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**STRATEGIC MANAGEMENT OF UKRAINIAN AGRICULTURAL ENTERPRISES
IN THE POST-WAR PERIOD IN THE CONTEXT OF SUSTAINABLE
DEVELOPMENT**

The relevance of this study stems from the unprecedented losses suffered by Ukraine’s agricultural sector due to the full-scale war, which necessitate new approaches to strategic management based on the principles of sustainable development. The study examines the strategic management of Ukraine’s agricultural enterprises in the post-war period. The article substantiates approaches to their post-war recovery and long-term development. To achieve this aim, an analysis of scientific publications from 2022 to 2025, processing of statistical data, and comparative and structural analysis were employed to identify the key directions for rebuilding the sector. The study results include an analysis of the war’s impact on the agricultural sector (infrastructure destruction, landmine contamination, export blockades, and financial losses of approximately US\$70 billion) and a demonstration of the sector’s resilience (through export diversification, innovation implementation, and alternative logistics). The article provides practical recommendations across the economic, innovation, environmental, and social dimensions of sustainable development, including state support, infrastructure investments, human capital development, and food security.

Keywords: agricultural sector; post-war recovery; innovations; resilience; sustainable development; agribusiness.

Tab – 1.

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**СТРАТЕГІЧНЕ УПРАВЛІННЯ АГРОПІДПРИЄМСТВАМИ УКРАЇНИ
В ПОВОЄННИЙ ЧАС В КОНТЕКСТІ СТАЛОГО РОЗВИТКУ**

Актуальність дослідження зумовлена безпрецедентними втратами аграрного сектору України внаслідок повномасштабної війни, що потребує нових підходів до стратегічного управління на засадах сталого розвитку. Предметом дослідження є стратегічне управління аграрними підприємствами України у повоєнний період.

В статті є обґрунтування підходів до їх повоєнного відновлення та довгострокового розвитку. Для досягнення мети використано аналіз наукових

публікацій 2022–2025 рр., опрацювання статистичних даних, порівняльний і структурний аналіз з метою виявлення ключових напрямів відбудови галузі.

Результатом роботи є аналіз впливу війни на аграрний сектор (руйнування інфраструктури, мінування земель, блокування експорту, фінансові втрати агросектору ~\$70 млрд дол. США) та продемонстровано стійкість галузі (диверсифікація експорту, впровадження інновацій, альтернативна логістика). Надано практичні рекомендації за економічним, інноваційним, екологічним і соціальним напрямками сталого розвитку – щодо державної підтримки, інвестицій у інфраструктуру, розвитку людського капіталу та гарантування продовольчої безпеки.

Ключові слова: аграрний сектор; післявоєнне відновлення; інновації; стійкість; сталий розвиток; агробізнес;

Кількість табл. - 1

Statement of the problem. Ukraine has traditionally been one of the world's leading agrarian countries. Before the full-scale war, its agricultural sector accounted for about 20% of GDP, one-third of employment, and nearly half of foreign-exchange earnings from exports. The Russian military invasion in February 2022 led to a sharp decline in agricultural production and exports. It undermined food security at national and global levels and induced a deep socio-economic crisis in rural regions. Hostilities and the occupation of significant territories destroyed the material and technical base of agro-enterprises, caused loss of resources and markets, led to landmining, and contaminated soil with munitions. These pose long-term threats to food production.

According to the Kyiv School of Economics and World Bank, war-related direct losses to Ukraine's agricultural sector total about \$11.2 billion, while total losses (lost income, declining production, and additional expenses) are estimated at \$72–80 billion [1]. Arable land shrank from about 28 million to 23 million hectares in 2022 alone due to hostilities and occupation. The critical task now is post-war recovery and strategic agro-enterprise development that enables rapid sector restoration, resilience, and future environmental and social balance.

