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State regulation instruments for the development of the agro-industrial complex under martial law in Ukraine

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► **Abstract.** Amidst the crisis in the food sector of the country caused by the Russian invasion and on the way to Ukraine's association with the European Union, the role of state regulation is growing. The study aimed to provide proposals for improving the food industry development programmes in the agro-industrial complex to improve the food supply of the population, innovative development of enterprises and ensure food security in Ukraine. General scientific methods were used in the study: dialectical, statistical, structural and functional analysis, tabular, systematic generalisation, and comparisons. The study summarises the existing programmes of support and development of the agricultural sector of Ukraine at the governmental and interstate levels. The problems of food and agricultural enterprises in the context of Russian aggression in Ukraine are identified, in particular, in terms of environmental damage and pollution, instability of energy supply, and rising logistics costs. The author notes the effectiveness but selectivity of grant support with the participation of foreign capital. The programme documents for the development of the agro-industrial complex and the food industry are systematised and their interconnection is analysed. These documents include the National Economic Strategy and the strategy for the development of its agricultural component, sectoral support programmes, sectoral strategies, and international and national programmes. The article presents proposals for the programme documents for the development of the food industry aimed at post-war recovery and further innovative development. The proposals take into account foreign experience, industry specifics and changes to the current legislation. Sectoral development programmes should be in line with the strategic guidelines until 2030 and the provisions of the Association Agreement with the European Union, contribute to solving environmental pollution and climate change, waste recycling and creating closed production cycles with high added value. The results obtained can be used in further research, programmes, recommendations and strategies of legislative and executive authorities for the effective development of the food industry as part of the agri-food complex and the improvement of food supply to the population

► **Keywords:** food supply; state regulation of exports; development programmes; food industry; support; food security

► Introduction

The agro-industrial complex is an integral part of the economies of the world, and its uninterrupted operation is a guarantee of food security. In the context of transformational changes in the economy, recent crises caused by the COVID-19 pandemic and Russian aggression in Ukraine, there is a growing need to implement effective

measures and state regulation aimed at overcoming crisis phenomena and processes, restoring agricultural potential and ensuring sustainable economic development. The Sustainable Development Goals by 2030, proclaimed at the United Nations (UN) Rome Summit in 2015 and approved in Ukraine by the Presidential Decree in 2018,

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serve as a benchmark for economic and social development in Ukraine and the world (United Nations, 2015; Decree of the President of Ukraine No. 722..., 2019). Under these conditions, the study and justification of the effectiveness of state regulatory instruments and means are particularly relevant today.

Many scientists addressed the problems of state regulation of the agro-industrial complex, implementation of appropriate measures and state programmes to ensure the country's food security. O. Kinzerska *et al.* (2021) studied the issues of financial strategy for sustainable environmental and economic development in the agricultural sector. The authors identified the economic, environmental and social feasibility of the development of the agro-industrial sector and the benefits of a financial strategy for the sustainable economic development of the agro-industrial sector until 2030, grouped the objects and factors of managing the sustainable development of the agricultural sector.

O. Kovalenko *et al.* (2020) developed the conceptual framework for the formation of economic policy and mechanisms for the development of the food industry, and substantiated methodological approaches to the formation of economic policy in the food sector. Agrarian policy should strengthen the domestic market and expand exports, as well as the coherence of the food chain. M. Sychevskyi (2019) substantiated the strategic guidelines for the development of the food industry based on sustainable development, the key focus of which is a person and well-being. The foreign economic priorities for the development of agri-food enterprises in the context of European integration and indicators for assessing the export potential of enterprises were substantiated by Shpychak *et al.* (2022). The problems of food exports of European countries and the role of Ukraine were analysed by O. Kovalenko *et al.* (2023). The researchers concluded that the level of economic development of countries influences their food export potential. At the same time, the issue of programme documents for the development of the agro-industrial complex (AIC) and the food industry within it requires more detailed research.

J.L. Pomeranz & D. Mozaffarian (2022) assessed the marketing regulatory component of the US baby food market. The study noted that the country relies on market self-regulation, while at the same time, countries around the world are trying to limit the market for unhealthy food and beverages for children. Therefore, appropriate measures should be taken to counteract the distribution of such food, including the regulation of the Federal Trade Commission's powers. I. Gok & E.K. Ulu (2019) assessed the development and regulatory aspects of the functional food market in Turkey and found limited consumer awareness of the functional food market and the lack of an appropriate labelling system. To increase consumption and sales of products, it is necessary to inform and educate consumers, introduce promotional activities and improve legislation. I. Kovalchuk *et al.* (2022) noted the importance of regulatory levers for the sustainable development of all parts of the agri-food sector.

The analysis of existing studies demonstrated that, although many aspects of state regulation of the agro-industrial complex and the food industry have been studied, the issues of programme documents for the development

of these industries require more detailed study, so the purpose of this study was to provide proposals for improving the programmes for the development of the food industry in the agro-industrial complex to improve the food supply of the population, innovative development of enterprises and ensure food security in Ukraine. This will contribute to the restoration and innovative development of production capacities, improvement of food supply chains, growth of the country's export potential, and increase in the efficiency of the industry's enterprises.

► Materials and methods

The study employed *general scientific methods* of cognition to address the set topic. The *analysis method* was used to review the achievements of scientists in the field of state regulation, in particular, food programmes and tools to support the functioning and development of the agricultural sector, legislative acts and other regulatory documents. The problems and trends in the agro-industrial complex and individual food industry sectors were assessed using *statistical* and *comparative* methods. The *dialectical method* was used to assess the basic principles and the state of development and shortcomings of strategic and programme documents for the development of the economy and the agricultural sector. In particular, such as the Strategy for the development of the innovation sector for the period up to 2030 (Order of the Cabinet of Ministers of Ukraine No. 526-r..., 2019), and the strategy for the development of exports of agricultural, food and processing products of Ukraine for the period up to 2026 (Order of the Cabinet of Ministers of Ukraine No. 588-r..., 2019). The dialectical method was also used to analyse programme documents previously developed for the bakery and meat processing industries ("Ukraine needs a state program...", 2021; National livestock development programme..., 2021). *Structural-functional analysis* was used to build a structural diagram of the interaction of programme documents for the development of the agro-industrial complex and the food industry. The structural diagram was used to assess the relationship between the National Economic Strategy until 2030 (Resolution of the Cabinet of Ministers of Ukraine No. 179..., 2021) and the programme documents for the development of the agricultural sector. The *systematic synthesis method* was used to assess and provide proposals for existing development programmes, as well as draft programme documents that have not been implemented for the bakery, meat and dairy processing, sugar and oil and fat industries. Grant programmes to support small and medium-sized businesses are summarised in a *tabular* format.

