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The Russian War in Ukraine Impact on Kyrgyzstan's Food Market and Agri-Food Sector in 2022

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Abstract

Russia's war in Ukraine caused a spike in basic food costs as well as agro-input prices (fuel, seeds, and fertilizer) in 2022. Fertilizer prices rose double on average compared to 2021, reducing farmer demand and import supply to Kyrgyzstan. Fuel costs increased, while market demand remained constant. Farmers had a seasonal diesel shortage in the second half of 2022. The financial market remained stable and lending in agriculture increased due to the stable interest rates for agricultural lending. Analysis of the four key food markets in Kyrgyzstan (wheat, sugar, potato and meat) demonstrated increase in prices under the external and internal factors - increased input prices, trade restrictions imposed by supply states, increased cost of logistics and growth of domestic production factors. The overall situation demonstrates that agriculture is undergoing a severe shock as a result of rising prices, which feeds into the cascade effect of rising prices. However, the country's population's consumer ability cannot keep up with price increases, resulting in a reduction in demand for more expensive foods.

JEL Codes: Q13, Q18



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1. Introduction

In 2020–2021, a number of exogenous shocks occurred at the global level and in Kyrgyzstan, associated with the impact of the COVID-19 pandemic on the global economy. In addition to the consequences of the disease that directly affected the population - an increase in the number of sick and dead people from the pandemic - there were changes in the country's economy that led to direct consequences from the complication of economic activity in this period, which directly affected access to food - restrictions on the movement of people and goods, reduced access to services and markets, restrictions on income-generating activities. In Kyrgyzstan, 44.3% of the population reduced food spending. 50.4% of people during the pandemic noted that the role of the state in limiting the rise in food prices is the most important task (NSC, 2020). These problems have manifested themselves everywhere in almost all countries of the world. This year's bibliometric study of over 170 scientific papers found that disruptions to agricultural food supplies as a result of the pandemic have contributed to supply and demand shocks, negatively impacting food security around the planet (Collins et al., 2022). The negative impact of the pandemic on food security continued in 2021, with inflation at 11.9% and food prices rising by 18% (NSC, 2022). At the end of February 2022, Russia militarily attacked Ukraine. This played the role of the next shock that negatively affected food security in Ukraine, in Russia, as well as across the continent and in the world (FAO, 2022).

In addition to the direct impact on the conflict countries, the Russian-Ukrainian war has various negative socio-economic consequences, which are felt as a negative impact on global food security. If the war deepens, the food crisis will worsen, which will become a problem for many countries, especially those dependent on food imports. The war came on an unfortunate combination of negative factors due to supply chain disruptions caused by the COVID-19 pandemic, high global demand, and crop failures of different natures in some countries. Thus, conflict-related disruptions in global food and fertilizer markets could affect prices and availability and worsen both global food security and the food security situation in Kyrgyzstan. There are direct as well as cascading effects on food security - food exports are reduced, access to fertilizers is limited, and harvesting is complicated by war. The experience of the 2008 global food crisis showed that export restrictions and speculation in the food market led to an increase in world food prices. Consumer behavior provokes panic buying at the level of countries and individual food consumers (Ben Hassen et al., 2022).

This study focuses on two main questions - how the Russian war in Ukraine affected the food market and the agri-food sector, as well as the mechanism of transformation of the rise in prices for food and inputs (fuel, finance, fertilizers) into the rise in agri-food prices in Kyrgyzstan. Current paper based on the FAO initiated study under the '*Analysis of the impact of global crises on agri-food sector in Kyrgyzstan for evidence-based national policy and programme development*' initiative. The paper is based on secondary data obtained from desk research as well as a qualitative study with key informants operating in selected agri-food value chains in Kyrgyzstan. The focus of this study is on identifying the driving forces and assessing the transformation of price shocks and agro-inputs availability into domestic food production. The results are presented in subsequent sections of the study, with related conclusions. The impact of the Russian-Ukrainian War on Kyrgyzstan's food security is

exacerbated by existing problems of inflexibility, vulnerability, and inefficiency in food systems in country similarly to many other developing countries. Thus, the transition to more sustainable food systems for Kyrgyzstan should be strengthened through the adoption of more effective agri-food policy measures.

2. Study methodology

The study methodology based on the desk research as well as a qualitative in-depth interviews with key informants. The data allow us to stress the potential relationship between the increased volatility of prices for basic agro-productive resources and food prices both in the global market and in the food market of Kyrgyzstan in 2022, both for food products produced in the country and imported from other countries. Detailed information on prices for agro-inputs was collected from open sources on global trends, as well as from nationally available data sources according to established indicators - staple foods (wheat, meat, potatoes, and sugar beet), including seeds, fertilizers, fuel, finance (volumes and %). The main information collected in the study is information on prices, the perception of price fluctuations by stakeholders in agri-food value chains, and important details on production, trade, logistics, access to resources. The main stakeholders are food producers, farmers, input suppliers (petroleum products and mineral fertilizers), suppliers of imported food products, as well as representatives of financial and credit institutions. Key informants shared their opinions and provide information about current situation on the agrifood market in the country as well as insights of the mechanisms of operating food markets including informal cross-border trade. The qualitative study sample included farmers (producers of sugar beet, potatoes, wheat and meat), a loan officer, and suppliers of petroleum products, mineral fertilizers, flour, sugar and seed potatoes.

3. Change in prices for agricultural inputs and food prices in 2022

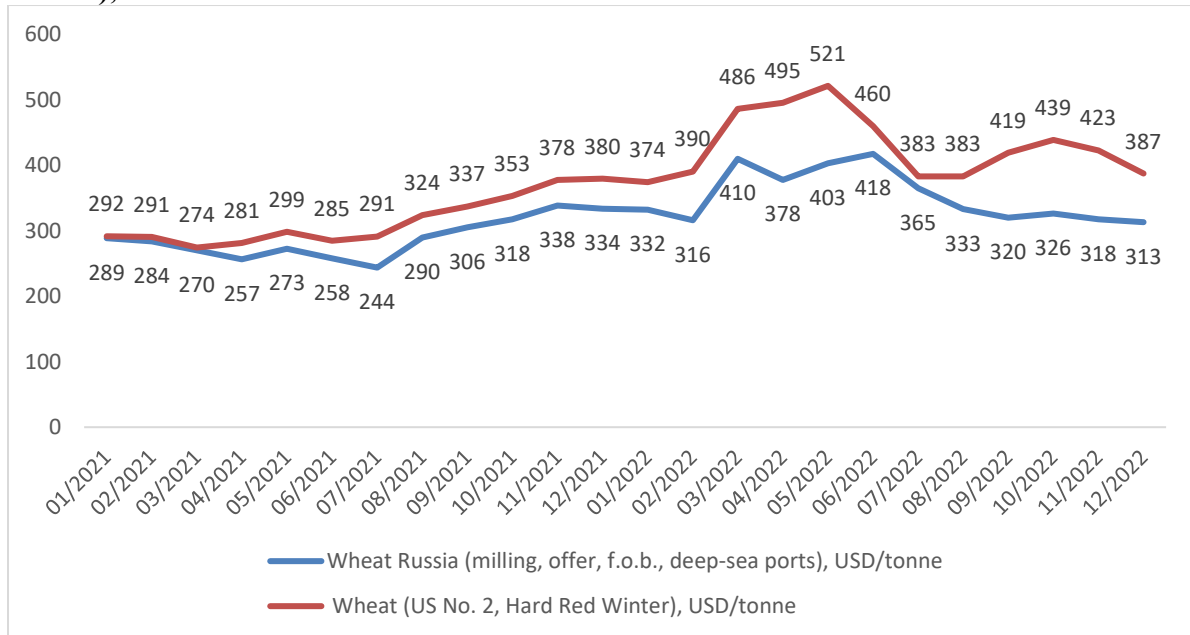
3.1. Food and agro-production resources global markets volatility

This section analyses the data on price fluctuations and production of staple foods that occurred in 2022, with a focus on core inputs – prices for staple foods, fertilizers and agrochemicals, fuels, and access to finance. The start of Russia's military operations against Ukraine led to increased instability in the food market. In March, the number of countries that imposed restrictions on food exports rose from three to sixteen, and by June there were twenty-two (EPRS, 2022).

The immediate outbreak of hostilities on February 24, 2022, led to an immediate increase in the price of food wheat in March 2022 (Figure 1). During March-June, prices stabilized at the level of 400-480 US dollars per 1 ton. Since July, prices have fallen to the level of 330 US dollars per 1 ton of Russian wheat. The world price of wheat also showed a decline to the level of \$409 in July-November 2022. In 2021, wheat prices fluctuated at the level of 290-315 US dollars per 1 ton with an upward trend of 330-370 US dollars by the end of 2021. Thus, the rise in prices for food wheat caused by the beginning of the war in Ukraine occurred at the level of 25-30%. The main reasons for the rise in wheat prices are the relatively large

share of both Russia and Ukraine for the world food market. Russia accounted for 24% of world wheat exports in 2021, and Ukraine 10% (EPRS, 2022).

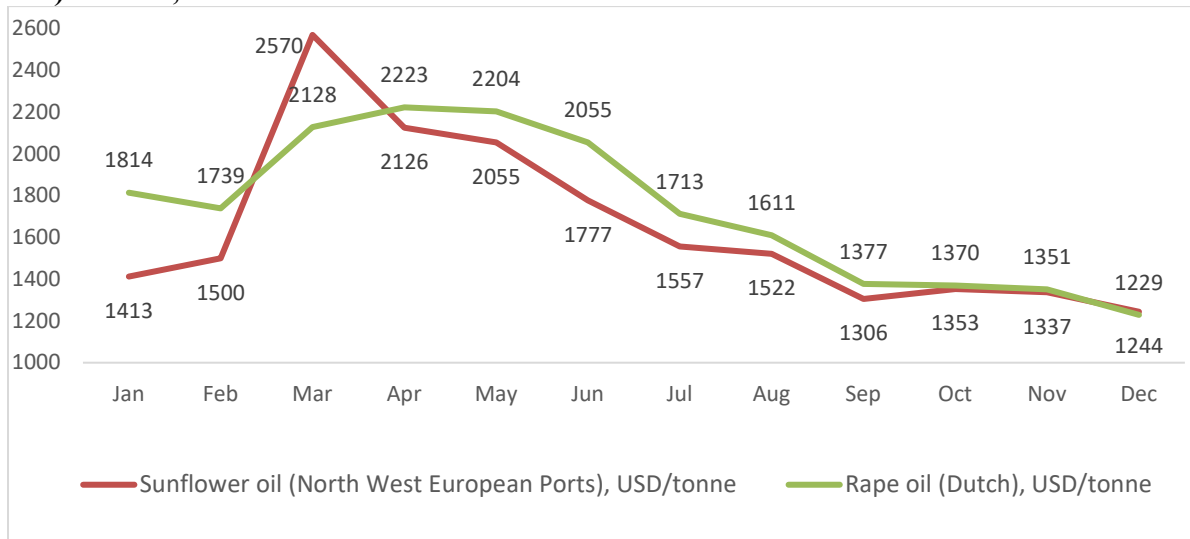
Figure 1. Price dynamics for milling wheat on world markets in 2021-2022 (USA, Russia), US dollars/ton



Source: FAO - monitoring and analysis of food prices, 2022. <https://fpma.fao.org>

Another direct impact of the war on food prices was the rise in sunflower oil prices in March, up 71% from February (Figure 2). The share of Russia in the export of sunflower oil in 2021 was 24%, and Ukraine - 31%. Then prices stabilized and went down from June 2022. The jump in prices for sunflower oil also affected the growth in prices for rapeseed oil, and probably other types of vegetable oils in the observed period.

