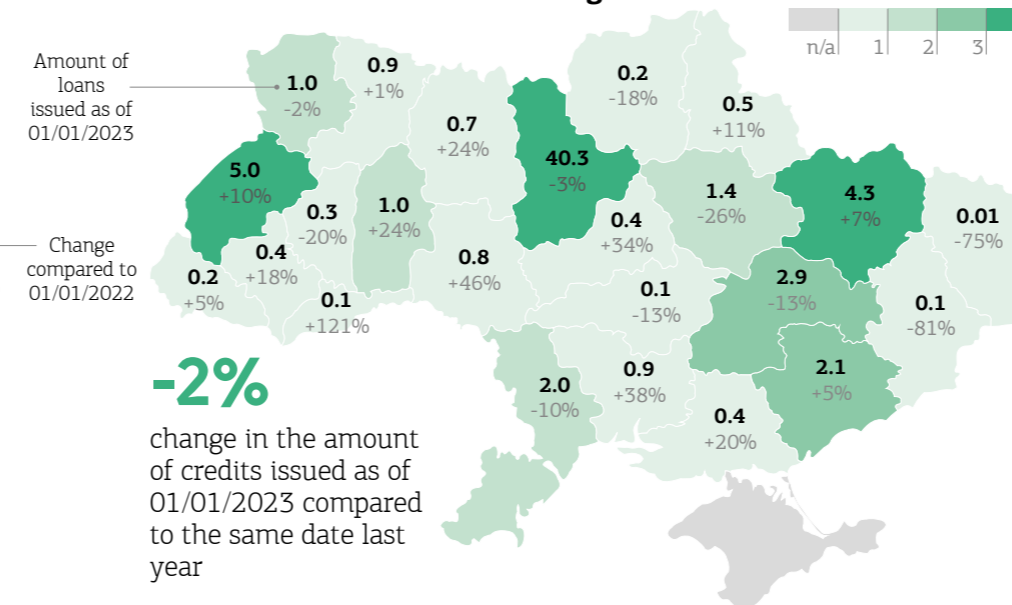


## Credits granted by depository corporations to nonfinancial corporations in 2022, bln UAH

### Agriculture, forestry and fish industry



### Production of food and beverage



**In 2022, the demand for credits increased significantly.** To maintain the operating cycle, farmers need additional working capital. The reasons for these needs are:

