

THE WORLD BANK REPORT

PRIORITIES FOR AGRICULTURAL SUPPORT IN UKRAINE¹

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Abbreviations

AKIS	Agricultural knowledge and innovations system
CAP	Common Agricultural Policy
CAPEX	Capital expenditures
CSA	Climate-smart agriculture
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GAO	Gross agricultural output
GDP	Gross domestic product
GWS	Green water scarcity
Ha	Hectare
IFC	International Finance Corporation
IPARD	EU Instrument for Preaccession Assistance for Agriculture and Rural Development
NBU	National Bank of Ukraine
MAPF	Ministry of Agrarian Policy and Food of Ukraine
MPS	Market Price Support
OECD	Organization for Economic Cooperation and Development
OPEX	Operational expenditures for working capital
RDNA	Rapid Damage and Needs Assessment
SPS	Sanitary and phytosanitary measures
UAH	Ukrainian hryvnia
UCAB	Ukrainian Agribusiness Club
USDA	United States Department of Agriculture
VAT	Value-added tax
WBG	World Bank Group
WDI	World Development Indicators

1. Setting up the Stage

1. **This report presents the priorities for agricultural support in Ukraine in the short run, i.e., until the end of Russia’s invasion of Ukraine, and medium run, i.e., aftermath of Russia’s invasion.** While the war persists, an access to affordable finance, export logistics, demining of farm fields, and other support that helps farmers and agribusinesses quickly adapt to the rapidly changing circumstances will remain the short-term priorities for agricultural support, as outlined in the recently completed third Rapid Damage and Needs Assessment (RDNA)². After Russia’s invasion ends, however, the agricultural support will need to realign to address challenges and capitalize on opportunities to enable Ukraine’s agrifood system transformation, including preparation of Ukraine for European Union (EU)’s accession. Objectives for agricultural policy will need to shift from simply producing and exporting more agrifood products to producing it in a more inclusive and climate resilient manner with lower environmental footprint. This report presents key aspects to consider for this realignment, building on the knowledge about Ukraine’s agriculture’s historical reliance on private financing, the imperative for improved land governance, the impacts of climate change, unique challenges encountered by small-sized farms, the EU integration, and Ukraine’s constrained fiscal space. This knowledge could be summarized as follows:

- a. Private sector financing has been crucial to support agriculture in the past, driving its spectacular growth since 2010.³ In recent years, prior to the war, Ukraine’s agriculture was able to attract more than US\$35 billion annually, with private financing accounting for 95 percent of working capital and capital investments. Public spending accounted for a small share of agricultural financing needs. In fact, Ukraine has been among the countries with relatively low level of agricultural public spending (0.33 percent of gross domestic product (GDP)), like Australia, Brazil, and Canada. Ukraine’s agriculture will continue to rely on private sector financing in the medium run, but to attract more private investments, the quality of agricultural public spending will need to improve. The global experience shows that agricultural public expenditures deliver best results when they are allocated to programs that crowd in private sector investments and deliver public goods that private sector does not provide.⁴ Quality of public spending matters more than quantity. Quality depends on allocative efficiency (what to spend on) and quality of implementation (how to). This report provides recommendations what to spend on, i.e., allocative efficiency of agricultural support.
- b. In comparison to its peers, Ukraine’s agricultural land has not yet been effectively leveraged to attract private investment. The ongoing liberalization of agricultural land market, coupled with strengthening of public institutions that oversee land and enhancements to related legislation, are essential for realizing the benefits of the second

² The Government of Ukraine, European Union, United Nations, and World Bank (2024): “Third Rapid Damage and Needs Assessment.” <https://www.worldbank.org/en/news/press-release/2024/02/15/updated-ukraine-recovery-and-reconstruction-needs-assessment-released>.

³ International Finance Corporation (2024): “Private Sector Opportunities for a Green and Resilient Reconstruction in Ukraine.” <https://www.ifc.org/en/insights-reports/2023/private-sector-opportunities-for-a-green-and-resilient-reconstruction-in-ukraine>

⁴ Gautam, M., D. Laborde, A. Mamun, W. Martin, V. Peniero, and R. Vos (2022): “Repurposing Agricultural Policies and Support: Options to Transform Agriculture and Food Systems to Better Serve the Health of People, Economies, and Planet.” World Bank and International Food and Policy Research Institute, Washington, DC.

- phase of agricultural land reform initiated in January 2024 to attract more private financing for agriculture.
- c. Climate change is increasingly impacting Ukraine's agriculture. Between 2010 and 2021, the fluctuation in Ukraine's agricultural output was double the global average and triple that of the EU. To cope with climate change, Ukrainian farmers will need to increase their investments in climate-resilient technologies. The government's support will be crucial to speed up climate adaptation as a priority climate action. Yet, as Ukraine aspires to join the EU, which established its vision of the EU Green Deal, Ukraine's agricultural sector should also aim to reduce its carbon footprint (i.e., climate mitigation), focusing on enhancing soil cultivation and management practices, which currently account for 80 percent of the country's agriculture's greenhouse gas emissions (GHGs). Climate mitigation actions should be seen used as an opportunity to attract carbon financing, another source of private financing.
 - d. Small-sized farms⁵ in Ukraine face many more constraints, particularly in terms of accessing private finance and other services, than their larger counterparts. Ensuring inclusive agricultural development and the advancement of rural areas, where small-sized farms are vital, requires the government to pay closer attention to specific needs of this segment of farms. Support tailored to the needs of small-sized farms is also vital to leverage the opportunities presented by Ukraine's accession to the EU, where the Common Agricultural Policy (CAP) places a strong emphasis on this group of farms.
 - e. A new category of public expenditure needs to be considered: investments in strengthening "competent authorities"⁶ to support Ukraine's EU accession. The EU Green Deal and the CAP impose significant requirements on strategic planning, compliance with strict environmental and social standards, food safety, and traceability for market access, as well as stringent oversight of public fund usage. Delays in establishing competent authorities that can meet EU standards could hinder or substantially delay Ukraine's progress towards EU integration. It can also hinder the use of the EU pre-accession funds such as the EU Instrument for Preaccession Assistance for Agriculture and Rural Development (IPARD), which could become available for Ukraine after 2027.
 - f. Ukraine's fiscal space is extremely limited compared to the vast needs of the country's agriculture and the overall economy for recovery and reconstruction. Even with increased donor financing, the total needs are enormous, necessitating strict prioritization of public expenditures. The large negative impact of Russia's invasion on Ukrainian agriculture, however, necessitates that state support, such as improving access to affordable finance to all farms, may need to be extended beyond what would normally be justified during peacetime.

⁵ There is no consistent legal definition of small farms in Ukraine. The average farm size in Ukraine is much larger than the world average. To provide the grant support during Russia's invasion of Ukraine, for example, small-sized farms are defined as farms with less than 120 hectares of arable land. To access the partial credit guarantee fund for agricultural loans, the small-sized farms cannot exceed 500 hectares. See Chapter 4 with the discussion and data on small-sized farms in Ukraine.

⁶ The term *competent authority* refers to the EU country-level institutions that organize official controls systems on their territory to verify that operators' activities and goods placed on the EU market (either EU produced or imported from non-EU countries) comply with relevant standards and requirements.

2. **The proposed redesign of agricultural support is intended to enable sustainable transformation and growth in Ukraine's agricultural sector.** It includes three priorities. *First*, public expenditures should prioritize a mobilization of private finance, the provision of core agricultural services, and the support of small-sized farms to address their specific challenges. *Second*, public spending should be bolstered by a broad-based rather than product specific agricultural support and by free trade policy that, for instance, avoids taxing exports of raw agricultural commodities to subsidize food processing, an option that is periodically debated in Ukraine. *Third*, investments are necessary to enhance the capabilities of competent authorities, ensuring compliance with EU standards and facilitating Ukraine's EU accession process. The concluding chapter of this report details the recommended allocation of agricultural expenditures in line with these guiding principles.

