Lomonosov Moscow State University
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Food Security in Eurasia 2020

Case studies

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Foreword

This publication is the result of joint work carried out by researchers from the countries of the Eurasian region and experts of the World Bank and the Eurasian Center for Food Security of Moscow State University. It is the fifth such publication of case studies, which are conducted every year to improve regional knowledge, support cooperation in scientific research, and generate evidence-based policies related to the development of sustainable food systems with the goal of improving food security in Eurasia. Thanks to the success of this approach, case studies have become a regular element of our contribution to the body of regional knowledge and the understanding of policy implications for food security in the region.

The relevance of these case studies is supported by the fact that they bring up the most pressing issues for improving mechanisms to achieve food security in the region. They analyze the current situation in the agricultural sector in each of the countries, enabling the authors to propose specific recommendations aimed at improving food security.

The case studies included in this volume have been prepared by 15 scholars from Armenia, the Kyrgyz Republic, the Russian Federation, and Uzbekistan. The studies cover various aspects of the impact of the COVID-19 pandemic on food security and nutrition. In this respect, it is necessary to highlight the fact that, among the Eurasian countries, Russia and the Kyrgyz Republic carry the highest incidence of COVID-19 and the highest number of newly confirmed cases and deaths, which is a very alarming situation. Moreover, Russia still has the world's fourth highest number of newly confirmed COVID-19 cases, following the United States, India, and Brazil.

The pandemic has triggered an economic downturn and reduced demand for energy commodities and services in sectors such as transportation, tourism, and HoReCa (hotels, restaurants, and cafés/catering/casinos). It has affected prices of energy resources and led to the depreciation of national currencies in the countries of the Eurasian region; it has also disrupted supply chains, reduced labor migrants' remittances from Russia, and increased unemployment and poverty. In turn, because of higher unemployment and poverty rates, along with the use of export restrictions by some countries (Russia, Ukraine, and Kazakhstan) and disrupted value and supply chains, the food security situation and the nutrition status in the region have deteriorated.

Responding to these challenges, the authors of the case studies have examined issues such as the impact of the COVID-19 pandemic on the nutrition of the population and on urban food systems in Uzbekistan and Armenia; measures to ensure uninterrupted organization of school meals in Armenia amid the pandemic; viable options for transforming systems of agricultural sales, taking the case of the Semeynaya Eco-Farm in the Leningrad region as an example; measures to reinforce food chains in vegetable farming and fruit growing in Armenia; proposals for streamlining the regulation of Russian wheat exports when facing price shocks; and methods for supporting the sustainability of animal husbandry, taking the Ak-Talaa district of the Kyrgyz Republic as an example.

Taken together, the case studies demonstrate the sustainability of agricultural production amid the pandemic outbreak despite temporary difficulties in accessing resources and finance faced by producers, and despite the shortage of seasonal labor. Rapid adaptation of the agrifood systems has been largely encouraged by more active use of innovation technologies—in particular, digital technologies.

Besides, in the context of the pandemic, regional trade in agricultural products has increased against the background of reduced imports from third countries. Practically all Eurasian countries have increased supplies within the region. Therefore, higher volumes of regional trade have helped to mitigate the negative impact of the pandemic on food security and nutrition in these countries.

However, the food systems of Eurasia are facing new challenges; among these are an economic slowdown, an increase in food prices, a reduction in household income, and trade restrictions. Under these conditions, food security will depend on how successfully these countries will be able to put in place a social assistance system to protect their vulnerable populations and to support the competitiveness of their products and the digital transformation of agri-business. All this demonstrates the need to intensify joint efforts to find responses to new challenges and work out recommendations for food policy makers.

We hope that the case studies from this book will be useful for experts and policy makers and will make a useful contribution in addressing many issues of food security.

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Photo credit: Efesenko on depositphotos

Urban Food Security and the COVID-19 Crisis: The Case of Uzbekistan Cities

Etenesh Asfaw, Marina Li, Inna Rudenko, Fotima Saydullaeva

Executive Summary

COVID-19 presents new challenges to urban food systems. This case study assesses food security amid the pandemic crisis and consequent lockdown in cities of Uzbekistan. Findings are based on a survey of 652 randomly chosen urban residents in July 2020; data on the monthly food consumer price index and records on food production and trade are from publications of the State Statistics Committee of Uzbekistan (SSC).

The study reveals that city consumers' food accessibility is vulnerable to the crisis despite food availability. More than 60 percent of respondents experienced income shortages that affected their ability to buy sufficient food. More than 90 percent reduced their food purchases; for many people, this was because of inflated food prices. Many resorted to reducing the variety of food they consumed, shifting from expensive meat products to bread, eggs, and vegetables. Respondents cut their alcohol, beverages, and sweets consumption. Despite their increased prices, wheat bread and cereals continue to be major food items in the diet of city residents.

The government took several policy actions to ensure urban food security amid the pandemic. Actions included declaring food transportation and agriculture production to be "essential," releasing strategic food reserves, increasing food imports and stocks, and providing financial support to vulnerable families. Urban consumers remain optimistic about the future of food security. However, the policy issue of how to sustain and build resilient urban food systems remains as the virus spreads and efforts to contain it continue. This study identifies five policy options to ensure a robust and resilient urban food system. They are: improved management of strategic food reserves; promotion of urban farming; sustainable urban social safety nets; open food trade; and continued liberalization of wheat production and market. Key stakeholders include urban consumers; urban food retailers; development partners; and the Ministries of Economic Development and Poverty Reduction, Employment and Labor Relations, Agriculture, Foreign Trade and Investment, and Finance.

Background

Over half (50.4 percent) of the 34 million Uzbekistan population resided in cities that were under consecutive COVID-19-related lockdowns between March 17 and August 15, 2020 (SSC 2020c). This study explores the food security impacts of the pandemic and the consequent lockdowns specific to food availability and accessibility in the cities of Tashkent, Samarkand, and Urgench (Figure 1).

Figure 1: Uzbekistan Case Study Cities (Red), 2020

Source: MapCruzin Data Research & GIS Project Specialist, https://mapcruzin.com/free-uzbekistan-maps.htm.

Case Study Data

Primary data were collected in July 2020 through an online survey of 652 randomly chosen residents (44 percent of them from Tashkent, 19 percent from Samarkand, and 10 percent from Urgench). The remaining 27 percent of the respondents were in other cities at the time of the survey. Over half (54 percent) of the respondents were female, and a majority (67 percent) were below the age of 35. About half (47 percent) are from families of fewer than five members, while the largest family in the sample had eight members. Six food retailers were also interviewed in Tashkent and Samarkand. Monthly data on consumer price index (CPI) for foodstuff collected by the SSC were used to investigate food inflation. Secondary documents and news reports were reviewed to identify the Uzbekistan government's policy responses to the pandemic.

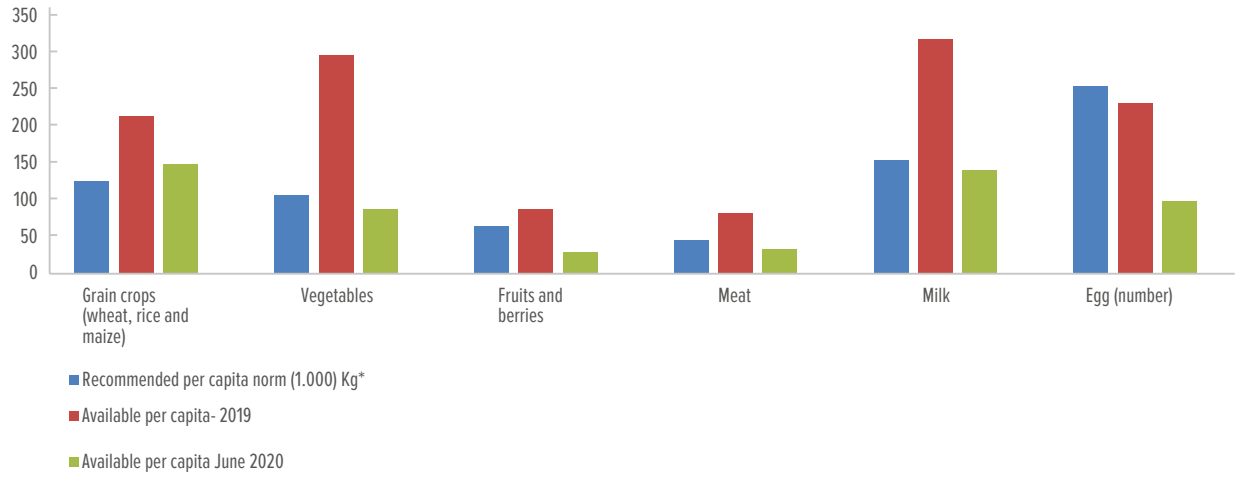
Food Availability

Uzbekistan is food self-sufficient and, as of early 2000, has had a secure food supply (Musaev, Yakhshilikov, and Yusupov 2010; Spoor 2000). The urban food supply depends greatly on food produced and supplied from the surrounding rural districts. In 2019, prior to the pandemic, food production volume, worth US$21 billion, grew by 2.7 percent of

the volume produced in 2018, with the highest 10 percent growth seen in grain crops (SSC 2020a). Food output in kilograms per capita in 2019 was above the recommended norm for all food groups except eggs (Figure 2). Food production prospects for the 2020 harvest (by September) were also favorable, despite reduced food consumption per capita by June 2020 (FAO 2020). The study reveals that urban food systems did not experience any major food shortages during the pandemic and lockdown. City food supply chains are robust, and an adequate amount and variety of food is available.

Uzbekistan's food imports make up 8 percent of the total annual import volume on average, mostly (66 percent) from Commonwealth of Independent States (CIS) countries. With food imports worth US$1.9 million, the country was a net food importer in 2019. Major food imports are cereals, wheat flour, sugar, tropical fruits, meat (including poultry), and food oil (SSC 2020b). The pandemic triggered larger demands than usual for imports in order to build up national strategic stocks. Wheat import requirements (3 million tons) in July 2020 were 7 percent above the previous five-year average (FAO 2020). Nevertheless, trade restrictions by some trade partners created concerns and contributed to the domestic food price spike.[1]

Figure 2: Food per Capita in Uzbekistan by June 2020, Compared with 2019 and Nutrition Norms



Source: Demographic data from SSC 2020c, https://stat.uz/uploads/docs/demografiya_iyun_en.pdf; agriculture data from SSC 2020a, https://stat.uz/uploads/docs/qishloq_xo'jaligi_dekabr_en.pdf.