Figure 2. Dynamics of prices for vegetable oil in world markets (sunflower, rapeseed oils) in 2022, US dollars/ton

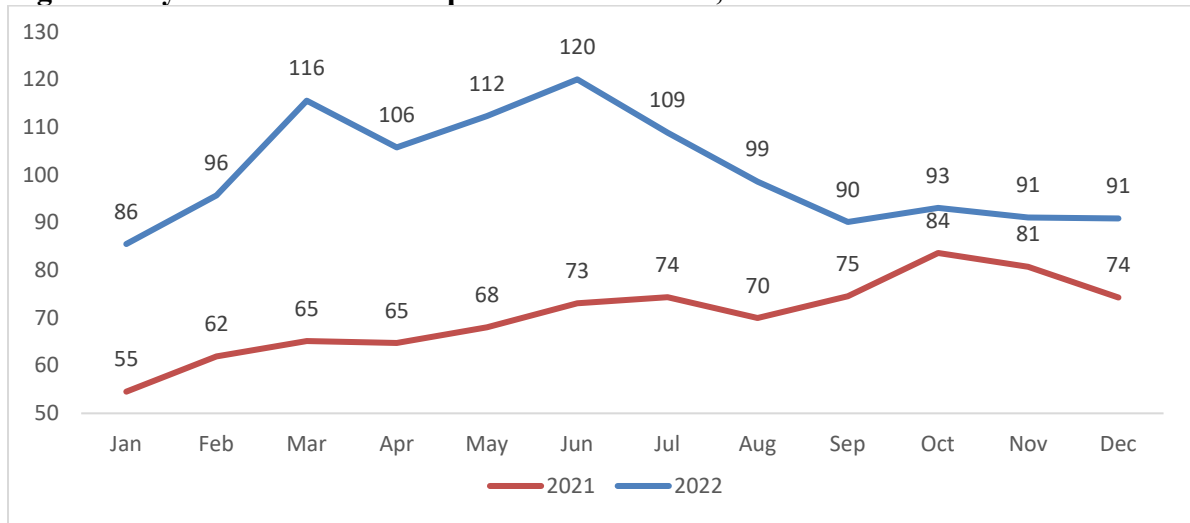


Source: FAO - monitoring and analysis of food prices, 2022. <https://fpma.fao.org>

In addition to the observed rise in prices for food and fodder grains, vegetable oil, military operations contributed to the rise in prices for oil products and fertilizers. In 2022, there was an increase in oil prices starting from March 2022 (Figure 3). Price dynamics led to an increase in oil prices in the range of 106-120 US dollars in March-July of this year. Only since

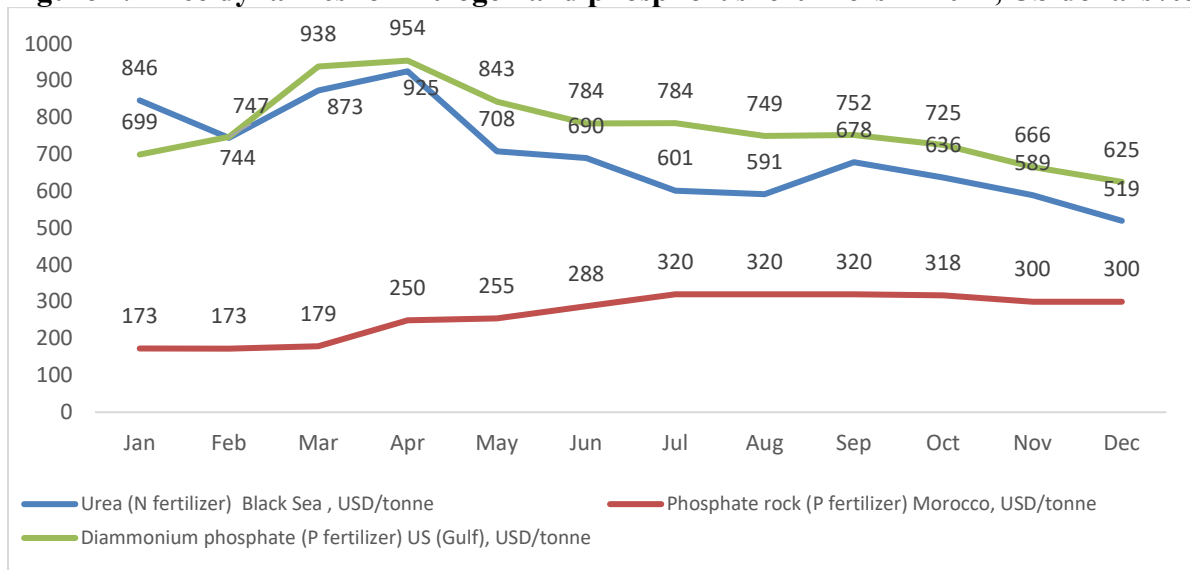
August, the price of oil has dropped below \$100 per barrel and stabilized at \$90-93 in September-December 2022. A comparison of average annual oil prices in the current year is 43% higher than in 2021.

Figure 3. Dynamics of world oil prices in 2021–2022, US dollars/barrel¹



Source: FAO - monitoring and analysis of food prices, 2022. <https://fpma.fao.org>

Figure 4. Price dynamics for nitrogen and phosphorus fertilizers in 2022, US dollars /ton



Source: FAO - monitoring and analysis of food prices, 2022. <https://fpma.fao.org>

Rising oil prices were accompanied by rising fertilizer prices in 2022 (Figure 4). Prices for fertilizers on the world markets grew everywhere, but first in the markets close to Europe. In general, in 2022, the average annual prices for fertilizers for various types of fertilizers showed an increase from 31 to 114% compared to prices in 2021. Earlier observations from the end of 2019 to the end of 2021 showed a rise in nitrogen fertilizer prices from \$245 per tonne in November 2020 to \$901 at the end of 2021 - an increase of more than three times. The same can be said about phosphate fertilizers - the growth has more than doubled - from 360 to 726 dollars per ton. Thus, the decline in fertilizer prices that began after the COVID-19 pandemic in early 2022 stopped and there was an increase in prices from March, which led to the fact that during spring field work in spring, fertilizers became more difficult for most farmers in the northern hemisphere. The same trend was previously observed at the end

¹ Price is for Brent crude oil.

of 2021.

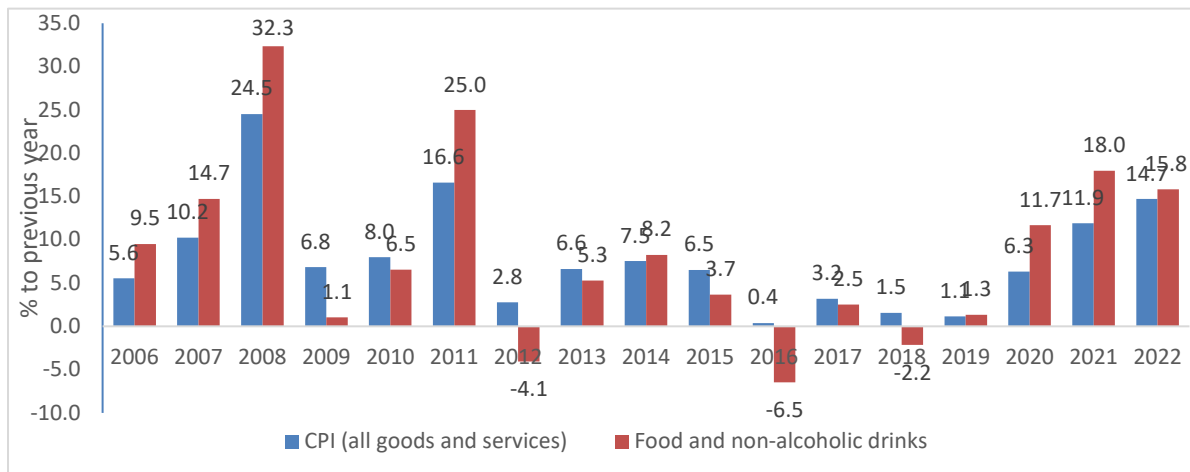
The year 2022 has been the third consecutive year of rising prices for global food and agro-productive inputs. The prominent role of both Russia and Ukraine in food export markets has played a role in the rise in global food prices. Russia's role in the export of petroleum products and fertilizers also played a negative role in the rise in prices for these types of resources important for agricultural production. Global agro-input markets have reacted with a panicky increase in demand for these commodities, which has had a cascading effect on rising prices for many types of food and inputs in the first half of 2022. Since July, many types of food have shown a reduction in prices, which was due to a good grain harvest and an agreement on the export of grain from Russia and Ukraine. However, the overall negative impact of military conflict on food security in a global context is clear.

3.2. Dynamics of food markets in Kyrgyzstan in 2022

The dynamics of world prices contributed to the continued growth in prices for the consumer market in Kyrgyzstan, including the food market, in 2022. This marked the third consecutive year of food price increases in the country (Figure 5). Previously, such growth was observed in 2007–2008. and in 2010–2011. Thus, this food crisis was the first challenge of this size and duration for the country in the last decade. In 2020–2022 food and beverage prices increased by 45.5% compared to 2019 prices. It should be noted that in the structure of products for which prices have risen over the past three years, there are many products and raw materials that are imported into the country - wheat flour, sugar, vegetable oil, and eggs. However, prices for goods produced in the country also increased, primarily for livestock products (Table 1).

Four products, which are both produced in the country and imported to Kyrgyzstan, were selected as products on which the paper will focus more attention - wheat, potatoes, sugar, and beef meat (Figure 6). Analysis of prices for these products in 2022 shows an increase in consumer prices for wheat flour, as well as for sugar since March this year. Prices for these products have stabilized since mid-summer. Potatoes showed a more stable level in the first half of the year, since July when supplies of new season potatoes started, prices for potatoes have decreased in the first five months, the price of beef was stable and, since June, began to grow - an increase since the beginning of the year amounted to 13.5%.

Figure 5. Inflation and food prices in Kyrgyzstan in 2006–2022, % to the previous year



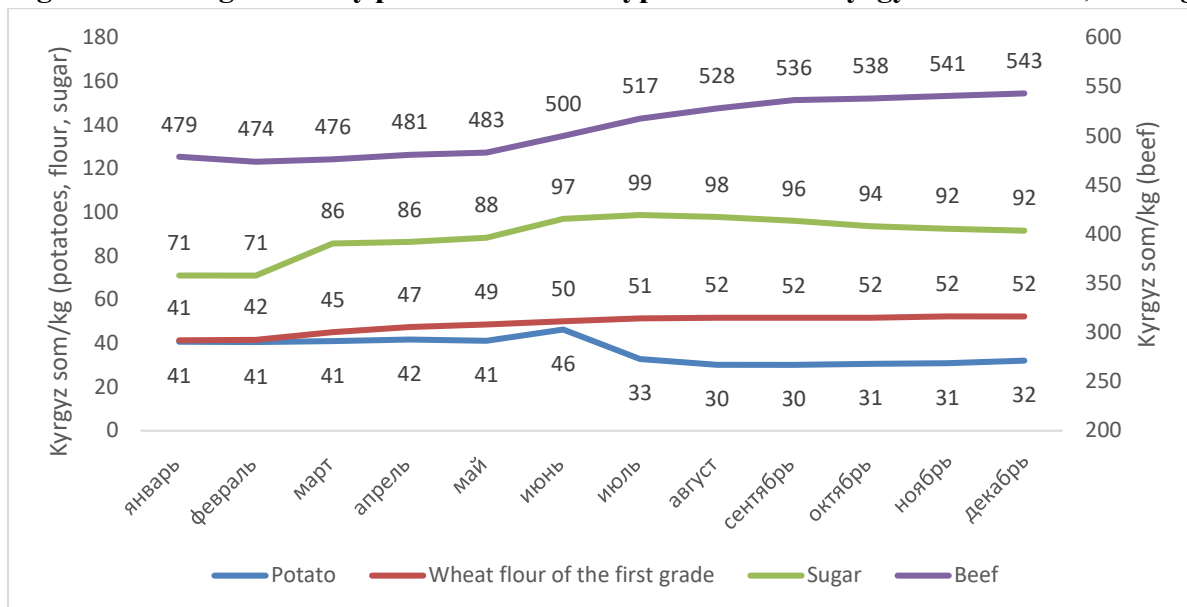
Source: National Statistical Committee (NSC), 2022

Table 1. Average consumer prices for some food products in Kyrgyzstan in 2019–2022, som per kilogram/unit of production

	2019	2020	2021	2022
Wheat flour from the first grade	31	38	39	48.8
Beef	330	373	464	508
Mutton	308	357	470	510
Draft milk, unpasteurized, l	34	37	39	55
Egg, 10 pieces	71	79	101	103
Cottonseed oil	99	110	170	190
Sunflower oil	94	107	171	185
Bulb onions	23	22	25	35
Potato	19	27	36	37
Sugar	46	47	65	89

Source: NSC, 2022

Figure 6. Average monthly prices for certain types of food in Kyrgyzstan in 2022, som/kg



Source: NSC, 2022

4. Agri-production inputs and food market in Kyrgyzstan in 2022

The chapter presents the data on the dynamics of agro-productive resources operations in the economy of Kyrgyzstan in 2022, as well as determining the relationship between the increase in prices for production factors and the impact on the production of selected food products - wheat, potatoes, sugar, meat. The analysis is based on a comparison of available data on production, foreign trade of inputs and food, as well as information obtained from in-depth interviews with key informants.

