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Ukrainian agriculture in times of war: Analysis of support programmes

Agriculture is a leading sector in the Ukrainian economy, providing a significant share of export revenues and guaranteeing the food security of other countries. However, the war with Russia has profoundly challenged the sector, which now faces the following problems: insufficient financial resources to ensure the production of agricultural products; reduced fertiliser use; crisis in animal husbandry sectors; labour shortage; destruction of the infrastructure for production, processing and storage of products; environmental threats; and insufficient attention on the part of the EU to the environmental component in support programmes. Different support programmes have been created to ease the challenges above, and these are analysed by the paper. In light of the country's prospective EU membership, the paper proposes the following solutions to ensure safe and high-quality production of Ukrainian food: budget financing, effective taxation, a fair price policy, soft loans (in particular for organic farming), grant support, and new subsidy programmes.

Keywords: Ukraine, war, agriculture, challenges, European integration

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Introduction

Ukraine has a developed agricultural and food sector, which is capable not only of fully providing food products for the country's own population, but also to actively influence international markets through the export of key agricultural products. Agriculture in Ukraine is recognised as a priority area of the economy. In the pre-war period, a lot of state resources and foreign investments were spent on reforms and programmes designed to support the development of agriculture. Fertile lands, a favourable climate and investments not only ensured an increase in the production of agricultural products, but also contributed to their export to Asia, Africa and the Middle East. However, due to the war, there were changes both in the directions of supply of Ukrainian exports and in the product structure. In the pre-war period, ferrous metals occupied first place among exported categories of goods, and in 2022, grain and oil crops, as well as meat (Ministry of Agrarian Policy and Food of Ukraine, 2023).

Starting from 2022, EU countries became the leaders among the importers of Ukrainian agricultural products (about 60% of the export structure). Outside the European Union, the largest supply goes to Turkey, China and India. In general, the share of agriculture and food industry in export is more than 50%, while in the GDP, it is 8%. Moreover, 30% of the population of Ukraine lives in rural areas (Ministry of Agrarian Policy and Food of Ukraine, 2023). Accordingly, the agricultural sector is one of the strategic areas of development of the Ukrainian economy and has huge export potential.

The war in Ukraine has created a new environment and agriculture is now faced with many profound challenges. This paper aims to analyse these challenges, together with the support programmes different institutions have provided to ease these challenges. In light of the signature of the Association Agreement between Ukraine and EU countries and the creation of a deep and comprehensive free trade zone with the European Union, it also recommends some solutions for the future.

Challenges of the Ukrainian agriculture sector

Military actions in Ukraine, caused by Russia's large-scale aggression, have led to a significant deterioration of the agriculture sector. This is explained by the destroyed infrastructure, destroyed farms and production, and disrupted logistics chains. The main challenges for the agricultural sector of Ukraine in the conditions of war are (Committee of the Supreme Council on Agrarian and Land Policy, 2023):

1. *The lack of financial resources:* Agricultural producers are in serious lack of financial resources due to the increase in the cost of production. The profitability of all activities was 14.1% in 2022, which is significantly less than 37.8% in 2021. Capital investments decreased by 26.1%, amounting to UAH 51.4 billion in 2022, compared to the previous year.
2. *Reduced fertiliser use:* The war brought a reduction of applied fertilisers and plant protection products, which negatively affected the condition of the soils and reduced the level of crop productivity. Insufficient funding and the need to economise have led to a 50-60% reduction in fertiliser application. Large and medium-sized agricultural enterprises plan to use fertilisers for only 47% of agronomic needs, and plant protection products for 56% by 2024. Only 10% of farmers are ready to use fertilisers in full, and plant protection products - by 18%.
3. *Reduced number of animals:* Animal husbandry was one of the most affected sectors, primarily in the meat and dairy industry. As of January 2024, there were 2,233,600 head of cattle in Ukraine, which is 3.3% less when compared to January 2023. The number of cows was 1,290,200 heads, which was 4.9% less. At the same time, about 29% of livestock are kept by enterprises and 71% by households.