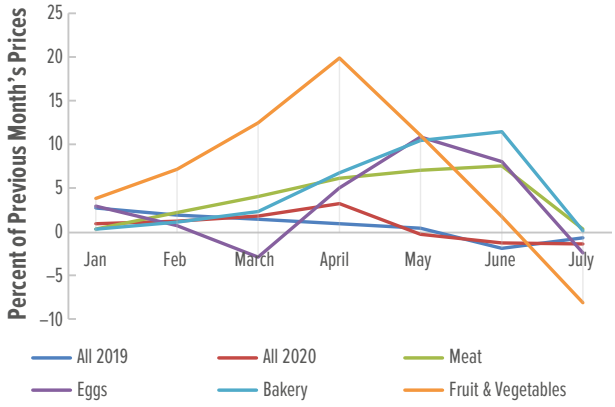
Note: Calculations are in kilograms/capita/year; eggs are in number/capita/year using SSC agricultural production and population data. Nutrition norms are those recommended by Resolution No. 251, 2015. kg = kilograms.

Food Inflation and Affordability

Sudden food price spikes were observed in the immediate months after lockdown, as shown in Figure 3. The overall price increase since January 2020 by the end of July 2020 amounted to 5 percent, with its peak in April. The most significant price increases were recorded for the staple wheat products (11.5 percent in June), followed by protein-dense foods: eggs (10.9 percent in May) and meat (7.6 percent in June). Egg prices were, however, volatile. The price of fruits and vegetables increased by 19 percent in April but declined in the following months. An abrupt increase in shopping due to price speculation, fear of market shortage, and hoarding by consumers are some of the reasons for the price increase during the first quarter of the year. Later, with fresh domestic harvests and saturated consumers' demand for food, prices stabilized and decreased.

[1] Russia, Kazakhstan, and the Kyrgyz Republic imposed food export bans on wheat flour, soybeans, and sunflower seeds from April 10 to June 30, 2020.

Figure 3: Uzbekistan Food Price Trends by Food Group, 2019 and 2020



Source: SSC food consumer price index (CPI) data.

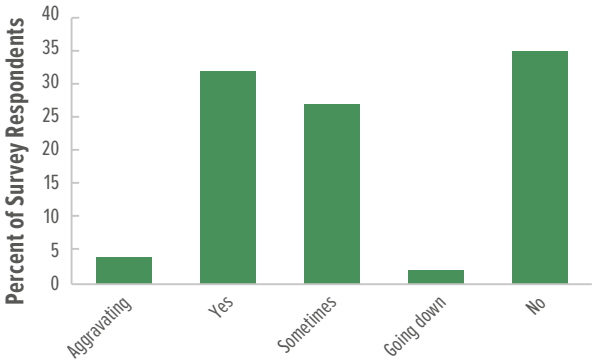
Note: SSC calculates the food CPI based on monthly market price data of 170 food items in 78 cities.

The case study reveals that food availability in the food system does not guarantee food and nutrition security. Food became unaffordable to many city residents, as their ability to purchase a sufficient amount and variety of food dropped with the sharp declines in employment and remittance incomes. Almost half of the survey respondents were either temporarily out of a job (25 percent), in and out of jobs (16 percent), or had lost their jobs (6 percent). Consumers' food purchasing power was further eroded by the currency devaluation of 6 percent in April (World Bank 2020).

More than 60 percent of the study respondents experienced income shortages that affected their ability to buy sufficient amounts of food during the lockdown, while some respondents indicated that their income shortage intensified by June, the time of the survey, as shown in Figure 4.

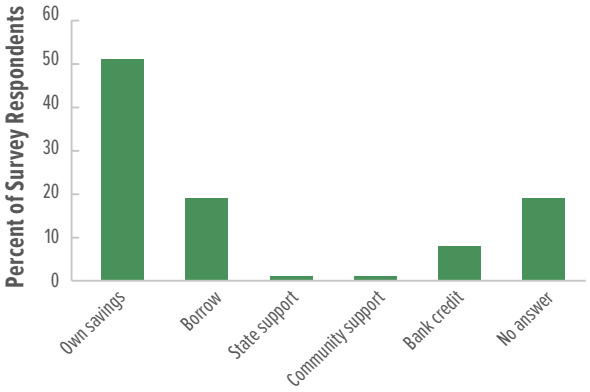
Over half of the survey respondents tapped into their savings, while 20 percent borrowed from friends and relatives to cope with income shortages; 10 percent were eligible (had a stable source of income and were able to repay the loan); these people took out loans from state banks, as shown in Figure 5. Community and state support were the least among the coping mechanisms. This might be because the state safety-net transfer was not widely targeted or sufficient in amount (only US$25 per family); furthermore, it came quite late (only in August 2020).

Figure 4: Income Shortage Affecting Ability to Buy Food in Case Study Cities, (*N* = 652)



Source: Survey results, July 2020.

Figure 5: Coping Strategies in Case Study Cities, (*N* = 652)



Source: Survey results, July 2020.

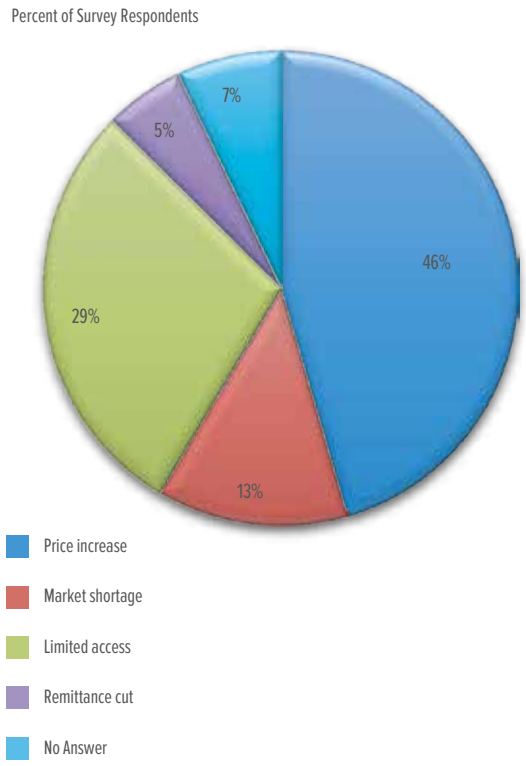
Shifts in Food Shopping and Dietary Preferences

The pandemic and lockdown led to changes in the shopping habits of urban consumers. Increases and fluctuations in food prices made it difficult for consumers to afford healthy and stable dietary diversity. Some (over 30 percent) respondents were buying more and stockpiling, as most meals are prepared and consumed at home during the lockdown. However, most city consumers (40 percent) adjusted their food purchase volume downward as the pandemic continued. The main reason cited for cutting food purchase volumes was "increasing food prices" (Figure 6). One-third of the respondents who cut their

food purchases did so because they had limited access to their traditional marketplaces, either because of temporary shutdowns or because respondents voluntarily switched their preference to "safer" and less crowded shops and supermarkets. Some 13 percent of the respondents indicated experiencing market shortages as a reason for reducing their food purchases. Nevertheless, food retailers indicated that there was not a lasting out-of-stock problem, despite temporary shortages due to the closing of farmers' markets (locally known as *dehkan bazaars*) for disinfection or delays in logistics. The study reveals that city consumers (60 percent) are satisfied with the variety and quality of food products available in the market.

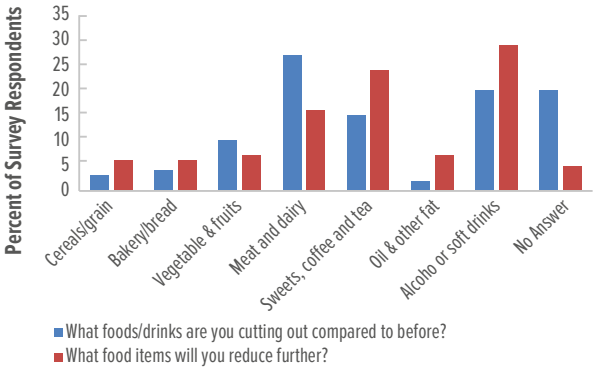
Consumers' dietary preference shifted from expensive protein meat products to less expensive but indispensable bread, cereals, and vegetables. Respondents primarily reduced their meat and dairy consumption (Figure 7), followed by alcohol, beverages, and sweets. Cereals and fats were the least cut out. In case of extended lockdown and income shortage, respondents plan to further cut their alcohol and beverage consumption. Bread and cereals, however, will continue to be major food groups consumed.

Figure 6: Reasons for Decreased Food Purchase during the Pandemic (*N* = 652)



Source: Survey results, July 2020.

Figure 7: Changes in Dietary Preferences During the Pandemic (*N* = 652)



Source: Survey results, July 2020.

Food Utilization

Malnutrition and deficiency for micronutrients such as iodine, folic acid, iron, and vitamins is common in Uzbekistan, despite increased food availability. Almost 2 million people (over 6 percent of the population) were nutrition insecure in 2019, while in 2018, over 5 million Uzbeks were anemic and 3 percent of children under the age of 5 were stunted (FAO 2019; UNICEF 2019). Obesity is on the rise among Uzbeks, with 28 percent of the population obese in 2020 (Shodmonov 2020). The increased availability of calorie-rich processed food, little awareness among citizens about balanced nutrition, and rising prices for healthy diets are major reasons for this. Malnutrition indicators are expected to be further exacerbated in cities during the pandemic lockdown, given households' decreased food budgets, unstable food consumption, and reduced mobility.

Policy Issues

Six policy issues are identified below.

Lack of Accurate Data on Food Stocks

Regional governments released strategic food stock reserves (including wheat flour, grains, potatoes, onions, poultry meat, and sugar) from the public- and

private-owned wholesale cold stores, warehouses, and wheat mills to prevent shortages in city markets.

Issue: The impact of the pandemic on a city's food system may last months or years, creating significant food access issues and stock depletion. Given the uncertainty during the continued pandemic, urban planners need efficient food stocking from new harvests and contingency plans. Accurate data on food stocks available for each city are necessary.

Nullified Food Import Restrictions

Uzbekistan nullified food import restrictions and did not impose measures to refrain from exporting food. Food imports were set among the priority import shares for 2020 to raise the stockpile of required volumes of food. In April 2020, the Ministry of Foreign Trade eliminated import tariffs until December 31, 2020, on flour, meat, dairy products, and sugar, which before the pandemic were at 5 to 20 percent (Presidential Decree 5978). Furthermore, the exchange rate devaluation (of 6 percent) is meant to enhance the export competitiveness of fruits and vegetables.