3. **The structure of the remaining sections of the report is as follows.** The second chapter presents the recent development of agriculture, its financing, and state support up to the year 2022. The third chapter describes the impact of climate change and discusses policy responses, while the fourth chapter talks about unique challenges faced by small-sized farms and the necessity for greater support for these farms compared to large ones, especially in adapting to climate change. The fifth chapter discusses the EU's agricultural requirements. The sixth chapter discusses consequences of Russia's invasion of Ukraine for the agricultural support. The seventh chapter provides policy recommendations.

2. Agriculture Development and Financing until 2022

4. **The agricultural sector has been a vital pillar of Ukraine's economy.** In 2021, agriculture accounted for 10 percent of GDP, and when combined with input supply, food processing, and trade, the agrifood sector generated 20 percent to GDP. Primate agriculture employed 22 percent of the labor force. Over the past 15 years, Ukraine has become one of the world's leading exporters of wheat, corn, barley, and oilseed products. In 2021, the value of Ukraine's agrifood product exports reached US\$28 billion, representing 41 percent of the country's exports. Grain crops alone constituted 35 percent of Ukraine's total exports, with grain exports showing a consistent annual increase.⁷ Despite this growth, crop yields have not reached their full potential, and there is room for Ukraine to make an even more significant contribution to both national economy and global food supplies. In 2021, Ukraine was the world's fifth-largest wheat exporter, shipping 20 million tons of wheat and holding a 10 percent share of the global market. For corn and barley, Ukraine accounted for about 15 percent of the global trade, mainly exporting to the EU, China, and the Middle East.⁸ The United Nations Food and Agriculture Organization (FAO) estimated that Ukraine's expected maize exports between 2021 and 2022 could account for up to 18 percent of the global maize trade, potentially making it the third-largest exporter worldwide if not for Russia's invasion. Additionally, Ukraine supplied up to 46 percent of the global market for sunflower seeds and sunflower oil, becoming top exporter of sunflower oil.

5. **Over the last decade, Ukraine's agriculture has performed strongly after the two transition decades in 1990s and 2000s.** The agricultural value added generated by the sector in 1995 recovered only by 2010 (Figure 1 left). The slow agricultural recovery was largely a result

⁷ State Statistics Service of Ukraine (2020): "2019 Agriculture of Ukraine." Kyiv.

⁸ United States Department of Agriculture (2022): "Ukraine Conflict and Other Factors Contributing to High Commodity Prices and Food Insecurity." Washington, DC.

of the stagnant production of grains and oilseeds (Figure 1 right), which were planted on 75 percent of Ukraine’s arable land. However, in the decade leading up to Russia's invasion, the sector flourished. Compared to 2010, in 2021 the sector's value added increased by 41 percent, supported by a more than doubling of grain and oilseed production (from 49 to 109 million tons). The share of agricultural exports in total exports rose from 11 percent in 2001 and 20 percent in 2011 to 45 percent in 2021. However, agricultural growth was highly volatile, pointing to a strong vulnerability to climate change.

Figure 1: Growth in Ukraine’s agricultural value added, 1995-2021 (left) and growth in production of main grains and oilseeds, 1991-2023 (right)



Source: WBG staff estimate using the World Development Indicators (WBI) and the US Department of Agriculture (USDA).

6. **Ukraine’s agriculture is export oriented.** More than 70 percent of produced grains and oilseeds were exported prior to the war, not consumed domestically. Since 2010, the share of export significantly increased. The growing global demand for grains and oilseeds, the large Hryvnia (UAH) depreciation in 2015, and investments in agrilogistics and storage enabled a continued increase in agricultural export, providing impetus to the agriculture sector’s growth.

7. **The recent agricultural growth was achieved with the relatively low state support.** During the last twenty years Ukraine’s annual public agricultural expenditures averaged US\$600 million. In 2019-21, this translated into 0.33 percent of GDP, less than 2 percent of gross agricultural output (GAO), and US\$14 per hectare (ha) of agricultural land (Table 1). For comparison, budgetary support in high-income countries, members of the Organization for Economic Cooperation and Development (OECD), averaged 0.47 percent of GDP, 17 percent of GAO, and US\$216 per ha of agricultural land. In the emerging economies, without counting Ukraine, the budgetary support accounted for 0.81 percent of GDP, 8 percent of GAO, and US\$127 per ha of agricultural land.⁹ Thus, Ukraine's agriculture has been growing with relatively low public support, unlike in many other countries. This is an important finding, given Ukraine’s low fiscal space. Quality of agricultural public spending is more important than quantity as not all public spending is equal. There is empirical evidence, for example, that commodity specific

⁹ Emerging economies monitored by OECD’s Agricultural Policy Unit include Argentina, Brazil, China, Colombia, Costa Rica, India, Indonesia, Israel, Kazakhstan, Philippines, Russia, South Africa, Ukraine, and Viet Nam.

production subsidies and tax benefits had lowered Ukraine’s agricultural productivity growth in the past.¹⁰ This finding is aligned with the global experience (Box 1).

Box 1: Quality of agricultural public expenditures

Many empirical studies find a low impact of aggregate spending on agricultural growth, implying that all public investments are not equal. Governments often spend on things that are not public goods, for example output and input subsidies. In addition, even when clear market failures exist, public spending will not necessarily improve the situation. Interventions can sometimes lead to government failures, which exacerbate original problems caused by market failures and produce unintended adverse effects.

Lopez and Galinato (2007)¹¹ analyzed the impact of public spending on agricultural growth in 10 Latin American and Caribbean countries during 1985–2000. They found that a 10 percent increase in public expenditures lifted agricultural growth by 0.6 percent. At the same time, they also found that spending on public goods was much more productive than spending on input and output subsidies – the reallocation of 10 percentage points of expenditures from subsidies to public goods increased growth by 2.3 percent. This was obtained without increasing total expenditures.

Another example is the switch from coupled subsidies that favor production of specific products to decoupled support and investment grants for agriculture modernization and rural development in the EU. Garonne *et al* (2019)¹² found that during 2004-2014 the coupled subsidies reduced agricultural productivity growth in 213 EU regions, while decoupled income support and investment grants helped increase productivity. The World Bank (2018)¹³ found that improvements in agricultural productivity and employment in the EU countries went hand in hand when supported with decoupled payments and investment grants. Coupled subsidies reduced growth by encouraging farmers to produce crops picked by governments not by markets. As a result, coupled subsidies tend to reduce the total agricultural productivity.

8. What was also important for spurring agricultural growth in the last decade was phasing out of agricultural price taxation. Between 2000 and 2002, Ukraine farmers received farmgate prices for grains and oilseeds below the export parity levels. As a result, farmers faced so-called negative Market Price Support (MPS). This negative MPS was driven by export taxes, quotas, and other export restrictions, as well as delays in the reimbursement of export value added tax (VAT). The negative MPS negated the budget support, reducing it from US\$646 million to US\$145 million, or from US\$17 per ha to US\$4 per ha (as indicated in Table 1). For comparison, in many emerging economies and OECD countries, farmers were supported through positive MPS, i.e., there farmgate prices were kept above the border reference prices, helping to amplify the

¹⁰ Neyter R. and O. Nivievskyi (2023): “Effect of Subsidies on Farm’s Exit Decision.” *Journal of Agribusiness* (39), Issue 4: 941-95 and Brychka S. (2019): “Deciphering Agricultural Competitiveness in Ukraine.” KSE Master thesis. https://kse.ua/wp-content/uploads/2019/04/Solomiia-Brychka_Thesis.pdf

¹¹ Lopez, R. and G. Galinato (2007): “Should Government Stop Subsidies to Private Goods? Evidence from Rural Latin America.” *Journal of Political Economics* (91): 1071-1094.

¹² Garonne, M., D. Emmers, H. Lee, A. Olper, and J. Swinnen (2019): “Subsidies and Agricultural Productivity in the EU.” *Agricultural Economics* (50): 803-817.