4. *Labour shortage*: A labour shortage arose as a result of hostilities, which forced some workers in the agricultural sector and farmers to stop economic activity and leave their homes. According to FAO (2024), more than 150,000 farmers were affected by the war and migrated. The situation was particularly difficult for small-scale producers who specialised in growing seasonal products. The forced migration of manufacturers and the conscription of men into the Armed Forces of Ukraine caused a labour shortage and an increase in the burden on women.
5. *Destruction of the infrastructure*: This affected all the production process, from production to processing and storage of agricultural and food products. Russia is purposefully destroying granaries, food warehouses and agri-food logistics infrastructures, which also complicates the export of grain from Ukraine. Difficulties with electricity supply in the winter of 2022-2023 caused part of the crop to spoil. Currently, the destroyed capacity of grain storages is 8.2 million tons, and 3.25 million tons of simultaneous storage capacities are damaged.
6. *Environmental threats*: Due to hostilities and mining of the territory in 2022 led to the fact that up to 30% of fields (approximately 5 million hectares) could not be used for sowing, because it is a “zone of increased danger in agriculture caused by mining and pollution of soils by heavy metals, mechanical deformations, thermal and chemical pollution” (Ecodiya, 2022).

Researchers note that in 2023, these problems affected 25% of the areas that became unsuitable for use. In addition, both the agricultural sector and land resources suffered significant losses as a result of the destruction of the Kakhovska dam. The total area of land plots affected by the flood reaches about 25 thousand hectares, of which 9.8 thousand hectares (38%) are agricultural land (Dorosh *et al.*, 2023b; Dorosh *et al.*, 2023c).

In June 2023, direct losses caused to the agro-industrial complex of Ukraine amounted to 8.7 billion US dollars. This amount includes losses due to the destruction and damage of agricultural machinery in the amount of more than 4.7 billion US dollars, as well as losses due to the destruction and theft of produced products in the amount of 1.9 billion US dollars. Indirect losses of the agricultural sector are estimated

at 40.3 billion US dollars (Ministry of Agrarian Policy and Food of Ukraine, 2023).

As a result of the war, according to FAO (2024), rural households suffered losses of approximately 2.25 billion US dollars. Of these, approximately 1.26 billion US dollars of losses were incurred by the plant industry, and 0.98 billion US dollars by livestock. In addition, 25% of households engaged in the production of agricultural products stopped or reduced their volume due to the war, and in the frontline regions this indicator is 38% (Ministry of Agrarian Policy and Food of Ukraine, 2023). Accordingly, due to hostilities and a difficult socio-economic situation, Ukraine is deprived of the opportunity to allocate a significant amount of funds for budgetary support of the agricultural sector, which complicates the situation and increases the requirements for the efficient use of resources during the period of martial law. Under such conditions, the financial and economic tools for supporting the agricultural sector are lending to agricultural enterprises, grant support, effective state regulation, and international cooperation.

Support received by farmers during wartime

We have analysed the amount of financial support received by agricultural producers during the period of martial law. Farmers received access to loans during martial law under the State Programme “Affordable Loans 5-7-9%”, which has been extended by the government, and its implementation is carried out by authorised banks with the participation of the Entrepreneurship Development Fund. According to the Ministry of Finance, since the launch of the programme, business entities have received 77,669 loans for a total amount of UAH 260.2 billion.

In accordance with this programme, credit agreements for the total amount of UAH 36.18 billion were concluded with agricultural producers. Kharkiv farmers received the largest amount of loans under the programme (362.5 million UAH), followed by Kyiv (313.7 million UAH), Vinnytsia (282.2 million UAH), Odesa (UAH 226.8 million), Lviv (226 million UAH) and Dnipropetrovsk (UAH 242.5 million) regions. In the total volume of loans to economic entities, the share of loans granted to enterprises of the agro-industrial complex has increased significantly since the beginning of the implementation of this programme (Figure 1).