Issue: It is not clear how the border trade policies that are projected to stabilize food inflation, facilitated by a temporary cut of tariffs on food imports, will impact food security in the long run. The implications of nullifying tariffs on the domestic producers' income and what monitoring tools are in place is vague. Though the devaluation of the Uzbek currency facilitates export, it also increases consumer prices in the middle of the pandemic. Furthermore, the high concentration of Uzbek trade partnerships puts the country at risk when most partners have imposed trade restrictions.

Vehicle Stickers

Local authorities made food supply (logistics and markets) "essential" and ensured easy mobility during the lockdown. Food retail supermarkets, small shops, and *dehkan bazaars* were kept open. Agriculture production value-chains — including food production, harvests, and processing — were facilitated by the Ministry of Agriculture, which allowed the movement of inputs, food, and related people. Vehicle stickers were issued to food transporters to travel along "green corridors" delineated for the smooth transport of inputs, agriculture workers, and outputs from farms and storage facilities to retail shops. These helped keep cities from running out of food supplies.

Issue: The process of issuing mobility permits (vehicle stickers) to food transporters and the inspection of these permits at frequent traffic checkpoints along a single journey, was, however, not smooth. The paperwork caused pressure and high transaction costs on food logistics, delaying food transport, especially in "red zone" high infection cities.

Price Regulations

The government intervened to lower market prices for staple foods. Local authorities inspected consumer markets to avoid artificial shortages and regulated price spikes and hoarding for important food products such as wheat flour and oil. These actions are against the liberalization efforts. Prior to the pandemic, a Presidential Resolution (Resolution PP 4634) was announced on March 6, 2020, to liberalize the wheat sector as of 2020, including reduced state procurement volume and price control. However, the global wheat price spike during the pandemic scared decision-makers and made them go back to the wheat self-sufficient policy and price regulations. This is evidenced by the state procurement of all wheat harvest in July 2020, below the market price. This measure was taken to stabilize the price for the consumer at a cost to wheat producers.

Issue: This reform reversal risks losing the gains of liberalization reforms.

Public Finance Support

The government made the agriculture sector the driver of the economic recovery. In May 2020, the President of Uzbekistan signed Resolution PP 4700 to ensure food security and manage the use of resources and state support for agriculture during the pandemic. Article 6 orders US$30 million (300 billion Uzbek som) to be allocated for the development of agricultural land plots for the employment of low-income rural households in seasonal (agricultural) jobs on small farms. Accordingly, rural low-income families who lost their jobs are issued land parcels by

local authorities with groundwater reserves for producing and selling food (Tulyakov 2020). Agriculture businesses also benefited from the anti-crisis package (Presidential Decree 5978), announced in April 2020, on tax incentives, postponed farm credit repayments, and deferred tax payments.

Issue: Most agriculture support and state employment promotion funds are concentrated in rural areas. There is no discussion about how farm incentives and public finance support can be replicated in urban areas for low-income city residents including urban agriculture, food storage, processing, and marketing.

Anti-Crisis Fund Establishment

The President of Uzbekistan announced the establishment of an anti-crisis fund to raise US$1 billion (10 trillion som) on March 19, 2020 (Presidential Decree 5969). About 9 percent of the fund is used for a one-time social safety-net cash support for 400,000 vulnerable families and people and small businesses that temporarily lost their earnings during the quarantine period. Safety-net payments of US$25 (223,000 som) per family were rolled out in late July 2020. Registered vulnerable families account for more than 1.7 million (5 percent) of the population; they are mainly female-headed households, people with disabilities, large families, and single elderly pensioners (MoEDPR 2020; UN-CMT 2020). Additionally, the president established a charity fund in July to engage private and voluntary sponsors in mitigating the impact of the crisis. The fund provided additional community support to the vulnerable population and rewards to the frontline medical workers. The safety-net measures are said to have protected the vulnerable from worst effects of the crisis (Tulyakov 2020).

Issue: The safety-net allowances are insufficient in amount and late in time. Safety-net payments arrived after households' aggravated food insecurity. A one-time transfer is not enough to ensure sustainable food security as the crisis continues. It is also important that new vulnerabilities be identified for safety-net targeting, as city dwellers in the informal sector and returnee migrants lost remittance income during the crisis.

Stakeholder Groups

Below are eight relevant stakeholder groups in the study.

Urban Consumers

Urban residents are optimistic about the long-term impact of the pandemic. More than 40 percent of the case study respondents trusted that the crisis is temporary. However, city residents have concerns about declining incomes and increased unemployment. They are least concerned about the unavailability of food and food insecurity. As a future food security strategy, consumers suggest expanding home food production and storing sufficient food. Many urban residents are growing food during the lockdown, especially in small cities, where private houses with small gardens prevail; in bigger cities like Tashkent, respondents suggested reducing and simplifying their food diet as a strategy.

Urban Food Market Shops and Farmers' Markets

Food retailers did not face any major logistics problem, as they were able to travel during the lockdown. However, the movement of food to retail points was sometimes delayed as drivers had to get permits to travel. Also, self-isolation and quarantine of people in the supply chain, in some cases, resulted in reduced human capacity at some nodes of the retail supply chains. Food retail shops (six shops) in the cities of Samarkand and Tashkent indicated that they sourced major primary food products from food producers and processors within a radius of 50 kilometers who deliver to the retail shops or from wholesale farmers' markets.

The Ministry of Agriculture

The Ministry of Agriculture (MoA) provides technical support to food producers and is responsible for regulatory oversight in the food sector. During the pandemic, the MoA provided technical supervision for the smooth supply chain of agricultural inputs (for spring planting), the food harvest in July/August, and the supply to markets.

The Ministry of Economic Development and Poverty Reduction, the Ministry of Employment and Labor Relations, the Ministry for Support of Mahalla (Community or Neighborhood) and Family, the Cabinet of Ministers, and city authorities *(hokimiyats)*

The diverse social ministries collaborate in the identification and targeting of vulnerable families nationally. The group is also responsible for transferring the safety-net payments from the anti-crisis and charity funds to the targeted vulnerable families.

The Ministry of Finance

The Ministry of Finance (MoF) is responsible for setting and implementing fiscal measures in response to the COVID-19 crisis. The MoF is responsible for raising and managing the anti-crisis fund and other COVID-19 response funds. It supervises the timely allocation and distribution of funds from the central budget to local budgets and cities. In doing so, the ministry is accountable to development partners and the public.

The Ministry of Foreign Trade and Investment

The Ministry of Foreign Trade and Investment (MoFTI) is responsible for implementing trade liberalization reforms amid the crisis. In April 2020, the MoFTI nullified import tariffs for 20 food products that had tariff rates ranging from 5 to 20 percent prior to the pandemic. The measure will be valid until December 31, 2020.

Committee for Management of State Reserves

The Committee under the Cabinet of Ministers, together with the Ministry of Economic Development and Poverty Reduction, mobilizes and monitors the country's strategic food reserves. It plans and implements the annual volumes of food required for accumulation, refreshment, replacement, and release from the state strategic food reserve. It is responsible for the quality, safety, and timeliness of food re-stocking in the strategic reserves and ensuring constant readiness for the release of food reserves.

International Development Partners and Donors

Multilateral, bilateral, and United Nation (UN) agencies showed unprecedented collaboration in their effort to support the government's response to the pandemic. The group established a COVID-19 Crisis Management Team (CMT) in March 2020, chaired by the UN Resident Coordinator, to enable a coherent and coordinated response to the crisis. About 98 percent of the anti-crisis fund (in July) was raised from development partners in the form of loans from several agencies. Budget support through soft loans is expected to help Uzbekistan avoid an economic recession and mitigate the impacts of the crisis. Partners also provide technical assistance in sector recovery strategies (UN-CMT 2020).

Policy Options

Building the resilience of city food systems is the basis for sustainable urban food security. The Food and Agriculture Organization of the United Nations (FAO) defines resilience as "the ability to prevent crises as well as to anticipate, absorb, accommodate or recover from crisis in a timely, efficient and sustainable manner" (FAO 2012). This includes protecting, restoring, and improving livelihoods in the face of threats that impact agriculture, nutrition, food security, and food safety. Resilience, in the context of this study, is the ability of urban consumers and city food systems, confronted by the COVID-19 crisis, to withstand the current and future impact of the crises on food security and be able to provide affordable food. The following five policy options are offered for strengthening urban food system resilience.

1. Efficient Management of City Food Stock Reserves

Food storage, as a buffer against crisis, is an important component of a robust urban food system and food security strategy. Adequate food storage, mostly of staple grains but also of any nonperishable food from domestic production and import, keeps continuous food systems flowing and stabilizes food prices. Food stocks also promote domestic production as they boost supply and secure supply price stability (Fraser, Legwegoh, and KC 2015). This means that the government buys food when a surplus exists in the city market stores and sells when a shortage occurs at market price. The result of the food reserve is less fluctuation in price. As a side effect, food stocks may make it expensive for other countries to purchase and the stocking operation can be costly to the government; it may also lead to huge stockpiles and wastage (Fraser, Legwegoh, and KC 2015). However, efficient management of the stock helps. Efficient food stock management includes expansion of existing storage infrastructure facilities; automation of the inventory process; regular and up-to-date exchange and coordination of information on food stocks and use among regional silos and store operators; proper storage of new stocks; a pre-commitment by the government under which conditions stocks will be accumulated and/or released; and accurate estimation and monitoring of state and private wheat mills, cold rooms, and warehouses in different cities of the country.

At the household level, food storage implies promoting and building on the tradition and skill of "food stocking for the winter." This helps city residents process and store food in times of surplus and thrive in challenging times. Traditionally, Uzbekistan people store main food items (wheat flour; potatoes; and dried, processed, and canned vegetables and fruits) for the winter season. They do so to cope with shortages of a variety of food products and price increases during the winter and early spring. Such interventions contribute to the food needs in cities if residents are encouraged and capacity is supported technically and physically for modern food storage and safety techniques. It can also be a source of income.

2. Urban Farming Policies and Incentives

Box 1: Urban Farming Explained

Urban farming is farming in cities that takes the form of backyard, roof-top, or balcony gardening; community gardening in vacant lots and parks; roadside urban agriculture; and livestock grazing in open space. City farms can also be indoors using vertical hydroponic or aeroponic methods (Brinkley and Kingsley 2018).