The information basis includes the regulatory and legislative framework of Ukraine – a decree of the President of Ukraine (Decree of the President of Ukraine No. 722..., 2019), resolutions and orders of the Cabinet of Ministers of Ukraine (Resolution of the Cabinet of Ministers of Ukraine No. 870..., 2011; Resolution of the Cabinet of Ministers of Ukraine No. 780..., 2016, and others). The UN international legislation is also used as a database (United Nations, 2015). The regional-level studies used orders of regional state administrations (Order of the Head of the Regional..., 2022). The database of the State Statistics Service of Ukraine was used to assess the state and

problems of the bakery, dairy, and sugar industries (Official website of the State..., n.d.). Data on international and Ukrainian grant programmes were used – U-Lead with Europe (n.d.), Gardens of Victory (n.d.), etc. The principles of the Swiss-supported food programme – Quality FOOD Trade Programme (QFTP) (Switzerland will assist..., 2023) and others – were also used. Research on the state and problems of the agro-industrial complex is currently limited by the lack of up-to-date information from the State Statistics Service due to the war in Ukraine.

► Results and Discussion

The National Economic Strategy for the period up to 2030, adopted in March 2021, supplemented during the Russian aggression against Ukraine on 21.04.2023, and entered into force on 04.05.2023 (Resolution of the Cabinet of Ministers of Ukraine No. 179..., 2021), serves as a policy document for the economy as a whole. The policy document serves as a basis for the development of strategies, programmes and regulations by the relevant ministries and executive authorities.

This strategy and the analytical report of the National Institute for Strategic Studies (Sobkevych *et al.*, 2022) pointed out negative phenomena in the agricultural sector:

- imbalance in the structure of production in the agricultural sector, as industrial enterprises are engaged in the production of profitable crops (sugar beet, sunflowers, cereals), while labour-intensive production of – livestock, potatoes, and vegetables is mainly carried out by households;

- low level of added value creation, in particular, exports are dominated by raw materials (wheat, corn);
- a critical decline in cattle numbers and milk production;
- insufficient development of the agricultural market infrastructure, lack of adequate transport and storage capacity;
- depletion of soil, pollution of territories and environmental degradation;
- dependence of agricultural producers on imports of equipment, technologies and selective materials;
- inefficient policy regarding exporters, including lack of awareness of export markets and opportunities, corruption, inefficient product insurance, and complexity of customs procedures;
- insufficient adaptation to global climate change.

The food industry's downstream processing sector faces problems common to the entire industry, including a decline in industrial production, high energy intensity and energy consumption, high depreciation of fixed assets, underdevelopment of the innovation and investment component due to a lack of working capital, high levels of monopolisation in certain industries and shadowing of the market. The current taxation system is not sufficiently conducive to the development of the food industry.

The National Economic Strategy, in the area of “agriculture and food industry”, defines strategic goals to address the accumulated problems and further innovative development (Fig. 1).

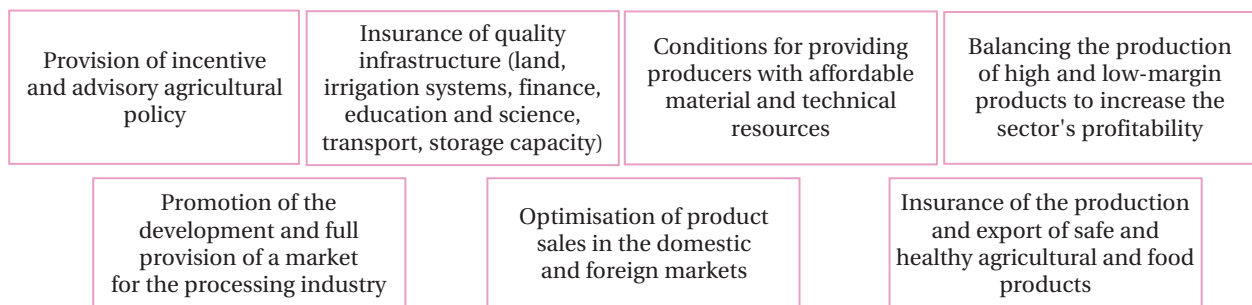


Figure 1. Strategic goals of the agricultural sector and the food industry

Source: compiled by the authors based on Resolution of the Cabinet of Ministers of Ukraine No. 179 “On the Approval of the National Economic Strategy for the Period up to 2030” (2021)

The Strategy's conclusions on the areas of focus include the need for an effective government policy and the poor state of elevator and transport infrastructure. It is important to expand access to material and financial resources. The need to increase the technological efficiency of production is also noted, as only large enterprises have the opportunity to purchase imported high-tech equipment, while small and medium-sized producers use a smaller range of technologies. The structure of Ukrainian agriculture is unbalanced, with crop production accounting for almost 80% of the sector. In most EU countries, crop production accounts for 57% and livestock production for 43% (in Poland, 48% and 52%, respectively) (Resolution of the Cabinet of Ministers of Ukraine No. 179..., 2021).

The Ukrainian livestock sector faces challenges related to the poor quality of milk and the predominance of poultry production (more than half of all meat in Ukraine,

compared to 8-23% in the European Union). A significant share of poultry production in Ukraine is export-oriented. Due to the low level of automation of technological processes and inadequate production facilities, livestock products are more capital-intensive and do not ensure sufficient quality.

A significant problem is the decline in the number of cattle. In 1991, there were 8.38 million cows in Ukraine, in 2001 – 4.96 million, and in 2021 – 1.67 million cows, which is five times less than at the beginning of the country's independence. During the period of war in Ukraine (2022-2023), the number of cows decreased by almost 13% – from 1.54 to 1.35 million (Resolution of the Cabinet of Ministers of Ukraine No. 179..., 2021; Official website of the State..., n.d.).