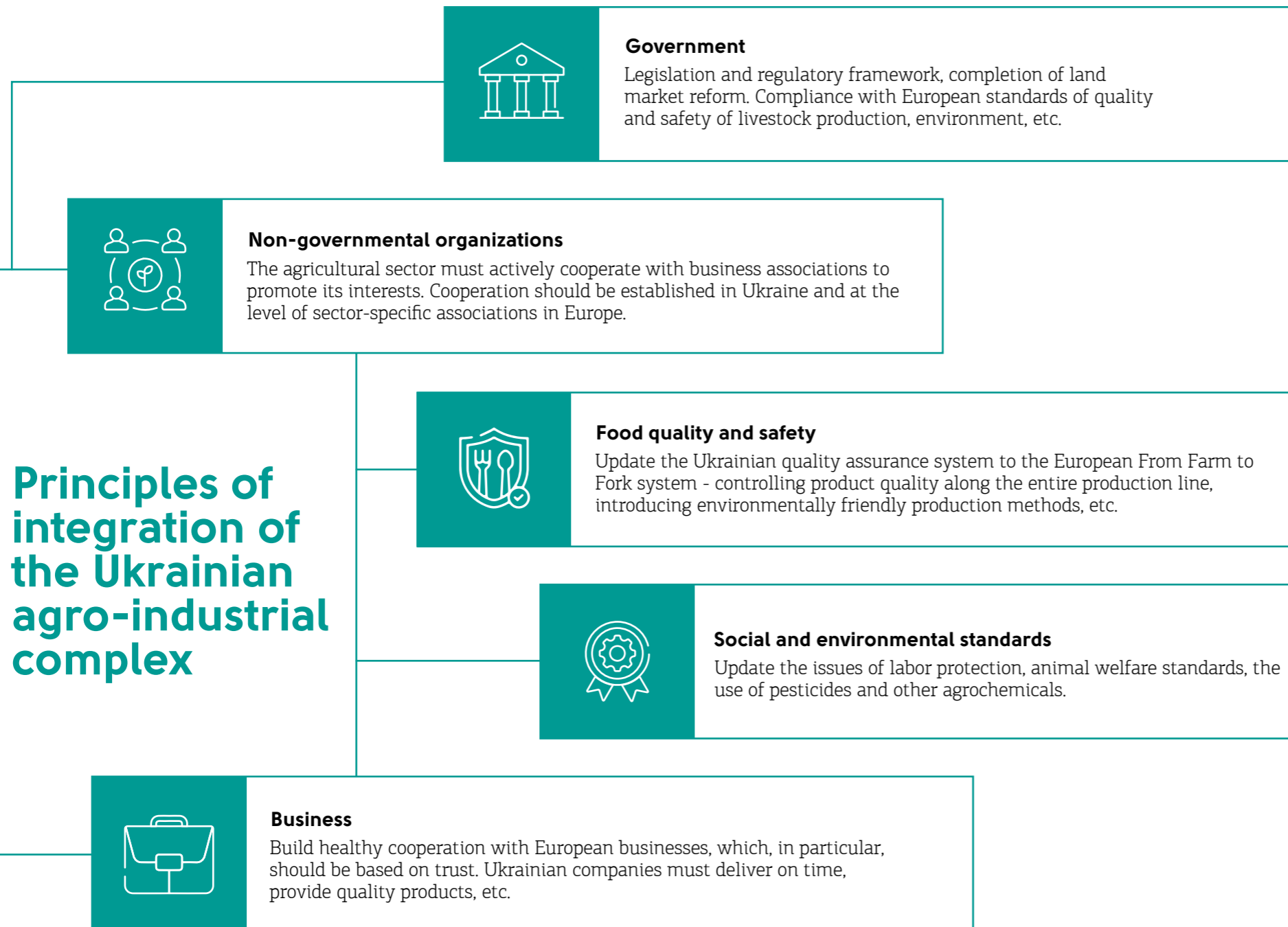
- declining prices for agricultural products;
- rising logistics costs;
- problems with product sales;
- higher prices for means of production, fertilizers, and PPPs.

The destruction and damage of agricultural machinery and the need for own transportation and energy-efficient solutions contribute to the demand for investment financing.

The most effective program for Ukrainian farmers is the program to reduce the cost of financing "5-7-9%", which is in great demand.

## EU INTEGRATION OF THE AGRICULTURAL SECTOR

### The main areas of integration of the Ukrainian agro-industrial complex into the EU



## Principles of integration of the Ukrainian agro-industrial complex

### Benefits of EU accession for Ukrainian agrarians



**Free access to EU markets.**  
Elimination of quotas, entry into the the EU's single customs union.



**Global export opportunities.**  
A network of more than 50 trade agreements with many countries worldwide.



**Support for farmers within the framework of the CAP policy\*.**  
Assistance to agrarians with encouraging sustainable production practices, development of rural communities

### Institutional reforms in Ukraine have already begun but will take time to complete.

The EU and Ukraine have been actively implementing changes in various areas since 2014. However, according to the latest report of the European Commission, the priority areas of change in the agricultural sector for the next year should be:

- finalizing the national strategy for the development of agriculture and rural areas;
- continuing to adapt legislation to EU legislation;
- monitoring and continuing the registration of farms in the State Agrarian Register;
- taking preparatory steps to create an EU-compatible payment agency and accounting data network.