Diversifying and localizing the sourcing of food protects vulnerable urban food systems against any disruption in the supply chain. One way to diversify the food source for city food systems is to support a wider range of urban farming methods. Indoor and vertical agriculture, which use the most unconventional of spaces, is an opportunity to mitigate space limitations in cities (Box 1). By localizing and urbanizing food systems, cities shorten supply chains and diversify away from scarce rural supply chains to a more multifaceted one. Urban farming boosts independence during times of hardship, while it reduces pressure and complements food production elsewhere (Eldridge 2020).

Producing food where it is consumed has several advantages. Shorter supply chains have fewer links in the chain and therefore experience less disruption during crisis. As the supply chain decreases, the logistic costs of food supply and distribution will drop, food will be fresher, and there will be less food loss. Shorter supply chains also enable consumers to re-connect with where the food comes from (Armar-Klemesu 2000).

City farms, in addition to being important sources for food items such as fruit, vegetables, herbs, and livestock, can be viable jobs created for urban low-income families in crisis times. Urban aquaculture — farming fish and aqua plants in city ponds, canals, and indoors — is also a highly productive and secure source of income (Armar-Klemesu 2000). Vulnerable households that practice urban farming have improved food security and diversified diets and are better-off in terms of protein consumption. The government's commitment and provision of technical and market support is a prerequisite for the development of urban farming. Hydroponics is gaining popularity globally as a solution to the problem of access to land for urban farming. Community agriculture is another innovative system for direct links between urban producers and consumers, where groups of consumers

pay a fixed price to the producer in exchange for a weekly vegetable box (Armar-Klemesu 2000).

Nevertheless, environment and health issues in urban agriculture that can be related to urban chemical pollution that affects land used for food production and possible contamination during marketing or distribution during the pandemic time needs attention. Improvement of least-health-risk urban farming with low-cost measures requires supportive government policy, incentives, and awareness and willingness on the part of the urban growers and entrepreneurs.

3. Urban Productive and Predictable Safety Nets

A variety of anti-crisis safety-net transfer packages and compensations are on the rise during the pandemic. A one-time and ad-hoc emergency assistance provided to vulnerable city families helps smooth their immediate income needs and assists in food acquisition. Nevertheless, extra support is needed to help vulnerable city families recover and build resilience to future shocks. Safety-net emergency supports would be effective if they evolve from fragmented informal/unpredictable assistance into integrated and consolidated social protection programs that help low-income families invest in productive assets.

Social protection programs that evolved from emergency aid and crisis relief into regular, predictable safety nets with income-generation interventions are productive and sustainable (Devereux 2002). Publicly funded safety nets have both livelihood protection and promotion effects when transfers are often invested in income-generating activities, education, social networks, or the acquisition of productive assets. This suggests that social safety nets, far from being a simple welfare intervention, can play a significant role in reducing future poverty, alleviating food insecurity and livelihood vulnerability.

Effectively targeted safety nets reduce poverty, reverse the trend of increasing inequality, and build household resilience (Monchuk 2013). Social protection amid the crisis needs to be well targeted and timely to ensure equitable and effective support to the fragile livelihoods in cities devastated by the pandemic. Most safety-net and recovery programs focus on rural areas, yet the fragile nature of livelihoods in cities — including the informal and subsistence daily work that led to higher incidence of COVID-19 related income loss in cities compared with rural farm incomes — should be recognized and tracked.

The pandemic has disproportionate impacts on the food security of some groups. It has combined with the effect of income loss of vulnerable groups such as women in city informal work, small business employees, households that rely on remittance income, persons with disabilities, the elderly, and children. Timely, reliable, and disaggregated data on city consumers and returnee migrants who lost jobs and are in long-term unemployment is vital for continuous vulnerability tracking, measurement, and evidence-based social protection planning and targeting. Similarly, detailed information about small businesses' activities is required to design a response to effectively support them. Innovative ways of investing remittance income in productive assets should also be encouraged.

4. Uninterrupted Food Trade

Trade restrictions proved to be the worst response to safeguard food security. Trade allows food to move from surplus production areas to areas of shortage, avoiding the drastic shortages and food insecurity associated with reliance on only local production. This supports supply chains and prevents them from collapsing. Thus, harnessing domestic and international cooperation for the smooth flow of food trade is essential during a crisis.

If global food production is abundant and world food supply is high, there is no reason to consider trade restriction. When one nation imposes a trade barrier, other countries follow, triggering food price spikes and speculative behavior in food markets. Rather it is important to restore mutual trade relationships and trade transparency to restore the trust in trade and markets. The Organisation for Economic Co-operation and Development (OECD) advises that it is important for governments to think beyond the immediate amid the uncertainty during the pandemic. It is vital to boost confidence in trade and global markets by improving transparency about trade-related policy actions and intentions; and to keep supply chains flowing and avoid unnecessary export restrictions and other trade barriers (OECD 2020). Also, Glauber et al. (2020) highlight the importance of diversifying trade relationships and breaking trade concentration. This means diversifying trade partners and performing a cost-benefit analysis of the transaction cost.

Food trade and related mobility within domestic local markets, across districts, and across regions must be sustained and facilitated for faster food exchange. This helps create and maintain food-related jobs and incomes but it also stabilizes the price rise of major food items in cities. E-commerce and express delivery further facilitates trade transactions and reduces logistic-related problems during the crisis.

The International Food Policy Research Institute (IFPRI) highlights the fact that import tariff is less important in the 21st century than it used to be.[2] Rather, nontariff regulations such as phytosanitary food safety are valuable for transparent trade. Nullified import tariffs on food by importing countries, intended to lower consumers' food prices, do support international demand but keep upward pressure on world prices of food. As a result, instead of containing price increases, the policy response may only drive world market prices higher and ultimately increase domestic food price. Such unintended effects imply that governments should carefully monitor the effects of any border- and tariff-related policy.

5. Liberalization of the Staple Food Wheat

Prices of wheat and wheat products receive special attention in Uzbekistan, where it is considered a matter of national security (Mirkasimov and Parpiev 2017). This case study also revealed the importance of the staple food. The government introduced the wheat Self-Sufficiency Policy (SSP) in the late 1990s to achieve an affordable and stable supply of staple food for its citizens. This policy controlled the production, distribution, and sale of domestically produced wheat and flour to limit price volatility (Zorya, Djanibekov, and Petrick 2019). The SSP increased domestic wheat production and achieved grain independence, reducing imports as of early 2000. However, the relevance of the policy for food and nutrition security, in the context of a dynamic economic liberalization of the country in the last few years, is debatable (Box 2).

Box 2: Arguments against the Uzbek Wheat SSP

Uzbekistan wheat is of low nutrient content and poor baking quality (Kienzler et al. 2011). Wheat production increased at the detriment of fodder crops, affecting the development of the livestock sector (Lerman et al. 2016). Wheat, occupying a large sown area, hinders the expansion of high-value vegetables and fruits, where Uzbekistan has a comparative advantage. The SPP did not prevent inflation of domestic wheat prices during the world food crisis in 2007–08. The policy caused price distortions and inefficiencies in inputs and outputs markets (Mirkasimov and Parpiev 2017). It does not automatically translate into improved food access for the poor, adequate nutrient intake, or a satisfactory quality of staple food (Lombardozzi and Djanibekov 2020).

Liberalization of the wheat sector and removing the wheat subsidy system opens new opportunities to strengthen the production of diverse high-value crops, such as the fruit and vegetable industries, in which Uzbekistan has a comparative advantage and large markets. Such diversification will also provide urban consumers with a variety of food types (crops and livestock). It also means diversifying away from heavy public expenditure in wheat production and procurement to a much broader expenditure that focuses on agriculture performance and transformation such as research, farm advisory and information services, education, farmers' cooperatives, market infrastructure, and the capacity of smallholder farms (Asfaw 2020).

Nonetheless, considering that wheat remains the most important food consumed in Uzbekistan, rapid liberalization reform will certainly impact vulnerable city consumers. A liberalization policy that ensures both the stability of wheat products' supply and seeks to buffer price is desirable. Strategic stocks (Policy Option 1) can be useful to neutralize the impact of a wheat price spike on consumers.

[2] View IFPRI's special series of blog posts analyzing the impacts of the COVID-19 pandemic on food and nutrition security, including discussions on trade, at https://www.ifpri.org/landing/covid-19-blog-landing-page.

Assignment

Critically analyze each of the above five policy options for a resilient urban food system. What are the pros (advantages) and cons (disadvantages) of each option? Explain which option is more desirable in your context, using the following three criteria: financial/economic viability, transformative (life changing) for urban consumers, and technical feasibility.

Policy Recommendations

Below are five recommendations for Uzbekistan's resilient urban food system.

Ensure Proper Storage and Management of Food

It is vital that stakeholders properly handle and store new food harvests to replenish the exhausted strategic food reserve storages, warehouses, and cold rooms. Public support for effective transport and storage of domestic and imported food is needed. Local authorities will need to bring food collection centers closer to the rural producer to reduce mobility and wastage. Regional/city storage infrastructure facilities need to be upgraded and modernized for the regular exchange of information on food stocks. At the household level, it is necessary for consumers to process and store cheaper and seasonal food before the start of the long winter season. Also, given the limited data on current levels of food stocks, research is needed to evaluate the scale of city food supply chains and household storage systems to ensure effective mechanisms to manage stocks.

Continue the Recent Wheat Liberalization Reform

The wheat self-sufficiency policy that promotes wheat subsidized production and state procurement is not relevant, despite price inflations for wheat flour. There is no need for the government to return to the SSP, but rather it should proceed with the reform process for the economic liberalization of the wheat sector.

Continue Social Protection and Job Retention Support While Monitoring New Risks

Job retention and creation and public safety-net interventions do help mitigate the worst effects of the crisis on the vulnerable. As the duration of the crisis extends, an increasing number of city households will experience severe food deprivation. It is thus important for social sector stakeholders to collect updated data on vulnerability and food insecurity risks in cities. Social protection stakeholders will need to roll out new and expand the existing social assistance (including the charity funds) for the vulnerable. An assessment of vulnerability and food and nutrition insecurity in cities generates information for accurate targeting and planning. Mobilizing additional support from development partners is necessary in this aspect.

Keep Food Trade and Supply Chains Flowing

By facilitating food trade flow, Uzbekistan will contribute toward a positive signal of confidence in the global food market and domestic food system. Global markets for staple food and trade projections are expected to remain well supplied into the next year and will continue to remain stable. Moreover, production of key staples is unlikely to suffer disruptions from the COVID-19 crisis (USDA 2020).[3] Similarly, the probability of disruptions to domestic food production, transport, and distribution is low (FAO 2020). It is therefore important to avoid trade tensions. It is also time that Uzbekistan extends its trade relations beyond its historically concentrated relations with the CIS. This, however, requires benefit-cost consideration on Uzbekistan's part.