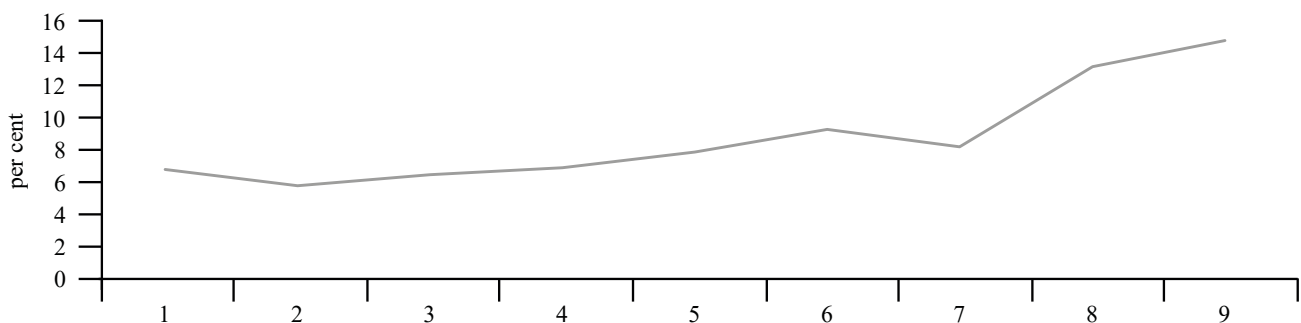


Figure 1: The share of loans by enterprises of the agricultural sector in the total amount of loans to economic entities, %.

Source: authors' calculation based on data from the Ministry of Agrarian Policy and Food of Ukraine

Since the beginning of 2024, according to the Ministry of Agrarian Policy and Food of Ukraine, 8,212 agricultural farms have received 54.4 billion UAH in bank loans for development. Of these, 4,986 farms were financed for 23.5 billion UAH under the state programme “Affordable Credits 5-7-9”. Agricultural enterprises of the Kyiv, Kirovohrad, Dnipropetrovsk, Lviv, Ternopil, Vinnytsia, Odesa, and Poltava regions received the largest amount of loans under various programmes (Figure 2).

According to the “Affordable loans 5-7-9” programme, enterprises from Kyiv, Kirovohrad, Vinnytsia, Kharkiv, Odesa, Dnipropetrovsk, and Volyn regions received the most (Figure 3).

At the same time, a fund for the partial guarantee of loans in agriculture was created in Ukraine thanks to the joint efforts of the Government of Ukraine and the active support of experts from the World Bank and the European Union. The creation of the fund took place in accordance with the Law of Ukraine dated 04.11.2021 No. 1865-IX “On the Fund for Partial Guarantee of Credits in Agriculture”. Its activity serves as an additional state instrument for financial support of small forms of entrepreneurship. This fund is aimed at improving farmers’ access to financial resources and expanding opportunities for development.

The authorised capital of the above fund is 735.6 million UAH. As of January 1, 2024, Ukraine’s share of UAH 374.0 million (50.5%) was transferred to the fund. The fund will provide credit guarantees for newly created enterprises to produce agricultural products, in the cultivation of which there will be no more than 500 hectares of land. Guarantees will be provided for a period of up to 10 years and will cover up to 50% of credit obligations, both for investments and for working capital. The Fund for Partial Guarantee of Loans in Agriculture began its activity at the end of January 2024 and issued the first guarantee for a bank loan in the amount of UAH 870,000. The fund will operate together with the current 5-7-9% Programme, creating a more reliable support system for small farmers.

Financial support for agricultural producers during the period of martial law in the area of influence of the Kakhovka hydroelectric station is also implemented. In the Mykolaiv and Kherson regions, individuals who own plots of land and use them for personal farming, construction of residential buildings and other structures, or individual gardening are provided with a one-time financial assistance. It amounts to UAH 3,318 for one hectare of land where the vegetable harvest was lost. The maximum area for which assistance can be provided is 20 acres in the Mykolaiv region and 30 acres in the Kherson region.