# Sustainable agriculture

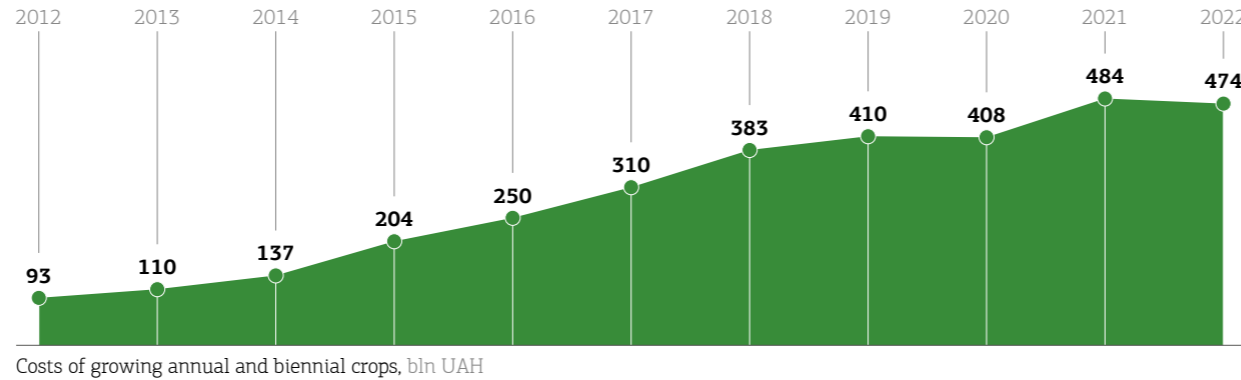


## REASONS OF AGRICULTURAL SECTOR TRANSFORMATION

### Rising production costs



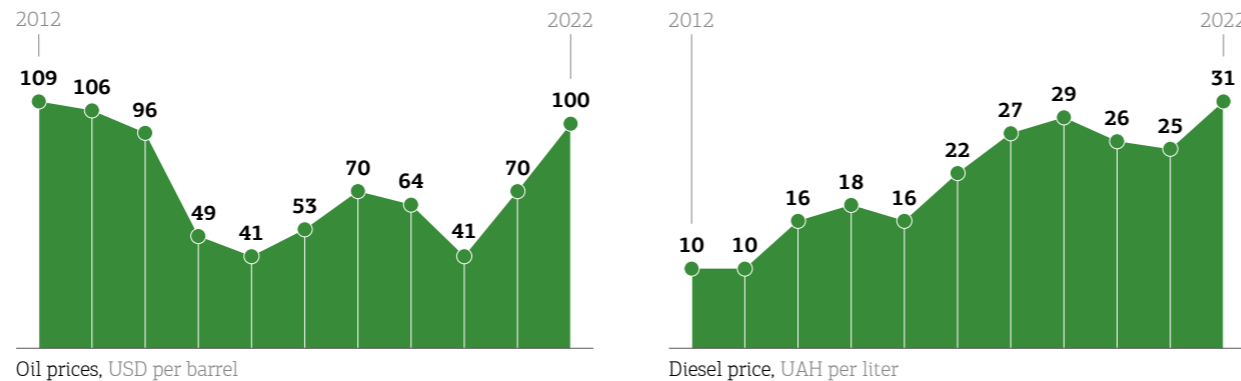
Rising costs require introducing efficient technologies, increased productivity and the development of sustainable risk management strategies.