[3] The assurance that world grain production and trade in 2020 is stable can be seen from the United States Department of Agriculture (USDA) monthly Grain: World Markets and Trade reports, available at https://downloads.usda.library.cornell.edu/usda-esmis/files/zs25x844t/q811m414s/ff365r040/grain.pdf.

Promote Urban Farming

City authorities will need to recognize that local food production is an important component of urban food systems and food security. This calls upon urban citizens, particularly low-income households, to utilize any available open space in the city for food production. Such initiative implies supportive urban policies; access to productive resources and secure land tenure; support services; and collective action among urban farmers — measures for the establishment of new individual and community farms and markets that purposefully enable urban farmers to sell directly to consumers. City farming can be further strengthened by introducing and facilitating innovative farming techniques in small spaces. To minimize health risk, households can be supported to adopt techniques that prevent contact with contaminated soil by growing crops in containers, using raised beds in growing media, and utilizing hydroponics and indoor aquaculture. Nevertheless, more preliminary work is necessary to properly design and implement an urban farm. This means a thorough feasibility study by stakeholders, including the urban public.

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Abbreviations

CIS	Commonwealth of Independent States
CMT	Crisis Management Team
CPI	consumer price index
FAO	Food and Agriculture Organization of the United Nations
IFPRI	International Food Policy Research Institute
MoA	Ministry of Agriculture
MoF	Ministry of Finance
MoFTI	The Ministry of Foreign Trade and Investment
OECD	Organisation for Economic Co-operation and Development
SSC	State Statistics Committee of Uzbekistan
SSP	Self-Sufficiency Policy (for wheat)
UN	United Nations

Note: All tons are metric tons.

Photo credit: Belchonock on depositphotos

School Feeding in Armenia: Challenges, Measures, and Policies for Mitigating the Impacts of the COVID-19 Crisis

Anatoly Maksimov

Executive Summary

School feeding is an essential element of a country's educational system and social protection, as it has a direct effect on school attendance and academic performance, children's cognitive abilities, and the overall development and health of the students.

The School Feeding Program that was launched in Armenia in 2010 is an important mechanism for supporting the socially vulnerable population, especially in depressed areas. Due to the objective constraints linked to the COVID-19 crisis, all the stakeholders involved in establishing school feeding (the authorities, schools, local manufacturers, and parents of schoolchildren) have been forced to respond to the situation without having sufficient experience or resources.

Improving the sustainability of the National School Feeding Program linked to the economic development of local communities, and the capacity of the schools themselves is a vital factor ensuring the stability of the food security system and enhancement of children's diet quality in Armenia.

The objective of this study is to conduct an analysis of challenges caused by the COVID-19 crisis, assess the measures taken to ease the crisis, sum up the lessons learned, and propose an updated group of policy options aimed at establishing school feeding, taking into account the experience gained in the course of the COVID-19 pandemic.

This study suggests that the distribution of food packages under the school feeding program is the most acceptable option for establishing children's feeding in Armenia in the environment of the COVID-19 pandemic.

Background

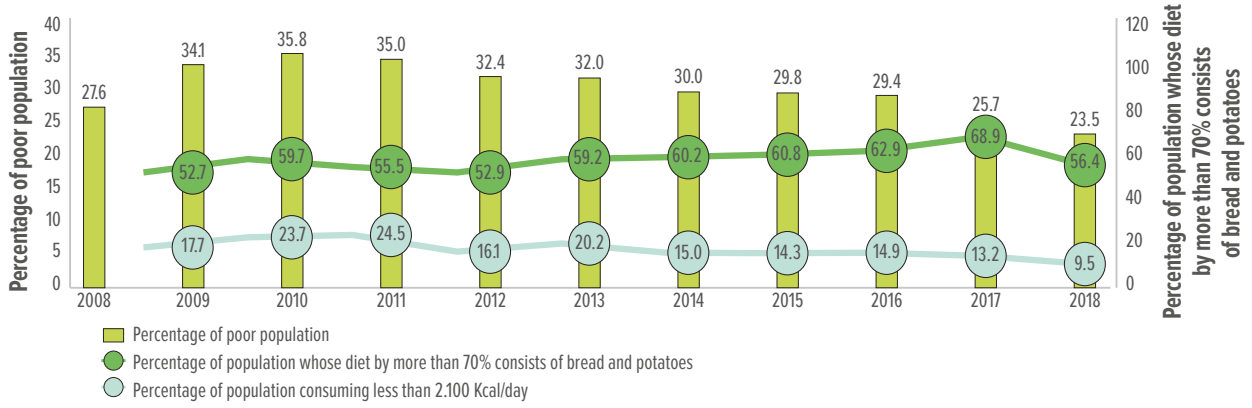
Social and Economic Context

Up to 1,660 million children worldwide (91.2 percent of the total number of schoolchildren) have not attended school because their schools had closed due to the COVID-19 pandemic. In 192 countries, schools were closed throughout the country (ЮНЕСКО 2020). According to UN estimates, as a result of the COVID-19 pandemic, a further 42 to 66 million children may be added to the 386 million children already living in extreme poverty. It is expected that, in 143 countries, the number of undernourished children — who typically rely on school feeding as a reliable source of their daily diet — will reach 368.5 million (UN 2020).

The population of Armenia is 2,965,300 people. The unemployment level is as high as 20.5 percent. Out of the total number of the poor (23.5 percent of the total population), the extremely poor (those with incomes under US$51 per month) make up 1.0 percent of the population; the moderately poor (US$51–72) make up 9.6 percent, and the poor (US$73–88) make up 12.9 percent (Армстат 2020).

According to the data of the Statistical Committee of the Republic of Armenia (ARMSTAT), starting in 2010, the country has seen a downward trend in poverty (Figure 1). The share of people consuming less than 2,100 kilocalories per day, with a diet that by more than 70 percent consists of bread and potatoes remains high.

Figure 1: The Level of Poverty and Nutrition Quality in Armenia



Source: ARMSTAT 2020, https://armstat.am/en/.

Child poverty in Armenia is in excess of 30 percent (Армстат 2020). Before the COVID-19 crisis, school feeding was provided to 102,000 children of grades 1 through 4; one-fourth of them were from poor families (АНО «Институт отраслевого питания» 2020). Approximately 99,000 families, mostly with children, were receiving social support benefits of 31,300 Armenian drams (US$65) per month (Sputnik Армения 2020). The COVID-19 crisis has shown that the Armenian government does not have a readymade solution for how to act effectively under the changed conditions — in particular, for how to maintain and support the school feeding program.

School Nutrition Development Program in Armenia: Stages, Participants, and Results

As of January 1, 2019, there were 1,409 comprehensive schools in Armenia, with a total number of 382,400 students, including 860 schools and 138,800 students in rural areas (Армстат 2020). Since 2010, substantial assistance in the establishment of school feeding has been provided to Armenia by the UN World Food Programme (WFP). The assistance is rendered with funding from Russia and in technical cooperation with the autonomous nonprofit organization Social and Industrial Foodservice Institute, which has accumulated extensive experience in the establishment of school feeding in Armenia, the Kyrgyz Republic, Russia, and Tajikistan, including in a crisis environment.

Under the school feeding program, the WFP and its partners have been rendering assistance in three areas:

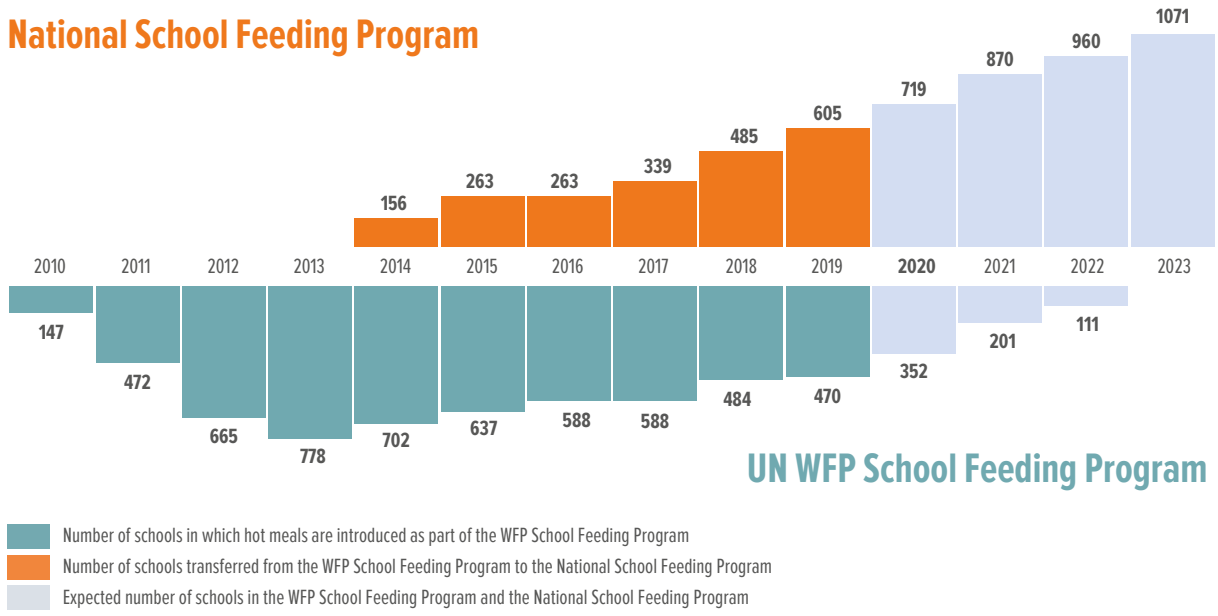
1. Aid to the government of Armenia in establishing an efficient and sustainable school feeding program.

2. Technical assistance, including an analysis of the current status of school feeding; establishment of a regulatory framework; improvements to the school capacity, including infrastructure development and supply of equipment to schools' mess facilities; improvement of the public administration system and funding mechanisms; development of schools' staffing capacity; and raising of public awareness of a healthy lifestyle and school feeding.

3. Food supply (flour, oil, pasta, rice, peas, buckwheat, lentils).

To the extent that hot meals are introduced in schools in some provinces (known as *marzer*) under the WFP project, they are admitted to the National School Feeding Program (Figure 2), for which the Armenian government allocates 140 drams (US$0.3) per day for meals per student of grade 1 through 4.