The overall situation in the dairy industry is correspondingly challenging. In 2021, 8.71 million tonnes of

raw milk were produced, which is almost 23% less than in 2010 (11.25 million tonnes) and 2.8 times less than in 1990, and the marketability of products is also declining. In 2022, according to preliminary data, 7.77 million tonnes of raw milk were produced, which is 89% of the previous year's volume (Official website of the State..., n.d.). A significant problem for the meat and dairy industries is the decline in consumer demand due to rising product prices and lower real incomes.

Industrial production of bakery products decreased from 1.801 million tonnes in 2010 to 0.845 million tonnes in 2021, i.e. more than halved (Official website of the State..., n.d.). Compared to 1990 (6.70 million tonnes), production has decreased by almost 8 times due to diversification, changes in the dietary pattern and shadowing of the market. There is a problem with the quality of grain, which is labelled according to the grain standard adopted in 2019, in grades 1-4. Out of the 20.7 million tonnes of wheat harvested in Ukraine in 2022, about one million tonnes, or 4% of the crop, was suitable for baking (grades 1 and 2). Therefore, it is advisable to propose to provide flour mills and bakeries with preferential loans for the purchase of Grade 2 grain suitable for baking.

Among the critical problems for bread and flour producers, as well as for the entire agricultural sector, is the high risk of disruption of energy supply due to the war in Ukraine. After all, the energy received from generators is more than twice as expensive as that from the power grid (Work on generators..., 2022). Since 2015, the problems raised by flour producers have not been resolved, including the lack of adequate support for Ukrainian machine building, the lack of grain carriers and covered wagons for transporting products, and the tariffication of rail transport (Seven challenges hindering..., 2015).

As for the current state of the sugar industry, in 2021, the country produced 1.45 million tonnes of sugar, which is one and a half times more than in the previous year and almost equal to the figures for 2015 (1.5 million tonnes). The industry's enterprises are capable of producing up to 2 million tonnes of products and exporting them. Due to the war in Ukraine, sugar beet acreage has decreased. However, the crop yield in 2022 was the highest in the last 5 years and reached the 2018 figure of 49.8 t/ha, compared to 47.9 t/ha in 2021. In 2023, 249.9 thousand hectares were planted with sugar beet, compared to 220 thousand hectares in pre-war 2021 (Official website of the State..., n.d.). The main way to develop the industry is through exports. A mechanism for Ukrainian exporters is being developed, with 30 plants currently operating. Given the export orientation of the industry, the urgent problems are finding logistics routes and importing countries for Ukrainian sugar, reducing unproductive costs and losses, and ensuring further processing of production waste.

A common problem for all food processing companies is the significant rise in energy prices – gas and electricity, other cost components, as well as petrol and diesel fuel – which affects the cost of transport logistics. In particular, for the first time, the cost of energy and operating expenses exceeded the cost of raw materials in the cost of bread. Given the imported component of fuel and currency fluctuations, further appreciation of the dollar will lead to higher product prices.

Significant resources and capacities must also be deployed to overcome the extraordinary damage to the environment, arable land, production and logistics facilities, housing and human capital caused by the Russian aggression against Ukraine. The amount of damage to the environment is currently USD 57 billion, and this is not the final figure (Environmental damages in Ukraine..., 2023).

The losses of the agricultural sector during the war exceeded USD 40 billion, including USD 9 billion in direct losses. Therefore, it is necessary not only to restore the lost environment and territories but also to give impetus to its further innovative development on the way to Ukraine's association with the EU (Losses in the agricultural sector..., 2023). In this context, the issue that is also highlighted in the National Economic Strategy for the period up to 2030 is relevant – the need to extend value chains, which will ensure greater profitability of the sector, as well as a reorientation to high value-added products (Resolution of the Cabinet of Ministers of Ukraine No. 179..., 2021). The solution to this problem lies in reducing losses and unproductive costs, as well as in the construction of additional production facilities close to the raw material base and production of key products. Relevant tasks should be included in sectoral development programmes or other regulatory and legislative documents that are consistent with the Strategic Goals of the agricultural and food industry, following the National Economic Strategy until 2030. Effective assistance to the agrarian sector in this regard is provided by the USAID Programme, which aims to increase productivity and market access in targeted value chains and improve support functions and the regulatory framework in the agrarian sector (USAID program for agrarian..., n.d.).

An urgent problem is the supply of baby food products to the Ukrainian market. The previous State Targeted Social Programme for the Development of Baby Food Production for 2012-2016 worth UAH 643.43 million was approved in 2011. 70% of the cost was to be covered by the state budget, the rest by local budgets and other sources (Resolution of the Cabinet of Ministers of Ukraine No. 870..., 2011). The programme document provided for the reservation of state budget funds, state support for technical re-equipment of enterprises; creation of new production facilities and laboratory equipment; and improvement of the regulatory framework. The implementation of the programme contributed to a partial improvement in the situation with baby food but was constrained by the limited financial capacity of enterprises and the state. Since 2021, the supply of baby food has improved, thanks to government support and approaches to healthy eating for children, particularly in schools. However, the necessary financial investments for further development of this segment are limited due to the war in Ukraine.

The plan of directions of state support for agricultural production for 2022, developed by the Ministry of Agrarian Policy, contained 16 points of state aid to agricultural enterprises, including partial compensation for the cost of agricultural machinery, advisory services, support for livestock, potato growing and niche crops, and organic production (State support of the agro-industrial..., 2021). Financial support was also envisaged by reducing the cost of loans, which were cancelled due to the martial law in

Ukraine and the redistribution of funds to the reserve fund (State support for the development of..., n.d.).

At the same time, the state programme “Available credits 5-7-9” was launched and widely used to develop agricultural enterprises with the participation and assistance of the Ministry of Agrarian Policy and authorised banks. In January-September 2023, 11.3 thousand enterprises received 58.8 billion UAH of loans for business development, of which 8.8 thousand enterprises received 34.4 billion UAH under this programme (Available credits 5-7-9..., 2023). The leaders in terms of loans received are Kyiv, Vinnytsia, Dnipro, Kirovohrad and Odesa regions, and in terms of the 5-7-9 programme – Kirovohrad, Vinnytsia, Odesa and Kyiv regions.

