

Ensuring sustainable agricultural development in Kazakhstan: Sources of funding

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ABSTRACT

Agriculture of the Republic of Kazakhstan has great potential, still, it is characterized by several problems. The aspects of normative-legal regulation of the agro-industrial complex of the Republic of Kazakhstan concerning financial relations in the sphere were summarized. The main statistical indicators of the agriculture, forestry, and fisheries sectors of the state were analyzed. The analysis of the structure of investments in the enterprises of agriculture, forestry, and fisheries of the Republic of Kazakhstan was carried out. The main issues concerning the financing of agriculture of the state are defined and the directions of their solution are offered.

Keywords: *Agro-industrial complex; investment; food security; crop production; livestock; enterprise fixed capital; environmental problems.*

1 Introduction

Sustainable agricultural development stands as a pivotal pillar in addressing some of the most pressing global challenges of our time. As our world grapples with a burgeoning population, environmental degradation, and the urgent need to mitigate climate change, agriculture finds itself at the intersection of these issues. In this context, the concept of sustainable agriculture has emerged as a beacon of hope and practicality. It seeks to harmonize the production of food, fiber, and fuel with the conservation of natural resources, the protection of ecosystems, and the equitable well-being of rural communities. In the pages that follow, we will delve into the principles, innovations, and challenges of sustainable agriculture, exploring its potential to secure our food supply, protect our environment, and foster resilient and prosperous agricultural landscapes for generations to come. Precision agriculture has continued to advance, integrating technologies like GPS, drones, and IoT sensors to optimize farming practices. Farmers can now apply fertilizers, pesticides, and water more efficiently, reducing waste and environmental impact while improving crop yields. Regenerative agriculture focuses on restoring soil health and biodiversity, emphasizing practices like cover cropping, reduced tillage, and crop rotation. Many farmers are adopting regenerative techniques to improve soil quality and reduce the need for synthetic inputs. Blockchain technology is being used to create transparent supply chains in agriculture (Karunathilake et al., 2023; Khangura et al., 2023). This helps trace the origin of food products, ensuring safety and sustainability throughout the production and distribution process. While sustainable agricultural practices and policies have garnered considerable attention globally, there exists a relative dearth of research and analysis specifically focused on the financing mechanisms and sources that can support the transition towards sustainable agriculture in Kazakhstan. This gap in understanding is noteworthy considering the critical role of funding in facilitating the adoption of eco-friendly farming practices, technological innovations, and capacity-building initiatives necessary for sustainable agriculture. Recognizing the importance of investigating these funding sources and their potential impacts is paramount in the pursuit of a more resilient and sustainable agricultural sector in Kazakhstan.

Ensuring sustainable economic development at the present stage is one of the main policy priorities of both developed and developing countries (Sachs et al., 2019; Bandari et al., 2022). For the latter, one of the most important aspects of policies aimed at achieving the goals of sustainable development is improving the efficiency of the agro-industrial complex (Gil et al., 2019). Agriculture is crucial for food security, supplies other sectors of the economy with products, creates new jobs, and promotes infrastructure and export-import relations with other states (Loizou et al., 2019; Hatab et al., 2019; Pawlak and Kołodziejczak, 2020). Among other things, the agro-industrial sector is important for achieving sustainable development goals, particularly zero hunger (Blesh et al., 2019; Byerlee and Fanzo, 2019).

Sustainable agricultural development can be characterized as the stability of rural areas, development in general economic terms, increasing productivity, and providing a high level of employment for the local population, which contributes to improving their living conditions (Aznar-Sanchez et al., 2019; Kulakova, 2021). However, despite the importance of industry in the economies of developing countries, the trends of agricultural development in the Republic of Kazakhstan are far behind the desired. For example, the share of the agro-industrial complex in the state GDP is only 5.7%, while in Kyrgyzstan the same indicator reaches 14.7%, in Armenia, Moldova, and Ukraine – more than 10%, in Azerbaijan it is at a level of 7.7% (UNECE, 2022). Currently, the main problems of agriculture in Kazakhstan include:

- undeveloped infrastructure;
- low supply, high level of import dependence, and unbalanced pricing policy in the livestock industry;
- low investment attractiveness;
- imperfect system of lending to agricultural enterprises (Kulakova, 2021);
- low labor efficiency;
- low availability of financing for agricultural enterprises;
- ineffective taxation;
- lack of scientific research in the field of agriculture;
- insufficient level of professionalism among the industry's employees;
- low standard of living in rural areas (Uspambayeva et al., 2020);
- slow industry digitalization (Francesco et al., 2020a);
- other ecology issues (Yu et al., 2020; Yan et al., 2020; Kim et al., 2021).

As evident from the above-mentioned list, most of the issues are concentrated around the lack of financing of the agricultural sector and related areas. Thus, at the present stage, the relevant issue for scientists and practitioners in the industry is the study of the structure and composition of the sources of agricultural financing in Kazakhstan, as well as to identify the problems that cause the inefficiency of the financing system, and their possible solutions. Several studies are devoted to the problematic issues of agricultural financing of the Republic of Kazakhstan, including its sustainable development. Thus, Utibayeva et al. (2019) disclose the issues of execution of the national budget and assessment of the financing of the agricultural sector in Kazakhstan. Scientists see the solution to several problems of the agricultural

industry in the provision of effective agricultural cooperation in two directions - vertical cooperation and horizontal cooperation. The researchers also focus their attention on the need to increase innovation activity.