Figure 2: Number of Schools Participating in the School Feeding Program in Armenia



Source: Original figure for this publication; data from the Social and Industrial Foodservice Institute 2020, http://eng.sifi.ru/.

The development of school feeding in Armenia can be subdivided into four stages:

Stage I (2010–12). In 2010, pursuant to an agreement with the government of Armenia, the WFP kicked off the Sustainable School Nutrition Project, which includes a set of institutional, infrastructure, and logistics activities for ensuring sustainable funding and establishing balanced and quality nutrition for children in schools.

Based on a comprehensive analysis of the current status of school feeding, school infrastructure, and the capacity of local agricultural production, 700 schools provided food for 50,000 elementary school students. For this purpose, the WFP supplied 2,474 tons of food. Based on the experience gained, the National School Nutrition Strategy was developed and adopted (Правовая информационная система Армении 2020d).

Stage II (2013–15). Mess facilities were renovated and provided with modern kitchen equipment in a further 264 schools, and 5,882 tons of food were earmarked. The project scope grew to include 850 schools and 71,500 elementary school students.

Schools in three provinces (Ararat, Syunik, and Vayotz Dzor) that implemented the provision of children with full-scale hot meals were admitted to the National School Feeding Program.

Stage III (2016–19). The School Feeding Program covered 1,000 schools and 102,000 students in grades 1 through 4. A further 534 schools got their mess facilities renovated and provided with modern kitchen equipment; 7,191 tons of food were supplied to schools. Three more provinces were admitted to the National School Feeding Program (Aragatsotn, Tavush, and Shirak).

The National Sustainable School Nutrition Foundation and the National Training Center for School Cooks and Principals were established, where more than 1,700 people were trained. *A Book of School Meals Recipes* was published and won a Gourmand World Cookbook Award 2019 (UN in Armenia 2019).

Taking into account the results achieved in the development of school feeding, a Global Child Nutrition Forum was held in Yerevan in 2016 and attended by over 250 participants from 40 countries (GCNF 2016; Правовая информационная система Армении 2020a).

Stage IV (2020–23). By 2023, 465 schools are to get their mess facilities renovated and provided with modern kitchen equipment. The School Feeding Program will cover a total of 1,071 schools and 108,000 students. Schools are to receive 5,500 tons of food, and specialized training sessions are to be held for 3,600 school workers and local administration officials. The remaining four provinces (Lori, Gegharkunik, Armavir, and Kotayk) are to be transferred to the National School Feeding Program.

The COVID-19 pandemic has made it necessary to significantly amend the existing School Feeding Program. In 2020, due to the COVID-19 pandemic, schools in Armenia suspended their classes on March 13 (2.5 months ahead of schedule), re-opened after summer vacation on September 15 (two weeks later than normally), and closed again for autumn vacation on October 15 (two weeks earlier than usual). Since November 15, primary school students attend school every other day. Accordingly, during the above periods, schools were unable to provide hot meals to their students.

Nutritional Value of School Diets

It is important for decision-makers who are considering a shift away from the school feeding program to other options of food distribution during the COVID-19 pandemic to understand that such a shift should not worsen the level and quality of children's nutrition that has already been achieved through the existing school feeding program, which focuses on introducing more balanced and nutritious hot meals in schools. In accordance with the rules in force in Armenia, a child between 6 and 10 years of age should daily receive 77 grams of proteins with food, including 47 grams of animal proteins, 79 grams of fats, 335 grams of carbohydrates, the caloric value being 2,350 kilocalories (Правовая информационная система Армении 2020a).

Elementary school students are given a hot breakfast at school, which should account for 25–30 percent of their daily need for nutrients and energy. The school provides one meal a day for five days a week. The diet is close to the recommended values, but it does not meet the requirement for all the nutrients (Table 1).

Table 1: Comparison between the School Feeding Diet's Nutritional Value and Recommended Values

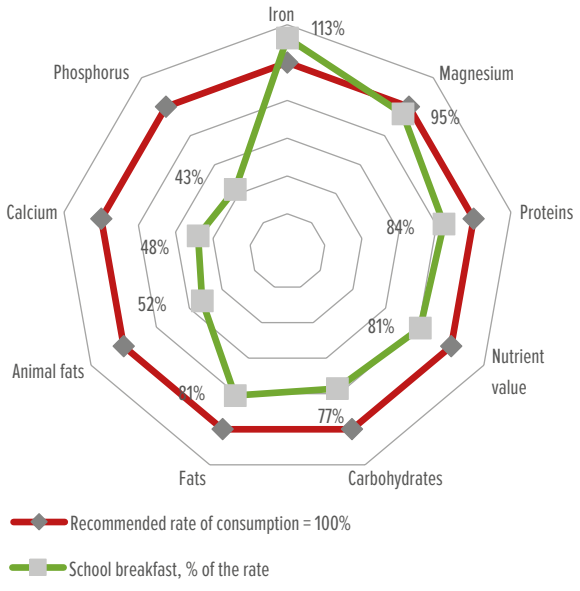
Nutrients	Average Value per Student per Day on the Menu[a]	Recommended Rate for Students Aged 6 to 10 years	
		Daily	Breakfast at School (25% of Recommended Values)
Proteins, g	16.2	77	19.2
Animal proteins, g	6.2	47	11.7
Fats, g	14.3	79	19.7
Carbohydrates, g	64.6	335	83.7
Nutrient value, kcal	477	2.350	587
Calcium, mg	132.8	1.100	275
Phosphorus, mg	176.5	1.650	412.5
Magnesium, mg	59.1	250	62.5
Iron, mg	3.4	12	3.0

Source: Calculated by the author; data from the Social and Industrial Foodservice Institute 2020, http://eng.sifi.ru/.

Note: g = grams; kcal = kilocalories; mg = milligrams.
a. These data are based on the analysis of two-week rations in village schools in Garnarich and Tsakhkut, Shirak Province, Armenia.

The analysis of macro- and micronutrient content and the nutritional value of school menus shows that the content of nutrients meets the physiological needs of children aged 6 to 10 years per meal (in this case a hot breakfast) for proteins by 84 percent; animal proteins by 52 percent; fats by 72 percent; carbohydrates by 77 percent; and energy by 81 percent (Figure 3).

Figure 3: Meeting the Need for Macro- and Micronutrients through School Feeding, Percent of the Standard Rate per Meal (Hot Breakfast)



Source: Calculated by the author based on the Recommended Rates (Правовая информационная система Армении, 2020a) and data from the Social and Industrial Foodservice Institute 2020, http://eng.sifi.ru/.

To ensure a balanced diet, the ratio between proteins, fats, and carbohydrates (proteins-fats-carbohydrates) should be 1.0 to 1.0 to 4.0, respectively. In the school menus under analysis, this ratio is 0.8 to 0.7 to 3.4.

Policy Issues

In view of the increased incidence of COVID-19, the National School Feeding Program, despite an increase in its capacity and competence in recent years, has been faced with the need to take additional measures to ensure the right to food for the children who stopped attending school because of the COVID-19 pandemic.

Assessment of Armenia's Capacity to Establish School Feeding

It is common knowledge that school feeding programs are effective only if they are based on a long-term public policy, stable funding, and sufficient institutional capacity to implement and coordinate the program, as well as a high level of community involvement in their implementation (Sarr and Karanovic 2017). The evaluation of Armenia's capacity, conducted in conformity with the World Bank's Methodology for Assessing National School Feeding Programs — which was developed as part of the Systems Approach for Better Education Results

(SABER)—has shown that the country as a whole (1) has shaped a public policy of school feeding, but (2) its the financial capacity, (3) the institutional environment and level of coordination, (4) matters related to the program development and implementation, and (5) the involvement of local communities are only beginning to emerge (Sarr and Karanovic 2017).

Public school feeding policy. A public policy for feeding children in school in Armenia has not been fully shaped. At the government level, a strategy for the Sustainable School Feeding Program (Правовая информационная система Армении 2020d) and a decision on funding and expanding the National School Feeding Program have been adopted. The School Feeding Program is mentioned in the draft law On a Public Program for Developing Education in the Republic of Armenia up to 2030 (Правовые акты Республики Армения 2020). However, no comprehensive long-term school feeding strategy linked to the UN's Sustainable Development Goals (SDGs) or to national policies in the field of food security, nutrition and social protection, poverty reduction, and education development is in place yet. A policy for establishing school feeding during a crisis has not yet taken shape, but such a policy is needed, as has been manifested in the course of the COVID-19 pandemic.

Financial capacity. Armenia's undoubted achievement is the funding of the National School Feeding Program from the public budget. Starting in 2014, the funding for making arrangements for feeding elementary school students is calculated as follows: duration of feeding: 168 days per year; cost of feeding per child: 140 drams (US$0.3) per day — including 120 drams for food items, 10 drams for cooks' services, and 10 drams for utilities, detergents, and cleaning products. In schools with fewer than 50 elementary school students, the above amounts are insufficient to hire a cook and pay the utilities.

Institutional environment and interagency coordination. The existing institutional environment is not adapted for implementing the National School Feeding Program in Armenia in crisis conditions and needs to be further improved. School feeding requirements (standards) have not been developed, particularly in the event of pandemics and other emergencies.

An Inter-Agency Working Group was set up by the Resolution of the Minister of Education and Science of the Republic of Armenia of June 24, 2015, to implement the National School Feeding Program. This Resolution was designed to maintain coordination between the authorities, international donors, non-governmental organizations, and local business communities. However, as a result of the restructuring of the ministry in 2018, the Inter-Agency Working Group ceased to function.

Development and implementation of a school feeding program. The current school feeding program is not perceived by the national government to be a program having a significant impact on food security and nutrition of the population.

An elaborate government policy based on an objective analysis of the existing situation is crucial for implementing a quality school feeding program. For example, such an analysis could identify the target group or beneficiaries, food basket, funding mechanisms, and a choice of options for supplying foods and monitoring their quality in the face of the COVID-19 pandemic.

Involvement of local communities in the establishment of school feeding. The main obstacles to the involvement of the community in the establishment of school feeding are a lack of a specific mechanism (structure), limited resources, and inadequacy of the legal framework, as well as lack of initiatives.

Currently, schools cannot de jure receive funding from the parents and local businesses to provide for children's feeding in schools. But parents do de facto take part in co-financing, typically through parent-teacher organizations. It is important to institutionalize this process by adopting an appropriate legal act at the national level, taking into account other countries' experience (АНО «За школьное питание» 2020).