With the support of the Ministry of Agrarian Policy, a grant programme for the development of horticulture has been in place since 2022, with agricultural enterprises from 14 regions of Ukraine participating as of September 2022. The amount of grants was 145.5 million UAH (Participants of the horticultural..., 2022). The procedure for obtaining grants was as follows: an authorised bank reviews the applicant’s documents within 5 days and submits them to the Ministry of Agrarian Policy, which decides on granting a grant within 10 days; if the decision is positive, the bank opens an account within 5 days, the applicant pays its share of the financing within the next 30 days and can immediately use the grant funds freely. The only condition is the targeted use of the funds. The project implementation period is 18 months, and an authorised bank checks the condition of the plantations for 5 years. If 50% of the grant is paid in taxes, the monitoring by the authorised bank may be terminated early (Grants for the development..., 2024). This grant programme serves as an effective start for other grant programmes, subject to the availability of funding.

International experience has confirmed the effectiveness of such projects, which stimulate the development and support of entrepreneurship, which is especially important for Ukraine in the context of post-war recovery. Starting in 2022, the Department for the Development of the Real Sector of the Economy of the Ministry of Economy of Ukraine will be responsible for providing grants for the creation or development of processing enterprises. To be eligible for grants, companies must submit a business plan, an application and a set of documents and meet the established criteria (number of points based on the results of the performance assessment). Among the 17 grants approved by the order of the Ministry of Economy No. 150 dated 06.10.2023, there are food industry enterprises that received 8.0 million UAH each for production development: Blahom’yaso LLC (Zaporizhzhia region), Yaitse-Raytse LLC (Ternopil region), and Smak Hliba LLC (Ivano-Frankivsk region) (Grants for processing enterprises, n.d.).

On 1 September 2022, the Ministry of Agrarian Policy announced the introduction of two state support programmes for farmers – payments per hectare of land (3,100 UAH per 1 ha, up to a maximum of 120 ha) and subsidies for cows (5,300 UAH per cow for owners of 3 to 100 cows). Applicants can receive funds by applying to the State Agrarian Register (State support for farmers..., 2022).

In 2021-2022, regional programmes for the development of the agro-industrial complex were introduced as part of decentralisation. They were posted on the websites of regional state administrations (Regional target programs, n.d.; Order of the Head of the Regional..., 2022). Regional programmes are formed based on an analysis of the state of agriculture and the food industry in the region, identification of the main problems, ways of solving them and sources of funding, a list of tasks (programme areas) and performance indicators. The main administrators of the funds are the Department of Agricultural Development and Economic Policy of the Regional State Administration and the Standing Committee of the Regional Council on Agricultural Complex, Land Relations and Rural Development. The Kyiv Regional Military Administration has introduced and is implementing development programmes in the areas of agriculture and rural areas, energy conservation (energy efficiency), healthcare and the use of natural resources in the region, etc.

The cooperation of the national government and regulatory authorities – the Ministry of Agrarian Policy and Food and the State Service of Ukraine for Food Safety and Consumer Protection – with experts from the Swiss-Ukrainian programme “Development of Higher Value-Added Trade in the Organic and Dairy Sectors of Ukraine” (Quality FOOD Trade Programme, QFTP), which agreed on a plan for the restoration and development of the organic and dairy sectors affected by the war, is effective. The recovery of the sectors is planned to take at least two years, with support for four years (Switzerland will assist..., 2023). The programme aims to increase production and trade in high-value-added products. The programme includes improvements to the regulatory framework in line with EU standards, liberalisation measures an increase in trade in domestic and foreign markets, and tighter control over product quality.

International programmes designed to achieve self-sufficiency of communities with basic food products within the framework of decentralisation and modern waste management have proven to be effective – Victory Gardens (n.d.), U-Lead with Europe (n.d.). The Victory Gardens programme is implemented with the support of the Government of Canada and ensures the efficient use of land by the population for growing, processing, storing essential food and reducing the risks of full-scale aggression. As of 2023, EUR 176 million has already been invested through U-Lead with Europe, a programme of cooperation between the Government of Ukraine and the EU and its donor member states, including for agricultural sector projects, 99 regional development projects have been prepared, and 9 draft laws have been supported.

At the same time, despite the optimisation of these processes in 2016 and the granting of more powers to the State Service of Ukraine on Food Safety and Consumer Protection, the mechanism of interaction between different institutions is not effective enough. The State Service of Ukraine on Food Safety and Consumer Protection monitors compliance with product safety and quality indicators. The Ministry of Health develops and communicates regulations on product safety and consumption volumes. The Ministry of Agrarian Policy approves hygienic requirements for the safety of products recommended

for consumption and oversees the development of product standards and other areas of food supply. The large number of structures complicates communication between them and slows down decision-making. In Europe, however, there is a single structure that adopts regulatory documents on product safety and monitors their implementation. In Ukraine, working groups are engaged in harmonising standards and developing technological regulations in line with EU requirements and rules.

The current norms of food consumption per person in Ukraine do not correspond to modern realities, as the overall structure of the population's diet has changed. For example, the norm of bread consumption (101 kg), which is observed in Ukraine, exceeds actual consumption (Resolution of the Cabinet of Ministers of Ukraine No. 780..., 2016). In EU countries, this figure does not exceed 30 kg, in post-Soviet countries – up to 50 kg per year. The share of the shadow market is significant. For example, the actual consumption of dairy products calculated by the State Statistics Service is usually underestimated because it does not cover the self-sufficiency of the population in its calculations.

Ukraine has made progress in organic production. In 2023, the State Register of Operators for the Production, Circulation and Labelling of Products was launched. So far, four Ukrainian organic production operators have been registered and granted certificates (The first 4 organic product..., 2023). However, their activities are hampered by the contamination of the territories by the military operations in Ukraine. The Food and Agriculture Organization of the United Nations (FAO) and the German-Ukrainian Cooperation in Organic Agriculture (COA) project, at the request of organic operators, provided them with 25 generators in 9 regions of Ukraine free of charge (Ukrainian organic operators..., 2023).