4.1. Fuel, fertilizers and finance markets in Kyrgyzstan

4.1.1. Mineral fertilizers

The market of agro-productive resources in this study is limited to the analysis of the supply of fertilizers, fuels and finance. All these types of resources are of particular importance for

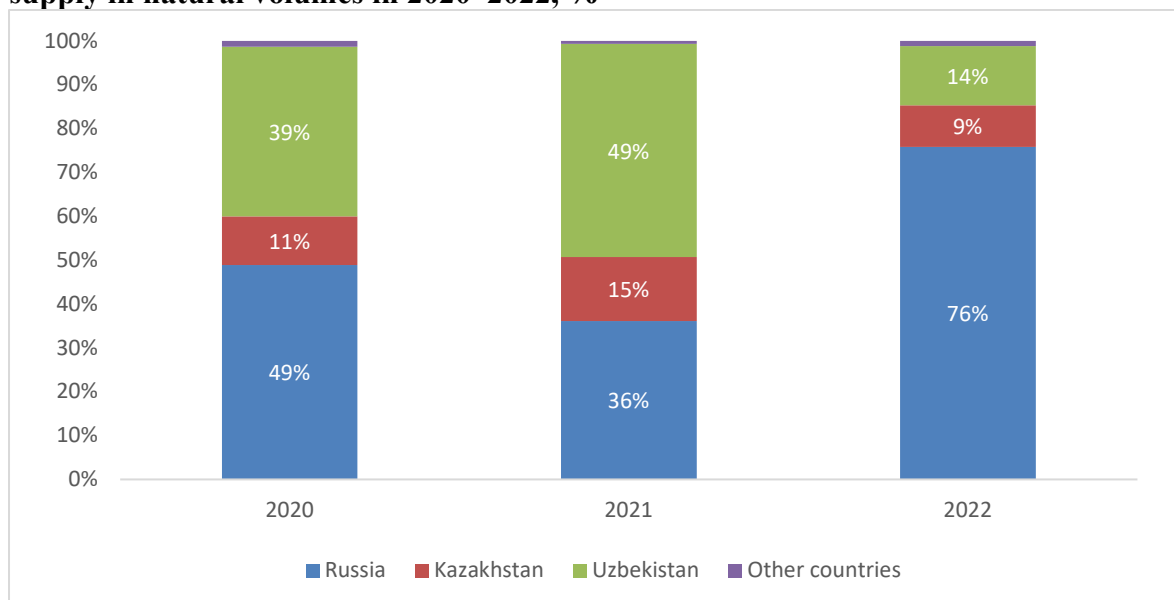
the agriculture of Kyrgyzstan as limited in availability resources. Mineral fertilizers are not produced in Kyrgyzstan due to the small capacity of the domestic market. Therefore, the supply of mineral fertilizers originates from abroad (Table 2). The main type of fertilizer supplied is nitrogen fertilizers, mainly ammonium nitrate and urea. The second most popular type of fertilizer is mixed fertilizers. Potash and phosphate fertilizers are imported in small quantities. The dynamics of fertilizers delivered to the country shows an increase from 89 thousand tons in 2020 to 106 thousand tons in 2021. This is followed by a decline in imports to 59 thousand tons in 2022. The decrease occurred due to a reduction in imports, primarily of mixed and nitrogen fertilizers from Uzbekistan. In addition to imports, mineral fertilizers were also exported, primarily to Tajikistan, which stopped in 2022 due to border conflicts between the countries.

Table 2. Dynamics of foreign trade in fertilizers to Kyrgyzstan in 2020–2022, tons, thousand US dollars

Import	tons			Thousand US dollars		
	2020	2021	2022	2020	2021	2022
Nitrogen fertilizers	49878	64854	46780	25871	40640	52764
Phosphate fertilizers	1188	1015	274	747	396	81
Potash fertilizers	284	359	89	248	203	292
Fertilizers mineral mixed	38015	40178	12461	9923	17917	11647
Import of mineral fertilizers, total	89365	106406	59603	36789	59156	64785
Export of mineral fertilizers, total	7198	2622	778	2079	1193	614

Source: NSC, 2022

Figure 7. Structure of imports of mineral fertilizers to Kyrgyzstan by country by supply in natural volumes in 2020–2022, %



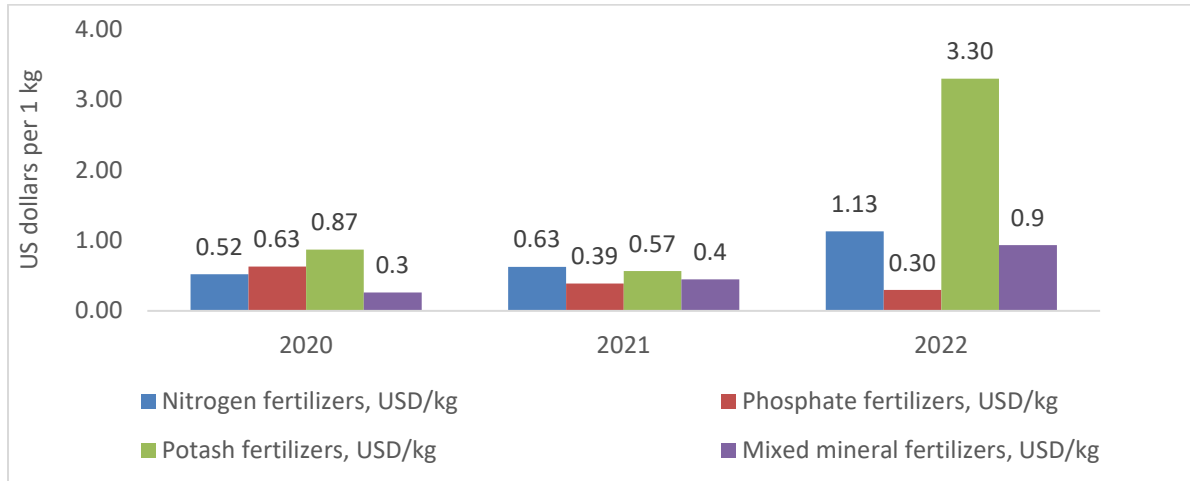
Source: NSC, 2022

Fertilizers are supplied to Kyrgyzstan from Russia, Uzbekistan and Kazakhstan (Figure 7). All other countries supply about one percent of fertilizers. The share of Uzbekistan, as already noted, has sharply decreased in 2022. Fertilizers are currently supplied predominantly from Russia – 76% of all fertilizers in 2022. The share of Kazakhstan has remained more or less stable for the last three years.

Another more important consequence of changes in the fertilizer market is the increase in input costs in 2022 (Figure 8). In 2021, the growth was only due to the cost of nitrogen

fertilizers. But in 2022, growth is observed in all positions, the most significant of which is the increase in the cost of nitrogen fertilizers (by 78%) and mixed fertilizers (by 135%). The growth in the cost of phosphate and potash fertilizers is not so critical due to the small volumes of supplies. Thus, the global increase in prices for fertilizers (Figure 4) directly affected the cost of supplies to Kyrgyzstan. That is why, with a noticeable decrease in the volume of imports to the country in physical terms, in value terms, the reduction in the supply of mineral fertilizers is less noticeable.

Figure 8. Imported mineral fertilizers cost value in Kyrgyzstan in 2020-2022 per 1 kg, US dollars



Source: NSC, 2022

The fertilizer importer confirmed a large increase in prices for purchased fertilizers in 2022. The price of delivery has doubled, the volume of deliveries has also almost halved. Demand for fertilizer also fell. At the same time, sales volumes in monetary terms even slightly increased. Clients - farmers reacted poorly to rising prices. Part of the demand was closed by the informal import of fertilizers from Uzbekistan, mainly ammonium nitrate in the south of the country. Farmers bought smuggled fertilizers without documents at a price reduction of 2-3 soms per kilogram compared to officially supplied fertilizers. The price for 1 kilogram of ammonium nitrate with documents is 36 soms. The respondent cites low purchase prices for agricultural products and agro-industrial resources in comparison with world prices as the reason for importing from Uzbekistan. Informal deliveries were erratic on occasion, but this seriously affected the sale of the product at the beginning of the vegetation season.

The rise in prices was sharp and simultaneous on the part of all suppliers. The fertilizer supplier negatively assessed the ban on the export of mineral fertilizers, although this would provide an opportunity to supply fertilizers to other countries - Turkey, Ukraine, Belarus, Poland. But the price increased due to the cost of supplies (almost doubled) and the cost of transportation (by 15-20%) from Russia. The market situation became the basis for the growth in the cost of imported fertilizers: *“...many people did not consider this a crisis. When fertilizer prices rose, they first thought natural gas had become expensive therefore. Well, it seems to me that nothing depends on the gas, the gas has not risen so much. To like this... This is the market. The market dictates prices. We want it that way, but the market sets its own prices.”*

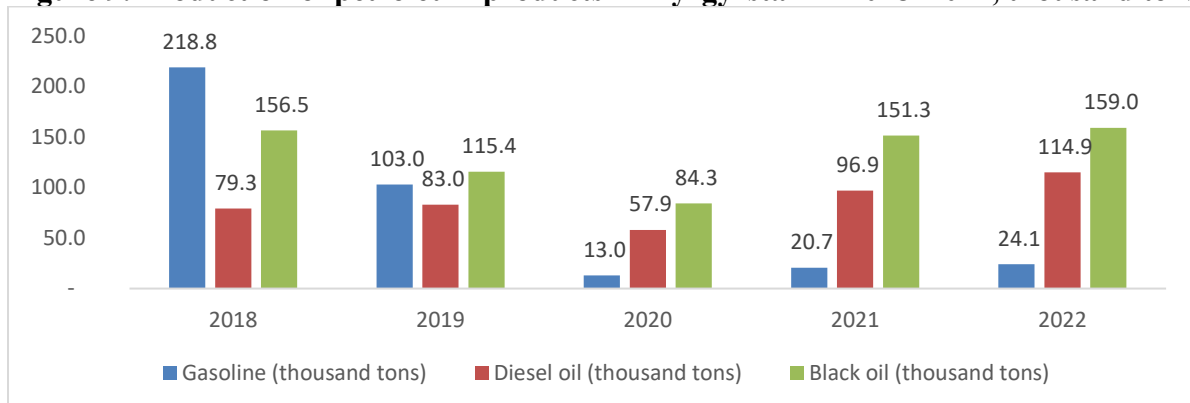
The respondent did not link that the increase in the price of fertilizers had a direct impact on the increase in prices for agricultural products, therefore he assumed a reduction in use by farmers. However, assessment is greatly hampered by the informal supply of fertilizers. Informal supplies make cost of fertilizers for a farmer is 5–10% lower, and informal suppliers receive the main benefit. The situation is stabilized by the lack of assortment and low stability of informal deliveries. In addition, many supplier firms sell fertilizer to farmers on credit through micro-lending companies. Farmers began to use more fertilizers, especially for commercial crops - vegetables, fruits, cotton, potatoes. They often turn to agronomists for consultations and select mixtures for each crop based on the type and quality of the soil. The increase in the cost of mineral fertilizers motivates farmers to use organic fertilizers, some farmers have begun to use liquid fertilizers. The commercialization of agriculture in Kyrgyzstan is increasing. At present, according to the respondent’s opinion, there is no need to change alternative channels for the supply of mineral fertilizers from other countries.

In general, prices for imported mineral fertilizers have approximately doubled. This led to a reduction in fertilizer imports by almost half in physical terms. However, this estimate does not reflect the volume of informal fertilizer imports from Uzbekistan. This situation is not sustainable and may not persist in the long term. The outlook for 2023 remains uncertain, with hopes of lower world prices for inputs, including mineral fertilizers.

4.1.2. Oil products and fuel

The market of petroleum products in the country is characterized by the presence of small volumes of domestic production of fuels large volumes of imports and exports of certain types of petroleum products. Fuel production is characterized by the operation of one oil refinery in Jalal-Abad oblast, which produces insignificant volumes of gasoline and more prominent supplies of diesel fuel for domestic consumption and fuel oil for export (Figure 9). Previously, gasoline production was higher due to a newer refinery in the north of the country, but after 2019 this plant is not working.