¹³ World Bank (2018): “Thinking CAP: Supporting Agricultural Jobs and Incomes in the EU.” *EU Regular Economic Report #4*, Washington, DC.

budgetary support.¹⁴ The only part of the world with many countries having negative MPS is Sub-Saharan Africa, which, because of it, have had the lowest agricultural growth in the world. Recently, however, Ukraine had shifted from negative to a small positive MPS, mainly due to price support for sugar and pork.¹⁵ As a result, the total support to Ukraine's agriculture increased from US\$4 per ha in 2000-02 to US\$23 per ha in 2019-21. Ukraine's agriculture has responded positively to these improved price incentives, experiencing substantial growth.¹⁶

Table 1: Agricultural support in Ukraine and its peers, 2000-2002 and 2019-2021

	Ukraine		OECD		Emerging economies	
	2000-02	2019-21	2000-02	2019-21	2000-02	2019-21
Agriculture budgetary support in % of GDP	1.83	0.33	0.55	0.47	0.96	0.81
Producer support estimate*, % of GAO	0.3	1.7	28.3	17.4	8.8	8.1
Budgetary support per ha of agricultural land, US\$	17.1	13.6	116.3	216.1	25.5	126.9
Total agricultural support per ha of agricultural land, US\$	3.5	22.7	207.5	288.5	28.1	216.7
<i>Budget expenditures, million US\$</i>	<i>646</i>	<i>604</i>	<i>155,345</i>	<i>258,713</i>	<i>39,726</i>	<i>203,036</i>

*Note: *Producer support estimate is a sum of market price support and budgetary support.*

Source: WBG staff estimate using the OECD and WDI databases.

9. **Another driver of agricultural success was farmers' ability to secure private financing.** Most working capital (OPEX) and capital investments (CAPEX) come to agriculture from private sector. State support constituted a mere 5 percent of the working capital requirement, as indicated by the International Finance Corporation (IFC) survey conducted in 2019 (Table 2). Banks and input suppliers contributed to half of total financing, while farmers' retained earnings/profits accounted for 40 percent. Notably, 20-30 percent of crop was sold in advance of the harvest (Figure 2), providing farmers with cash needed to repay loans and purchase inputs, thereby reducing the reliance on external finance. On the other hand, the fact that so many farmers sold harvest from the field could indicate challenges to raise cash through borrowing (Figure 3).

¹⁴ In this group of countries, only Argentina and India have the negative total MPS for agriculture.

¹⁵ Due to the export tax, the prices of sunflower seeds remained below export parity prices, thereby facing the negative MPS. Other commodities with negative MPS included oats and milk (OECD).

¹⁶ Brychka (2019) found MPS to be one of the major factors driving Ukraine's competitiveness.

Table 2: Sources of working capital financing of Ukraine’s agriculture in 2019

Sources of financing	% of total
Retained earnings and profits	40
Banks	20
Input suppliers	30
State financing	5
Other sources	5

Source: IFC report 2019.

Figure 2: Timing of the harvest sales, 2020

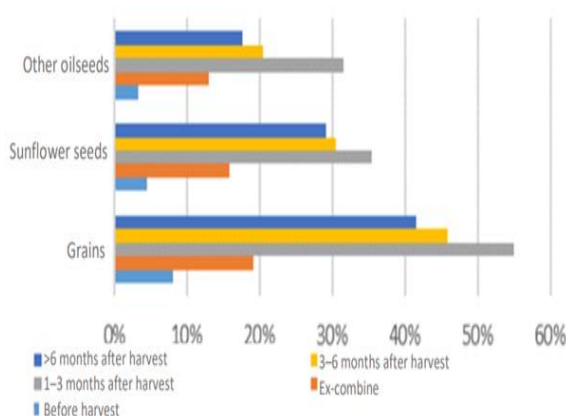
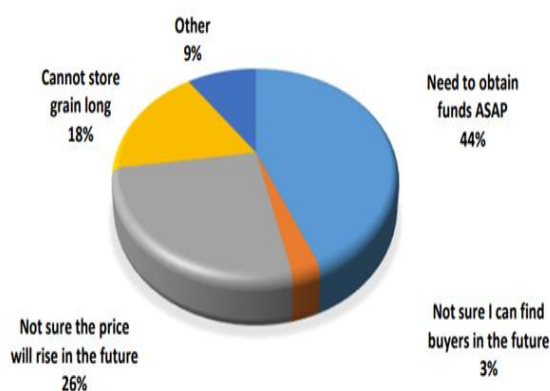


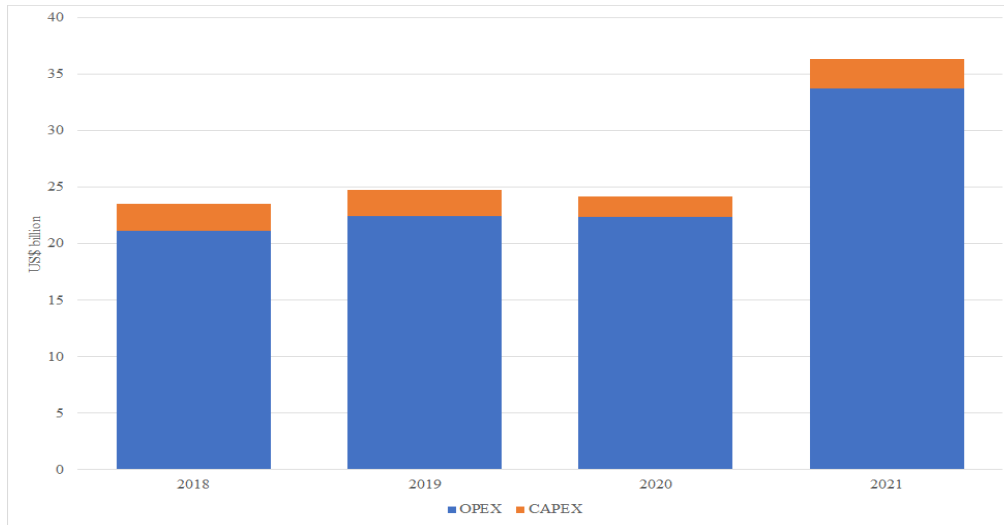
Figure 3: Reasons for sales before or immediately after harvest, 2020



Source: USAID/UkrAgroConsult grain market survey in 2020.

10. **The total financing attracted by Ukraine's agriculture sector swelled from US\$23 billion in 2018 to US\$36 billion in 2021.** Around 90 percent of this financing was directed towards working capital, whereas the CAPEX represented 10 percent of total financing (Figure 4). This comparison of financing amounts with public expenditures from 2019-21 detailed in Table 1 (i.e., US\$604 million), pointing on the sector’s low dependence on public funds. The small share of CAPEX points to the challenges of long-term planning in Ukraine and the dearth of collateral for securing long-term finance such as land mortgages. The development of this collateral instrument began to take shape only following the opening of the agricultural land market in July 2021.

Figure 4: Financing of Ukraine’s agriculture, 2018-2021



*Note: Cost items represent the costs for crop and livestock sectors.
Source: WBG staff estimate using the Ukrainian State Statistics data.*

11. **Bank loans were the most popular external financing instrument.** Fifty six percent of all farms on average and 85 percent of large farms used bank loans to finance agricultural production (Figure 5). Insurance, leasing, crop receipts, and derivatives were among popular financing instruments, but their use was positively correlated with the larger size of farms, while small-sized farms hardly used them (Figure 6).

Figure 5: Financial sector instruments for Ukraine’s agriculture, 2020

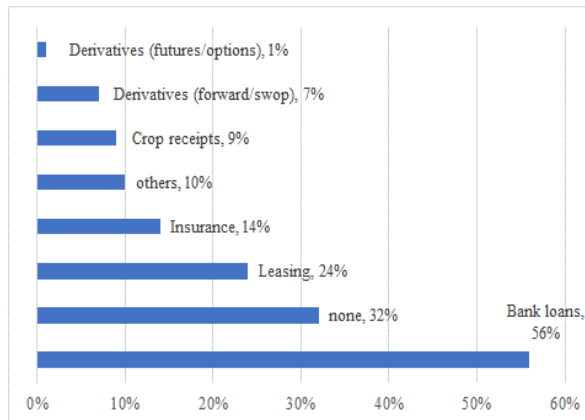
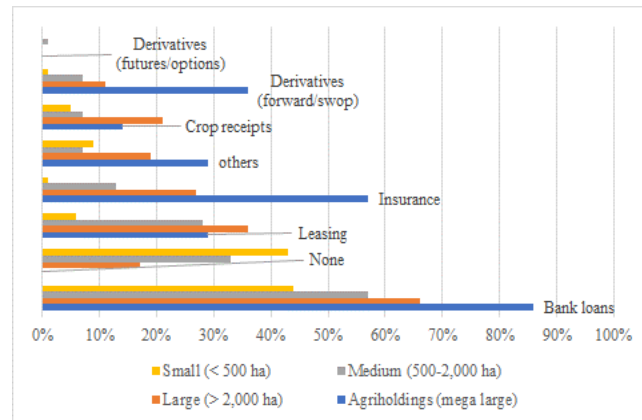


Figure 6: Financial sector instruments by farm size, 2020



Source: USAID/UkrAgroConsult grain market survey in 2020.