The study's relevance stems from the need to develop modern approaches to the strategic management of agricultural enterprises in the context of uncertainty and post-conflict recovery. Sustainable development of the agro-sector—balancing economic, environmental, and social priorities—is critical for Ukraine. Post-war reconstruction should ensure food security, economic growth, and agricultural export potential, while also offering a chance to "reboot" the sector through sustainable development principles by adopting innovations, eco-friendly technologies, and new social business models. This research aims to identify strategic priorities and management actions to help Ukraine's agricultural enterprises recover after the war and transform in line with the Sustainable Development Goals and requirements for European integration.

Analysis of the latest research. The recovery and sustainable development of Ukraine's agricultural sector during wartime have attracted considerable scholarly attention in 2022–2025. Studies focus on enterprise strategies in crisis, risk analysis, and improving agribusiness resilience. Ukrainian researchers investigate both general wartime management and specific aspects of the agricultural sector. Key findings from relevant 2022–2025 publications are summarized in Table 1.

Table 1 – Key publications (2022–2025) on strategic management and sustainable development of Ukraine’s agricultural sector under wartime conditions

Source (year)	Main findings of the study	Significance for strategic management of agricultural enterprises
Bugaichuk et al., 2023 [2]	The full-scale invasion necessitated accelerated adaptation of enterprises to a turbulent environment and activation of long-term strategic planning; development strategies must be based on clear goals and efficient use of resource potential.	Emphasised the critical importance of developing long-term strategies even under wartime uncertainty. Strategic plans of agricultural enterprises should be revised considering wartime risks and focus on effective use of available resources and human capital.
Makaliuk et al., 2023 [3]	Analysed the financial and investment status of agricultural enterprises during the war; found deterioration of financial results and investment activity due to hostilities. Justified the need for state support and investment to restore the sector.	Underlined the necessity of ensuring financial sustainability of agricultural enterprises: the state and investors should play an active role in post-war recovery (e.g. preferential lending, liquidity support programs, and incentives for investment in rebuilding production capacities).
Kovbasa, 2024 [4]	The war significantly transformed agribusiness strategic priorities – safety of production assets, logistics, and personnel provision came to the forefront. Proposed improving risk-management systems through digitisation, diversification of risk management methods, and closer stakeholder interaction, and balancing strategic development components considering environmental, social, and economic factors.	Strategic management of agricultural enterprises must change in light of wartime threats: modern risk-management tools (digital monitoring platforms, scenario analysis) need to be implemented, ensuring logistics flexibility and personnel safety. Strategies should simultaneously consider profitability, risk resilience, environmental requirements, and social responsibility.
Nadvodnyuk, 2022 [5]	Developed theoretical and methodological foundations for managing the sustainable development of agricultural enterprises. Proposed an indicator system to assess sustainable development across economic, environmental, and social	For strategic planning in the post-war period, implementing a system of sustainable development indicators (indicators of financial stability, resource-use efficiency, environmental impact, level of social support, etc.) is useful. This allows tracking progress and adjusting strategy according to sustainable

	dimensions, and a set of measures to implement the sustainable development concept in enterprise activities.	development goals, integrating them into business planning.
Sysolina et al., 2024 [6]	Analysed economic security of agro-enterprises during the war, identified main threats (loss of resources, markets, financial destabilisation) and outlined opportunities to enhance resilience (business diversification, risk insurance, stockpiling).	The findings indicate that strategic management should include plans for economic security: reserving financial funds, diversifying business (including processing or alternative crops), insuring harvests and assets, and establishing new sales channels to reduce dependency on external shocks.

Analysis of the literature reveals several key findings. First, under wartime conditions, strategic management of agricultural enterprises is being fundamentally rethought, with a universal emphasis on combining urgent actions and long-term planning. Researchers agree that even during emergency recovery, it is essential to build the foundations for the sector's future resilience and competitiveness. International organizations and analytical centres have responded with detailed recovery roadmaps, such as the CSIS white paper (2025). This document proposes a staged recovery plan: urgent actions (0–1 year) include restoring infrastructure, clearing mines, and supporting farmers; short-term priorities (1–3 years) focus on export diversification and workforce development; medium-term goals (3–5 years) target rural community strengthening and integration into value chains; and long-term aims (5+ years) address EU integration, climate adaptation, and growth of the processing industry [7]. Collectively, the scientific and expert analyses provide the groundwork for a holistic, coordinated strategy for the post-war development of Ukraine's agricultural sector.