Uspambayeva et al. (2020), studying the aspects of financial management in agricultural enterprises, focus on improving the effectiveness of state audit, which assesses the allocation of budgetary funds for the needs of the agricultural sector through state and regional programs, plans, and strategies. Aspects related to the need to improve the quality of planning are prioritized. The issues of auditing the use of state budgetary funds are also described by Beisenova et al. (2020). They prioritized the comparison of auditing in Kazakhstan with the international practice of its implementation. A study by Tolegenovna et al. (2017) examined aspects of the financing of the agricultural sector of Kazakhstan and formulated recommendations for the improvement of state financial regulation of the agricultural sector. The study focuses on the issues of stimulating investment in the industry. Aidarova et al. (2022) study the problems of financing the agricultural sector of Kazakhstan in the context of its impact on aspects of sustainable environmental development. Scientists discussed the impact of environmental factors on agriculture, as well as on the financial relationships that are formed in this sector.

Based on the above-mentioned, the research aims to study the structure and composition of the sources of agricultural financing in Kazakhstan, as well as to identify the main problems of the financing system and recommendations for their elimination.

2 Materials and Methods

In the conducted research, the usage of the method of generalization, the normative-legal regulation of the agro-industrial complex of the Republic of Kazakhstan was considered. The financial aspects noted in the legislative documents were prioritized. The research results consist of the generalized presentation of the main provisions of the studied legislative acts concerning the financial aspects of the problem. The use of economic and statistical analysis allowed studying the main statistical indicators of the agriculture, forestry, and fisheries sector of the Republic of Kazakhstan, in particular, the structure and dynamics of gross output of products (services) of agriculture, forestry, and fisheries of Kazakhstan, as well as the dynamics of investment in fixed capital of enterprises of the agricultural and industrial sector. The following indicators were studied:

- the structure of investment in fixed capital in agriculture, forestry, and fisheries of Kazakhstan;
- regional investments in fixed capital in agriculture, forestry, and fisheries of Kazakhstan;
- investment in fixed capital in agriculture, forestry, and fisheries in the regions of Kazakhstan (with a distribution of sources, namely: local budget funds, own funds, bank loans, and other borrowed funds);
- construction investments in the direction of "Agriculture, Forestry and Fishery" of Kazakhstan (in the context of the following areas: the cost of construction and installation work; overhaul of buildings and structures; machinery, equipment, and tools associated with the construction of the object; other costs associated with the construction of the object).

With the use of graphical methods, namely – charts, graphs, and tables built in the software environment MS Excel, the results of economic and statistical analysis were visualized, which increased their clarity and allowed the more effective formulation of appropriate conclusions. As a result of the study, using the methods of deduction and induction, the main problems of the agro-industrial sector of Kazakhstan concerning the financing of its enterprises were formulated, and the key directions for solving such problems were proposed. A comparative analysis of the obtained results with the studies of other scientists was carried out, based on which the formulated recommendations can be improved and supplemented.

The informational basis of the study included the scientific periodicals of Kazakhstan and other countries, as well as publicly available data on the official websites of the Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023). In addition, the following normative legal documents were used: Law of the Republic of Kazakhstan No 66-III "On State Regulation of the Development of the Agro-Industrial Complex and Rural Territories" (2005); Decree of the Government of the Republic of Kazakhstan No. 960 "On approval of the Concept for the development of the agro-industrial complex of the Republic of Kazakhstan for 2021-2030" (2021); Decree of the President of the Republic of Kazakhstan No. 636 "On approval of the Strategic Development Plan of the Republic of Kazakhstan until 2025 and declaring invalid some decrees of the President of the Republic of Kazakhstan"(2018). The conducted research and the recommendations formulated according to its results can be used to improve management efficiency at the level of individual enterprises of the agro-industrial complex of Kazakhstan, as well as to serve as the basis for the optimization of regulatory and legal support in the field of agriculture.

3 Results

3.1 Regulatory regulation of the agro-industrial complex of Kazakhstan: financial aspects

The development of the agro-industrial sector primarily depends on the provision of state support, including financial support, as well as the adoption of relevant legislation. Therefore, it is necessary to research the main state documents that enshrine certain aspects of the development of the agro-industrial complex at the legislative level. These documents are: Law "On State Regulation of the Development of the Agro-Industrial Complex and Rural Territories" (2005), Decree "On approval of the Concept for the development of the agro-industrial complex of the Republic of Kazakhstan for 2021-2030"(2021) and Decree "On approval of the Strategic Development Plan of the Republic of Kazakhstan until 2025 and declaring invalid some decrees of the President of the Republic of Kazakhstan"(2018). Under the Law "On State Regulation of the Development of the Agro-Industrial Complex and Rural Territories"(2005), the main objectives of regulation of the agricultural sector at the state level are:

- developing the infrastructure of rural areas and ensuring the well-being of the local population;
- ensuring food safety in the country;
- sustainable development of the agricultural sector and rural areas;
- ensuring favorable conditions to support the competitiveness of industry products;
- stimulating the development of organic agriculture.