### Rising cost of energy products



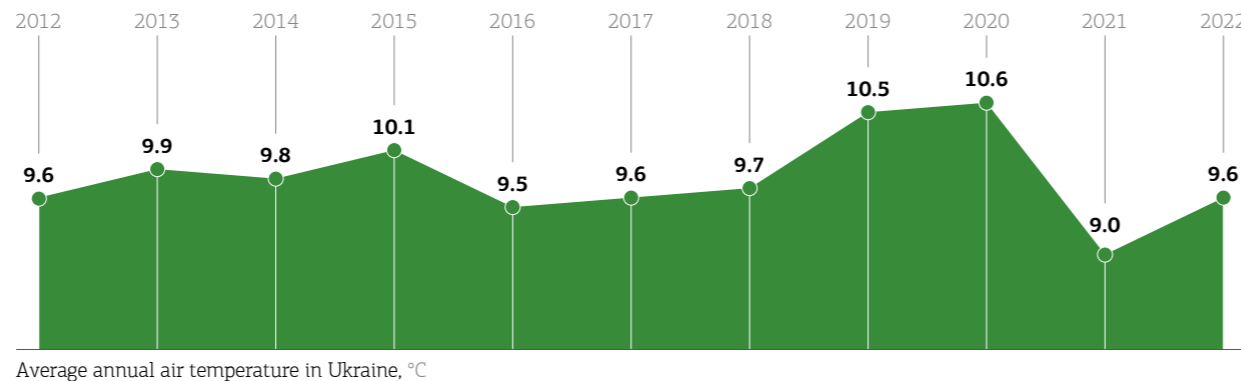
The rising cost of energy products increases the cost of agricultural production and transportation. This stimulates the search for more efficient technologies and the development of alternative energy sources, which affects global food prices.



### Climate change

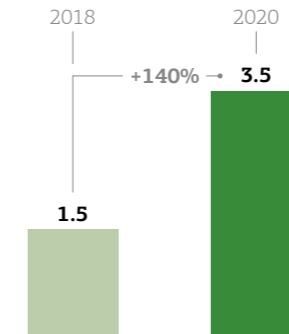


In the context of climate change, the agricultural sector is looking for innovative technologies and strategies to ensure sustainability and productivity. This adaptation process and search for new solutions shape the agricultural sector's transformation in line with the new realities.



## DIGITALIZATION OF AGRICULTURE

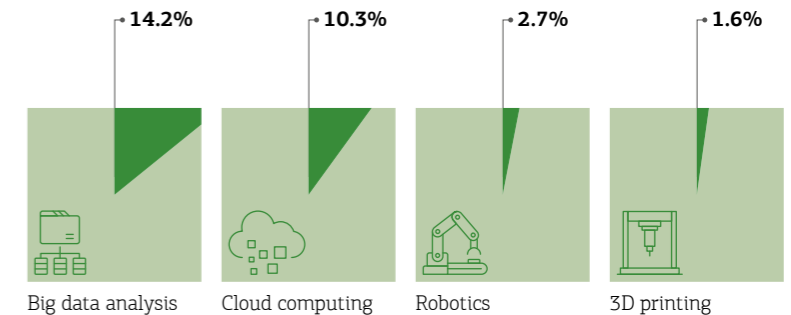
### Spending on innovation in food and beverage production, bln UAH



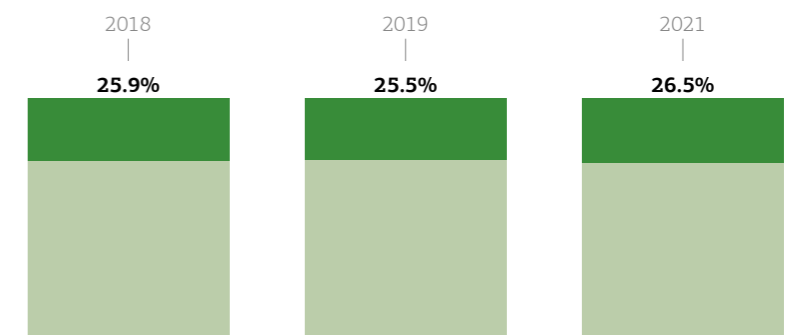
Increasing spending on innovation has several advantages:

- improving efficiency;
- adaptation to changes;
- increasing competitiveness;
- stimulating development;
- saving resources.