Aim and Objectives of the Study. The aim of the article is to substantiate strategic approaches to managing Ukraine's agricultural enterprises in the post-war period, grounded in sustainable development. To achieve this aim, the following main objectives were defined:

- summarize the modern scientific literature on the strategic management of agricultural sector development under crisis and sustainable development conditions.
- identify the key directions of strategic management of agricultural enterprises in the post-war period across four dimensions: economic, innovation, environmental, and social.
- formulate practical recommendations for government bodies and enterprise management regarding the implementation of strategic priorities for the post-war development of Ukraine's agricultural sector.

Presentation of the main material. Key Aspects of Strategic Management of Agricultural Enterprises in the Post-War Period are the next:

- **economic aspect.** The economic dimension of post-war management covers restoring production and financial indicators, stabilizing business models, and strengthening competitive positions. The war caused extensive direct damage to agriculture—destroying or damaging machinery, warehouses, processing facilities, and logistics infrastructure. In addition to these losses, enterprises faced reduced harvests, unsold produce, and rising input costs (total agricultural losses are estimated at about US\$70 billion) [1]. In this context, supporting agricultural producers financially to restore operations is a primary task.

Market diversification is now a key economic priority. With Black Sea routes at risk, Ukrainian exporters are entering markets in Asia, the Middle East, and Africa. The government is pursuing new trade agreements with previously minor importers. High-value-

added products—such as oils, processed grains, and meats—are expanding their export share, reducing dependence on raw commodity exports and on price fluctuations [8].

An important component of the economic strategy is attracting investment to restore and modernize the sector. Despite wartime risks, Ukraine's agricultural sector demonstrates potential that sustains investor interest. Creating favourable conditions for domestic and foreign investments is a key cross-sectoral priority that must remain central at all stages of reconstruction. In this regard, the state plans to put in place mechanisms to ensure wartime risks for investors, establish public-private recovery funds, and form partnerships with international financial organizations (e.g., EBRD, IFC). The economic sustainability of post-war agro-enterprises will largely depend on the successful implementation of these measures, which will provide capital for renewing fixed assets, introducing innovations, and expanding business operations.

- **innovation aspect.** Innovations play a decisive role in transforming agricultural enterprises in the post-war period, as they simultaneously allow for increased production efficiency, reduced dependence on manual labour, and compensation for resource shortages. One lesson of the war has been the necessity of maximising technological development in the agricultural sector – enterprises that had previously invested in modern technologies proved more resilient and productive even under crisis conditions. In Ukraine's agricultural sector, the implementation of “smart” farming concepts has accelerated. Large agro-holdings and progressive farmers are increasingly adopting precision farming technologies, including GPS-guided machinery, drones for field monitoring, and IoT sensors to track soil moisture and crop conditions. In the post-war period, when every hectare and every tonne of produce counts, digitalisation of processes – from sowing to marketing – becomes a necessary condition for competitiveness.

Another important direction is innovation in logistics and storage. The war has forced agricultural producers to seek unconventional solutions for transporting produce, ranging from creating their own transport capacities to using blockchain platforms for cargo tracking. Logistics startups and IT solutions (for example, online exchanges for agricultural transport) have received a boost in development. Furthermore, investments in modernising storage facilities and elevators (installing aeration systems, automating grain quality control) have become priorities in order to minimise product losses and preserve quality during longer storage and transshipment.