In the context of designated objectives, this law stipulates, among other things, the provisions on crediting in the sphere of agriculture and rural areas (Article 10) and subsidies to the agricultural sector (Article 11). The development of lending is carried out in the following main directions: development of infrastructure, leasing, granting loans to credit partnerships in the industry, purchase, production, processing, and sale of agro-industrial products, etc. The subsidization of agriculture is carried out under the conditions of economic efficiency and improvement of the quality and competitiveness of products.

"On approval of the Concept for the development of the agro-industrial complex of the Republic of Kazakhstan for 2021-2030" (2021) highlights the main problems concerning the financing of agriculture:

- in the sphere of scientific and personnel support: lack of funding in the sphere of scientific research in the industry, as well as activities related to the dissemination of knowledge;
- in the sphere of land resources: insufficient funding for soil surveys, as well as geo-botanical survey;
- in the sphere of state support: lack of resources of quasi-governmental institutions to finance the complex, inaccessibility of credit financing, etc.

The action plan to implement the above-mentioned Concept includes such measures concerning the improvement of the situation in the sphere of industry financing: program-targeted and grant financing of scientific support in the sphere, financing of investment projects, introduction of medium-term financing for some types of seasonal works, increase of leasing programs financing, development of credit partnerships system, development and introduction of the state system of subsidies, etc.

"On approval of the Concept for the development..." (2021) notes that under the "Agribusiness" program the subsidization of the agro-industrial complex was doubled, which allowed increasing labor productivity in the industry proportionally. In addition, the State program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021 was implemented to improve the competitiveness of the industry (Decree of the Government..., 2018). The main guidelines of the policy in agriculture are: increasing the productivity of the industry, optimizing the processing of products, ensuring food security, and focusing on the export of environmentally friendly products. In addition, the Strategic Plan focuses on attracting investment in the industry by creating investment funds, technology development in the industry, cooperation with the international scientific community, production of organic products as a promising export direction, financing of priority areas of industry development through the National Management Holding "KazAgro", etc.

From the analysis of legislative acts, it can be concluded that for the development of the agro-industrial complex in Kazakhstan, the state administration has adopted several measures to improve the productivity and competitiveness of the industry, as well as to improve its financing. However, despite the measures taken, several unresolved problems remain in agriculture in Kazakhstan, and the issues of financing are the most important of them. More detailed information on the actual state of the agro-industrial sector of the state is shown in statistical data of the industry

3.2 The main statistical indicators for the sector "Agriculture, Forestry and Fisheries" of the Republic of Kazakhstan

The vast area of the Republic of Kazakhstan provides a variety of climatic and geographical conditions in the country, which makes it possible to grow cereals, cotton, rye, millet, oats, barley, sunflowers, rice, tobacco, sugar beets, grapes, peas, and vegetables. Conditions are also favorable for the development of livestock, particularly meat and dairy cattle,

camels, sheep, and horses (Liang et al., 2020; Schierhorn et al., 2020; Zhou et al., 2022). The structure of the gross output (services) of agriculture, forestry, and fisheries in Kazakhstan can be generally represented as a set of crops, livestock, and agricultural services (Figure 1).

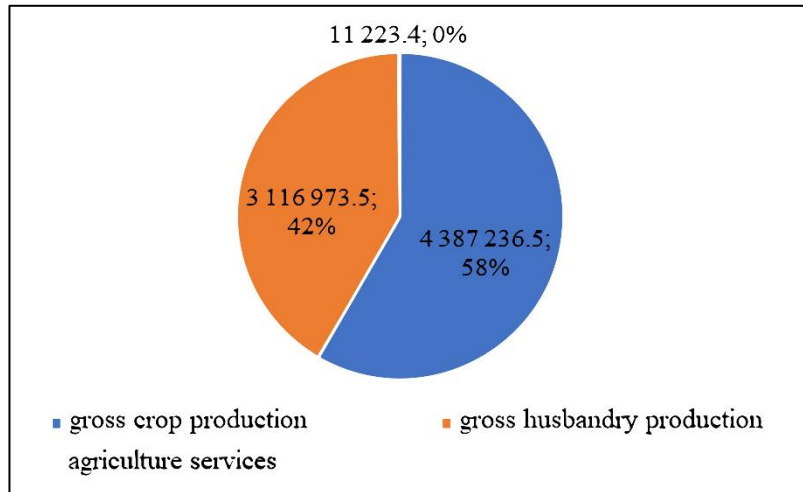


Figure 1. Gross output of products (services) of agriculture, forestry, and fisheries of the Republic of Kazakhstan, million tenge (2021; Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023)).

As can be seen from Figure 1, in the structure of the gross output of products (services) of agriculture, forestry, and fisheries of Kazakhstan prevails crop production (58%), which is also characterized by higher dynamics of gross output (Figure 2).