12. **Bank loans for Ukraine’s agriculture dropped in 2015 following the threefold depreciation of the exchange rate in the end of 2014.** Since then, the agricultural loans recovered (Figure 7). By the end of 2021, agriculture was the sector with the one of the lowest non-performance loan ratios, making agriculture a very attractive sector for the banking sector’s investments (Figure 8).

Figure 7: Loans for Ukraine’s agriculture

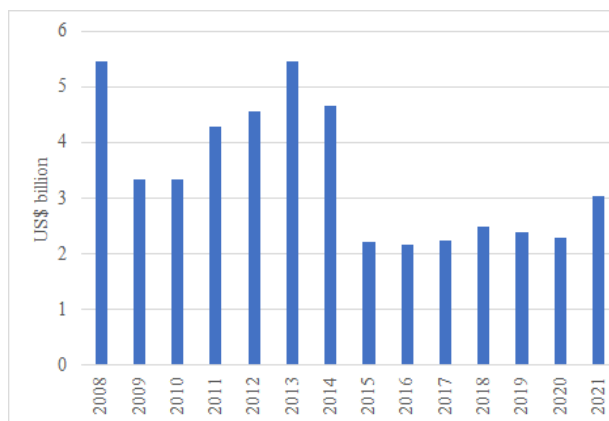
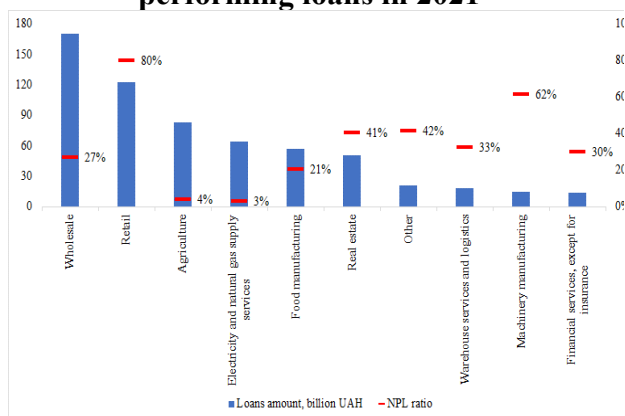


Figure 8: Value of loans and non-performing loans in 2021



Note: The UAH currency depreciated threefold in 2015 following the financial crisis, causing the value of agricultural loans in US\$ to drop significantly after 2014.

Source: WBG staff estimate using the NBU data.

13. **The story of the recent development of Ukraine's agriculture is, however, twofold.** On one side, it is a tale of the aforementioned success. On the other, it is a story that encompasses vulnerabilities and forward-looking challenges posed by climate change, inclusiveness, low capacity of agricultural public institutions, the EU accession, and the recovery and reconstruction following Russia's invasion. The subsequent sections will outline these challenges, establishing the context for agricultural support's priorities in the medium run.

3. Impact of Climate Change

14. **Agriculture in Ukraine, as in other parts of the world, is being affected by climate change.** Ukraine's agriculture is rainfed. Irrigation covers less than 2 percent of arable land. Thus, it depends on precipitation, which became more erratic in recent years. Between 2000 and 2020, the volatility of agricultural growth in Ukraine averaged 35 percent, in contrast to 21 percent in Poland and 14 percent in the EU. Both average climatic conditions and extreme weather events are significant factors that explain the variance in Ukraine's agricultural output, with weather extremes accounting for 36 percent of the variance across the country and 40 percent in the northwest.¹⁷ Such variance is expected to increase with climate change, although the change of climate may bring some long-term benefits to Ukraine's agriculture (Box 2).

15. **Adaption to climate change is an ultimate responsibility of farmers.** They have already started doing it; there are many examples in Ukraine on adoption of technologies and practices that strengthen climate resiliency, often through digitalization.¹⁸ But the progress has been slow. The global experience shows that public support to reduce the cost of capital and promote knowledge transfer are critical to accelerate climate adaptation. This is especially relevant to small-

¹⁷ Schiehorn, F. et al. (2022): "Machine Learning Reveals Complex Effects of Climatic Means and Weather Extremes on Wheat Yields during Different Plant Development Stages." *Climate Change* (169).

¹⁸ Prykhodko, D., O. Sikachyna, E. Pedersen, G. Sylvester, and R. Rybchynskyi (2022): "Digital Technologies in the Grain Sector of Ukraine." UN FAO and European Bank for Reconstruction and Development.

sized farms, who have a weaker access to capital and knowledge to adopt climate-smart agriculture (CSA) technologies and practices.

Box 2: Impact of climate change on Ukraine's agriculture

The 2021 World Bank study¹⁹ showed a large range of possible outcomes, depending on the extent of adaptation to climate change by farmers. Warmer temperatures and changing precipitation patterns are anticipated to improve average yields of key crops such as wheat and expand the area suitable for crops that thrive in warmer climates, like soybeans and corn, while also reducing the risk of winter crops freezing.²⁰ These improvements could be substantial, with some crops projected to see yield increases of up to 50 percent by 2050. However, climate change is also expected to negatively impact the yields of certain crops in some regions, for example, corn and sunflower in the south.

The climate change in Ukraine is also predicted to increase variability of production. It will increase the number and area of pests and diseases affecting crops, prolonged heatwaves that can harm commodities in the field and in storage, and increased irrigation requirements in many areas, which will lead to higher production costs. Higher temperatures and heat stress are likely to reduce feed intake by livestock and increase their mortality, while also decreasing the quality of forage due to more frequent invasions of pests and diseases.

16. Many parts of Ukraine will require irrigation services to maintain crop production in the era of climate change. The irrigated area before destruction of the Kakhovka reservoir was only 1.6 percent of arable land. Thus, irrigation area will need to be expanded, but in a smartly manner. In addition to make public investments available for irrigation, which could be large sums, significant challenges within irrigation systems, such as their low efficiency and performance, energy and GHG emissions associated with irrigation water pumping, and deteriorating infrastructure, should be addressed. Prioritizing efforts aimed at improving irrigation efficiency will be critical, reducing conveyance losses, and addressing the underutilization of existing irrigation infrastructure, in addition to the urgent need to expand critical irrigation services in areas facing water scarcity (Box 3). Furthermore, opting solely for large-scale centralized irrigation systems could increase Ukraine's risks. It is advisable to embrace small-scale decentralized irrigation solutions like solar-powered drip irrigation to mitigate dependence on large-scale centralized systems prone to potential risks, as demonstrated by the damage to the Kakhovka reservoir. It is also imperative to consider cultivating drought-resistant crops that require minimal irrigation, a shift with the potential to reduce water demands and bolster agricultural resilience.

¹⁹ World Bank (2021): "Building Climate Resilience in Agriculture and Forestry." November 2021, Washington, DC.

²⁰ Müller, D. et al. (2016): "Impact of Climate Change on Wheat Production in Ukraine." https://apd-ukraine.de/images/APD_APR_05-2016_impact_on_wheat_eng_fin.pdf

Box 3: Estimates of sustainable irrigation coverage in Ukraine

For evaluating the potential effects of climate change on irrigated agricultural systems in Ukraine, the World Bank performed an estimation of the agricultural areas susceptible to green water scarcity (GWS) under different global warming scenarios, specifically, 1.5°C and 3°C. GWS refers to conditions where there is insufficient rainfall for optimal crop growth, necessitating irrigation for increased yields. Results show that under current baseline climatic conditions, approximately 10 percent (3.1 million ha) of Ukraine's rainfed croplands are vulnerable to GWS. However, with a 1.5°C and 3°C global temperature increase, the extent of cropland affected by GWS is projected to rise significantly, encompassing 41 percent (13.5 million ha) and 77 percent (25.5 million ha) of total cropland area, respectively.