The export component is an important area of activity for the food industry, which provides foreign exchange earnings to the country's budget, income and jobs in production, supplies surplus products to foreign markets and ensures global food security. In 2019, the government approved and in 2023 amended the Strategy for the Development of Exports of Agricultural, Food and Processing Products of Ukraine for the Period up to 2026 (Order of the Cabinet of Ministers of Ukraine No. 588-r..., 2019). The document introduces export potential assessment mechanisms, strengthens cooperation between the Ministry of Agrarian Policy and industry associations, introduces quality standards for products following the EU-Ukraine Association Agreement, takes measures to stimulate producers, improves phytosanitary measures, improves organisational and legal conditions of activity, and other components. The implementation of this strategy, along with other factors, resulted in an increase in food exports and an improvement in the business environment for exporters. However, there is still a need to solve logistical problems, restore production and reach mutually beneficial agreements with EU countries on food exports. A promising direction is to shift from exports of raw materials to a significant increase in the share of high-value-added products. In addition to export-oriented products such as grains, oil, sugar, and chicken, it is necessary to increase foreign sales of dairy products.

The Strategy for the Development of the Innovation Sector until 2030, adopted in July 2019, emphasises that Ukraine has competitive advantages in terms of market capacity, ability to innovate, availability of educated personnel, and scientific schools that promote innovation (Order of the Cabinet of Ministers of Ukraine No. 526-r..., 2019). Furthermore, the agricultural sector “has a high potential for modernisation, introduction of new technologies and increase of the level of processing of its own products, but its prospects are limited” in terms of impact on the gross domestic product (GDP) of the state. At the same time, the export potential of the agricultural sector and its contribution to global and national food security were not taken into account, as food meets the basic needs of human life.

The ambitious plan of the Strategy for the development of the agro-industrial complex, presented in July 2023 by the Ministry of Agrarian Policy, envisages a significant increase in agricultural production, in particular fruit and berries, by up to 8 times (Strategy for the development..., 2023). Ukraine is a global food supplier for more than 600 million people, which is important for global and national food security. The Strategy for the Development of the Agro-Industrial Complex presents global trends and defines the vision of Ukraine as a global food supplier. Through vertical integration and import substitution, it is planned to provide food production with its mineral fertilisers, agricultural machinery and plant protection products, and a developed irrigation system. Support for agricultural industries is expected to produce 200 million tonnes of agricultural products, including a 4.5-fold increase in the production of vegetables, root crops and melons. In line with current trends and economic needs, it is planned to achieve up to 50% of production through deep processing. The goal of waste processing is to accelerate the development of green energy and increase methane production in the amount of 10 billion cubic metres per year as an additional source of energy.

The investment attractiveness of agricultural production facilities is driven by high domestic demand and the possibility of exporting products, the availability of a raw material base and the payback of projects. The powerful strategic directions for the development of the agro-industrial complex will be implemented in the context of Ukraine's post-war recovery, so it is necessary to take into account internal and external challenges and realities of today and focus efforts on rebuilding the country and overcoming the unprecedented damage caused to the agricultural sector and the country's economy.

In the current environment, grant programmes for business development have proved to be effective, and most of them are to be extended for the next period (Table 1). The experience of the economies of developed countries (the US, the EU) and Ukraine has proven the importance of supporting business development, especially in times of crisis. The mechanisms of direct lending to small and medium-sized businesses, such as the Affordable Loans 5-7-9 programme for production development, microgrants, and grant programmes for enterprise development, are effective. In 2024, it is planned to resume financing the cost of Ukrainian agricultural machinery and allocate 1 billion UAH for this purpose.

Table 1. Grant programmes for small and medium-sized businesses in force in 2023

No.	Program	Program goal	Program indicators, geography*
1	State programme “eRobota” (Ukraine)	For small and medium-sized businesses, including agriculture: to start own business; greenhouses; development of horticulture, berry growing, viticulture	During the year of its existence, 4,600 entrepreneurs received 3 billion UAH up to 250 thousand UAH 2-7 mln UAH
2	Grant competition of the USAID project “Cybersecurity of Ukrainian Critical Infrastructure”	For Ukrainian developers of cyber defence solutions	Budget of 500 thousand USD USA
3	USAID Competitive Economy Programme	25 grants for small and medium-sized processing enterprises; 30 grants to improve the human resources potential of businesses for small and medium-sized farming enterprises	75-150 thousand USD USA 35-150 thousand USD up to 40 thousand USD USA Poltava, Sumy, Kyiv, Chernihiv regions
		Business development support: business marketing support projects; online business consultations; the Startup of the Year Award and other projects	from 10 thousands USD USA
4	MHP-Community Charitable Foundation with the support of the Kurator brand	For catering companies	Up to 100 thousand UAH for 13 regions of Ukraine
5	Lars Seier Christensen’s Danish investment fund Seier Capital A/S	For blockchain startups	from 5 thousand to 50 thousand EUR, continuously
6	Ideas Powered for Business from SME fund	Financing for the protection of intellectual property of small and medium-sized enterprises	from 1 thousand to 1.5 thousand EUR
7	Charitable Foundation “SOS Children’s Villages Ukraine”	For opening a business for internally displaced persons and families with children	Up to 150 thousand UAH Kyiv, Poltava, Ivano-Frankivsk, Lviv, Chernivtsi regions
8	A comprehensive programme of support and development of agriculture	For enterprises in the field of organic production	Up to 150 thousand UAH Lviv region
9	EBRD – U4U business	Consulting projects for small and medium-sized businesses. Internship in an experienced European company with an entrepreneur	85% of the project cost 75% of internship costs, online – free of charge
10	Single Market Programme	Patenting ideas, protecting trademarks and designs	1-1.5 thousand EUR Up to 08.12.2023
11	Mercy Corps support programme	For businesses that are relocated or in the process of relocation Assistance to temporarily displaced persons for micro businesses Restoring farming lost due to the war	Up to 20 thousand USD Ivano-Frankivsk, Lviv, Kherson, Ternopil regions up to 1,500 thousand USD Dnipro region; up to 1,500 thousand USD Poltava, Sumy, Chernihiv regions
12	International Organisation for Migration (IOM)	For war-affected micro and small businesses	4.5-20 thousand EUR for 10 regions of Ukraine and Kyiv city

Note: * – regions of Ukraine are indicated for programmes that operate only in certain regions

Source: compiled by the author based on I. Krytska & D. Dzysiuk (2023)

The State Budget for 2024 envisages the continuation and resumption of state programmes for direct support, stimulation and development of business in the country, the total cost of which will amount to 40 billion UAH (In the state budget, 40 billion..., 2023). Based on the results

of the analysis of legislation, strategies and programmes for the development of the food industry, the main programme documents for the development of the food industry as part of the agricultural sector were identified (Fig. 2).