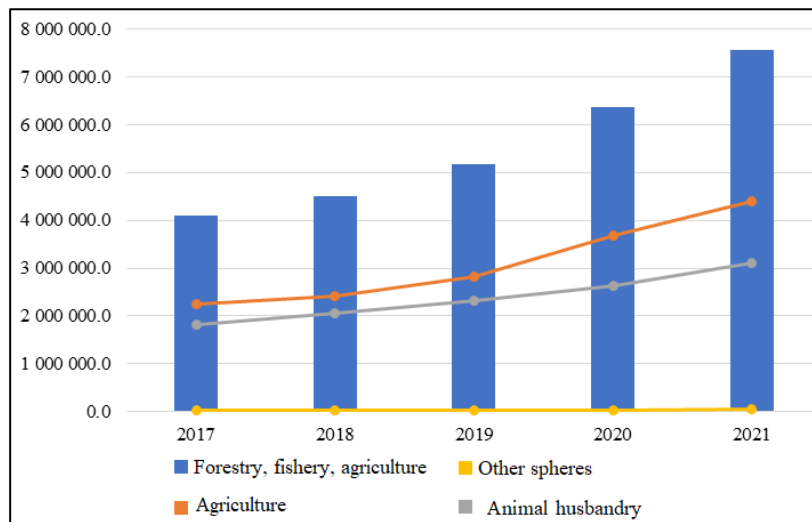


Figure 2. Gross output of products (services) of agriculture, forestry, and fisheries of the Republic of Kazakhstan, million tenge (2017-2021), Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).

Figure 2 demonstrates a fairly rapid growth rate of gross output of products (services) of agriculture, forestry, and fisheries: in five years, gross output has almost doubled. This fact was noted in the "On approval of the Strategic Development Plan...."(2018). Thus, the increase in gross output was carried out not least thanks to the "Agribusiness" program, under which subsidies to the industry were doubled. The "other industries" highlighted in Figure 2 and characterized by insignificant growth in gross output include auxiliary activities in crop cultivation and animal breeding, hunting and trapping, including the provision of services in these areas, forestry and logging, as well as fishing and aquaculture. An important area in the context of studying the problems of financing the agricultural sector of Kazakhstan is characteristic of investment in the industry (Figure 3).

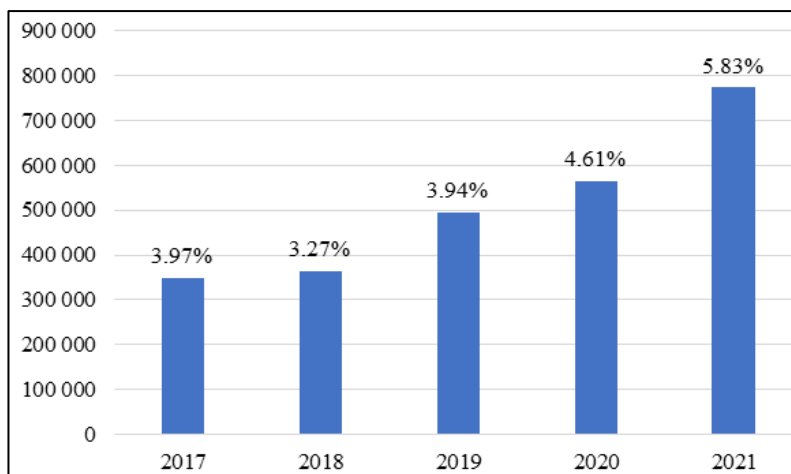


Figure 3. Investments in fixed capital ("Agriculture, Forestry and Fisheries") in the Republic of Kazakhstan, million tenge, % of the total investment in fixed capital, Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).

From Figure 3 it can be concluded that the increase in investment in fixed capital in the direction of "Agriculture, Forestry and Fisheries" in the Republic of Kazakhstan for five years (2017-2021) was almost 2%. The next section of the study is devoted to a detailed study of the use of investments, the composition and structure of their sources, as well as regional differences.

3.3 Investments in agriculture, forestry, and fisheries enterprises of the Republic of Kazakhstan by directions of use, regions, and sources

As noted above, the efficiency of agriculture largely depends on sufficient financing of the industry, which allows for improved infrastructure, stimulates scientific research in the industry, makes it possible to introduce and use new technologies and techniques, etc. Figure 4 shows the structure of investment in fixed capital in agriculture, forestry, and fisheries in Kazakhstan.

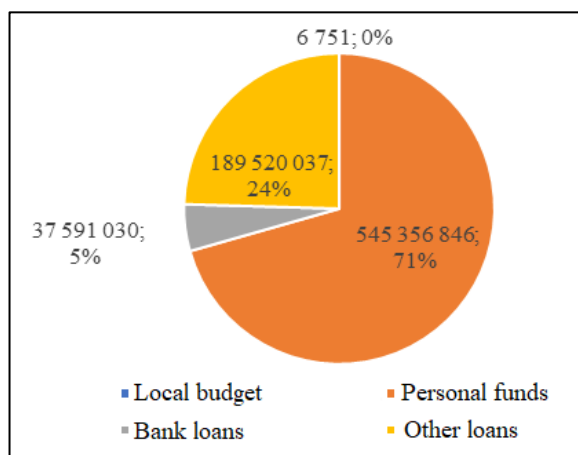


Figure 4. Investments in fixed capital in agriculture, forestry, and fisheries of the Republic of Kazakhstan, thousand tenge (2021). Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).