The analysis identified croplands where irrigation can effectively address the issue, making use of available renewable water resources (surface and groundwater) while ensuring responsible water consumption that does not harm environmental flows or deplete freshwater stocks. Under baseline climate conditions, roughly 60 percent (1.8 million ha) of cropland affected by GWS is suitable for sustainable irrigation expansion. As temperatures rise, the portion of GWS-affected cropland suitable for such expansion is projected to increase. In a 1.5°C and 3°C warmer climate, this figure reaches 49 percent (9.3 million ha) and 70 percent (17.8 million ha), respectively. Conversely, croplands facing GWS where water will not be locally available for irrigation expansion will increase from 1.3 million ha under baseline climate to 4.1 million ha and 7.7 million ha in a 1.5°C and 3°C warmer climate, respectively. In the analysis, along with southern region, the east-central regions of Ukraine emerge as hot spots for water scarcity due to climate change, making them unsuitable areas for irrigation expansion.

Source: World Bank (forthcoming): The Future of Irrigation in Ukraine. Washington, DC.

17. While climate adaptation remains priority, Ukraine will need to start taking actions on climate mitigation. Prior to Russia's invasion, agriculture contributed to 13 percent of Ukraine's GHG emissions. This is a slight increase from the 1990s when agriculture accounted for 10 percent of overall GHG emissions, with 80 percent of these emissions resulting from unsustainable soil management practices.²¹ It is crucial to start taking measures to reduce GHG emissions to help the country meet its commitments under the Paris Agreement. Climate mitigation is also important to align with the EU Green Deal as part of the EU accession process, as well as to benefit from attracting carbon finance.

18. Prior to the war, the potential for carbon finance in Ukraine was estimated at US\$5.3 billion or three times the current CAPEX in agriculture. This potential was estimated using the CSA technology average costs (in US\$/ha) and the area (ha) suitable for technology adoption. The highest potential for carbon financing is seen with small and medium-sized farms, as many large-sized farms have already adopted many CSA technologies and they cover only 30 percent of the country's arable land area (Table 3). Yet, small-sized farms will require the support to access affordable capital and knowledge transfer to accelerate CSA adoption. As the next chapter explains, markets alone will not do it fast enough for small farms. Although Russia's invasion has temporarily shifted the focus away from climate mitigation and even adaptation, towards the survival of Ukraine's farms and the maintenance of agricultural production, the reconstruction and

²¹ Ministry of Environment of Ukraine (2021): "Analytical Review of the Updated NDC of Ukraine to the Paris Agreement." Kyiv, July 2021.

recovery will need to assure the adoption of CSA to follow a development path that is low-carbon, resilient, and aligned with EU standards.

Table 3: Potential carbon financing in Ukraine’s agriculture

Technology Type	Small-Sized Farms	Medium-Sized Farms	Large-Sized Farms	Total
Minimum Tillage	-	\$316.30	\$118.80	\$435.10
Precision Ag: Auto-Guide	-	\$31.05	\$36.16	\$67.21
Certified Seed	\$89.48	\$219.35	\$76.64	\$385.47
Irrigation: Large Field	\$237.90	\$1,388.52	\$485.17	\$2,111.59
Irrigation: Drip Irrigation	\$1,201.30	\$73.73	-	\$1,275.03
Greenhouse: Rows and Tunnels	\$710.30	\$214.80	-	\$925.10
Anaerobic Digestion	-	-	\$102.00	\$102.00
Large-Scale Pelleting Plants	-	-	\$58.44	\$58.44
Total:	\$2,238.98	\$2,244.48	\$879.61	\$5,363.07
Total, in %:	41.7%	41.9%	16.4%	100.0%

Source: IFC 2021, unpublished report on CSA financing potential in Ukraine.

4. Support to Small-Sized Farms

19. **The structure of farms in Ukraine is very diverse.** There are two broad groups of agricultural producers: legally registered commercial agricultural enterprises and unregistered individual household farms. The average farm in Ukraine is 514 ha, and most farms are small-sized. Before the full-scale invasion, Ukrstat reported that there were more than 4 million small-sized households (each cultivating an average of 2.8 ha) producing food for both subsistence and market needs (Table 4). These households managed 38 percent of Ukraine's total agricultural land and accounted for nearly 32 percent of GAO in 2021; however, their share in GAO is decreasing. The remainder of the agricultural output is increasingly being generated by private agricultural enterprises. About 31,000 of these enterprises are small-sized farms with the average size of 105 ha. There are also about 10,000 corporate farms with the average size of 1,650 ha and 55 agri-holdings with up to 510,000 ha.

20. **Small-sized farms in Ukraine encounter greater risks and higher input costs than their larger counterparts.** Small-sized farms, which include individual commercial and household farms as indicated in Table 4, constitute the largest group by total land area, with 20.1 million ha compared to 17.1 million ha operated by medium and large-sized agribusinesses. However, since the 2000s, agricultural policies in Ukraine have favored large-scale operations, leaving small-sized agricultural producers with fewer opportunities for growth. This situation is exacerbated by common market failures that small-sized farms face, such as limited access to finance due to insufficient collateral and elevated financing costs. As a result, Ukraine’s small-sized farms are found less likely to adopt CSA technologies such as precision agriculture or no-till

farming.²² The challenges for small-sized farms have intensified during Russia's invasion despite the increased efforts of development partners such as the EU, FAO, USAID, and the World Bank to support these farms. A 2022 survey by the World Bank, which included 1,714 farms in Ukraine, found that the proportion of small farms (with less than 500 ha) experiencing negative cash flow nearly doubled in 2022 compared to 2021, from 6 percent to 10 percent, with the eastern regions seeing a rise to 12 percent.²³

Table 4: Land use by farm type, 2018

	Number	Land area operated (in '000 ha)	Average agricultural land area per unit (ha)
Agricultural enterprises (private)	40,333	20,746	514
- Corporate farms	9,892	16,294	1,650
- incl. agriholdings (mega-large farms)	55	5,000 – 6,000	30,000 – 510,000
- Individual commercial farms (small commercial farms)	30,441	4,450	105
Agricultural enterprises (public)	278	937	2,863
Individual Household Farms	4,600,000	15,706	2.8

Note: The statistics here does not reflect the most recent changes in the areas operated and quantities due to Russia's invasion of Ukraine.

Source: Nivievskiy et al. (2021).²⁴

21. Small-sized farms require more tailored public support than medium and large-sized farms to address their specific challenges. When aligning with the EU's CAP, it is essential for Ukraine to develop a clear strategy to support small-sized farms, using tailored instruments for commercial versus household farms. Assistance for small-sized farms should be strategically designed to enable their growth and capitalize on their comparative advantages, such as in horticulture. Larger farms typically yield higher income per worker in both Ukraine²⁵ and the EU.²⁶ Consequently, state support for small-sized farms should not merely aim to preserve the current structure but should encourage the evolution of small-sized farms into more sustainable and economically viable business models, which may include diversification and expansion. Effective support policies should include the provision of public goods to rural areas, such as infrastructure, agricultural research, and extension services. These public goods should be augmented by interventions to correct market failures where feasible. A notable market failure is the limited

²² Ukrainian Agribusiness Club (2021): "Precision Farming Technologies in the Ukrainian Agriculture Sector." Commissioned by the Netherlands Enterprise Agency, and FAO (2021): "Digital Technologies in the Grain Sector of Ukraine." FAO Investment Center, Rome.

²³ Deininger, K. and D. Ali (2023): "Impact of Russia's Invasion on Ukraine's Farmers Productivity, Rural Welfare, and Food Security." The World Bank Research Paper, Washington, DC.