Experience Feeding Children during the COVID-19 Pandemic

The approaches used during the COVID-19 pandemic in the Commonwealth of Independent States (CIS) countries to support children through school feeding programs can be combined into following groups: (1) monetizing school feeding — this occurs in Armenia, some regions in Russia (АНО «Институт отраслевого питания» 2020); (2) providing certain types of food, most often flour-based food — as occurs in the Kyrgyz Republic (Kaktus media 2020; АНО «Институт отраслевого питания» 2020); and (3) distributing food packages — as in Russia (АНО

«Институт отраслевого питания» 2020). Some countries tend to deliver ready-made meals to schoolchildren — such as Finland and the United States (WFP 2020).

Each of these approaches has its strengths and weaknesses, which depend on (1) a comparison of the cost of a particular food package and retail prices for the same food; (2) the targeted spending of the funds allocated for children's feeding; and (3) the maintenance of the infrastructure and support to the companies supplying food for school feeding.

In Armenia, support for children's nutrition during the initial period of the COVID-19 pandemic was provided by means of monetizing food aid to the school feeding program. The WFP prepared a special program, School Feeding for Responding to Crisis Situations, which provides for the allocation of 233 million drams as a one-time aid to elementary school students (Ministry of Education, Science, Culture and Sports 2020). The beneficiaries of this program are children aged 6 to 9 years from families that were receiving a family allowance as of June 2020. The program encompasses approximately 29,300 children, each one receiving 8,000 drams for 40 days.

In addition, the Armenian government has taken actions to neutralize the social consequences of the COVID-19 pandemic (Правительство Республики Армения 2020). These include, among others, the following child support measures:

- One-time aid at the rate of 100,000 drams for each minor child (under 14 years of age) in families where both parents or one parent lost a registered job between March 13 and March 25, and, as of 25 March, neither parent had a job (provided that, in the two months prior to dismissal, their average monthly salary did not exceed 500,000 drams).

- One-time aid at the rate of 26,500 drams for each child under the age of 18 in families where neither parent had a registered job (provided that the children and at least one parent live in the Republic of Armenia, are not beneficiaries of the family allowance program, and, if they had a job before March 1, their salary did not exceed 500,000 drams).

However, the above measures are clearly inadequate to ensure good nutrition for children during the COVID-19 pandemic and additional measures of support are required. Therefore, a number of nonprofit foundations supporting children's nutrition in Armenia have also adjusted their activities. Thus, for example — taking into account that a state of emergency was declared in Armenia, kindergartens were closed, and children lost access to food funded by the government — the Fund for Armenian Relief distributed 1,337 food parcels among children from 19 communities in Tavush Province (Fund for Armenian Relief 2020). And World Vision Armenia has been raising donations to support over 3,000 extremely poor families in Armenia with the necessary food and hygiene items (World Vision 2020).

Stakeholder Groups

Stakeholders include government agencies, local communities, schools and students, and local producers of agricultural products as well as international agencies and nonprofits.

The Government of Armenia

The Armenian government plays the key role in developing and improving policy measures aimed at strengthening food security, maintaining the country's food balance, and enhancing the nutrition of the population — primarily of children.

Work is underway to provide the population with food produced by local producers, thus getting them involved in supplying produce for feeding children in schools and other social institutions. This entails improving the tendering procedures for local farmers and other small agricultural producers and rendering social support to the population, above all children, under the conditions of the COVID-19 pandemic.

Policy measures aimed toward shaping a sustainable school feeding system will have a direct effect on improving food security and nutrition of target groups and achieving the SDGs: SDG2, which is linked to better access to food; SDG4, linked to quality education; and SDG17, linked to improving the capacity of governments.

Local Communities

Local communities should be involved in the establishment of school feeding. Community members with school-aged children are the beneficiaries of the school feeding program. They are interested in maintaining the level of nutrition achieved for their children before the pandemic while the novel coronavirus keeps spreading, as well as in reducing the costs of meals by introducing green energy, growing produce on school grounds, and so on. Local communities, through their representatives, can take part in decision-making about the funding of the school feeding program at the regional and national levels.

Schools

In accordance with the Model Articles of Schools, approved by Government Decree No. 1392-N, schools are responsible for feeding students if possible (Government of Armenia 2002). To support the school feeding system, schools have the right to conduct business activities related to the sale of vegetables, fruit, and other produce grown on their grounds, provided that such activities are subject to the needs of the educational process and are related to the activities of school students and teachers. Because of the transmission of COVID-19, schools have had to give up providing hot meals for children in schools. But they can take part in providing other options for supporting children's feeding, such as distributing and handing out food packages or other kinds of food.

Students

An important stakeholder comprises the students themselves. School feeding improves children's cognitive abilities and academic performance, strengthens their health, and, in general, contributes to the enhancement of human capital. During the COVID-19 pandemic, nutrition quality has deteriorated for many students as hot meals were discontinued in schools.

Local Producers

Local producers are interested in supplying their agricultural produce for school feeding as well as for catering in other social institutions (kindergartens, hospitals, etc.). School feeding can turn into a stable market for some local farmers. They are interested in lowering barriers to their participation in supplying products for feeding children in schools. The COVID-19 pandemic expands opportunities for farmers' participation in the school feeding program by supplying it with their products. For this purpose, it is essential to improve the legal framework for procuring produce from local producers, as well as to improve the infrastructure supporting the supply chain of their products for school feeding.

International Development Partners and National Nonprofits

International development partners and national nonprofit organizations that promote the National School Nutrition Program by enhancing the capacity and competence of public and local authorities, school principals, and school cooks, as well as by rendering technical assistance, contribute to the expansion of the school feeding program and create the basis for its further development.

International partners are interested in institutionalizing their programs and increasing their sustainability. Local nonprofit organizations should become successors to international school nutrition programs and support the Armenian government upon their implementation.

Policy Options

The new political authority that came to power in Armenia in 2018 has shown its commitment and determination to implement socioeconomic reforms aimed at reducing unemployment and enhancing

living standards, ensuring food security, and improving the population's nutrition. However, malnutrition and poor-quality meals remain a problem for many people, especially children.

One of the goals of the country's current agrifood policy is to establish an institutional framework and economic preconditions for establishing a sustainable food supply to the population, including during emergencies (pandemics, natural and climatic calamities, imposition of food embargos, etc.).

There is demand in Armenia for the development of a new school feeding strategy based on a more sustainable and innovative model, using local products and involving local communities. The improvement of the school feeding system will have a positive effect on the socioeconomic development of Armenia, helping to reduce poverty, improve social protection and food security, and develop agricultural production. It will also help address demographic problems and strengthen the health of the nation. The issue has become increasingly pressing because of the pandemic. It is important to develop measures to mitigate the impact of the COVID-19 crisis on children's nutrition and implement these measures in the context of national school feeding policies.

Armenia has ambitious goals for its school feeding strategy, and there are three fundamental policy options to consider. The first policy option involves organizing buy-in from all the stakeholders involved to generate a supply chain and infrastructure that depends on the sustainable development of school feeding. The second policy option involves generating a pilot school meals project that reflects the organization of the national infrastructure with local and community engagement. The third policy options are concerned with the short-term challenges presented by the pandemic. All three policy options complement each other. In the future, they can be consistently and comprehensively introduced into practice.

One challenge is that, like all countries, Armenia has a limited budget and decisions will have to be made about what policy should take priority.

1. Options for Establishing a National Policy for Organizing School Meals

The government's school feeding program: This program should embrace not only the eating arrangements at school but also the development of an infrastructure and an entire chain for food production and supply for school feeding that includes training and upgrading cooks, developing menus, and so on.

The key policy measure should be the adoption of a long-term strategy for the sustainable development of school feeding linked to Armenia's national security strategy (Правовая информационная система Армении 2020c), legislative acts on food security and nutrition improvement (Правовая информационная система Армении 2020b, 2020d, 2020e, 2020f), its agricultural development strategy for 2020–30 (Барсегян 2019), and its social support programs for the population. The strategy should include measures aimed at diversifying the sources of food for school nutrition and as well as for funding the program; it should also involve increasing the sustainability of program implementation, including in crisis conditions, using the mechanisms to involve:

- *Local producers* in supplying agricultural produce for school feeding; this requires increasing the upper limit of product procurement cost for school feeding, without tendering when procured from local farmers;
- *Local businesses and communities* in co-funding the National School Feeding Program; this requires providing incentives to local businesses; and
- *School capacity and resources* to produce agricultural products and generate electricity using renewable (solar energy) sources.

National Institution: The implementation of the school feeding policy requires a significant institutional capacity, as the program encompasses comprehensive activities aimed at protecting children's health. To ensure the program's long-term sustainability, it is important to build up the government's capacity for managing it. It is necessary to establish a national institution (hereinafter the "National Institution") that would be empowered and responsible for the implementation of the school feeding program. The National Institution should have the necessary resources and skilled personnel to manage the school feeding program.

One of the tasks that can be initiated and coordinated by the National Institution is revising the food procurement procedure for school feeding. The Law of the Republic of Armenia On Procurement of

December 16, 2016, dictates that food procurement for schools should be conducted via electronic trading if the contract amount exceeds 1 million drams (Legal Information System of Armenia 2016). This law applies to at least 50 percent of schools with more than 50 students in grades 1 through 4.[1] The provision sets a limit on the monetary value of agricultural products that schools can arrange to procure directly from local producers. Another priority is providing for the control and safety of foods supplied to schools and complying with healthy eating recommendations. It is necessary to develop recommendations on the food basket for school feeding, taking into account local agricultural produce as well as national habits and tastes.

Public funding: As part of public funding, it would be expedient to form a group composed of small schools (those with fewer than 50 students) and increase the funding per student to ensure quality feeding of their students. Funding all the students in such a school, including high school students, could make this a more attractive proposition.

Another relevant measure would be to ensure the stability of public financing and its indexation by accounting for the level of inflation and rising energy (electricity and gas) prices in the country. This must be considered when forming the national budget for the next year. Local businesses and communities should be involved in co-financing school feeding programs and in building up the schools' capacity to fund children's nutrition (see the pilot project discussion below).

Improving the process of developing and implementing the school feeding program: The Strategy for Developing School Feeding, which is currently underway, should take into account the international requirements for nutritional quality (by considering healthy eating requirements and guidelines of the World Health Organization, or WHO, and the WFP); it should also consider the experiences of other countries in building sustainable production and supply chains for school feeding. Also important is the participation of local agricultural producers and logistics centers, improving school capacity for growing produce on school grounds, and considering the role of local communities and parents in establishing school feeding.