As can be concluded from Figure 4, the largest share of investments is carried out at the expense of own funds (71% of the total volume). Other borrowed funds account for 24%, bank loans – 5%, and local budget funds – for less than 1%. At the same time, no funds were allocated from the republican budget for investment in the sector, and bank credits consist entirely of credits from national banks without the involvement of foreign banks. In the structure of other borrowed means of non-residents are equal to 799814 thousand tenge from the total amount 189520037 thousand tenge (i.e. less than 0.5%). Figure 5 shows the regional volume of investment in fixed capital in agriculture, forestry, and fisheries of Kazakhstan

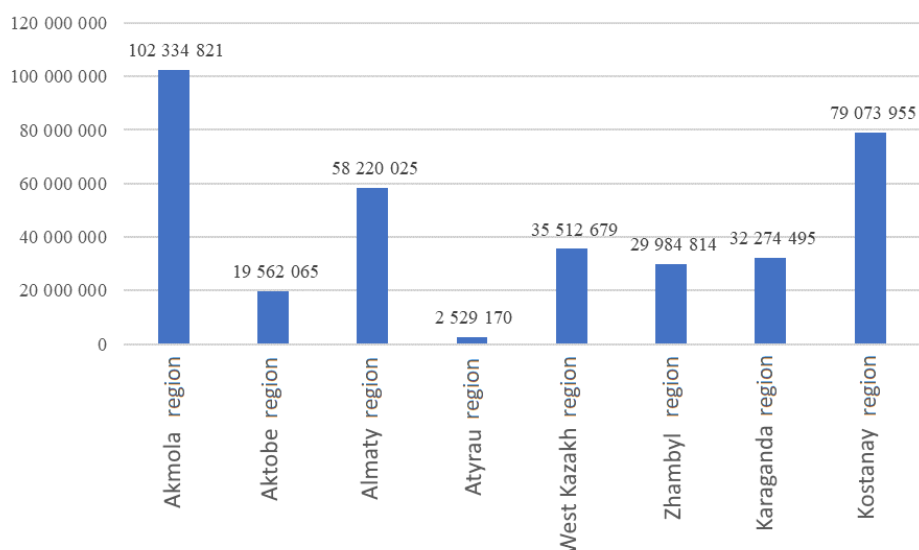


Figure 5. Regional investments in fixed capital in agriculture, forestry, and fisheries of the Republic of Kazakhstan, thousand tenge (2021). *Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).*

As can be seen from Figure 5, the leaders in terms of investment are Akmola, Almaty, and Kostanay regions. In more detail, the structure of regional volumes of investments in fixed capital of enterprises of agriculture, forestry, and fisheries of Kazakhstan with the distribution of investments by the source is shown in Table 1 and Figure 6.

Table 1.

Investments in fixed capital in agriculture, forestry, and fisheries in the regions of the Republic of Kazakhstan (distribution by source), thousand tenge (2021)

	Main capital investments	%, in the year 2020	Local budget	Personal budget	Loans from national banks	Other loans
Kazakhstan Republic	772474664	133.2	6751	545356846	37591030	189520037
Akmola region	102334821	153.8	-	67705291	6517727	28111803
Aktobe region	19562065	83.8	-	8930661	20375	10611029
Almaty region	58220025	103.2	-	35894747	13227659	9097619
Atyrau region	2529170	71.2	-	x	62663	X
West Kazakhstan region	35512679	141.4	-	29696923	1178802	4636954
Zhambyl region	29984814	110.9	-	26686809	230038	3067967
Karaganda region	32274495	120.5	-	21007325	637157	10630013
Kostanay region	79073955	138.2	-	48767745	2601844	27704366
Kyzylorda region	8776559	60.4	-	2911237	96089	5769233
Mangistau region	300809	13.7	-	272309	28500	-
Pavlodar region	103207701	180	-	79145604	4209948	19852149
North Kazakhstan region	159223065	123.7	-	107577960	1967547	49677558
Turkestan region	60892795	105	-	52732168	192260	7961616
East Kazakhstan region	70300208	179.1	-	55117854	4446689	10735665
Almaty	104205	94.4	-	104205	-	-
Shymkent	10177298	230.2	-	x	2173732	x

Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).

Table 1 details the information presented in Figure 6, which, in turn, clearly demonstrates the distribution of investment volumes by regions of Kazakhstan with the distribution of the total volume by source. As it can be noted, investments differ significantly in volume and structure depending on the priority areas of agriculture in the region and other factors, but common is the predominance of own funds in the structure of investments. An important direction of investment in agriculture, forestry, and fisheries is construction. The structure of investments in construction in the industry by the direction of funds use is shown in Figure 7.