²⁴ Nivievskiy O., P. Yavorskiy, and O. Donchenko (2021): "Assessing the Role of Small Farmers and Households in Ukraine's Agriculture and Rural Economy and Measures to Support their Sustainable Development." The KSE [study](https://doi.org/10.48550/arXiv.2307.11683) commissioned by the EU SAFPI Project. <https://doi.org/10.48550/arXiv.2307.11683>

²⁵ Nivievskiy O., P. Yavorskiy, and O. Donchenko (2021): "Assessing the Role of Small Farmers and Households in Ukraine's Agriculture and Rural Economy and Measures to Support their Sustainable Development." The KSE [study](https://doi.org/10.48550/arXiv.2307.11683) commissioned by the EU SAFPI Project. <https://doi.org/10.48550/arXiv.2307.11683>

²⁶ Mathew, A. (2024): "Who Feeds Europe and How Much They Do Earn." www.capreform.eu

access to finance for small-sized farms, which could be mitigated by offering partial credit guarantees for investments, including for land purchases, combined with matching grants to co-finance capital investments, and other tools to address systemic risks. Conversely, recurring per-hectare subsidies without investment or CSA conditions could hinder small-sized farms from competing in the market, conserve inefficient structures, and thus should be avoided.

22. Further liberalization of farmland sales market can improve access to private financing for small-sized farms, making it more affordable.²⁷ Farmland sales market was initially launched in July 2021 with significant restrictions, permitting only individuals to purchase farmland plots and imposing several limitations on transactions and ownership, such as a 100 ha cap per individual, a minimum price at the normative monetary land value, preemptive purchase rights for tenants, and exclusions for foreigners and legal entities, with state and communal farmland remaining unsellable. Consequently, the constrained design of the initial market phase, along with wartime challenges, limited the anticipated benefits of the market. Only about 1.05 percent of all farmlands in Ukraine, or approximately 1.25 percent of Ukraine's controlled farmland, were traded. With more farmlands now being traded, there is an incentive to establish viable financial products with using land as a mortgage, being accessible also for small-sized farms.

23. The second phase of farmland market liberalization commenced in January 2024 allowing legal entities to purchase farmland and increasing the cap on farmland accumulation per beneficiary from 100 ha to 10,000 ha, while maintaining other restrictions. Legal entities are now expected to enhance the role of farmland in securing loans and investments, which is particularly crucial during the current wartime period with extensive collateral damage and the dire financial state of agricultural producers in Ukraine. At present, only about 1 percent of new agricultural loans are secured through farmland, a figure much lower than global benchmarks, yet the potential for agricultural financing is significant.²⁸ With current transaction prices, the total market capitalization of farmland is roughly US\$36 billion, potentially generating an additional US\$18 billion in loans under the current liquidity ratio of 0.5,²⁹ far exceeding the current agricultural debt to banks of about US\$3.3 billion. Further liberalization, increased market liquidity, and the accumulation of necessary market statistics by the NBU to enhance the liquidity ratio of farmland as collateral are expected to bolster the use of farmland for financing. This could lead to a higher market capitalization of farmland, translating into more accessible and affordable financing for agricultural producers and landowners, particularly small-sized farms, who primarily cultivate their own land.³⁰ An increase in farmland market capitalization and its liquidity as collateral could bridge the current financing gap of over US\$20 billion required for the agricultural sector's rebuilding, recovery, and development.

²⁷ Kyiv School of Economics Agricenter (2024): "Land Market in Ukraine." Analytical Note for 4Q2023. <https://kse.ua/wp-content/uploads/2024/01/Land-Market-in-Ukraine-Q423.pdf>

²⁸ United States Department of Agriculture's Economic Research Service (2023): "Farm Sector Real Estate Debt Hits Records High, Sharply Diverging from Non-Real Estate Debt." <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=106426>

²⁹ On April 6, 2024, the National Bank of Ukraine increased the liquidity ratio for agricultural land from 0.35 to 0.5.

³⁰ Nivievskiy O. and R. Neyter (2024): "Further Liberalization of the Farm-Land Sales Market in Ukraine." NL 183, January 2024. https://www.german-economic-team.com/wp-content/uploads/2024/01/GET_UKR_NL_183_2024_en.pdf

5. EU accession

24. **Preparation for the EU accession necessitates additional public investment, beyond aligning Ukraine's legislation and regulatory environment with the EU *acquis*.** First, agricultural public institutions need to become ready to receive the EU accession preparation funds, such as the EU-Accession Assistance for Rural Development (IPARD). Without vetted institutions the EU funds will not start to flow, and creation of these institutions is critical now. Then, these funds will be critical to prepare for the eventual EU accession, which entail many new requirements. Farmers, processors, and traders will need to be inspected by a control body or authority before they can market their products within the common EU market. Once they have been inspected and found compliant, they receive certification confirming adherence to EU standards. Additionally, farmers must adhere to various legislations that protect public health, animal and plant health, the environment, and animal welfare. Furthermore, all farmers receiving income support are required to comply with statutory management requirements under cross-compliance legislation, reflecting their adherence to EU food safety and environmental laws. All food producers must also comply with the general food law, which includes regulations on labeling and traceability. Certain products may have additional rules, such as more comprehensive labeling requirements.

25. **There are several competent authorities for managing agriculture and rural development programs in the EU, which Ukraine will need to establish.** A Managing Authority is charged with developing support measures, communication, monitoring and evaluation of implementation, reporting, and programming. A Paying Agency, along with a Farm Registry and Land Parcel Identification System, lays the groundwork for an Integrated Agriculture Control System with the capacity for administrative controls, area monitoring, on-the-spot checks, and conditionality assessments. Agricultural Knowledge and Innovations System (AKIS), which encompasses agricultural research and advisory services, is critical for research on location-specific CSA adoption and advisory for compliance of farmers with EU requirements. The Farm Accountancy Data Network collects information on the economic situation of farms through surveys. Another example is the authority responsible for monitoring and controlling cross-compliance, such as good agricultural practices and animal welfare, which applies to all farms receiving direct farm support. The final example is the food safety authority, which oversees sanitary and phytosanitary measures, food safety, traceability, labeling, and other related controls.

26. **Strengthening competent authorities requires not only capacity building and staffing but also public capital investments.** Examples include laboratories for food safety and sanitary and phytosanitary (SPS) measures, cross-border inspection points, facilities for managing utilization of animal and other waste, and secure facilities with IT equipment for a Paying Agency. These investments are essential to enable competent authorities to carry out their duties without imposing excessive costs on agribusinesses.

27. **The funding required for preparing for EU accession is not extensive and some has already been provided by the EU and other development partners.** However, it is crucial for the government to provide co-financing for these expenditures to cover staff and operational costs. The most significant constraint is securing adequate and capable staffing, which must be financed by domestic resources, along with administrative reforms, to ensure the effective use of CAPEX investments from donors and accredit competent authorities by EU.

6. Priorities for Short-Term Agricultural Support³¹

28. **The short run, shaped by Russia’s invasion of Ukraine, will determine the medium and long run for Ukraine’s agriculture and priority for state support.** Incurred losses and damages are already large and will require significant resources for recovery and reconstruction. As of February 2024, the RDNA3 estimates the agricultural sector's damage and losses at US\$80 billion, with losses comprising 87 percent of the total.