Figure 9. Production of petroleum products in Kyrgyzstan in 2018–2022, thousand tons



Source: NSC, 2022

Imports of petroleum products consist of supplies of petroleum products and motor gasoline (Table 3). The total volume of imports for petroleum products slightly increased from 653,000 tons in 2021 to 666,000 tons in 2022. The decline was caused by a reduction in the supply of diesel fuel - by 8%. At the same time, the supply of aviation kerosene increased by 69%. As for motor gasoline, the reduction was more noticeable - approximately 20% below the level

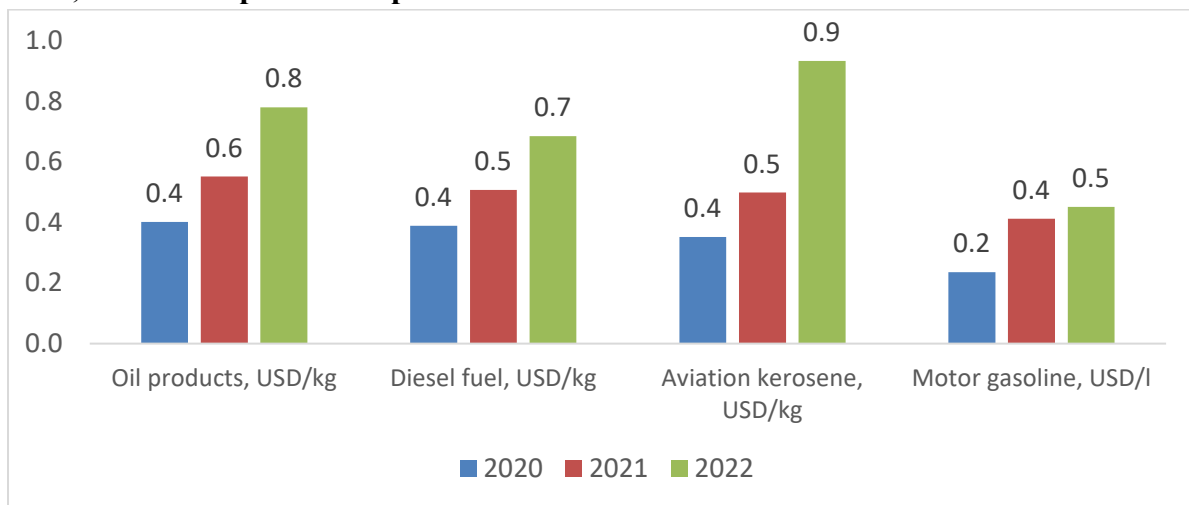
of the previous year. Simultaneously, aviation kerosene is actively exported from Kyrgyzstan (from 70 to 85% of imported fuel) and almost all fuel oil produced in Kyrgyzstan. Exports of diesel fuel and gasoline to Tajikistan were noted in past years, but they ceased in 2021, both according to official data and data received from respondents involved in informal trade.

Table 3. Import and export of petroleum products in Kyrgyzstan in 2020–2022 in natural and monetary terms

№		Natural indicators			Million US dollars		
		2020	2021	2022	2020	2021	2022
Import							
1.0	Oil products except gasoline, thousand tons	698.6	652.5	665.9	280.8	359.8	519.4
1.1.	including diesel fuel, thousand tons	484.2	418.0	384.6	188.2	212.4	263.3
1.2.	including kerosene, jet fuel, thousand tons	68.6	63.3	100.7	24.2	31.5	94.0
2.0	Motor gasoline, million liters	730.7	939.8	769.6	172.6	388.0	347.4
Export							
1.0	Oil products except gasoline, thousand tons	105.8	178.7	212.2	45.1	68.1	143.2
1.1.	including kerosene, jet fuel, thousand tons	56.5	48.3	86.0	31.6	36.2	97.7
2.0	Motor gasoline, million liters	3.0	0.6	0.8	0.6	0.1	0.3

Source: NSC, 2022

Figure 10. The cost value of imports of fuels per unit of petroleum products in 2019–2022, US dollars per unit of production

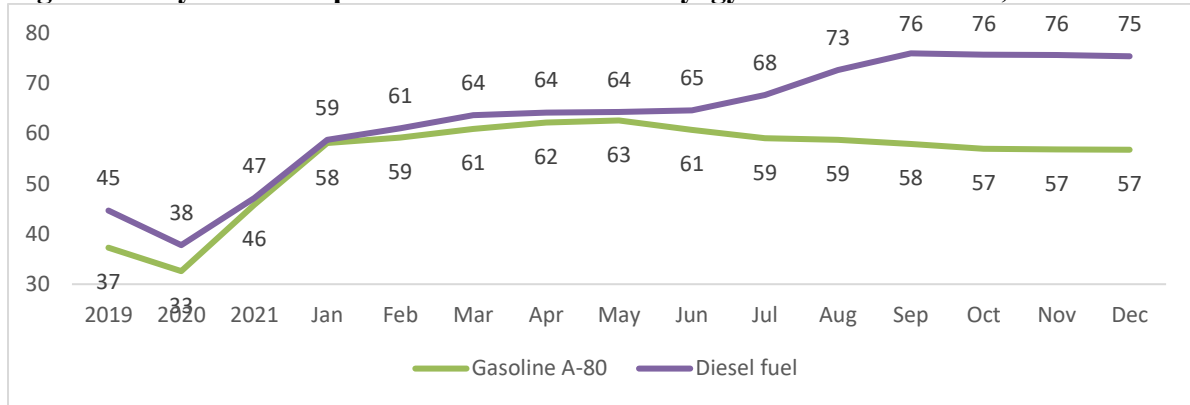


Source: NSC, 2022

The main reason for the reduction in imports of fuels may be the increase in the cost of petroleum products received from abroad. The customs value of imported petroleum products per unit increased for all positions (Figure 10). Diesel fuel in 2022 increased in price by 45% for consumers compared to 2021, motor gasoline by 29% (Figure 11). In fact, the rise in prices has been going on for two years and reflects the general volatility of the world market for oil resources. The rise in prices for imported oil products is directly reflected in the rise in consumer prices for fuel in the country. As you can see, fuel prices remained low in 2020 compared to 2019. Then there was an increase in 2021 and already from the beginning of 2022, fuel prices rose to the level of 64–65 som/liter for diesel fuel in March-June, and from July prices rose even higher and reached the level of 73–76 som/liter in September - December. For motor gasoline, prices rose to 58-59 som/liter in January-February. Then gradually the prices increased to 60-63 som/liter in March-May, and from the beginning of summer they gradually decreased to 59 som/liter and from autumn stabilized at the level of

57 som/liter from October.

Figure 11. Dynamics of prices for basic fuels in Kyrgyzstan in 2019–2022, som/liter



Source: NSC, 2022

The main reason for the price increase in the summer of 2022 was the seasonal shortage of diesel fuel. According to a respondent importer of fuels, the main supplies to Kyrgyzstan are carried out from Russia at domestic prices without export duties, this creates an opportunity for Kyrgyzstan to keep prices cheaper than in neighbouring countries that do not produce oil products in sufficient quantities. However, prices still rose very strongly from the suppliers-oil refinery plants. The supply is carried out according to quotas, that is, for each country for which oil products are carried out without export duties, there is a certain volume of supplied oil products. Usually, the quota is selected in the first few months and already in the second half of the year there may not be enough volumes of fuel. Usually, the shortage of petroleum products is for diesel fuel.

In 2022, the fuel market volumes decreased, it became difficult to do business in this area. Informal imports from Kazakhstan increased, especially for motor gasoline. But this year, it was in Kazakhstan that bans on diesel fuel began to be introduced. The reason is the lack of internal demand for diesel fuel in Kazakhstan. They even began to impose restrictions on the transport in fuel tanks this summer and introduced a complete ban on the export of diesel fuel. Basically, the price of diesel fuel has increased because of this. In previous years, a lot of diesels went informally to Tajikistan, but after border conflicts in 2021, this informal trade channel was closed.

The increase in prices for petroleum products in 2022 did not show a decrease in demand. The decrease in official imports was only for motor gasoline, which, according to business opinion, was offset by unofficial imports from Kazakhstan. Problems with the supply of diesel fuel are seasonal and can be resolved through a change in quotas for supplies from Russia. This appears to be a negotiating moment in discussions with partners in the Eurasian Economic Union. Expectations for 2023 are associated with ongoing sanctions against Russia, which may also lead to lower prices for petroleum products in Kyrgyzstan.

4.1.3. Access to finance

Access to finance is a very important factor that allows both the population and businesses to operate in economy. The overall lending market in Kyrgyzstan did not decrease compared to 2021, but rather grown in 2022 (Table 4). There was a reduction in lending both in the economy as a whole and in agriculture in foreign currency. In general, there was an increase in lending by both banks and microfinance organizations in 2022. A decline is observed in

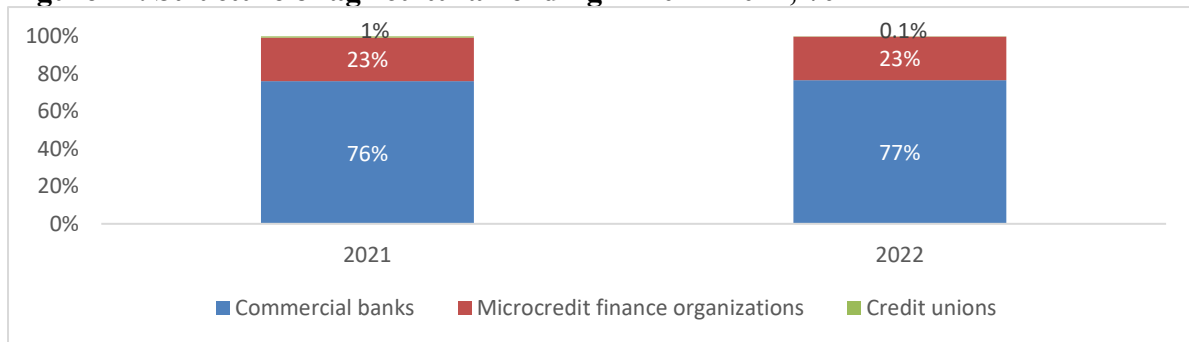
the issuance of loans to agriculture by credit unions, but their overall share in the total credit market is insignificant.

Table 4. Total volume of newly issued loans, and agriculture in total by financial and credit institutions in 2021–2022, billion soms

№		2021	2022
1	Total loans issued by banks, billion soms	158.2	188.8
1.1.	Loans issued by banks in nat. currency, billion soms	125.9	157.3
1.2.	Loans issued by banks in currency, billion soms	32.30	31.5
1.a.	Total loans issued by banks to agriculture, billion soms	25.8	29.4
1.a.1.	Loans issued by banks to rural in nat. currency, billion soms	25.1	29.2
1.a.2.	Issued loans by banks to agriculture in in. currency, billion soms	0.7	0.2
2	Loans issued by microfinance organizations, billion soms	30.7	38.7
2.a.	Loans issued by microfinance organizations to agriculture, billion soms	7.9	8.9
3	Loans issued by credit unions, billion soms	0.8	0.2
3.a.	Loans issued by credit unions to agriculture, billion soms	0.2	0.05

Source: National Bank of Kyrgyz Republic (NBKR), 2022

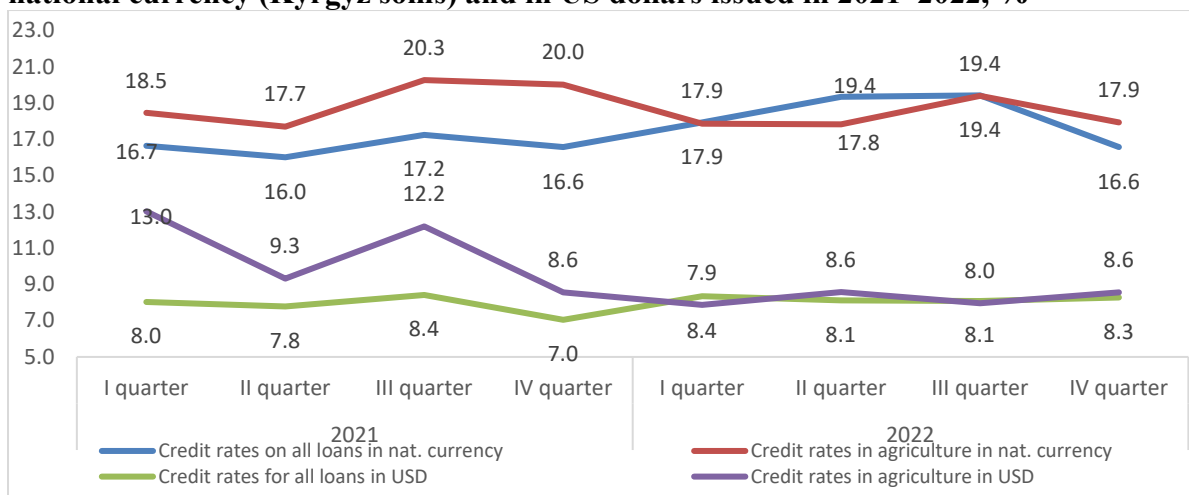
Figure 12. Structure of agricultural lending in 2021–2022, %



Source: NBKR, 2022

In general, agricultural lending comes from three sources - commercial banks, microcredit financial institutions (MFIs) and credit unions (CUs) (Figure 12). The main providers of loans for agriculture are commercial banks and IFIs. In 2022, agriculture received 38.4 billion soms of loans from all forms of financing, which is 13% higher compared to the same period in 2021.