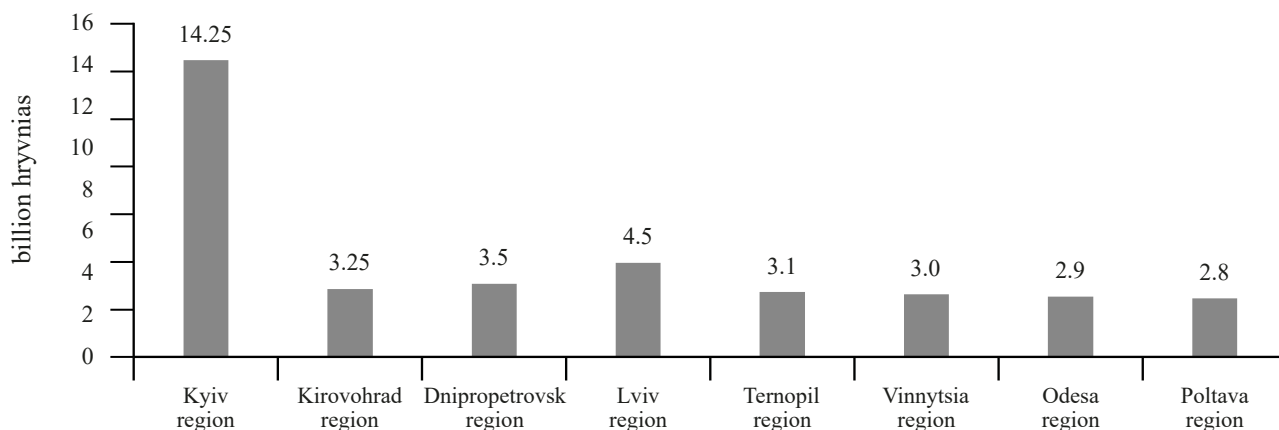


Figure 2: The volume of loans received by agricultural producers in the regions of Ukraine under various programmes from the beginning of 2024.

Source: authors’ calculation based on data from the Ministry of Agrarian Policy and Food of Ukraine

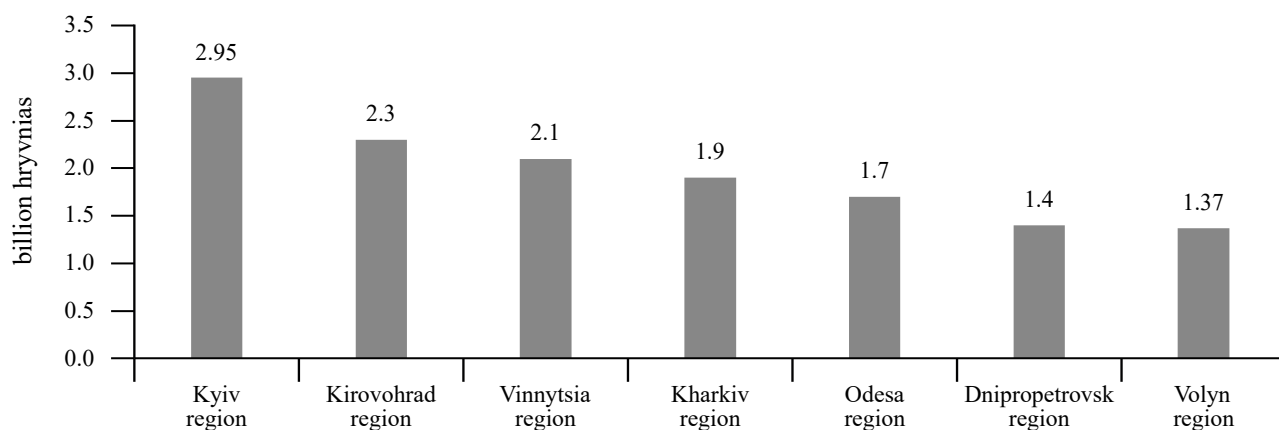


Figure 3: The amount of loans received by agricultural producers in different regions of Ukraine under the “5-7-9 Available Loans” programme