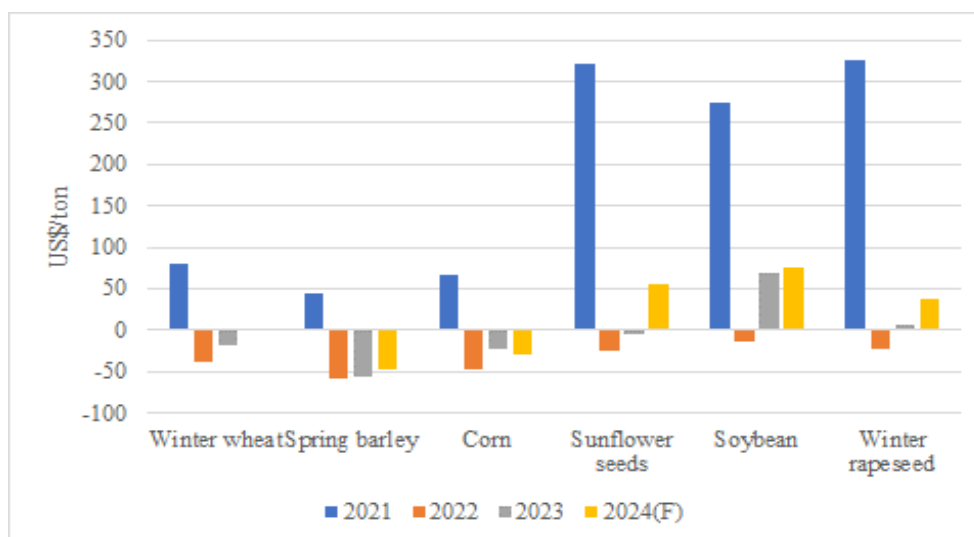
29. **The total damage within the agricultural sector amounts to US\$10 billion, while losses tally up to US\$70 billion; these figures include the repercussions of the Kakhovka Dam's destruction in July 2023.** The *damage* accounts for the partial or complete destruction of storage facilities, fisheries, aquaculture, and perennial crops, as well as the forced culling of livestock. It also covers the destruction and theft of machinery, equipment, and the theft of inputs and outputs. The war-induced *losses* encompass the loss of farm income (due to reduced or missed production); lower farm gate prices (stemming from export logistics disruptions); increased farm production costs (due to the escalated prices of fertilizers and fuel); the costs of land recultivation following mine-related surveying, clearance, and land release operations; and the suspension of fishing activities. The most significant loss, representing 49 percent of the total losses, is attributed to the decline in annual crop production. The next substantial loss, accounting for 35 percent of losses, is due to reduced farm gate prices for export-oriented commodities such as wheat, barley, corn, and oilseeds. Additional losses include diminished livestock production (8 percent), heightened input costs (6 percent), reduced perennial crop production (1 percent), and losses associated with land recultivation, fisheries, and aquaculture (1 percent combined).

30. **The total estimated cost for reconstruction and recovery is projected at US\$56 billion over a span of 10 years, averaging US\$5.6 billion annually.** Throughout Russia's invasion, prioritizing support measures such as addressing access to finance, reducing export costs, and demining fields have been essential and will continue to be so during the early years of the reconstruction phase. The costs of recovery and reconstruction compound the already substantial financing needs of Ukraine's agriculture and will require support from public sector, supplemented by donor assistance, to replace damaged assets and recoup a portion of economic losses, particularly for small-sized farms. Addressing the problem of the slow return of agricultural export revenues to Ukraine is another emerging issue with negative macroeconomic implications, requiring urgent resolution.

31. **Bank lending has emerged as the main source of agricultural funding during Russia's invasion of Ukraine.** Prior to Russia’s invasion, banking lending accounted for only 20 percent of working capital needs (see Table 2). Farmers mainly used inputs on credit and own capital to finance their operations. But when Ukraine was invaded, input suppliers stopped providing input on credit, while own capital/profits dried out. Most farms hardly made any profit in 2022 and 2023, with the 2024 outlook for profits remains marginally positive only for oilseeds (Figure 9).

³¹ This chapter is based on the Government of Ukraine, European Union, United Nations, and World Bank (2024): “Third Rapid Damage and Needs Assessment.” <https://www.worldbank.org/en/news/press-release/2024/02/15/updated-ukraine-recovery-and-reconstruction-needs-assessment-released>, and the detailed Agricultural RDNA3 prepared by Kyiv School of Economics and the World Bank: <https://kse.ua/agricultural-war-damages-review/>.

Figure 9: Average profitability/loss of growing grains and oilseeds in Ukraine, 2021-2024



Source: MAPF, UCAB, and World Bank (2024).³²

32. **Thus, banking loans have become the main source of financing for Ukraine’s agriculture during the war.** The affordable credit program 5-7-9, which provides state guarantees and subsidizes a portion of the interest rate, has been instrumental in sustaining agricultural financing (Figure 10), although the estimated financing needs declined for two reasons (Figure 11). Firstly, the years 2021 and 2022 were marked by global inflation in energy and food prices, which significantly raised agricultural production costs. These prices have now nearly reverted to their pre-COVID levels, along with agricultural production costs. Secondly, nearly 20 percent of Ukraine's territory is under Russian occupation, and a substantial portion of agricultural land has been abandoned (situated near zones of intense fighting), further reducing total recorded farm expenditures. For reference, the dotted columns in Figure 11 indicate the estimated farm expenditures on production in a non-war scenario, which could have been between US\$25 and US\$30 billion. Despite the reduced overall financing needs for agriculture, the financing gap is estimated to be substantial, US\$21 billion. This gap is considerably larger than before the invasion, suggesting that Ukrainian farmers are facing difficulties in financing their standard operations, not to mention recovery and productivity-enhancing efforts. Considering Ukraine's agriculture's vital role in the nation's economy and in addressing the global challenge of sustainably feeding an increasing population, this financing gap poses a threat to global food security. Should Ukraine regain its territories post-war, the gap is projected to expand to US\$26 billion.

³² Ministry of Agrarian Policy and Food, Ukrainian Agribusiness Club and World Bank (2024): “Ukraine: Impact of the War on Agriculture Profitability.” Issue #3: <https://minagro.gov.ua/en/news/in-2024-crop-production-will-break-even-and-the-profitability-of-livestock-production-will-decrease-ministry-of-agrarian-policy-and-food-of-ukraine>.

Figure 10: Bank’s agricultural lending in Ukraine, 2008-2023

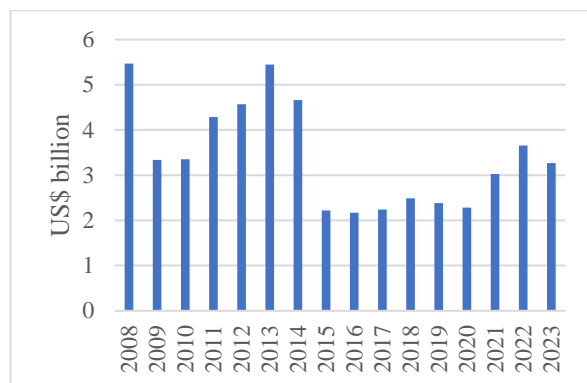
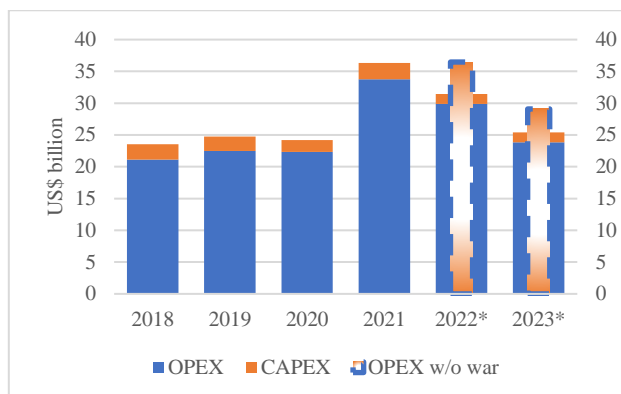


Figure 11: Financing demand for agriculture in Ukraine, 2008-2023



Note: The OPEX costs for 2022 and 2023 were inferred from the 2021 data using the following data: crop budgets survey results from the World Bank and UCAB and a drop of the planting areas in 2022 and 2023. The OPEX w/o war costs ('no war OPEX scenario') estimate considers only the development of the costs, but no changes to the actual acreage.

Source: WBG staff estimate using the NBU and Ukrainian State Statistics data.

33. Support of the access to affordable finance would need to remain in place during the war and early stages of reconstruction and be available to all farms, irrespective of size. This should be sustained for several years to assist the farms to recover from the damages and losses caused by Russia's invasion and until the confidence of input suppliers and investors in Ukraine's agriculture is rebuilt. Over time, this type of recurrent support will need to refocus to small- and medium-sized farms aligned with the original objectives of the credit program 5-7-9. The access to finance will influence a success of recovery and reconstruction and shape the priorities for medium-term support of Ukraine's agriculture.

7. Priorities for Medium-Term Agricultural Support

34. The design of agricultural support in Ukraine post-Russia's invasion should be based on several principles. These principles are drawn from global experiences, EU requirements, and the effectiveness of various support programs in Ukraine, with the goal of informing the support to hasten the agrifood system transformation.