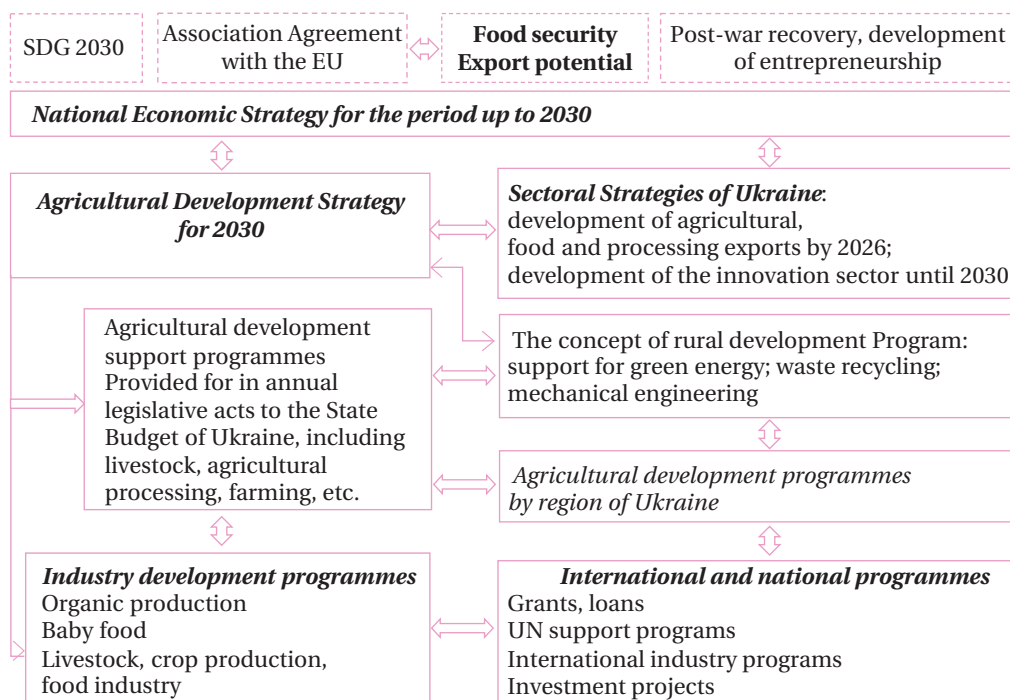


Figure 2. Structure diagram of interaction between programme documents for the development of the agro-industrial complex and the food industry

Note: SDG – sustainable development goals

Source: compiled by the authors

The National Economic Development Strategy of Ukraine until 2030, which was developed in 2021 and adapted in 2022 during the military operations in Ukraine, is based on the SDG 2030 and the provisions of the Association Agreement with the EU and serves as the basis for strategies and programmes for the development of the agro-industrial complex. The vector of development of the agro-industrial complex and food industry is closely linked to sectoral strategies, in particular, export development and innovation. The expenditure side of the budget includes funding for agricultural support programmes based on regional needs. Agricultural development programmes by regions of Ukraine contain an analysis of the state of the agricultural sector in the regions, problems, ways to solve them, and a justification of the needs and development potential. However, control over the implementation of budget programmes, their economic benefits, and management decisions in case of failure to implement them are not effective enough. Despite the effectiveness of grant support and targeted investor financing, which are now being actively used in war-torn Ukraine, the drawbacks of such programmes are the selectivity of regions and enterprises. Pilot programmes in certain regions need to be supported by the government and expanded to other regions of Ukraine, but this process is currently hampered by a lack of funds and a lack of interest from all participants, including businesses.

Current priorities and programme directions for the development of the food industry are substantiated in documents that differ in form but have common content: sectoral sections of the overall strategy (programme) or concept; development programmes, business plans or

business justifications for grants, investments, loans, and joint international programmes. The justification of these policy documents at the sectoral level requires an analysis of the demand for Ukrainian products and the identification of critical points.

The development of policy documents in the food sector should be based on international experience and the latest research findings. In particular, food traceability in Europe, the United States and China (Stazi & Jovine, 2022) is relevant, as it is proven that food regulation poses scientific, economic, legal and technological challenges in the future. A systematic review of 100 sources on agri-food supply chains is beneficial (Yadav *et al.*, 2022).

The issue of the relationship between diet and food security is an urgent concern, with researchers concluding that food and nutrition security influence food choices and that barriers to consumption act as an intermediate step (Thomson *et al.*, 2024). This is an essential factor to consider when formulating public policy. For Ukraine, as well as for the whole world, the problem of school meals is relevant. In particular, in Europe and the Western Pacific, despite a moderate improvement in the diet of children in schools, the measures taken were insufficient (Matela *et al.*, 2024).

Food safety is receiving substantial international coverage, both by public authorities and the scientific community, in line with countries' desire for consolidated responsibility and uniform quality rules and standards across regions, as exemplified by the United States, Canada, and Latin America (Saylor, 2024; Leake, 2024).

When developing approaches to regulatory and legal regulation of the agri-food sector, food risks, constraints

and strengths need to be assessed. Therefore, researchers have developed a new methodology (NAM) that addresses risks and constraints, strengths and weaknesses, and identifies key areas that require government regulation (Manful *et al.*, 2023). The experience of Italian scientists on the possibility of using the coherence matrix as a standardised practice in regional food policy is useful (Monticone *et al.*, 2023).