Source: authors’ calculation based on data from the Ministry of Agrarian Policy and Food of Ukraine

As part of the budget programme “Financial support for agricultural producers”, state support is provided to farmers who use reclaimed land. Funds are allocated on a non-refundable basis depending on the type of irrigation: UAH 13,250 per 1 ha for sprinkler irrigation without including the cost of irrigation equipment and irrigation equipment; UAH 25,300 per hectare for sprinkler irrigation, including the cost of irrigation equipment and pumping equipment; UAH 24,500 per hectare for drip irrigation, including the cost of domestically produced drip irrigation equipment and pumping equipment. State support is also provided to water user organisations that use reclaimed land. Funds will be provided on a non-refundable basis in amounts of up to 50% of the total cost of expenses incurred in accordance with the project documentation, excluding value added tax (Cabinet of Ministers of Ukraine, 2023).

To stimulate job creation under martial law, in July 2022, the Government introduced a grant programme for the creation or development of processing enterprises as part of the Government’s financial support program for businesses “eRobota” (Resolution of the Cabinet of Ministers of Ukraine dated 24.06.2022 No. 739). One of the advantages of the programme is the opportunity for anyone to create or develop their own business in areas such as “Your Business”, “Your Garden”, “Your Greenhouse”, “New Level”. There is also an opportunity to involve new members in farming activities. However, the programme’s requirements do not include environmental obligations, except for the necessity to use certified seeds. The programme includes grants for the creation or development of processing enterprises on the condition of co-financing from the grant recipient. The grants paid out promote the development of sectors such as food production, beverage production, and other sectors of the economy. In fact, since the start of the programme, as of February 15, 2024, the Ministry of Economy has paid out 503 grants amounting to 2,619.6 million UAH. In particular,

209 grants amounting to 1,320.3 million UAH were provided for “Food Production”. The State Budget of Ukraine for 2024 allocates 1,370 million UAH for grants for the creation or development of agricultural product processing enterprises. In 2023, businesses engaged in agriculture were reimbursed 10.5 billion UAH of value-added tax from the state budget (4.1 times more than in 2022 (2.5 billion UAH) and 2.8 times more than in 2021 (3.8 billion UAH)) (Ministry of Agrarian Policy and Food of Ukraine, 2023).

State support for farmers in Ukraine includes direct budget support (subsidies and grants), tax benefits, and price regulation (export or import restrictions). The most attractive of these forms of support is the direct budget support provided in the State Budget for agricultural producers. However, due to the war, budget constraints have complicated the implementation of these programmes for the second consecutive year. In 2023, state support for farmers was distributed between the Ministry of Agrarian Policy and Food, the Ministry of Economy, and the Ministry of Finance.

We have also analysed studies related to the system of distribution of funds allocated by the Government of Ukraine for subsidies and subventions to local budgets, as well as their distribution among community budgets by expenditure items. According to their results, it was determined that the majority of communities need an increase in budget revenues by 6.9-10.0% annually, therefore, the financing of community economic development programmes needs a significant increase (Dorosh *et al.*, 2019).

The results of the agricultural sector’s activities in 2023 indicate that state support for this sector is economically necessary. Many countries around the world recognise this and employ various methods, forms, and instruments to provide such support. This support for agricultural producers and communities during the war is implemented through a number of projects within the framework of international assistance and cooperation (Table 1).

Table 1: List of projects that support agricultural producers and communities during the war as part of international aid and cooperation