Figure 13. Dynamics of average interest rates on loans of commercial banks in the national currency (Kyrgyz soms) and in US dollars issued in 2021–2022, %

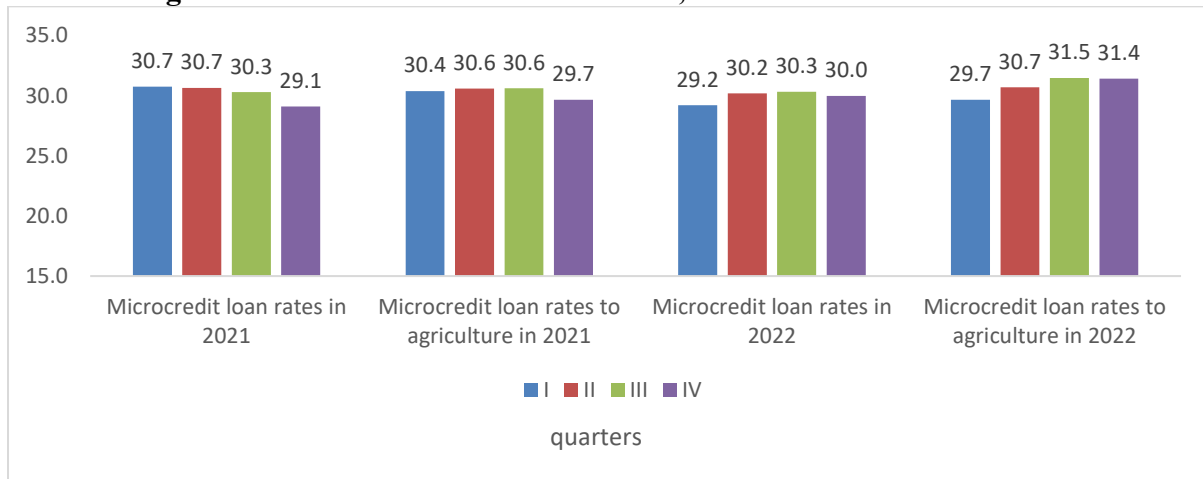


Source: NBKR, 2022

The second important aspect of access to finance is their cost - the change in interest rates. A comparison of 2022 with 2021 does not show a noticeable change in the cost of lending for commercial banks sector (Figure 13). In general, in the credit market of commercial banks, the increase in interest rates on loans in national currency amounted to 1.7%, while in agriculture there was a decrease in the average lending rate in the national currency by 0.9% (19.1% in 2021 vs. 18.3% in 2022). For foreign currency loans, rates increased by 0.4%, while for agriculture, the rate decreased by 2.5% (10.8% in 2021 vs. 8.2% in 2022).

MFIs demonstrate higher interest rates at 30% per annum both for all clients in general and for loans to agriculture (Figure 14). When comparing MFIs agricultural lending rates in 2022 compared to 2021, a slight increase of 0.3% should be noted (30.3% in 2021 vs. 30.6% in 2022). In general, the rate is noticeably higher in this segment of lending to the agricultural sector.

Figure 14. Dynamics of quarterly weighted average interest rates on micro-credit financial organizations loans issued in 2021–2022, %



Source: NBKR, 2022

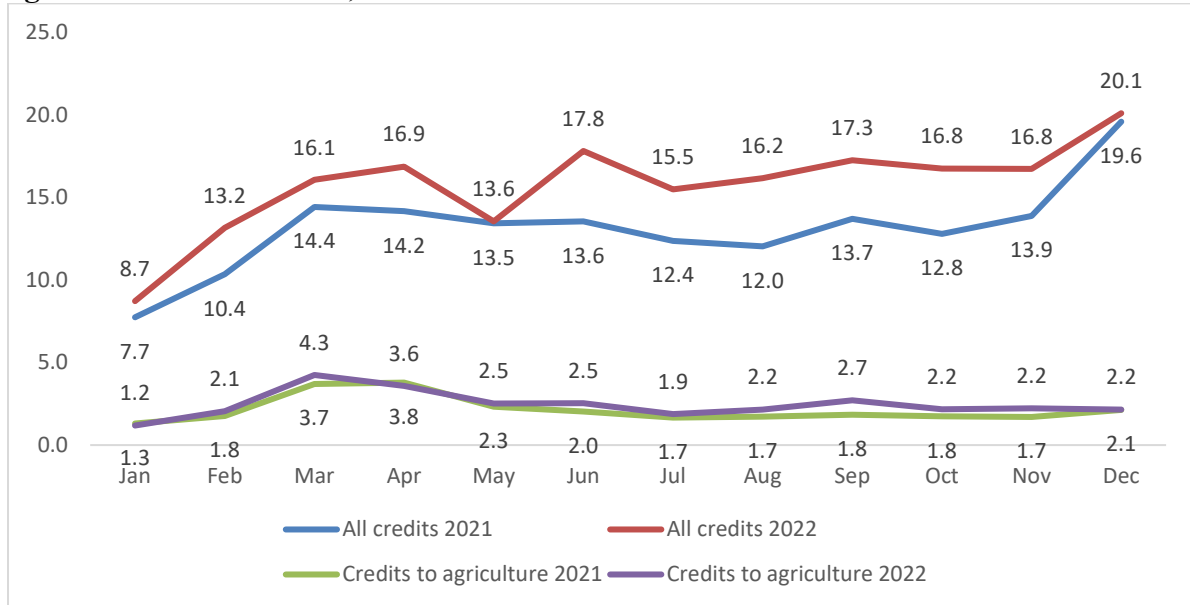
The issuance of loans in monthly dynamics shows that in general, in 2022, the commercial banking sector withstood the impact of external shocks and did not reduce lending to both all economic entities and agriculture (Figure 15). The seasonal dynamics in 2022 shows an increase in lending volumes and no failures, which undoubtedly provided farmers and agribusinesses with access to loans throughout the entire period.

The representative of the financial institution informed about the factors that contributed to the improvement of access to credit on the supply side. Many credit lines were received with the support of the state - the agriculture financing program -10, loans to support the agro-industrial complex. Interest rates on such programs have decreased from 10% per annum to 6% in the national currency. The number of clients under such programs is constantly growing, both old and new clients. The growth of applications from clients in agriculture amounted to 20% compared to last year. Loan amounts are also growing, but do not exceed 400 thousand soms (less than 5 thousand US dollars). All requests were not granted due to limited resources. Thanks to international programs, a program was launched to issue interest-free loans to those affected by the pandemic. However, many farmers could not participate because there was no official data on their turnover - there were no patents or data as individual entrepreneurs.

At the same time, banks also issue loans also at higher rates from the banks' own funds. The

rates for them are about 20%, although last year it was 16-17%. Customer dissatisfaction with rising interest rates was noticeable. Some clients experience difficulties in timely payments, but the level of delay in payments did not exceed the level of the previous year.

Figure 15. Monthly dynamics of issuance of all loans by commercial banks and agriculture in 2021–2022, billion soms



Source: NBKR, 2022

In general, despite the difficulties in the lending market, there was no decline in lending in Kyrgyzstan in 2022. The growth of agricultural lending amounted to 13%. At the same time, there was no increase in the interest rate in agriculture. As it becomes clear, the containment of the weighted average interest rate in the field of agricultural lending occurred due to the continued issuance of subsidized loans under state lending programs with an even lower rate of 6% per annum in national currency. These resources were not enough for all farmers and, for the most part, farmers receive the missing credit funds at higher interest rates - from 20% per annum. The implementation of state programs for subsidizing farmers should be more transparent and more accessible with clear parameters for selecting clients to avoid the growth of social tension and ensure the principles of equality and social justice.

4.2. Staple food products situation in Kyrgyzstan in 2022

4.2.1. Wheat and wheat flour

Wheat flour is one of the most important food products in Kyrgyzstan. Annual production is usually around 600 thousand tons, but in 2021, due to drought, the wheat harvest was insufficient and amounted to only 363 thousand tons (Table 5). In 2022, the harvest is close to the level of 2019-2020 - about 600 thousand tons. A significant part of the produced wheat is forage and is not used for flour production. From produced and imported wheat, 153-155 thousand tons of flour were produced per year in 2019-2021, in 2022 the volume of flour production increased to 225 thousand tons.

In 2020, imports amounted to 170 thousand tons of grain and 101 thousand tons of flour (Figure 16). In 2021, however, 235 thousand tons of grain were mainly imported, while the volume of flour imports decreased to 56 thousand tons. The import of flour and wheat in 2022

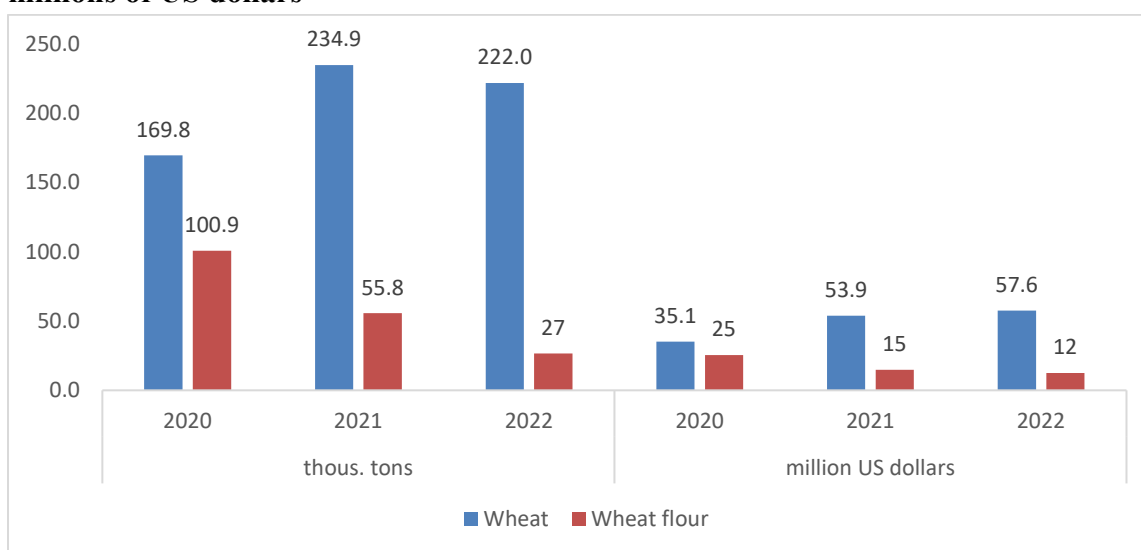
decreased slightly to 222,000 tons of grain and 27,000 tons of flour.

Table 5. Wheat and flour production in Kyrgyzstan in 2019–2022.