### Share of processing enterprises\*\* that used innovations in 2021, %



### Share of processing enterprises with employees in the IT sector, %



# TECHNOLOGIES AND PRACTICES OF SUSTAINABLE AGRICULTURE

## Renewable technologies and practices

### No-Till



What is it? → A system of soil cultivation that means no plowing.

How does it work? → Direct sowing on soils that have not been plowed or cultivated. Direct sowing is carried out with the simultaneous application of mineral fertilizers.

How is it useful? → The technology preserves and restores soil fertility and prevents soil erosion. The soil retains and accumulates moisture.

What is the benefit? → Reducing the cost of maintaining machinery, labor, fuel, and fertilizers.

### Cover crops



What is it? → Intermediate crops grown to enrich the crop rotation with organic matter.

How does it work? → Cover crops are sown after the main crop is harvested to cover the soil with their biomass. They serve as "green fertilizers".

How is it useful? → Soil structure and quality are improved. The main benefit is a reduction in water runoff and soil erosion.

What is the benefit? → Economic benefits due to reduced use of mineral fertilizers.

### Strip-Till



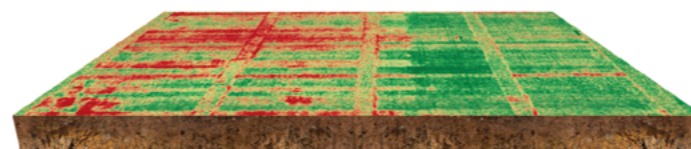
→ Soil strip tillage with simultaneous fertilization.

→ The fields are cultivated and loosened only in strips in the rows of future sowing using a precise GPS signal; the rest of the field remains untouched.

→ Due to the simultaneous application of fertilizers to a depth of 15-20 cm, the plants receive well-timed fertilization in active growth.

→ Moisture retention due to nutritious residues and reduced fuel consumption.

### Precision farming



→ A management system using a large data set and high accuracy of operations.

→ Thanks to digitalization, a separate approach is applied to each field: differentiated rates of fertilizer and PPPs, smart irrigation, etc.

→ Increased yields, reduced fertilizer and pesticide use due to more accurate application.

→ Saving goods and materials, reducing the number of machine hours and man-hours.

### Verti-Till



→ Loosening the field surface using special tools.

→ The tool's knives have special grooves set at a right angle to the soil. They provide excellent loosening and crumbling of the field surface.

→ Ensuring a homogeneous soil structure with protection from wind, water, and sun. Instead, moisture penetrates the soil better.

→ Increased yield due to nutrients remaining on the surface.

## Sustainable technologies and practices

### Permaculture

The practice of farming with minimal labor inputs and without harming the environment.

The main feature is the development of sustainable agricultural production by reducing waste, using renewable sources, combating pollution, and increasing soil fertility in environmentally friendly ways.

### Agroforestry reclamation

A practice that combines woody perennials (e.g., trees, shrubs) with crops on the same plot.

Forest plantations on fields, often at their edges, prevent erosion and promote biodiversity.

## BIOENERGY

### What is bioenergy?

Bioenergy means the use of biomass (straw, sunflower or corn stalks, husks, shells, manure) to create biofuels (biodiesel and bioethanol) or gas fuels (biogas and biomethane).

### Trends in bioenergy development in Ukraine

Since 2017, electricity production from biomass and biogas has increased more than four times. As of the beginning of 2023, there are 87 bioenergy facilities, and **their installed capacity is 289.2 MW. This is comparable to the annual consumption for more than 550 thousand households.** In 2022, despite a 16% decrease in electricity production due to damage and occupation of almost 5% of bioenergy facilities, the industry continued to develop:

