

## Improving Food Supply through Modernisation of the Agri-Food Complex in Kazakhstan - a Country Study

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### ABSTRACT

The Republic of Kazakhstan aims at improving food security by increasing self sufficiency in food. However, present developments in population growths, climate change and related issues pose a challenge the country has to deal with. This requires new and different initiatives for improving agricultural production and the competitiveness of its enterprises which would facilitate investments and attract external investment interests. The paper outlines the challenges and provides suggestions on how policy could contribute to arriving at self sufficiency in food, assuring long-term food security.

**Keywords:** food security; food supply; agro-industrial complex; market conditions; entrepreneurial risk.

## 1 Introduction

Self-sufficiency is one of the main indicators characterizing the food security level of countries. It reflects the possibility of supplying a country's consumer markets with sufficient food, serving the needs of the whole population (Viana and Waquil, 2022). Countries that strive for self-sufficiency are presently confronted with major changes in food supply and consumption. It is threatened a.o. by (Vartanova, 2019):

1. *Population growth*. According to forecasts, the world population will reach 9.7 billion by 2050, which will require an increase in production by more than 50 percent in relation to the current level.
2. *Urbanization of the population*. If current trends persist, in 2050 two-thirds of the population will live in cities. As a consequence, the number of people living in rural areas and people employed in the agricultural sector will decrease.
3. *Limitations in agricultural production growth*. The global dynamics of agricultural production growth are projected by 2024 at the level of 1.5%.
4. *Climate change and the associated decline in the sustainability of agricultural production*. Climate change with effects on the degradation of land and water resources combined with the global growth in population will lead to food shortages in many developing countries.

Efforts for keeping or improving self-sufficiency are influenced by a variety of factors focussing on all levels of production, distribution, and consumption of food (Viana and Waquil, 2022).

This study does focus on the improvement of self-sufficiency through an increase in agricultural production and takes Kazakhstan as an example. Factors that might influence agricultural production involve a.o. increases in yields and in the provision of agricultural inputs, establishment and expansion of production facilities, specialization of agricultural production, and the intensification of interregional trade relationships for the exchange of agricultural products and raw materials (Nikolaenko and Bal-Prylypko, 2020).

The paper introduces into the subject through a general discussion of factors that affect the food system's ability to produce, distribute, and deliver food (Hou and Liang, 2022) as well as the factors that hinder the development of food security (chapter 2). The subsequent chapters provide a short overview on the present state of agricultural development in Kazakhstan (chapter 3) and, with reference to chapter 2 on opportunities for improvement in state-controlled agricultural development situations in general and specifically in Kazakhstan (chapter 4).

## 2 Food sector's ability and limitations

The *food system's ability* to produce, distribute, and deliver food is affected by a number of factors including a. o. (Hou and Liang, 2022):

- a) the status of the technical base of agricultural enterprises,
- b) the natural and climatic conditions of agriculture,
- c) the size of agricultural enterprises,
- d) the required level of food supply per capita,
- e) the processing of agricultural products,
- f) the development of a transport system that organizes the exchange between manufacturers, suppliers, and consumers, and
- g) the population's purchasing power, etc.

Based on the sector's ability, Hou and Liang (2022) identify various internal and external factors that support the *actual availability of food*. Internal factors involve, e.g. the production volume of agriculture, the use of land and water resources, the competitiveness of food products, the economic and social development of agriculture, and the interaction between agricultural producers, distributors, consumers, and authorities. External factors involve, e.g., the conjuncture of world food prices, the import of food, raw materials, machinery, equipment, and fertilizers, the access to water resources outside a countries borders, and the transportation needs.

However, there are also major factors that hamper the development towards food security. They include a.o. (Zou et al., 2022):

- a) the discrepancy between income and food prices,
- b) outdated production equipment,
- c) low efficiency of shopping and market complexes,
- d) unemployment,
- e) low living standard,
- f) inefficient trade, tax, and customs policy,
- g) low development level of market infrastructure, and
- h) low demand for food from domestic production, etc..

### 3 Methodology

The provision of information about the status of agriculture in Kazakhstan is based on the use of a variety of approaches, including modelling, data analysis and synthesis, and system analysis. Table 1 shows the gross domestic product in Kazakhstan for the period 2014-2020. The data were retrieved from the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan’s Bureau of National statistics. Information about expenditures on agriculture development in Kazakhstan from 2013 to 2020 (table 2) were determined by analysing the Program for the Development of the Agro-Industrial Complex of the Republic of Kazakhstan in relevant years.

### 4 Results

#### 4.1 The features of agriculture development in Kazakhstan

Agriculture of Kazakhstan is the main sector of the agro-industrial complex since the activities of the other sectors involved in the processing and delivery of food as well as the food security level of the country depend on its development. A comparison between the gross domestic product of the country and the expenditures for agriculture exemplifies the strong position of agriculture.