	2019	2020	2021	2022
Sown area, thousand ha	240.1	247.5	250.6	233.7
Wheat production, thousand tons	601.2	629.1	362.7	592.5
Productivity, tons / ha	2.5	2.5	1.4	2.5
Production of flour, thousand tons	154.4	153.6	153.8	225.2

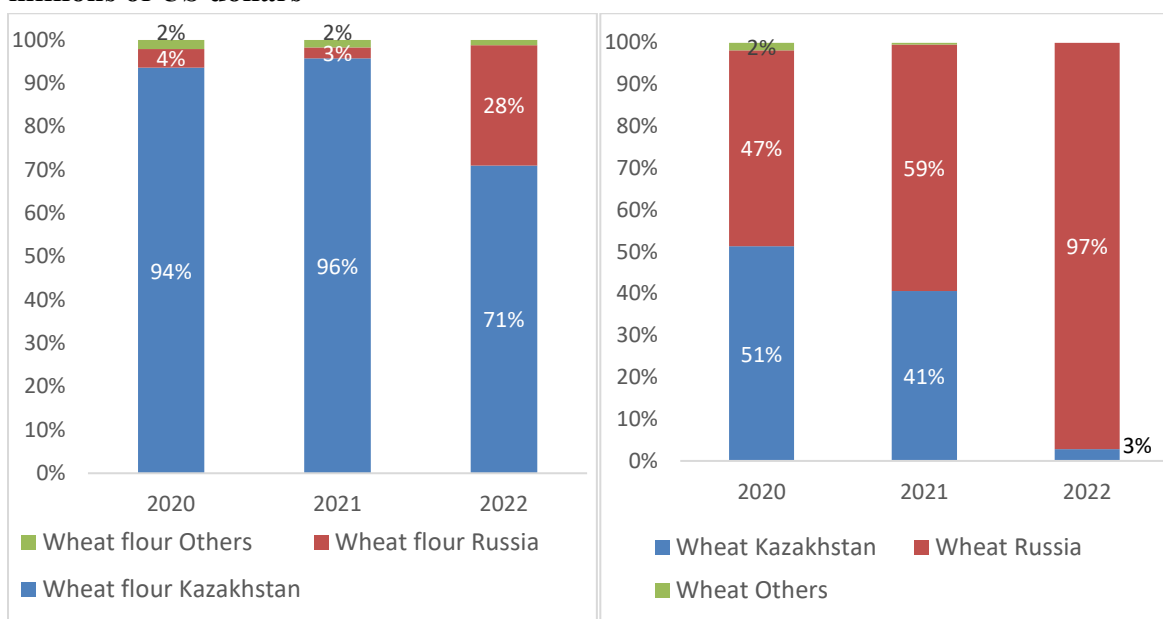
Source: NSC, 2022

Figure 16. Imports of wheat and flour to Kyrgyzstan in 2020–2022, thousand tons and millions of US dollars



Source: NSC, 2022

Figure 17. Imports of wheat and flour to Kyrgyzstan in 2020–2022, thousand tons and millions of US dollars



Source: NSC, 2022

At the same time, official imports of both flour and wheat are mainly transferred to Russian wheat and flour. Thus, in 2020–2021, the share of wheat supplies was 47–59%, and already this year, almost all wheat was of Russian origin (Figure 17). Flour supplies in 2020–2021

were mainly from Kazakhstan - 94–96%, but already in 2022, Russian flour accounted for 34% of all flour imports.

The reduction occurs due to the increase in the cost of wheat grain and flour. In addition, there are channels for informal flour supplies from Kazakhstan according to flour importers. Part of the flour is supplied to Kyrgyzstan informally. The cost of flour on the consumer market in Kazakhstan is 15–20% lower than in Kyrgyzstan. Informal flour supply chains usually operate in the absence of an export ban. Once the ban is in place, supply chains are more tightly controlled and informal imports become more difficult and unstable. Kazakhstan has introduced quotas for wheat exports since April 2022, and then again in July. The ban was lifted only in September. Under such conditions, Kazakhstan mainly supplied its grain for export to China. In 2022, the situation has changed, first with sugar, and then with flour. A ban was imposed on the export of these products. In autumn, the authorities intensified the struggle in Kazakhstan to export diesel fuel. All this in general complicated the work of informal traders and contributed to the reduction in supplies. Possibly informal supplies are cheaper due to tax evasion in Kazakhstan. Prices still rose everywhere, but the demand for flour is stable and many buyers prefer specifically Kazakh flour. In 2022, approximately 20–25% less was imported informally compared to last year due to bans. Alternative supplies of wheat from Russia and the informal import of flour from Kazakhstan made it possible to cover the demand for wheat and flour in Kyrgyzstan. At the same time, the volume of official imports this year has noticeably decreased - according to calculations, imports of flour fell by half (by 51.6%) and wheat by 5% compared to the 2022. Informal imports, despite the damage in the form of a lack of tax payments, contribute to the saturation of consumer demand in the country. It is possible that in the absence of informal flour imports, pent-up demand would have caused even more price increases and led to panic buying behavior, which was observed during the pandemic in 2020.

A grain farmer from the Issyk-Kul region informed about his difficulties in growing wheat in 2022. More expensive seeds of Russian wheat were noted - 54 som/kg, and Kazakh - 27 som/kg. But as it turned out, *“... the mill does not take Russian wheat. Therefore, I sold it in the same form in the fall. Russian wheat turns out to be small. The Ministry of Agriculture provided it. I sowed, then, when I collected it, I took it to the mill, they took the first batches, but they didn't take it the last time, they also, in my opinion, did not immediately understand. They said there was something missing in the wheat, so I sold it already in the form of wheat.”* Kazakh wheat "Kazakhstan-10" has grown large. Overall, wheat seed spending was 45% higher than in 2021.

The farmer used ammonium nitrate in wheat cultivation - 200 kg/ha. Prices increased from 1800 soms to 2200 soms per 50 kg. The cost of fuel has increased - diesel fuel has increased in price from 56 som/liter to 76 som/liter. At the same time, the payback has fallen sharply since the price of domestic wheat is low - 19.5 som/kg. If this situation persists, the farmer wants to switch to another crop next year. The farmer has access to credit, both subsidized and leased, but uses the credit for another more commercial crop, the potato. Wheat cultivation becomes unprofitable at these resource prices. If credit funds are added here, then the loss due to interest will be even greater.

The situation on the wheat market is highly dependent on import supplies of wheat and wheat flour. The introduction of export bans by Kazakhstan has been actively used as a policy

measure since 2020. This led to a reorientation of wheat grain imports from Kazakhstan to Russia, which makes it possible to export at better prices and larger quotas. Flour imports from Kazakhstan are declining through official channels and increasing through unofficial imports. This creates a distortion of trade statistics and does not allow one to estimate the real size of the wheat market in the country. Despite the opportunity to saturate domestic demand in the consumer market, in the future this situation will have a negative impact on the market. Rising prices for agro-productive inputs make it unprofitable for farmers to grow wheat and they can switch to other, more commercial types of crops. Purchase prices for domestic wheat are noticeably lower than for imports, which also reduces the motivation of farmers - wheat producers.

4.2.2. Sugar

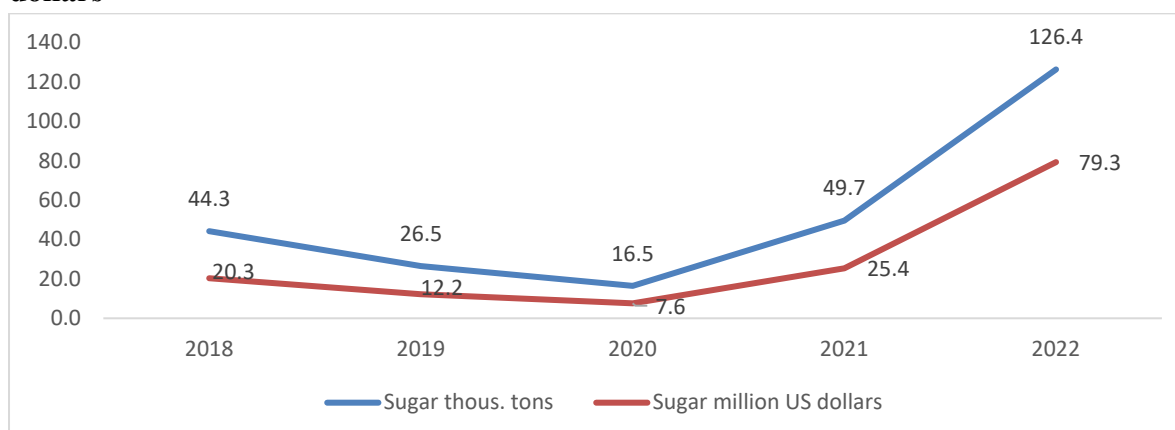
The sugar market is formed by domestic production of sugar based on the production of sugar beets, as well as imports of refined sugar and raw sugar. The sugar cluster in Kyrgyzstan was created in the 70s of the 20th century in the Chui region. It fell into decline in the 90s and did not work at full strength, but in the last decade it began to recover. In recent years, sugar production peaked in 2018 with domestic production of 122 thousand tons of sugar and 100 thousand tons each in 2017 and 2019 (Table 6). However, unfavourable market conditions in the same period led to a decrease in purchase prices for sugar, and farmers moved away from sugar beet crops in 2020 - in the last three years, crops were about 10 thousand hectares, having decreased by more than 50% on average. In 2021, a severe drought also led to a drop in yields. At the same time, domestic production has almost halved. And it was from 2021 that the price of sugar began to grow rapidly and also doubled in 2021–2022 (Table 1, Figure 6). In 2022, production increased to 468 thousand tons due to increased yields.

Table 6. Sugar beet and sugar production in Kyrgyzstan in 2017–2022, thousand ha, thousand tons, tons/ha

	2017	2018	2019	2020	2021	2022
Sugar beet area, thousand ha	17.5	16.3	14.4	8.4	10.3	9.0
Sugar beet production, thousand tons	712	773	741	449	366	468
Productivity, tons / ha	41	48	51	53	36	52
Sugar production, thousand tons	100.4	122.5	99.7	51.3	64.9	107.4

Source: NSC, 2022

Figure 18. Sugar imports to Kyrgyzstan in 2018–2022, thousand tons and millions of US dollars

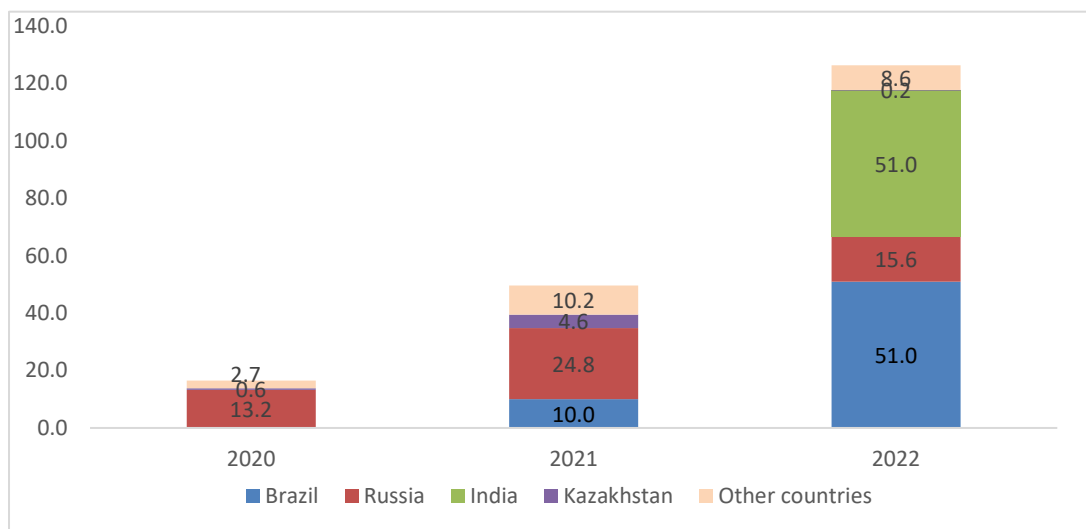


Source: NSC, 2022

Active domestic production in 2017-2019 led to a reduction in the country's sugar imports, with a lowest imported volumes in 2020. Due to accumulated stocks, the price of sugar in 2020 did not increase compared to 2019 but has already begun to increase rapidly since 2021 (Table 1). The shortage of domestic raw materials and rising prices made sugar imports profitable, and in 2022, imports increased by more than two and a half times in physical terms (Figure 18). This contributed to the stabilization of the price of sugar in the country with a shortage of this product in Kazakhstan, Russia and neighboring countries in the summer of 2022.

According to the information received from the importer and processor of sugar under the EAEU regulations, there are duties on the import of raw materials for sugar production from third countries. Therefore, the import of raw sugar is strictly limited within the allowable quotas. The importance of obtaining a quota from the EAEU for sugar imports is an extremely important policy measure that affects the volume of sugar imported into Kyrgyzstan according to sugar importers and producers. Therefore, thanks to the existing quota of 120 thousand tons of sugar, it was possible to import raw sugar from Brazil and sugar from other countries in 2021-2022.