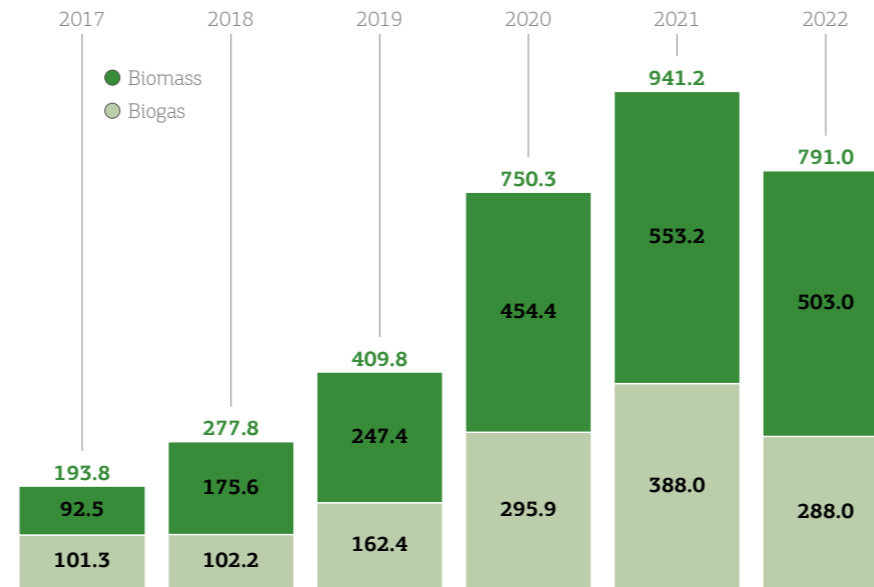
**5**  
new bioenergy projects

**13,3 MW**  
new bioenergy projects

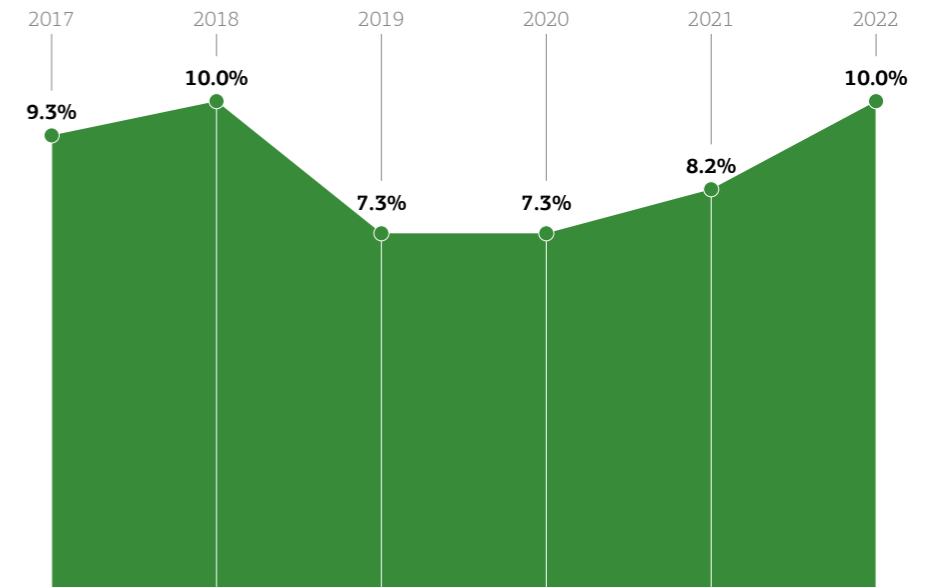
### Potential for bioenergy development in Ukraine

For Ukraine, **bioenergy is one of the strategic directions for developing the RES sector.** In particular, thanks to several advantages: safety, environmental friendliness, economic benefits, universality and multivariability. **The bioenergy sector has significant development potential** due to the climate, high soil fertility, and the fact that the main raw materials for the production of biofuels are key crops in Ukraine.