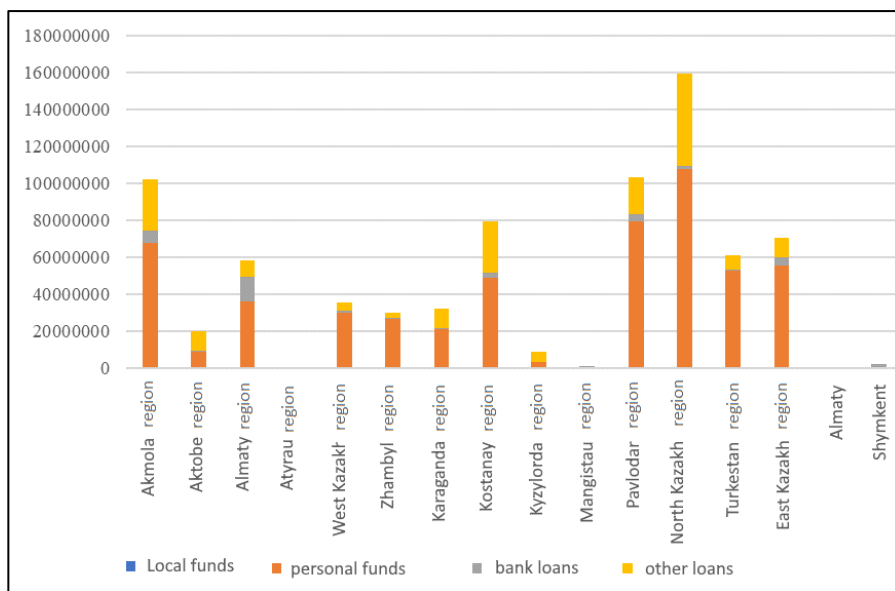


Figure 6. Investments in fixed capital in agriculture, forestry, and fisheries in the regions of the Republic of Kazakhstan (distribution by source), thousand tenge (2021). Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).

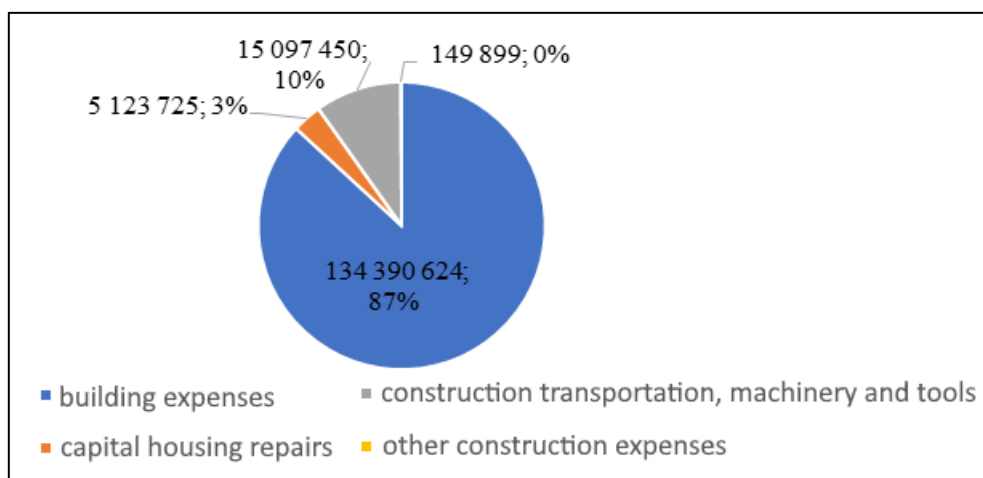


Figure 7. Investments in construction (in the direction of "Agriculture, Forestry and Fisheries") of the Republic of Kazakhstan, thousand tenge (2021). Source: Bureau of National statistics of the Agency for Strategic planning and reforms of the Republic of Kazakhstan (2023).

The agricultural sector of Kazakhstan is characterized by the significant depreciation of fixed assets (Francesco et al., 2020b), but, as shown in Figure 7, only 3% of investments are directed to the capital repair of buildings and structures. A large share of them (87%) is the cost of construction and installation works. The economic and statistical analysis allows us to proceed to the formulation of conclusions about the financing of the agro-industrial complex of Kazakhstan and the development of recommendations to improve the current state of the problem, considering aspects of sustainable development of agriculture.

Thus, the development of the agro-industrial sector in Kazakhstan heavily relies on state support and relevant legislation. This dependence is a common feature in many countries, where government intervention plays a crucial role in shaping the agriculture sector's growth and sustainability. Previous studies in various countries, such as studies on agricultural policy and development in developing nations (e.g., Pingali and Kelley, 2007), underscore the significance of government support in agricultural development. The key financial support mechanisms in Kazakhstan include crediting and subsidies, provided under conditions of economic efficiency and product quality improvement. This approach aligns with international best practices that aim to ensure that financial support leads to sustainable and efficient outcomes in the agricultural sector. Research on agricultural subsidy programs worldwide, like studies

conducted by Anderson and Swinnen (2010), emphasizes the importance of targeted and efficient subsidy programs in the agriculture sector. Challenges in financing the agro-industrial complex in Kazakhstan include issues related to scientific research, land resources, and state support. These challenges are in line with common issues faced by agriculture sectors in many countries, where funding for research, land management, and state support can be critical bottlenecks. The "Strategic Development Plan of the Republic of Kazakhstan until 2025" outlines key policy directions for agriculture development. Having a strategic plan with clear policy directions is a common approach for governments to provide long-term guidance for the sector. Recommendations include diversifying financing sources, addressing regional disparities, and promoting sustainable development in agriculture. These recommendations stem from identified challenges and are aligned with best practices for enhancing agricultural development.