Development programmes for the food industry in Ukraine should be based on the consolidation of state structures and public administration bodies, businesses, the public and investors. The main issues of such programmes lie in two fundamental areas: post-war restoration of the raw material base, production and logistics; and innovative development of the industries on the way to Ukraine's association with the European Union.

The *bakery industry* urgently needs an implementation of the State Programme for the Revival of Bread Quality, which was emphasised in October 2021 at a meeting of the Head of the State Service of Ukraine for Food Safety and Consumer Protection with the heads of the largest bakers' associations that determine the food policy of the industry – the All-Ukrainian Bakers Association and Ukrkhliprom and the PU “Flour of Ukraine” (“Ukraine needs a state program...”, 2021). It is also necessary to address the immediate issues of grain quality for baking, *currently* by providing loans for the purchase of Grade 2 grain by millers and bakers, and subsequently by improving the quality and grade of grain. The issues of regulating relations between producers and trade, stimulating the growth of health and functional products, resource and energy saving measures (in particular, the use of heat generated in the production process for heating premises), and controlling the quality of water and raw materials are also relevant. It is important to coordinate the problems of providing products to socially vulnerable groups of the population and preventing the shadow market and flour smuggling.

Meat processing and dairy industries primarily require the recovery of cattle of various types, a high-quality feed base and developed logistics, the restoration and reconstruction of processing enterprises, and the establishment of sustainable logistics. In 2021, proposals were collected for the formation of the National Livestock Development Programme in key areas: restoration of cattle, development of pig production, dairy farming, poultry farming, etc. (National Livestock Development Programme..., 2021). It is also necessary to strengthen support for small and medium-sized farmers and processing enterprises, innovative solutions for the feed base, review the terms of trade with the EU, and move away from a raw material focus. To promote the production of high-value-added products, a special value-added tax regime that is directly applied to the creation of value chains could be an effective lever.

Given the high ploughing of Ukrainian land, it is necessary to promote the expansion of hayfields and encourage farmers to restore livestock farms. In the dairy industry, there is a need to improve the quality of milk, deepen the value chain and increase exports of value-added products. It is also necessary to solve the problem of domestic processing of high-quality meat raw materials, which were mostly exported. To increase the value chain and reduce unproductive costs, it is advisable to implement

the international experience in creating closed-loop associations, such as the experience of Denmark, where the milk processing association is united with raw material producers. It is equally important for the meat and dairy processing industries to address the issue of environmental pollution, as more than 40,000 livestock complexes and farms produce 900 million cubic metres of manure containing about 2.5 million tonnes of nitrogen. Almost 10% of the nitrogen goes into water bodies (Environmental problems of farms..., n.d.). An effective tool for the development of the food industry is the Swiss-Ukrainian programme “Development of Higher Value Added Trade in the Organic and Dairy Sectors of Ukraine”, which addresses the issue of *organic production* in Ukraine, in particular through certification of products by producers.

In the *sugar industry*, despite the steady performance in 2022-2023, the development programme should focus on the production of closed-loop products, including the location of advanced waste-to-energy facilities near sugar factories. It is also necessary to increase support and incentives for sugar beet producers and expand foreign markets.

It is also necessary to intensify the *baby food* programme by expanding the range of products based on plant and animal raw materials and resuming the production of canned meat and fish.

The *oil and fat industry* suffered significant losses during the war in Zaporizhzhia and Kherson regions. Previously, 95% of sunflower was processed into oil (mostly unprocessed), but now sunflower exports and logistics costs have increased significantly, and investors have left the industry (Kozachenko, 2022). The programme document for the development of the industry should take into account: its restoration and modernisation with the involvement of grants and investments; the creation of a closed production cycle with high added value, with a predominance of processed oil, as well as the widespread production of advanced processing products – meal and pellets; increase in exports of processed oil; and the introduction of a waste management programme.

Grant programmes for the development of horticulture and greenhouses, berry growing, viticulture, and hop growing are relevant for supporting the population and ensuring food security. However, in the horticultural processing industry, it is also necessary to create closed cycles and promote the production of advanced processing products, such as apple pectin and pharmaceuticals, and to implement programmes to support self-sufficiency.

In general, all sectoral programmes for the development of the food industry are concerned with supporting producers of raw materials and processed products, introducing resource and energy-saving technologies with a focus on green energy, and bridging the innovation gap with developed industries. An important area is the further implementation of legislation in line with EU requirements and rules. The programmes should be in line with the 2030 Agricultural Development Strategy and the provisions of the Association Agreement with the EU.

The quality and environmental friendliness of products will be enhanced by measures to encourage compliance with optional standards and environmental protection. The introduction of lean management approaches in production facilities is orienting manufacturers towards

the ideology of economical use of resources, ensuring the creation of closed production chains and export of high-value-added products, and promoting a clean environment. A healthy lifestyle has become popular in society today, which is driving companies to increase the health products segment.

Improvement of the regulatory environment for the agricultural sector should be aimed at ensuring food security and the adoption of laws of Ukraine on food security (to regulate terms, provisions, and interaction of market participants in the field of food security); internal trade (to regulate the relationship between producers and trade); and support and development of innovation. The methodology for determining the main food security indicators should be updated to reflect the best practices of the FAO. Legislation on stimulating innovation, customs control, and tax invoices needs to be regulated in line with EU requirements.

The disadvantage of state programmes was the lack of adequate funding and insufficient justification of the funds allocated for their implementation, failure to achieve the planned results and the absence of a mechanism for punishing failure to implement programmes. The experience of Ukraine, the EU and the US confirms that grant programmes and sectoral development programmes in certain areas were more effective (for example, the Swiss-Ukrainian programme “Development of Higher Value Added Trade in the Organic and Dairy Sectors of Ukraine” – Quality FOOD Trade Programme, QFTP (Switzerland will assist..., 2023). However, these programmes are selective in terms of the subjects covered and the scale of dissemination, due to the lack of funds and local initiative. Programmes to support the self-sufficiency of the population with foreign participation, such as U-Lead with Europe and Victory Gardens, have economic and social effects but have not yet found widespread and state support. The ambitious provisions of the Strategy for the Development of the Agro-Industrial Complex presented by the Ministry of Agrarian Policy of Ukraine need to be discussed, as the high targets should be clarified given the state of the economy in 2023 (Strategy for the Development..., 2023). The limitation of the prospects for modernisation and introduction of new technologies in the agricultural sector in terms of the impact on GDP, as outlined in the Strategy for the Development of Innovation Activities for the period up to 2030 (Order of the Cabinet of Ministers of Ukraine No. 526-r..., 2019), is debatable. Proposals to take into account the experience of Turkey’s strategic initiatives in the functional food market should be expanded by the experience of other countries in this area (Gok & Ulu, 2019). The mechanisms for the development of the food industry at the present stage will need to be supplemented by an environmental component (Kovalenko *et al.*, 2020). The practice of food traceability also requires consideration of environmental aspects (Stazi & Jovine, 2022).