Biotechnological and agrochemical innovations have also gained importance due to wartime challenges. The shortage of fertilisers and crop protection agents caused by supply disruptions is stimulating the search for alternatives, such as microbial soil enhancers and more stress-resistant crop varieties. In 2023, Ukraine updated its legislation on the use of GMOs in agriculture to align with EU standards, opening opportunities for innovations in breeding and biotechnology (for example, growing drought-resistant GMO soy or maize) [9]. Such steps, although subject to debate, could increase productivity in the medium term, especially given climate change.

Finally, post-war reconstruction represents an opportunity for a technological leap in Ukraine's agricultural sector. Foreign investors and funds are showing interest in Ukrainian agri-tech startups and digital transformation projects in agriculture. Strategic management should thus involve partnerships with technology companies, the implementation of R&D programmes, and the training of personnel in new skills. Only through a combination of economic incentives and innovative solutions can agricultural enterprises not only recover but also reach a qualitatively new level of efficiency in the post-war period.

- **environmental aspect.** The war has caused not only direct economic damage but also a large-scale environmental catastrophe for the agricultural sphere. Soil contamination by explosive devices, fuel spills, and the destruction of shelterbelts and topsoil by heavy

machinery – all these have a negative impact on the environment and must be taken into account in recovery strategies. Sustainable development of agricultural enterprises after the war is impossible without prioritising environmental concerns.

Firstly, mine clearance and land reclamation are a basic condition for returning to full-scale agricultural production. By the end of 2023, about 174 thousand km² of Ukraine's territory could be contaminated by mines and ammunition, a significant portion of which is agricultural land in the southern and eastern regions. Accelerating humanitarian demining requires substantial resources (the total cost is estimated at around US\$38 billion) and time (estimates suggest full clearance could take decades) [10]. Therefore, development strategies must plan for a phased return of lands to cultivation after their safe clearance, and use remote sensing technologies to identify priority areas.

Secondly, restoring irrigation infrastructure and water resources is a key environmental focus. The loss of the Kakhovka Hydroelectric Power Plant in 2023 led to water shortages over large areas in the south that were traditionally irrigated by the Dnipro. Combined with climate change (shifts in precipitation, more frequent droughts), this threatens crop yields. A study published in *Nature Food* predicts that by mid-century, three-quarters of Ukraine's chernozem (black earth) soils may face moisture deficits due to climate change and infrastructure damage [11].

Thirdly, post-war reconstruction opens the opportunity for a “green” transition of the agro-sector. Many enterprises recognise the importance of reducing their environmental footprint and are already investing in renewable energy and organic production. Farms are switching to organic methods – abandoning chemical pesticides and synthetic fertilisers – which not only open up premium export markets but also restore soil health, increase biodiversity, and improve the reputation of Ukrainian produce abroad. Strategic management should support these trends by integrating environmental goals into business strategies. In particular, it would be advisable to implement environmental management systems in enterprises, seek certification under international standards (e.g., ISO 14001, GlobalGAP), and participate in carbon farming programmes (earning “carbon credits” for soil restoration and planting shelterbelts).

Finally, adaptation to climate change must become an integral part of the post-war strategy. Achieving climate resilience in agricultural production includes growing more drought-resistant and hardy crops, optimising crop rotation, and implementing soil-conservation technologies (such as no-till and cover crops) to prevent erosion. Government policy and international support can incentivise farmers to adopt such practices through education programmes and financial incentives. In this way, the environmental reorientation of the post-war agro-sector will not only mitigate the damage caused but also make Ukraine's agriculture more resilient and modern in the long term.

- **social aspect.** The social component of sustainable development for agricultural enterprises is equally important, as sector recovery directly impacts the welfare of the population, the development of rural communities, and food security. The war has caused large-scale demographic and social changes in rural areas: many agricultural workers have been mobilised or killed, while many residents have left the country or become internally displaced. In these conditions, labour availability and social cohesion are critical factors for the successful recovery of agricultural enterprises.