Figure 19. Imports of sugar and raw sugar by main supplying countries to Kyrgyzstan in 2020–2022, thousand tons



Source: NSC, 2022

The main raw sugar supplies began after March 2022, and “... sanctions were imposed on Russian ports of receiving cargo, and the largest port of Novorossiysk in the Black Sea was us under sanctions, so bulk carriers that transport sugar could not enter Novorossiysk. They began to unload raw materials to other ports (the port of Batumi), and because of this, the logistics became very complicated, due to the fact that these ports are not quite ready to receive such large volumes, there are not enough wagons, because raw sugar transported in special refrigerators, all this was not enough. Then the sugar went through two more ports in the Caspian Sea, and then the railway in Kazakhstan was not ready to transport such a volume of cargo and the Caspian ferries stopped and could not provide. This is the complexity in terms of logistics turned out to be. Therefore, the cargo arrived later, and the start of mass production of sugar was shifted to June instead of the planned one in May. Production should be continuous ... but due to the fact that the cars were stuck, we had to stop the plant twice in order to prevent too high production costs.”

Thanks to active imports, the cost of sugar in the summer of 2022 stabilized on the consumer market in Kyrgyzstan at the level of 90–95 som/kg. In addition, in addition to imports of raw cane sugar from Brazil, there were many imports of sugar from other countries - primarily finished sugar from India (Figure 19). 80% of sugar was imported from these two countries in 2022. There were also deliveries of sugar from Egypt, the United Arab Emirates and other countries.

According to the information of the sugar importer and processor, the key problems were with the logistics of supplies - it became extremely complicated due to the Russian war in Ukraine. Logistics services have also grown - port services, downtime due to long waiting times (10 days of unloading instead of 3 in the port of Novorossiysk). Multimodal transportation in general is much more expensive than direct deliveries by one-mode transportation. The cost of sugar itself, including raw sugar in the world, has risen sharply. Sugar is a tradeable commodity and with growing global demand, the price of it can rise strongly, which happened in 2022. The government helped sugar importers and processors with low interest rate financing for supplies in the spring and summer of 2022.

Many consumers reacted negatively to the increase in sugar, but thanks to the measures taken to saturate the domestic market, there was no shortage of sugar in Kyrgyzstan. The price increase was stopped in the summer of 2022: *“And if the price of sugar in Kazakhstan was infinitely high this year for sugar, then by joint efforts we were able to keep the price of sugar at an acceptable level this year in the same Globus, Narodny, Frunze, etc. .d. the price of sugar was around 80 som/kg, social sugar was priced at 78 som, and in the same Kazakhstan, if you transfer it to our money, 200. ² That's the difference for you.”*

Since 2022, sugar beet farmers have become interested in the production of sugar beet due to the increase in purchase prices. The work of farmers is becoming more connected with the processor - the sugar refinery factory. According to a sugar beet farmer from Chui Oblast, the sugar factory provides a variety of seeds to choose from - more productive varieties that require good farming and irrigation, and more resistant, but also less productive varieties. Variety "Chevalier" refers to more resistant varieties with a seed consumption of 1 kg/ha. The cost was 7.5 thousand som/kg in 2022. The price rose a month later to 14 thousand som in March 2022. More productive seeds cost twice as much. In 2022, from 3.5 hectares of arable land, the respondent received 237 tons of sugar beets - 67 tons / ha. The beet grower has been the recipient of a subsidized loan since 2020, taken at 10% per annum in som for 5 years. In addition, if necessary, short-term loans are taken at 18% per annum in som for working capital.

Beet growers actively use fertilizers, chemicals in the cultivation of sugar beets, as well as herbicides to suppress the growth of weeds. In 2022, the prices went up seriously: *“... medicines, fertilizers (nitrate, ammophos), diesel fuel were 30 som each, but this year they filled in 75 som. Last year, cars were transported at 350, this year they take 450 beets per ton, and they also force them to fill in fuel. Everything has gone up in price this year. And our products went up in price in 2021, according to the contract, the price was 3 som 30 tyiyn per kg, but we sell it on 4.5 som, and in 2022 we sell for 6.2 som. And our expenses covered everything, this year is successful anyway.”* Thanks to the good weather, the availability of

² This statement and the given figures are based on the words of the respondent.

irrigation water and the lack of competition, sugar beet farmers were able to work successfully. Farmers expect strong competition in the sugar mill area next year and are worried about lower purchase prices at higher input costs.

The overall dynamics of the sugar market shows great volatility in recent years. The increase in sugar prices in the country has amounted to more than 100% over the past two years, which is significantly higher than the inflation rate. This situation on the market led to an increase in prices for imports of sugar, raw sugar in complicated logistics environment. The current efforts of the Government of Kyrgyzstan and importers allowed to saturate the market and prevent panic in the sugar market. However, the current price of sugar makes the situation unsustainable due to the disproportion with other agricultural prices. The expected transition of farmers to this area will occur not only in Kyrgyzstan, but also in other countries. The sugar market, both in terms of production and international trade, is likely to be volatile in the next two or three years, both in the country and in the world.

4.2.3. Potatoes

Potato is the main food in Kyrgyzstan after wheat. Domestic production is quite stable and completely covers domestic demand (Table 7). The limited domestic market and the lack of demand for potatoes in export markets contribute to a more or less stable production with a gradual decline from production 1.4. million tons per year to 1.25-1.3 million tons in the last four years.

Table 7. Potato production in Kyrgyzstan in 2017–2022, thousand ha, thousand tons, tons/ha

	2017	2018	2019	2020	2021	2022
Potato area, thousand ha	83.0	84.4	79.2	76.3	74.9	74.2
Potato production, thousand tons	1416	1446.6	1373.8	1327.2	1289.1	1275.0
Productivity, tons / ha	17.1	17.1	17.3	17.4	17.2	17.2

Source: NSC, 2022

Export of potatoes is quite limited and amounts to only 25-30 thousand tons per year to Kazakhstan, Russia and Uzbekistan (1.5-2% of domestic production). The maximum amount of potatoes was exported in 2020 - 67 thousand tons, when there was an increased demand for potatoes in Uzbekistan. Potato export prospects are quite limited, including due to subsidies in the domestic markets of many countries.

Table 8. Potato imports to Kyrgyzstan in 2020–2022, thousand tons, thousand US dollars

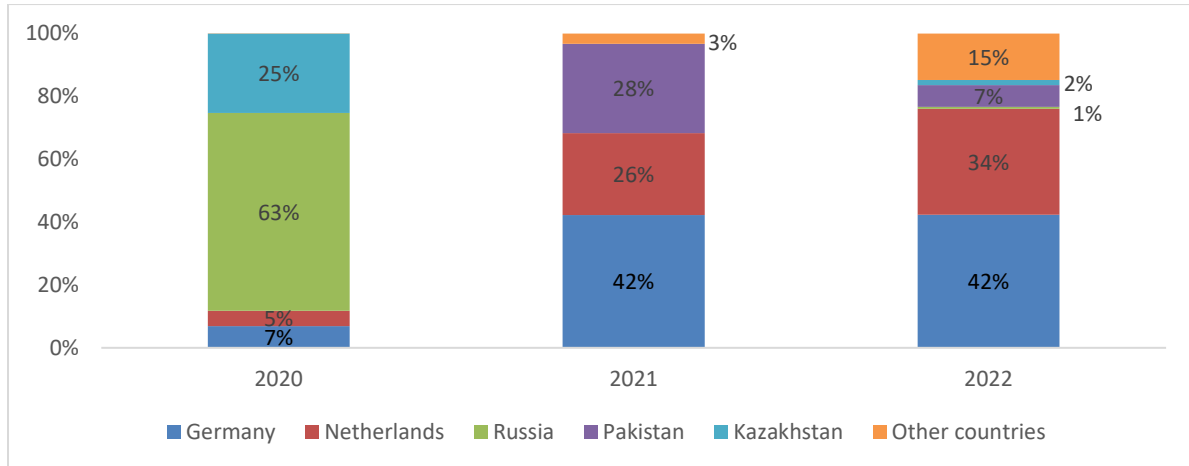
№			2020	2021	2022
1	Seed potatoes	thousand tons	2.2	2.4	3.7
		thousand US dollars	431	1,473	2,468
2	Food potatoes	thousand tons	0.8	0.8	1.2
		thousand US dollars	64	114	235

Source: NSC, 2022

Potato imports are also severely limited within 3-5 thousand tons per year (Table 8). Mostly imported potatoes are seed potatoes to ensure domestic production. In 2022, mostly seed potatoes were imported. The average cost of imported seed was \$667 per ton. The price increase was 7% compared to 2021 prices, but almost three and a half times higher than the cost of seed potatoes in 2020. This happened due to a change in the structure of potato supplies in 2021-2022. In 2020, due to the pandemic, many supplies from Europe were not made,

which led to the need to import seed potatoes from Russia and Kazakhstan (Figure 20). In the next 2021, supplies of seed potatoes from Germany and the Netherlands returned again - 68% in 2021 and 76% in 2022. In 2021-2022, there were also supplies of seed potatoes from Pakistan, which can be an alternative to supplies from Europe and the EAEU in case of emergency.

Figure 20. Structure of imports of seed potatoes by main supplying countries to Kyrgyzstan in 2020–2022, %



Source: NSC, 2022

In 2022, seed potato suppliers faced serious problems in the supply of seed potatoes: *“In fact, our supplies from Europe fall precisely in March-April. Accordingly, as soon as these events took place, it immediately affected our work and the very first thing that happened was big problems with transport, because at that time sanctions began - European companies-imposed sanctions on Russian and Belarusian road carriers. At the end of March, there was already such a requirement that all Russian and Belarusian cars leave Europe, respectively, in response, there were sanctions from Russia on European cars, so there was a very large shortage of transport. Transport has risen sharply in price and there were difficulties, firstly, with finding transport from Europe to Kyrgyzstan. We need trucks - refrigerators, there was a very large shortage of them, because it is at this time in spring that the transportation of seedlings, seeds, and various crops from Europe begins. Not only to Kyrgyzstan, but also to Uzbekistan, Tajikistan, Kazakhstan, Russia. Accordingly, in connection with these events, there was a strong shortage of both the transport itself and the growth in prices for transportation. And, accordingly, delivery, which previously cost 7.5-8 thousand euros, rose to 11 thousand euros for 1 car. In addition, delivery times have become more complicated - usually trucks reach Kyrgyzstan from Europe within 2 weeks, and here the trucks traveled almost up to 1 month. Accordingly, part of the seed material arrived in April. There was a big risk that they would arrive very late when we had finished the entire planting season. ... And by the way, we did not bring the last car. Everything was paid for, but it was the last truck that we could not bring, because there was no transport anymore.”*

The cost of potatoes varies from 0.97 euros per kg to 1.2 euros per kg. Prices did not increase in 2022, because contracts are concluded and paid at the end of the year, payment was in January 2022. It was difficult for importers, as transportation grew quite strongly, in addition, payments had to be made from February to April, and the euro exchange rate rose to 119 soms per 1 euro. Farmers entered into supply contracts in 2021, and some farmers bought at this

price. Then the euro exchange rate fell sharply, and some farmers bought at a cheaper exchange rate. This is what affected some of the farmers who bought with the growth of currencies and high uncertainty. In general, the growth in the cost of seed potatoes was at the level of 10–15%, but if part of the payments had not been made before the start of the Russian war in Ukraine, then the growth would have been 10–15% higher. Alternative deliveries of potatoes were worked out through Turkey and Georgia, but it turned out to be much more expensive, serious problems with documentation (certification) also complicate this process. Some farmers refused due to rising prices, but since demand exceeded supply, other clients bought these volumes anyway. Demand for potatoes from Germany and the Netherlands is high. But all potato farmers still had serious complaints about the price of potatoes. About 10–15% of seed potato buyers were hit hard.