J. Szulecka & N. Strøm-Andersen (2022) studied the aspects of waste management on the way from industrial self-regulation to state regulation in Norway and justified the need for state intervention in these processes, but the thesis on strengthening state waste management is debatable. The study should focus on stimulating the

self-regulation of enterprises and gradually limiting state intervention.

F. Von Kaufmann & V. Skafida (2023) addressed the interaction between government, industry, and other stakeholders in the development and regulation of the market for alternative protein products in the United States in 1960-1980, the motivation for the introduction of products in schools, which gave impetus to the adjustment of modern school feeding programmes not only in the United States but also in other countries. In Ukraine, national school meals are currently being diversified. G.E. Schneider (2021) proved that the evolution from family farms to large industrial agribusiness was accompanied by an increase in ultra-processed food, and the use of herbicides and pesticides following the example of the modern US food industry. A return to healthy food and community empowerment, along with other measures, requires government support. By comparison, Ukraine has gone from a post-Soviet business organisation to the creation of large agricultural holdings that require government support. Current trends are to implement healthy eating principles and limit harmful additives. Small and family businesses began to develop with the transition to market relations, and their effective development depends on empowering communities. The instruments of state regulation of the development of the agro-industrial complex, including the food industry, have not been developed systematically enough since Ukraine’s independence, and a significant number of indicators have not been achieved for subjective and objective reasons. Therefore, there is a need for more widespread grant programmes, with the involvement of other sources of funding.

► Conclusions

The results of the study, obtained according to the set goal, provide proposals for improving the food industry development programmes in the agro-industrial complex. Implementation of these proposals will contribute to the innovative development of enterprises, optimisation of food supply chains, growth of the country’s export potential, and increase of the efficiency of enterprises in the industry.

Among the problems faced by the food industry in the agro-industrial complex in the context of Russian aggression against Ukraine are the following: disruption of uninterrupted operation and logistics chains of production and supply; environmental damage and pollution; dependence on imported equipment; instability of energy supply; and the prevalence of logistics costs over raw materials in the cost of food products.

The existing grant support for food and agricultural enterprises with foreign capital has proved to be effective but selective. The generalisation of grant programmes for small and medium-sized businesses shows a wide range of users of such programmes, so it is necessary to spread awareness among enterprises and the population about the opportunities for business recovery and development, as well as means of support. The proposed structural scheme of interaction and interconnection of programme documents for the development of the agro-industrial complex and the food industry is focused on the development strategy, sectoral support programmes provided for in the country’s budget, sectoral strategies (including

export development, and innovation), international and national programmes. Proposals to the food industry development programme documents should focus on post-war recovery and further innovative development on the path to the EU Association, considering international experience and sectoral specifics, and be guided by the strategic benchmarks until 2030. Sectoral development programmes should contribute to addressing environmental pollution and climate change, waste recycling, and the creation of closed production cycles with high-added

value. Prospects for further research include assessing the impact of government regulation on the functioning of food value chains in the context of current challenges and post-war recovery.

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► Conflict of interest

The authors of this study declare no conflict of interest.

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Інструменти державного регулювання розвитку агропромислового комплексу в умовах воєнного стану в Україні

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► **Анотація.** В умовах кризових явищ у продовольчому секторі країни, спричинених агресією російської федерації і на шляху до асоціації України з Європейським Союзом зростає роль державного регулювання. Метою дослідження було надання пропозицій щодо вдосконалення програм розвитку харчової промисловості в системі агропромислового комплексу для покращення продовольчого забезпечення населення, інноваційного розвитку підприємств та забезпечення продовольчої безпеки України. У процесі виконання дослідження використано загальнонаукові методи: діалектичний, статистичний, структурно-функціонального аналізу, табличний, системного узагальнення, порівнянь. За результатами роботи узагальнено діючі програми підтримки та розвитку аграрного сектора України на урядовому і міждержавному рівні. Визначено проблеми харчових та аграрних підприємств в умовах агресії російської федерації в Україні, зокрема щодо збитків та забрудненості навколишнього середовища, нестабільності енергопостачання, зростання логістичних витрат. Зазначено дієвість, але вибірковість грантової підтримки за участю іноземного капіталу. Систематизовано програмні документи розвитку агропромислового комплексу і харчової промисловості та проаналізовано їх взаємозв'язок. Ці документи включають Національну економічну стратегію і стратегію розвитку її аграрної ланки, галузеві програми підтримки, секторальні стратегії, міжнародні та національні програми. У статті надано пропозиції до програмних документів розвитку харчової промисловості, які спрямовані на післявоєнне відновлення та подальший інноваційний розвиток. Пропозиції враховують іноземний досвід, галузеві особливості та зміни до чинного законодавства. Галузеві програми розвитку мають відповідати стратегічним орієнтирам до 2030 року і положенням Угоди про асоціацію з Європейським Союзом, сприяти вирішенню проблем забрудненості навколишнього середовища та протидії кліматичним змінам, перероблення відходів та створення замкнених циклів виробництва з високою доданою вартістю. Отримані результати можуть бути використані в подальших наукових дослідженнях, програмах, рекомендаціях і стратегіях органів законодавчої та виконавчої влади щодо ефективного розвитку харчової промисловості у складі агропродовольчого комплексу та покращення продовольчого забезпечення населення

► **Ключові слова:** продовольче забезпечення; державне регулювання експорту; програми розвитку; харчова промисловість; підтримка; продовольча безпека