Project name	Methods of economic stimulation	Amount of funds
Food and Agriculture Organization of the United Nations (FAO). Support programme with funding from the European Union.	Provision of investment grant assistance to small agricultural producers, cooperatives and associations of producers of geographical indications for agricultural producers from Lviv, Ivano-Frankivsk, Zakarpattia and partially Chernivtsi regions.	From 1,000 up to 25,000 US dollars.
Food and Agriculture Organization of the United Nations (FAO). Programme for providing seeds of spring crops (wheat, barley, peas).	To support small farmers in the frontline regions, legal entities and individual entrepreneurs who have registered agricultural land with an area of 10 hectares to 500 hectares can participate in the programme.	2 tonnes of spring crop seeds per farm to choose from, depending on the region.
Financial assistance programme for persons relocated (or in the process of relocation) due to war; small and medium-sized businesses.	The programme is available in Kyiv, Ivano-Frankivsk, Lviv and Ternopil regions to preserve and create jobs for forcibly resettled persons and the population affected by hostilities.	The average amount of financial assistance is 20,000 US dollars, provided that participation in the specified programmes involves an investment of one’s own funds up to 50% of the amount of financial assistance.
International cooperation project ReACT4UA (“Application and implementation of the Association Agreement between the EU and Ukraine in the field of trade”) funded by the German government.	The Vrozhai Peremogy Farming Development Centre provides services focused on the needs of farmers, informs about innovations in crop production and helps strengthen the ability of farmers to adapt to changes in the agricultural sector and new needs, change their business models, diversify production and attract financial resources for business development.	On a free basis.
USAID Program for Agrarian and Rural Development (AGRO).	The programme provided agricultural producers with seeds and fertilisers for the sown area of about 370,000 hectares. Farmers who cultivate from 5 hectares to 500 hectares will receive mineral fertilisers amounting to a total volume of 14,000 tonnes.	On a free basis.
Harvest Program (USAID).	Reconstruction and expansion of the agricultural sector.	250 million US dollars.

Source: made by authors’ based on information from the Ministry of Agrarian Policy and Food of Ukraine, Food and Agriculture Organization of the United Nations (FAO), United States Agency for International Development (USAID) and Mercy Corps UERP.

Future support in light of EU accession

It seems evident from the programmes above that little attention is given to the environmental component. Accordingly, as a candidate for EU membership, Ukraine must take into account the priorities of the Common Agricultural Policy (CAP). Alongside primary funding in the form of direct payments per hectare and income support for farmers, particularly young ones, the CAP has significantly increased funding for the “green component”, which will be implemented from 2023 to 2027, taking into account the goals of the “Farm to Fork” strategy.

Despite this, Ukraine needs to develop its own “Green Deal” strategy, which should allocate funds for the implementation of corresponding measures. This involves the gradual withdrawal from cultivation of degraded and low-productive lands contaminated with chemicals due to emergencies or military actions, whose further use is economically inefficient and environmentally hazardous. Before the war, over 2 million hectares of land were earmarked for conservation, and after the war, their number will significantly increase. To address the problem of degraded lands, economic incentives should be applied to landowners for grassing and afforestation. This includes financial support in the form of compensation for the cost of grass seeds and sowing expenses for grassing, and for afforestation – compensation for the cost of forest plantations, their planting, and care until canopy closure. There should be annual reimbursement of part of the foregone income in the form of premiums over a twenty-year period (Dorosh *et al.*, 2021)

Apart from the existing problems due to military actions, there are also polluted soils caused by the destruction of their structure from mechanical, physical, and chemical damage. Transforming contaminated lands for further use requires reclamation work. Before choosing a reclamation technology, the consequences of hostilities need to be analysed. This process includes inventorying damaged lands, identifying impact factors, determining the type of impact and its consequences, assessing the level of soil contamination, and developing a land management project (Dorosh *et al.*, 2023a). To allocate funds for land reclamation, legal formalisation of this important compensation instrument is necessary, with clearly defined sources, grounds, procedures for compensation payments, and their amount, as we intend to integrate into European markets.

The restoration and conservation of ecosystems necessary for human life directly impact sustainable development and biodiversity support. It is necessary to implement financial support for the preservation of natural reserves, such as areas of the Emerald Network. Without targeted state financial support, these vital sources of biodiversity maintenance, ecosystem services support, scientific research, and environmental awareness raising may lose their functionality. State investments in these areas will contribute to the long-term conservation of natural resources, ecosystem stability, and improvement of environmental education.