Strategic programmes for returning veterans to civilian life also focus on integrating them into the agro-sector: the government's “*Strategy of Veteran Reintegration until 2033*” provides training and grants to help former servicemen start agribusinesses [12]. In view of this, agricultural enterprises can serve as platforms for employing veterans with leadership skills and the motivation to develop their own businesses.

Rural community development is another strategic direction closely linked to agricultural enterprises. Before the war, many rural areas suffered from youth outmigration, poor service quality, and poor infrastructure. Post-war reconstruction should contribute to a “reset” of the countryside: investing in agribusiness must go hand in hand with investing in local infrastructure—roads, power grids, internet, and educational and medical facilities. Large agro-companies can participate in these processes through corporate social responsibility and public-private partnerships. Creating new jobs in processing, logistics, and rural services will slow population migration and improve the quality of life in the countryside. As recommended by CSIS, strengthening rural communities should be carried out comprehensively – through financial support for local business initiatives, the development of entrepreneurship among villagers, and improvements in rural infrastructure [7]. This will increase the economic resilience not only of individual enterprises but also of regions as a whole.

Food security and social stability represent another aspect. Ukraine’s domestic food market also suffered a shock after the start of the war – there were periods of fuel shortages and problems delivering food to frontline regions. Strategic management at the state and sector levels must ensure that the basic food needs of the population are met, even in crisis conditions.

Conclusions and future research directions. The full-scale war has caused unprecedented losses in Ukraine’s agricultural sector, manifested in the destruction of assets, mining of large land areas, sharp reductions in production and exports, financial losses for enterprises, and threats to food security. The post-war period has imposed the requirement of immediate restoration of agricultural enterprises while simultaneously accounting for long-term challenges and risks. Sustainable development must become the underlying ideology of reconstructing the agricultural sector. Strategic management of agricultural enterprises must balance economic goals (restoring profitability, increasing exports) with environmental goals (rational land use, renewable energy, adaptation to climate change) and social goals (job creation, community development, food security) [13]. Such an approach will enhance the sector’s resilience in the long term.

In the economic dimension, the key priorities are financial support and investments in reconstruction, restoration of logistics, and diversification of export markets. It is necessary to continue credit support programmes for farmers, attract private capital, and partner with aid. Developing alternative export routes and increasing the share of high-value-added products will help strengthen Ukraine’s competitive position in world markets.

In the innovation dimension, the post-war agro-sector should rapidly adopt modern technologies, including precision agriculture, digitalisation, and the automation of equipment. Innovations are also needed in storage, processing, and land demining. Enterprises should invest in R&D and partnerships with technology companies to increase productivity and reduce dependence on manual labour and hazardous factors.

The environmental aspect of reconstruction requires priority solutions to demining and soil restoration, modernising irrigation and water supply systems, and transitioning to environmentally friendly farming practices. It is important to integrate environmental standards into enterprise strategies, implement energy-saving technologies, and support organic production. This will not only minimise environmental damage but also ensure Ukraine meets its international commitments on climate and sustainable development.

Social development in rural areas and human capital are necessary conditions for successful strategic management. It is recommended to strengthen workforce training (courses, internships, education), create incentives for employers to hire veterans and internally displaced persons in the agro-sector, and invest in village infrastructure.

Enterprises should participate in community development to build public trust and lay the foundation for social stability.

Implementing the outlined strategic priorities will require concerted efforts by the state, business, and the international community. State agricultural policy must become more flexible and proactive – from supporting innovation to insuring wartime risks for investors. Agricultural enterprises, in turn, should update their development strategies, taking into account lessons from the war and sustainability principles. International partners are already playing a significant role in financing and providing expertise for rebuilding Ukraine's agricultural sector, and an ongoing partnership will be key to success. The implementation of these approaches will not only restore agricultural production to pre-war levels but also elevate it to a qualitatively new level that meets modern challenges and ensures Ukraine's food and economic security for decades to come.

Future research prospects lie in detailing and adapting, as well as developing mechanisms for the practical implementation of the identified strategic priorities at both the enterprise and state levels.

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