4 Discussion

4.1 Addressing challenges and enhancing investment in the agricultural sector of Kazakhstan

The research confirms the existence of several problems in the agro-industrial complex of Kazakhstan, associated with the lack of funding. Among other things, it should be noted that investments in fixed capital of agricultural enterprises are made mainly at the expense of their funds. The industry is not attractive enough for foreign investors, and access to loans from national banks is limited. Also, due to the high depreciation of fixed assets, the sector needs to increase investment in capital repairs of buildings and facilities at enterprises. However, despite all the above-mentioned problems, the sector has a high potential supported by the availability of vast areas, labor resources, and favorable geographical and climatic conditions for the development of cattle breeding and cultivation of a wide range of crops. Thus, the legal framework and programs to ensure the sustainable development of agriculture in Kazakhstan need to be revised and updated. This applies to such aspects as stimulating investment in the industry, ensuring a sufficient level of state financial support, and providing access to credit resources. The research results are reflected in the work of Tolegenovna et al. (2017). The authors noted that the main direction of state regulation of the agricultural sector in the Republic of Kazakhstan is its investment development. This is predetermined by sufficient volume and growth of investment is the key to the restoration of the industry, updating the technological base, solves the problem of significant depreciation of fixed assets, which ultimately leads to the sustainable development of the agricultural sector.

Elemesov and Bekmuratkyzy (2019) also emphasized the need to attract large amounts of investment in agriculture. Investments in this industry in Kazakhstan are characterized by a high degree of volatility, and the growth of investments has a direct correlation with the growth of profitability in the industry. Following the scientists, the realization of more even, as well as purposeful investments would allow reaching an increase of stability and growth of yield in plant growing, on which the basic share of investments falls. The direction of such investments should be science-based methods and technologies in the field of agriculture, which will ensure sustainable and progressive development. In turn, unreasonable investments can even cause harm and lead to increased depreciation of fixed assets, while it is already at a high level. In addition, scientists named the main reasons for the actual lack of foreign investment in the industry, which include low competitiveness, unfavorable climate for making investments, underdeveloped agricultural land market, and short lease term for non-resident investors. Comparing the research results, it can be concluded that the implementation of state programs concerning the financing of the agricultural sector to improve the quality of production, its competitiveness, modernization of production, etc. should precede, as well as contribute to, the improvement of its investment attractiveness for investors, especially non-residents.

Following Kulakova (2021), to solve the existing problems in the industry regarding the sustainable development of rural areas in Kazakhstan, it is necessary to improve the infrastructure and social welfare of the local population. The researcher proposed several measures related to the optimization of the labor market, the expansion of local government functions, and the improvement of infrastructure and social welfare of the local population. However, in the work of Kulakova, little attention has been devoted to solving the problems highlighted in the same study by the scientist, related to the lack of investment in the agricultural sector in the RK, as well as the limited access to credit resources.

4.2 Enhancing financing and sustainable development in Kazakhstan's agro-industrial complex

Utibayeva et al. (2019), were studying the problems of financing the agro-industrial complex in Kazakhstan, noted that one of the key areas and the main reserves for creating a food and raw material base of the agro-industrial market is the development of cooperation in rural areas. As such, it will increase labor productivity, the competitiveness of production, fully load processing plants, increase technological equipment, increase profitability, and also decrease overhead costs. The measures to be taken to develop cooperation in the countryside are, among other things, to ensure equal conditions for subsidizing cooperatives in the agricultural sector, using all possible means of financial support from the state, as well as reviewing the conditions for micro-crediting of cooperatives. Agricultural cooperation is divided into two main directions: horizontal cooperation and vertical cooperation. The first direction can improve

profitability in small and medium-sized productions by merging and reducing the costs of production and sales. The second direction (vertical cooperation) implies the integration of producers of agricultural products, which increases the economic benefits of their cooperation with processing enterprises and other consumers, as well as with suppliers of resources. In addition, the researcher recommends increasing the rate of implementation of digitalization in agricultural enterprises, including the creation of an electronic portal for collecting information on the industry, which will facilitate the monitoring of agribusiness entities to reliably assess the productivity and number of jobs. According to the authors, the solution to the problems that exist in the agricultural sector of Kazakhstan regarding the financing of its subjects should include the development of cooperation in rural areas, but not be limited to it as the main measure.