The environmental safety of agricultural products is closely related to adherence to principles in the livestock

sector regarding the handling of animal by-products. This includes the arrangement of manure storage facilities and installations for the disposal of animal carcasses and other by-products at both the enterprise and state levels. Given the catastrophic state of infrastructure for handling animal by-products, proper and effective conditions for their disposal need to be created. This will promote the further development of the livestock sector and prevent negative impacts on the environment and human health.

The support vector should also shift towards small producers, considering the multifunctional role of agriculture. It is worth changing state support for the agricultural sector, directing it mainly towards small-scale farming. According to the Law of Ukraine “On Agricultural Advisory Activities” (2004), the Ukrainian advisory system includes a set of actions and measures aimed at meeting the needs of personal peasant and farm households, business associations, other agricultural enterprises of all forms of ownership and management, as well as rural populations in increasing knowledge levels and improving practical skills for profitable farming. The Registry of Advisory Services lists 32 organisations.

Peasant and farm households play a key role in ensuring food self-sufficiency for the population, aiding the Defence Forces, and supporting internally displaced persons. It is necessary to preserve and strengthen the stabilising role of farming by giving this segment priority in post-war financial support for Ukraine’s agricultural sector. Implementing support for small farms following the EU model and simplifying funding conditions will help reduce the gap between agricultural incomes and the average wage. Support for personal peasant households will facilitate their formalisation and increase production. Therefore, there is a need to normalise the share of financial support directed at the development of the family farming segment in the agricultural sector, considering the volume of production they generate. The share of farm households and household farms in the gross agricultural production in 2019–2021 was almost 46%, making them a promising reserve for the development of the family farming system. It is important to direct a significant portion of funds to encourage these households to gain farmer status. Additionally, a special financial support programme should be created for the establishment and development of farms by veterans of the Russo-Ukrainian war.

At the same time, businesses in Ukraine’s agricultural sector, as recipients of state support, must be responsible both socially and environmentally. The mechanism for using state funds is outlined in the Order for each programme according to regulatory documents. However, social and environmental requirements are absent. Therefore, there is a need to introduce a minimum set of requirements for recipients of state funds. Regarding the social aspect, this includes the creation of jobs, decent wages, minimum incomes in agriculture, employment of young people, and support for newly established farms, among others. As for environmental requirements, recipients of state funds for agricultural activities must adhere to sustainable development conditions, comply with fertiliser application standards, use plant protection products responsibly, manage livestock waste properly, and utilise green manures.

Conclusions

The agro-industrial complex is a critically important sector of the economy, especially under martial law. Supporting this sector is particularly crucial due to the need to ensure food security and the stability of agricultural production. Improving the quality, safety, and environmental friendliness of their products, as well as reducing the negative impact on the environment, agricultural businesses can primarily achieve with proper financial support from the Ukrainian government through legislative regulation of the support mechanism and enhanced assistance from the European Union countries both during the war and in the post-war reconstruction period. This involves:

1. Developing and implementing state programmes for the development of agriculture and rural areas, taking into account the goals of the CAP to ensure stable support for Ukraine's agricultural sector, allowing it to adapt to new challenges such as climate change, global market changes, and socio-economic transformations;
2. Developing its own "Green Deal" strategy, planning funds for the gradual withdrawal from cultivation of degraded and low-productive lands contaminated with chemicals due to emergencies or military actions, whose further use is economically inefficient and environmentally hazardous;
3. Changing the vector of financial support in favour of small and medium-sized farms to create favourable conditions for agricultural activities;
4. Key areas of state regulation should include: adequate budget financing; effective taxation; fair pricing policy; financial and credit system; provision of subsidies, grants, and subventions; compensation payments; and social policy, among others;
5. Enhancing the social and environmental responsibility of recipients of state support to meet sustainability requirements and comply with standards and regulations in agricultural activities as provided by Ukrainian legislation and EU countries, thereby fully realising the control function at all stages of agricultural production.

This approach will solve a number of problems in Ukraine's agricultural sector both during the war and in the post-war reconstruction period. The proposed economic regulation tools for agricultural production by businesses will allow for the production of safe and high-quality products and integration into European markets.

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