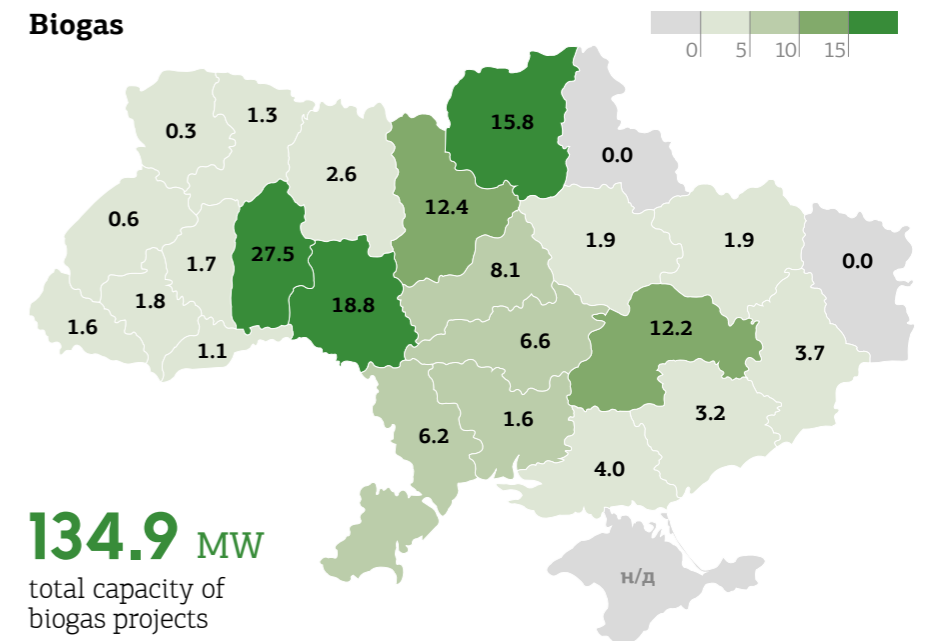
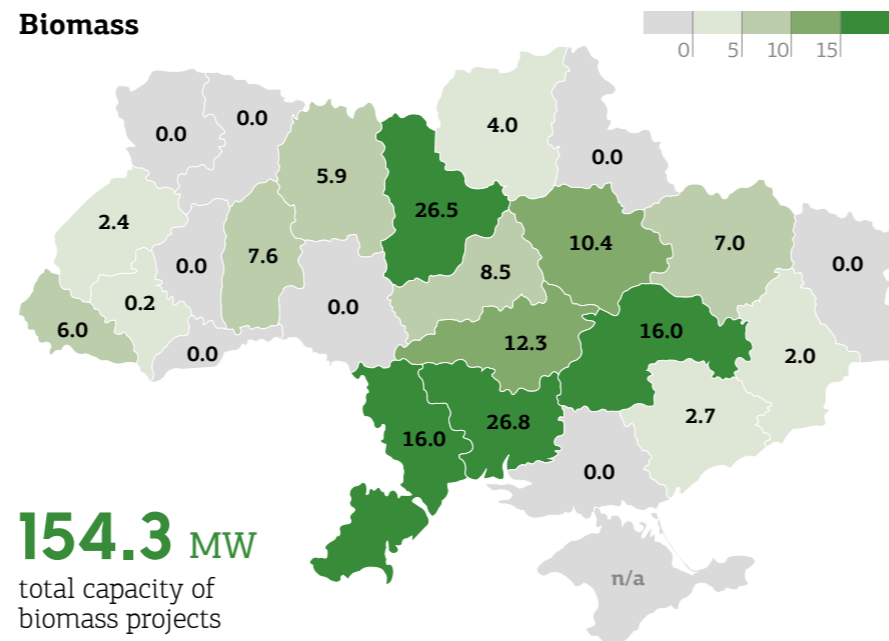
### Generation of electricity by bioenergy facilities, mln kWh



### Share of electricity generated from bioenergy in RES, %



### Capacity of bioenergy facilities in 2022, MW



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