It is worth agreeing with Utibayeva et al. (2019) regarding the need to introduce elements of digitalization, in which case the existing legal framework for stimulating innovative development, particularly in the field of sustainable agricultural development, should be revised. Uspambayeva et al. (2020) considered aspects of improving the effectiveness of financial management of agro-industrial enterprises. In this context, the researchers saw a change in key approaches to the quality of planning as the main measure to improve the effectiveness of public administration in the field of agriculture. As such, that would make it possible to adequately assess the planned indicators, identify shortcomings of state programs at early stages, and improve the quality of program documents. It is worth agreeing with the authors on this issue because the quality of financial planning determines the effectiveness of financial management at both the state and individual enterprise levels

Aidarova et al. (2022) in the context of the study of problems related to the financing of the agro-industrial complex in Kazakhstan, address the important issue of the impact of such problems on aspects of sustainable environmental development. The authors made a parallel between the agricultural sector and natural, climatic, and biological processes. The scientists concluded that at the present stage, agriculture in the Republic of Kazakhstan is characterized by several problems related to environmental aspects and their impact on the agro-industrial complex. From this follows the need to develop public finance and establish a sustainable relationship between them and environmental measures, which consists of the rational allocation of agricultural products, financing of relevant activities, competent planning, and use of investments. In the authors' opinion, environmental problems in Kazakhstan, in particular those that affect the agro-industrial complex, really should be a priority in the formation of state programs concerning the financing of the agricultural sector.

4.3 Addressing environmental challenges and promoting sustainable development in Kazakhstan's agro-industrial sector

Yessymkhanova et al. (2021), studying the issues of sustainable development in Kazakhstan, noted that the environment of the Republic of Kazakhstan today is characterized by several problems, among which it can be highlighted the acute shortage of water resources, contamination of land resources by radioactive, bacteriological and chemical waste, air pollution and the rapid pace of climate change.

As noted by Wang et al. (2022), the most problematic in environmental terms are the regions near the Aral Sea, as well as the cities of Kostanai and Karaganda. In addition to the problems caused by climatic and natural conditions, the source of adverse effects on the ecology of the regions is the local models of agricultural management. As the main way of solving the indicated problems, scientists allocate targeted coordinated investments in environmental protection and management of agro-industrial production. It is worth adding that to improve environmental performance it is useful to use the international experience of states in the field of environmental protection measures, which is due to the relevance of environmental issues abroad and the significant success of developed countries in this matter. The research results in the discussion allows us to conclude that the development of public finance and promotion of investment in the agricultural sector of Kazakhstan should include, in addition to the main directions (increasing productivity, profitability, product quality, competitiveness, etc.), and such vectors as the development of agricultural cooperation, improving the quality of public financial planning, investing in the digitalization of the industry and financing of environmental measures.

One of the primary limitations of this analysis is the reliance on existing data, which might not capture all the nuances of the agro-industrial sector in Kazakhstan. Additionally, the data used in this analysis are up to a certain point in time and may not reflect the most current developments. The accuracy and reliability of the data sources used, such as governmental reports, can be subject to scrutiny. There may be discrepancies or gaps in the data that were not addressed in the analysis. Future research should prioritize collecting more comprehensive and up-to-date data to provide a more accurate picture of the agro-industrial sector in Kazakhstan. This could involve conducting surveys, interviews, or utilizing remote sensing and satellite data for crop monitoring. To complement the quantitative analysis, qualitative research should be conducted to gain a deeper understanding of the challenges and opportunities faced by stakeholders in the agro-industrial sector. This can involve interviews, focus groups, and case studies.

5 Conclusions

This research has provided valuable insights into the normative-legal regulation of Kazakhstan's agro-industrial complex, with a particular focus on state financial regulation. Kazakhstan has implemented various legislative acts, programs, and measures aimed at improving the competitiveness, productivity, and financial sustainability of its agricultural sector. Despite these efforts, challenges persist, and further legislative improvements are needed. Over the past five years, Kazakhstan has witnessed significant growth in the gross output of agriculture, forestry, and fisheries, partly attributed to the successful "Agribusiness" program, which doubled subsidies for the agro-industrial complex. The agricultural landscape is dominated by crop production, which constitutes 58% of the total output, highlighting the importance of crop farming within the sector. A major challenge identified in this research is the sector's struggle to attract external investments, particularly from foreign investors. This issue is compounded by a substantial level of fixed asset depreciation.

To address the industry's financing challenges and enhance its competitiveness, Kazakhstan should consider the following policy measures. Increasing state financial support, encompassing subsidies, grants, research funding, and infrastructure development, is crucial.

Facilitating accessible and affordable credit options for agricultural enterprises is essential to stimulate growth. Encouraging both domestic and foreign investment through targeted incentives and improved investment climates is a priority. Future research should delve deeper into the mechanisms of state support for Kazakhstan's agro-industrial complex. Comparative studies, benchmarking against international best practices, and in-depth examinations of successful national practices can provide valuable insights for policymaking and sector development. In conclusion, while Kazakhstan's agro-industrial complex has made significant progress in recent years, challenges, particularly in financing and investment attraction, persist. Addressing these challenges through comprehensive state support, accessible credit resources, and improved investment conditions is vital for the sector's sustainable growth and competitiveness. Continued research and knowledge sharing, both nationally and internationally, will be instrumental in fostering positive changes within the industry.

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