35. First, public expenditures should focus on removing the barriers to private financing and enhance agricultural service delivery to incentivize CSA adoption. Public expenditures include direct payments to farmers and funding for general support services. In 2021, 45 percent of Ukraine's agricultural public expenditures were allocated to general support services such as agricultural knowledge and innovation (AKIS), inspections and control, and rural infrastructure (Table 5). The remaining 55 percent were used for programs to provide direct transfers to farmers, mainly coupled subsidies for livestock production. Going forward, these allocations should be changed, with a larger portion going to general support services to meet the challenges of Ukraine's agriculture, such as climate change and EU accession. Investments in public services also play a significant role in attracting private investment. Global experience shows that each additional dollar invested in public services typically attracts about two dollars of private investment in

OECD countries, particularly in economic infrastructure and human capital.³³ In Ukraine, the leverage could be even higher, potentially up to 3.4, based on evidence from comparable countries such as the Baltic states or Poland. This leverage is akin to that of concessional capital.

36. Direct farm payments should be designed to better leverage private investments, with a focus on adopting CSA practices and building climate resilience, accessing carbon financing, and providing tailored support to small-sized farms. The potential for carbon financing in Ukraine is estimated at US\$5.3 billion or three times the current CAPEX in agriculture. The highest potential for carbon financing is seen with small and medium-sized farms, requiring the state support for realizing this potential.³⁴ Many large-sized farms can adopt CSA technologies without the state support.

37. Second, public expenditures should be supported by a broad-based agricultural support policy and a commitment to free trade. A broad-based policy avoids favoritism and ensures that no subsectors are prioritized over others and avoids coupled support that tends to reduce agricultural productivity. A free trade policy entails refraining from taxing agricultural exports, such as to subsidize food processing, which has been considered in Ukraine from time to time. This approach helps avoid a return to the negative MPS that burdened Ukrainian farmers in the 1990s and 2000s.

38. Third, investments in the capacity of competent authorities should begin immediately to align with EU standards and advance EU accession. Efficient public service providers are crucial for two reasons in Ukraine's current situation. On the other hand, as Ukraine moves towards EU membership, post-war reconstruction and recovery will need to be in line with the EU's extensive *acquis*, which includes standards in farming practices, food safety, environmental protection, and animal welfare. This alignment is expected to attract significant donor funding, with other donors likely coordinating their assistance with the EU.³⁵ This will inevitably require public investments in service provision and infrastructure, which will further leverage private investments.

39. In the medium term, therefore, the emphasis on public service support should outweigh direct farm payments to achieve a sustainable transformation and growth of Ukraine's agricultural sector. Table 5 presents the summary and timeline of key policy actions, while Table 6 presents a medium-term expenditure framework for Ukraine's agriculture, with 2021 as the baseline. In the medium run, important direct farm support measures should include the access to finance for small and medium-sized farms, matching grants for capital formation aimed to support climate adaptation and mitigation, establishment of the platform to access carbon finance for climate mitigation, and grants to small and medium-sized farms to access private sector advisory services. Among general support services, most important should include the support

³³ Matvejevs O. and O. Tkacevs (2023): "Invest One – Get Two Extra: Public Investment Crowds in Private Investments." *European Journal of Political Economy*. <https://doi.org/10.1016/j.ejpoleco.2023.102384>

³⁴ The state support includes establishment of a platform for registering farms to obtain carbon financing, support of knowledge transfer to farmers through AKIS/advisory services, and creation of a monitoring, reporting, and verification (MRV) system tailored to the needs of small-sized farms.

³⁵ von Cramon-Taubadel S. and O. Nivievskiy (2023): "Rebuilding Ukraine – Agricultural Perspective." *EconPol Forum Journal* (24/2): 36-40, 2023: <https://www.cesifo.org/en/publications/2023/article-journal/rebuilding-ukraine-agricultural-perspective>.

AKIS, food safety, sustainable irrigation, and strengthening of the competent authorities needed for the EU accession.

Table 5: Timeline of key priority actions

	Short run	Medium run
Access to finance	Very important	Important for small and medium-sized farms
Demining	Very important	Less important
Export logistics*	Very important	Less important
Support for capital formation and modernization aimed at CSA adoption	Important	Very important for all types of farms
Support for procurement of on-farm services (i.e., advisory services)	Less important	Very important for small and medium-sized farms
Support for accessing carbon financing	Less important	Important for all farms
AKIS	Less important	Very important for small and medium-sized farms
Irrigation infrastructure and services	Less important	Very important
Food safety, sanitary and phytosanitary measures	Important	Very important
Institutions required for EU accession	Less important	Very important

*Note: * Budgetary outlays for export logistics are not reflected in Table 6 as they are financed by other ministries than MAPF. They are shown in this table to underline a criticality of this investment for export-oriented Ukraine's agriculture.*

Source: WBG staff's assessment.

40. **The medium-term expenditure framework for Ukraine's agriculture, presented in Table 6 visualizes the repurposing of the agricultural support along with the priorities set in Table 5.** Budgetary outlays are presented using the OECD methodology.³⁶ The baseline is the year of 2021. The forecast includes the post-war recovery period (2025-26) and the medium-term reconstruction period (2026-30). It is projected that total agricultural public expenditures would increase from US\$595 million in 2021 to US\$700 million in 2025 and US\$1 billion in 2030 in current prices, along with the GDP growth to maintain the same share of agricultural spending in percent of GDP. During the recovery period (2025-26), direct farm payments should focus on providing access to affordable finance (e.g., interest rate subsidies, credit guarantees for working capital), accounting for 17 percent of total spending. Payments for fixed capital formation (e.g., matching grants, partial credit guarantees, and loans for capital investments) should be maintained at a high level to leverage private investments. Advisory services to farmers (e.g., payments for on-farm services) need to be gradually scaled up, building a foundation for the establishment of AKIS in Ukraine, which is the EU requirement. At the same time, any specific commodity production support payments should be phased out.

41. **In the medium run, the agricultural support would need to shift more to delivery of general support services.** By 2030, total spending on general support services should increase to about 73 percent to meet the needs for higher AKIS spending, inspections and controls for EU accession, irrigation investments, and improved market access to the EU (as detailed in Table 6).

³⁶ <https://www.oecd.org/agriculture/topics/agricultural-policy-monitoring-and-evaluation/>

The smaller direct farm payments would focus on supporting capital investments by leveraging private capital, with improved access to finance targeting small- and medium-sized farms.

42. **The figures outlined in the medium-term expenditure framework shown in Table 6 are not prescriptive.** They are intended to demonstrate the recommended direction for public spending, conveying to Ukraine's farmers and market participants that the government is strategically utilizing public funds. The goal is to entice private investment, rectify market failures, and provide public services in anticipation of EU accession. Such a prudent approach to the use of limited budget funds would provide the maximum support to Ukraine's agriculture, contribute to the nation's prosperity, and support the EU accession.

Table 6: Actual (2021) and proposed medium-term (2025-2030) agricultural public expenditures for Ukraine

	2021, US\$ million	2021, %	2025- 2026, US\$ million	2025- 2026, %	2026- 2030, US\$ million	2026- 2030, %
DIRECT PAYMENTS	328	55.1	238	34.0	270	27.0
Payments based on outputs	0	0	0	0	0	0
Payments based on input use:	150	25.2	238	34.0	270	27.0
Payments based on reduced cost of working capital	48	8.1	119	17.0	50	5.0
Payments based on fixed capital formation	102	17.1	112	16.0	190	19.0
Payments based on on-farm services	1	0.2	7	1.0	30	3.0
Payments per ha or animal (coupled)	178	29.9	0	0	0	0
Payments per ha or animal (decoupled)	0	0	0	0	0	0
GENERAL SUPPORT SERVICES	267	44.9	462	66.0	730	73.0
Ag knowledge and innovations	75	12.6	105	15.0	170	17.0
Inspections and controls	177	29.7	210	30.0	300	30.0
Development and maintenance of infrastructure	5	0.8	119	17.0	200	20.0
Marketing and promotion	0	0	21	3.0	50	5.0
Cost of public stockholding	0	0	0	0	0	0
Others	10	1.7	7	1.0	10	1.0
TOTAL	595	100	700	100	1,000	100

Source: WBG staff estimate using the OECD data for 2021.