The seed potato importer assesses the situation in the next two or three years as stagnating. There are quite a few buyers: *“previously, if Tajikistan, Kazakhstan, Uzbekistan bought seed potatoes in large quantities, then this year there are certain difficulties with the sale of seed potatoes, due to the fact that there was a high harvest in Kazakhstan and partly somewhere in Russia, therefore demand this year is less than last year, respectively, the market has now risen, therefore, there are problems with sales to a certain extent, so I think that this year there will be a decrease in demand in the trend. ... I think somewhere up to 30% there will be a reduction in volumes for the next year, probably.”*

A potato farmer from the Naryn region also assessed the current year as more difficult for them. As negative factors, it was noted that there was an increase in prices for fertilizers, fuels and labor. Many farmers switch to organic types of fertilizers when growing potatoes - there was no increase in yield, but the potatoes are more marketable, clean. The cost is 7000 soms/ha (100 liters at 70 soms). Before that, manure was used, the consumption was higher. Diesel fuel has grown strongly - this all affects the cost of potatoes. The growth also affected wages - employees ask a higher rate. We then use our own labor more.

At the same time, the price of potatoes fell sharply. The purchase price for potatoes from the farmer is now 9 som/kg. Last year it was 15 soms. The export of potatoes has fallen sharply: *“... the reason is that the export has stopped, they did not export potatoes to Kazakhstan and Uzbekistan. And 9 soms is a very low price, it does not justify the expenses. Now, if you sell it now for 12–13 soms per kg, it will pay for itself, this is without income.”* Thus, even the presence of small export volumes strongly affects the purchase prices of potatoes.

The potato market in 2022 has undergone a serious shock due to the complexity of logistics and supply costs. It should be noted that production in 2022 was based on higher domestic prices in 2020-2021, which ensured a higher purchase price from the potato farmer. Meanwhile, demand driven by potato exports to Kazakhstan and Uzbekistan last year was caused by a severe drought that affected last year's crop. But in 2022, there is no demand for Kyrgyz potatoes, due to good climatic conditions and, accordingly, a better harvest in these countries. All these factors had a negative impact on the potato market in Kyrgyzstan this year.

4.2.4. Beef meat

In Kyrgyzstan, the number of cattle has been growing slowly but steadily over the past two decades. The total number of cattle amounted to 1 million 780 thousand heads in 2022 (Table 9). The total volume of meat produced is 230-240 thousand tons in recent years. Of these, 48–49% of all meat is beef.

Table 9. Cattle, red meat and beef production in Kyrgyzstan in 2017–2022, thousand heads, thousand tons, %

	2017	2018	2019	2020	2021	2022
Cattle, thousand heads	1575.4	1627.3	1680.7	1715.8	1750.5	1783.5
Red meat (in slaughter weight), thousand tons	216.6	221.3	226.2	230.4	235.0	241.8
including:						
beef	103.6	108.6	111.5	114.5	113.6	118 ³
Share of beef in total meat production	48%	49%	49%	50%	48%	49%

Source: NSC, 2022

Table 10. Import and export of cattle and beef to / from Kyrgyzstan in 2017–2022, heads, tons, thousand US dollars

		2020	2021	2022
Import of cattle	Heads	17,489	39,481	4,570
	thousand US dollars	6,507	13,569	2,425
Export of cattle	Heads	10,939	3,217	20,173
	thousand US dollars	8,264	2,848	17,104
Import of beef	tons	388	1,014	947
	thousand US dollars	1,068	3,363	3,290
Export of beef	tons	85	0.1	84
	thousand US dollars	172	0.4	270

Source: NSC, 2022

Imports and exports of beef meat are relatively small and do not significantly affect the domestic market or consumption. Import and export of live cows and bulls is undergoing changes associated with the import of cattle from Russia and Kazakhstan and subsequent re-export mainly to Uzbekistan. In general, the official volumes of trade in live cattle are not large. It is possible that some exports of live animals are carried out informally, which may reduce the reliability of trade data.

A livestock farmer engaged in fattening cattle in the Naryn region informed about the main problems in beef cattle breeding in 2022. The main changes concerned the growth in the cost of fuel, many types of services also rose in price. The purchase price of livestock this year has increased compared to 2021. The main item of expenditure is feed. Forage harvesting requires investments in fodder production, primarily in hay harvesting of perennial grasses (15 hectares). 4 thousand bales were prepared. The growth in fuel has led to the fact that the cost of own hay production has increased from 50 som/bale to 65 som/bale. Each bale weighs 18–20 kilograms. Own hay costs two and a half times cheaper than purchased hay. Purchased hay costs 200 som/bale in autumn 2022. In addition, there are a lot of expenses for growing barley (25 hectares). The cost of barley in autumn decreased to 18 som/kg, by spring it rises to 22 som/kg. The main consumption of fuel is 2.5 tons per season. The cost has increased from 50

³ Beef production in 2022 is estimated approximately.

som to 75 som/liter. The cost of mowing perennial grasses has increased from 1200 som/ha to 1500 som/ha.

The purchase price for cattle increased by 30% during the year. The cost of other types of farm animals has also risen. The cost of paying workers is also rising, the rise in food prices affects employees.

Access to subsidized loans is difficult - a lot of red tape. It is difficult to get subsidized loans at 6% per annum: *"... there are many restrictions, but they give 1 million som in total. There is a queue there, if they take 500 farmers, then the remaining 3 thousand people. They are in line."* The amount of assistance is small - the farmer wanted to take seeds, but they give them for 1-2 hectares, and he needs 25 hectares of barley. The farmer believes that assistance from the state should be more significant. Currently, the farmer takes a loan at 20% per annum in som. In 2021, the loan was at 16% per annum. The loan is taken annually and repaid in full within one year.

The above factors affect the rise in meat prices - the cost of livestock is growing. Farmers' expectations for 2023 are also growing: *"... if we sold meat for 450 som per 1 kg last year, now we sell for 500 som. At the market for 550 already. And they say that in the spring the cost will rise to 600 som."* General instability affects the anxiety of livestock farmers: *"Well, I would like prices not to rise, there was stability. I would like the state to help farmers with seeds. Issues with lending to farmers should be decided by the state."*

The beef market is thus mainly formed at the expense of the domestic market of the country, both in terms of production and consumption. The rise in prices for agro-production factors indirectly affected beef cattle breeding - prices for fuel rose, prices for machine services rose, the cost of livestock for fattening increased, in addition, the cost of labor of workers increased due to the general level of inflation. Access to subsidized loans is insufficient, and farmers are forced to take out loans at commercial rates (20–25% per annum in som). All these factors are ultimately included in the cost of the final product - meat. As can be seen from the price statistics, the increase in prices for beef has occurred since the second half of the year (Figure 7). By this point, livestock farmers have sensed the change and responded to rising resource prices. In addition, the general uncertainty and volatility on a global scale, coupled with the general increase in prices, also motivated the increase in beef prices. Similar dynamics is observed among other types of farm animals for the same factors of influence.

5. Conclusions

The challenges of 2022 have led to global shocks in food markets around the globe and in Kyrgyzstan. Russia's war in Ukraine has led to an increase in prices for basic foodstuffs, an increase in prices for agro-industrial resources – fuel, seed, fertilizers. The general increase in food prices has led to high inflation, which negatively affects the population of the country - economic access to food continues to deteriorate.

An increase in prices for fertilizers by about a factor of two led to a decrease in demand and volumes of imports to Kyrgyzstan (Table 2, Figure 8). Some informal imports may have mitigated the effects of this price spike, but due to the small price difference and the instability of this supply chain, this did not have a significant impact at the level of food farmers. In

general, farmers' access to fertilizers has been seriously reduced. Currently, the main supplier of mineral fertilizers is Russia. Despite prospects for lower fertilizer prices, supply uncertainty remains a major concern.

Despite rising prices for petroleum products, demand remains stable. Agricultural production is facing a seasonal diesel shortage in the second half of the year. The price of diesel fuel has risen sharply in 2022 (Figure 11). As in the case of fertilizers, part of the need for motor gasoline in 2022, according to business, is covered by unofficial imports from Kazakhstan, which is not a sustainable solution and needs to be addressed. Market participants' expectations for the next year are related to the ongoing sanctions against Russia, which may also lead to lower prices for petroleum products in Kyrgyzstan, but uncertainty remains high.

The financial market showed stability and demonstrated the growth of lending - in agriculture there was an increase in loans by 13%. It seems from the answers of respondents that part of the lending was carried out thanks to interventions from the Government of Kyrgyzstan - assistance to farmers (Financing Agriculture-10), assistance in the supply of sugar to processors. This also contributed to the fact that there was no increase in interest rates. But it should be considered that while some clients were able to get subsidized loans at 6–10% per annum in national currency, many others took loans at 20–25%. Such a gap is quite dangerous from the point of view of social justice and causes disappointment for farmers.

Wheat and flour production is a critical part of Kyrgyzstan's food systems due to the importance of flour and bread in the nutrition of the country's population. Rising prices provoked a decrease in imports through official channels. Dependence on imports is quite high and has gradually shifted from traditional supplies from Kazakhstan to supplies of wheat and flour from Russia. The main reason is the use of export duties on exports by Kazakhstan, despite the contradiction with the rules of the EAEU. Informal flour supply harms trade between our countries in the long run and will cause distortions in wheat production. In general, the increase in prices for agro-productive inputs has led to a situation of unprofitable wheat production. The profitability of this crop is quite low, taking into account the low productivity and low quality of domestic grain. In a practical sense, this is realized in low purchase prices for wheat. There will not be a sharp decline, but in the future, this may be realized in the transition to fodder grains - barley, and, in the future, oats.

The sugar supply situation can be divided into two separate areas - the saturation of the consumer market and the effect of rising prices for inputs at the farmer level. With the support of the Government, the processors and importers coped with the first task, which was reflected in the fact that prices rose less than they could. However, one must understand that sugar prices are still very high, and, in the long term, the stability of supplies requires a more planned approach, improved supply logistics. It is not worth expecting that Kyrgyz farmers will double the supply of sugar beet in the short term. With favorable conditions, this will take several years. The second problem is that the rise in prices for agro-productive inputs has led to an increase in the cost of production. Such costs can be covered by the high price of sugar. If the price of sugar beet goes down, then farmers will simply stop growing it, which has happened several times over the past decade. A more systematic approach is essential if critical sugar supplies are to be secured on an ongoing basis.

The potato market is highly dependent on prices in neighboring markets. Overproduction of potatoes leads to low purchase prices in the autumn after harvest. Under such conditions, a

drop in potato prices is good for consumers, but it can bankrupt potato farmers. Strategies to transition to storage systems and then sell them in the spring need to be actively implemented among farmers. The current structure of potato production is based on the import of highly productive genetically modified potatoes and its replication up to 4-5 generations by Kyrgyz potato farmers. This is a relatively sustainable system, as it allows you to maintain productivity at a certain level for several years with a reduction or suspension of seed potato imports, as was the case during the COVID-19 pandemic. However, there is a dependence, and the logistics for the next season should be worked out in a more optimal mode, since the risks of supplies through the Baltic States and Russia remain.

The production of beef and other types of red meat in general was also under pressure due to the growth of agro-inputs. In animal husbandry, this was realized through an increase in the cost of feed, mechanized services, the cost of labor, transportation, and the cost of the animals. For many farmers, the cost of financing has also risen. This impact was also characteristic of the other crop value chains described – wheat, potatoes and sugar beets. In general, agriculture is experiencing a serious shock due to rising prices, and in turn continues the cascading effect of rising prices. However, the consumer ability of the country's population cannot fully follow the rise in prices and leads to a decrease in demand for more expensive food.

The development of a strategy to reduce the cost of agro-inputs is a priority for the state policy in the nearest future. The following steps appear to be the most practical steps based on the results of the analysis:

1. Wheat production should be supported at the farmer level. Targeted support programs should include support for larger producers to achieve economies of scale. Support should include programs for productivity growth, agricultural equipment leasing, financing, and guaranteed purchases.
2. Potato as an important product of food security should be supported through support for the development of domestic seed potato production capacity with finance, logistics, technical assistance.
3. Sugar beet producers should receive support through processors - support for training farmers, providing seeds, fuel, finance on credit with a guaranteed purchase price can play a positive role in reducing the cost of sugar beet.
4. Meat producers need support to improve feed efficiency. Support from larger feed producers would reduce the cost of feed and help reduce the cost of meat production. Increased mechanization, the use of fertilizers, more productive seeds, the use of succulent fodder and tubers will contribute to an overall improvement in the productivity of livestock in general and meat production in particular.
5. All farmers need access to cheap credit resources. The implementation of government subsidy programs for farmers should be more transparent and more accessible with clear parameters for selecting clients. More clearly defined rules and avoidance of conditions that are difficult or impossible to fulfill are more beneficial.

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