**Table 1.**  
Gross domestic product in Kazakhstan for 2014-2020

	2014	2015	2016	2017 <sup>1)</sup>	2018 <sup>1)</sup>	2019 <sup>1)</sup>	9 months of 2020
billion tenge	39 675.8	40 884.1	46 971.2	54 378.9	61 819.5	69 532.6	45 803.2
USD billion <sup>2)</sup>	221.4	184.4	137.3	166.8	179.3	181.7	
Physical volume index, % for the previous year	104.2	101.2	101.1	104.1	104.1	104.5	97.2
Deflator, % for the previous year	105.8	101.9	113.6	108.4	109.2	107.6	
Gross domestic product per capita							2446.7
Tenge	2 294	2	2 639	3 014	3 382	3 755	
	830.2	330 360.2	710.3	720.8	469.2	744.6	
USD billion <sup>2)</sup>	12 806.7	10 509.9	7 714.8	9 247.6	9 812.5	9 812.5	

Note: 1) The calculations were made in accordance with the new Methodology for Measuring the Non-Observed Economy, registered with the Ministry of Justice of the Republic of Kazakhstan No. 19215 dated 8.08.2019. 2) The conversion into US dollars is carried out at the average annual official exchange rate of the National Bank of the Republic of Kazakhstan. (Source: compiled by the authors according to the source (Agency for Strategic planning..., 2021).

**Table 2.**  
Expenditures on the agriculture development in Kazakhstan.

Indicators	Years							
	2013	2014	2015	2016	2017	2018	2019	2020
Financing volume, billion tenge	339.7	466.0	322.7	340.7	383.5	406.9	414.3	448.4

Source: compiled by the authors according to the source (Program for the development of the..., 2020).

Every year Kazakhstan increases agricultural production both for domestic consumption and for export (Program for the development of the..., 2020). Kazakhstan exports mainly wheat, corn, rice, flour, honey, wool, dairy products, beef, lamb, pork, etc. The agriculture of the Republic of Kazakhstan has been integrated into the world food markets and participates in the development of the trade balance. However, Kazakhstan remains still dependent on imports of many food products, in particular on processed food, fruit and vegetable products, and processed milk and meat products. By 2025, Kazakhstan plans to reduce the import of agricultural products by half and increase domestic production (Program for the development of the..., 2020). To ensure food security, reserve stabilization funds are being created, which include socially important food products. For example, according to the Department of Statistics of the Republic of Kazakhstan, as of April 1, 2020, the total grain reserves amounted to 7.8 million tons including 6.1 million tons of wheat intended for seeds (1,1 million ton), for domestic consumption (4,6 million tons), and for fodder (0,4 million tons) (Agency for Strategic planning..., 2021).

#### 4.2 The mechanisms for ensuring industrial safety

A statistical analysis of developments in the agricultural sector in Kazakhstan showed that new development initiatives are necessary for assuring profitability in the long run and for attracting investors for investments into agriculture.

One of the major approaches for ensuring food security within countries with many small enterprises and for increasing the competitiveness of agricultural enterprises asks for the development of production clusters through cooperation or other means that would integrate small producers into larger production units which would be able to embark on the necessary modernization of agricultural activities and allowed an optimal and efficient management of operations.

For reaching these objectives, countries such as Kazakhstan need to develop a mechanism of state support for agricultural production and the food market. Beyond the many factors that influence agricultural production but are not open for change such as the natural and climatic conditions, state support is the most important and relevant factor for agricultural development. In the situation of Kazakhstan it can be stated that the higher the level of state support, the higher the degree of self-sufficiency in food supply.

## 5 Discussion

The main condition for the stable functioning and development of enterprises within the agro-industrial complex are effective and dynamic investment activities, which are provided by state support (Zhichkin et al., 2021; Uzun et al., 2019). As experience shows, it is impossible to overcome a depressed economic state, as well as to restore and increase the economic potential without state support including assistance from local authorities in investment processes (Chizmar et al., 2022), especially in the post-crisis period.

Investments in the development of the agricultural sector serves not only agriculture but supports other policy objectives such as the preservation of a sustainable density of population in rural areas, especially if combined with investments in restoring and maintaining rural infrastructure which, in turn, is a prerequisite for agricultural competitiveness as well (Klimenko et al., 2021; Voronov, 2014; Panteleyeva, 2014; Chernyavskaya, 2014).

The level of development of the agricultural sector and of the whole food sector in the Republic of Kazakhstan is not high. It is, therefore, important to generate the right economic development incentives that improve the competitiveness of the agricultural sector and the quality of life in rural areas through the development of rural areas.

For increasing the investment attractiveness of agricultural enterprises and attract domestic and foreign investors, it is necessary to simultaneously engage in a multitude of activities including the following:

1. Entering the world market, which requires an improvement in the quality of agricultural goods and compliance with international standards;
2. Expanding the range of agricultural goods;

3. Conducting marketing research and developing business and market relationships on regional, country and world market levels.
4. Attracting foreign investors by creating larger production units;
5. Improving preferential lending for agricultural producers;
6. Developing and implementing pilot projects on co-financing opportunities as well as on agro-leasing alternatives (Amonov et al., 2021; Kumar et al., 2022; Machisa et al., 2022; Burov, 2014).

## 6 Conclusions

One of the main priorities of the state policy of Kazakhstan is to ensure food security, which is an integral part of national security. For enabling enterprises of the agro-industrial complex to contribute to food security and to reduce dependencies on imports, the state needs to support the sector for becoming attractive for investments. The state of Kazakhstan follows this approach and has increased its support in 2020 by 108.7 billion tenges compared to 2013.

Increasing the competitiveness of agriculture and the agro-industrial enterprises in Kazakhstan could be reached by following a number of initiatives as outlined before. Their implementation will have additional side effects which reach beyond competitiveness such as creating new jobs in the rural areas, improve the quality of products, increase the export potential of agriculture and more.

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