Studies conducted by World Vision in 1,175 households in Armenia (6,333 family members, including 3,118 children under the age of 18) showed that 82.8 percent of families meet their food needs only partially or not at all; 65.1 percent of respondents in those studies suggest distributing food packages (World Vision 2020). The suspension of school feeding significantly affected the quality of nutrition in such families. That is why the provision of food packages is an important element of social support to such families under the school feeding program during the COVID-19 pandemic.

An important area of the activities of the National Institution should be setting up annual monitoring and assessment of the National School Feeding Program, ensuring awareness of its results, and their publication on dedicated information portals at the regional and national levels.

2. Policy Options for a Pilot School Meals Project with Local Business and Community Engagement

Community involvement in the establishment and co-financing of school feeding: The role of the community must be clearly defined in school feeding policies, as their participation is the key to ensuring the quality and long-term sustainability of a school feeding program.

Pilot project: In order to test the sustainability mechanisms of school feeding programs, it is important to develop and implement a pilot project in one of the areas (communities) affected by an adverse socioeconomic environment. If the project is a success, it can be proposed as a model project for other regions/communities in the country. The pilot project will demonstrate the potential for improving the sustainability of school feeding based on local resources under the COVID-19 pandemic and other crisis conditions. It will be able to address a number of interrelated tasks:

- Develop the green energy sector and install solar power stations to generate electricity at schools. This will provide schools[2] with electricity for cooking hot meals without increasing public funding for this purpose in subsequent years.

[1] Author's calculations, based on 168 school days per year, 120 drams per day for purchasing food per student in grades 1 through 4.

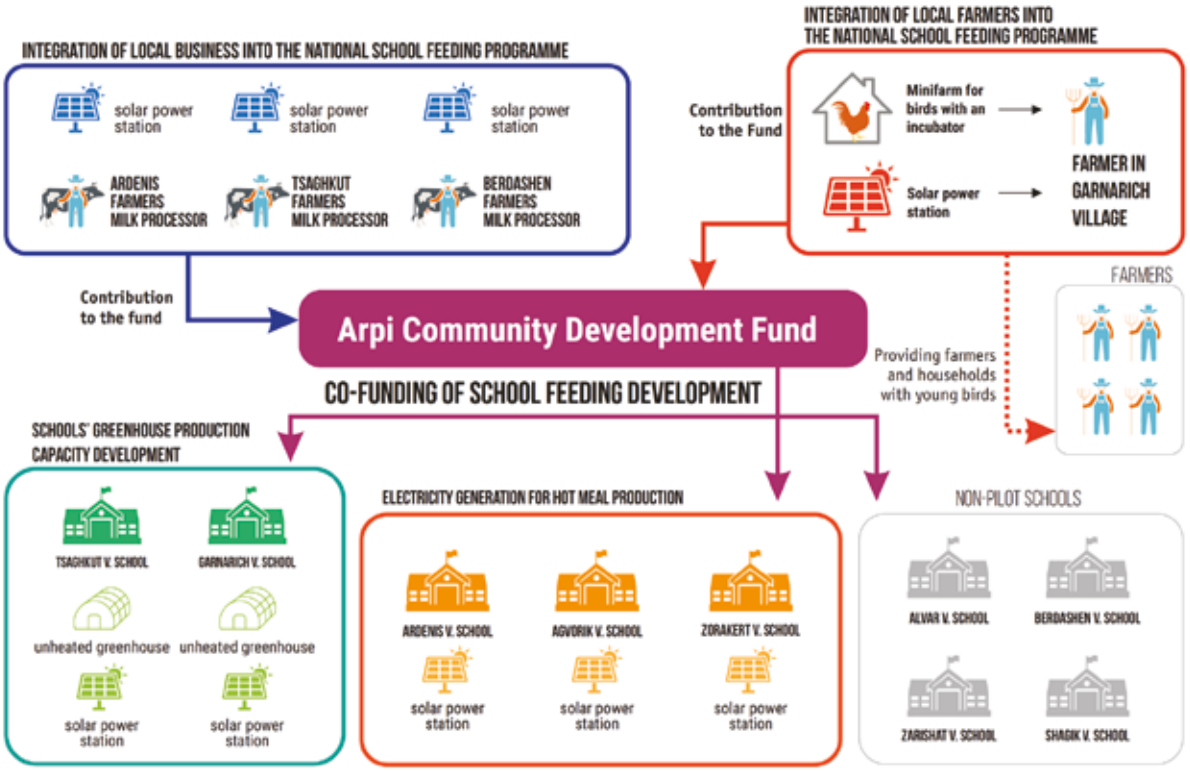
[2] Armenia has a government program for the transition to renewable sources of electricity, primarily by using solar energy. Electricity producers can supply power to the national grid and spend it as needed during the year. Excess electricity can be sold to a transmission company at a 20 percent discount off the market price. Such conditions stimulate and ensure the economic effectiveness of its generation using solar power, as well as provide for self-contained operation of school mess facilities if the power supply is interrupted.

- Increase the capacity of schools to grow produce on school grounds.
- Introduce menus based on the produce of local farmers and school gardens. To make up for the shortage of animal proteins as well as iron and calcium, dishes containing meat, eggs, and dairy products can be added to the diet (once or twice a week).
- Develop the logistics for the supply of local farmers' produce for school feeding.
- Get local businesses and communities involved in the school feeding program and create an economic mechanism for public-private co-financing of the program.
- Provide for the sustainability of the school feeding program in the event of crisis situations (such as a pandemic, transport traffic restrictions, hostilities, etc.) — in particular, a plan to quickly shift to distributing food packages made up of the products of local producers and processors under crisis conditions.

Pilot project institutional framework: In the course of implementing the pilot project, an institutional framework will be founded, with the necessary regulatory documents to be developed for its wider dissemination. One of the pilot project models currently being implemented by the WFP in 2019–20 has been suggested by the Social and Industrial Foodservice Institute (Figure 4).

Pilot project model: The proposed pilot project model, developed by the Social and Industrial Foodservice Institute for the WFP, provides for the establishment of Arpi Community Development Fund,[3] which will receive co-financing for the school feeding program from local businesses and communities. The project makes investments in local business entities, which are to be equipped with solar power stations of various capacities. Based on meter readings,

Figure 4: Logistics Scheme for Developing a Sustainable Model of a School Feeding Program in the Arpi Community



Source: Social and Industrial Foodservice Institute 2020, http://eng.sifi.ru/.

[3] The Arpi Community is located in one of the most depressed regions in the north of Armenia—the Lake Arpi area, Shirac Province. There are nine schools in the community with 150 children, including 77 elementary school students. Milk production is the core business of the local farmers. They produce approximately 6,300 tons of milk per year, processed mostly by three workshops (entrepreneurs) in the villages of Ardenis, Tsakhkut, and Berdashen. In 2019, milk production in the community increased by about 15 percent.

30 percent of the cost of generated electricity will be transferred on a monthly basis for 15 years to the Community Development Fund for the school feeding program. In addition, one of the farming enterprises will incubate eggs and breed and sell growing poultry to other farmers in the region. This will help to provide schoolchildren with fresh eggs, diversify the business of local farmers and households, and increase their profitability.

In accordance with the Fund's charter, the money received for the school feeding program cannot be used for any purpose other than the development of school feeding. The Fund will set up a special governing body, the Supervisory Board, which will identify the areas in which to spend the revenue and supervise the targeted spending. The Supervisory Board will be composed of school principals participating in the pilot project.

In addition, solar stations will be installed in schools to generate electricity for cooking hot meals, and two greenhouses with a total area of 384 square meters, to produce no less than 3.8 tons of vegetables and greens per year.

The project provides for the installation of nine solar stations with a total capacity of 170 kilowatts, which will annually generate approximately. 146,000 kilowatts of electricity, and thus reduce CO_2 emissions down to 130 tons per year (compared to power generation at coal and gas plants).

In addition, investment in dairy plants will increase the volume of milk bought from community members by 22.8 tons per year because of an increase in the working capital and reduction in the current electricity costs.

According to the author's calculations, the implementation of the pilot project will allow for an increase of the annual earnings of direct participants by US$28,700. The schools will receive additional funding of up to US$16,900 per year, of which at least US$12,700 will be channeled to the school feeding program.

3. Options for Organizing School Meals in the Context of the COVID-19 Pandemic

Models for the short term: Given the ongoing COVID-19 pandemic, it is vital in the short term that the public authorities select one of the below models to provide school feeding to a target group of students:

- *Distribute certain foods for cooking meals at home.* This option provides for distributing certain foods, typically flour and vegetable oil, for baking bread at home, and should be most likely considered as a measure aimed at reducing hunger and supporting the poorest families.

- *Prepare and distribute food packages.* This option provides for preparing packages of at least 8 to 10 food items for long-term storage. Food packages make it possible to home-cook meals that, in their energy content and nutritive value, are close to hot meals at schools.

- *Monetize the school feeding program and distribute cash.* This option can be used for a quick response to the involuntary discontinuation of children's feeding in schools. However, if the COVID-19 pandemic persists for a long time, this option has substantial weaknesses (parents may use the cash for other purposes; suppliers of food for school feeding remain uninvolved in the process; the cost of bought foodstuffs may prove more expensive than that of the products supplied by food suppliers for school feeding, etc.).

- *Provide ready-made meals.* This option requires the availability of an infrastructure for cooking, transporting, storing, and distributing ready-made or semi-finished foods, which can be quickly heated up or cooked at home. The option is undoubtedly more costly than the other options and can be used only in large population centers because it needs a logistics infrastructure that is not available in Armenia.

Each of the options has its pros and cons, risks and opportunities for preserving the school feeding infrastructure. In the Armenian context, the most acceptable option for feeding children under the school feeding program is distributing food packages with the participation of suppliers, which were earlier awarded contracts for the supply of foods for school feeding.

As part of the development of school meals program in Armenia, the WFP decided to switch to the provision of take-home rations, consisting of six food items (buckwheat, lentils, pasta, rice, oil, and wheat flour) (UN in Armenia 2020). This will be a one-time distribution of food baskets based on the established

standards for 80 days of online study (when students are not in schools), it will cover about 50,000 children. It is proposed to apply a similar approach within the framework of the National School Feeding Program in Armenia, which is supervised by the Ministry of Education, Science, Culture and Sports of the Republic of Armenia.

Providing food baskets will allow the country to:

- Maintain suppliers and infrastructure for providing food to the school feeding program;
- Ensure the targeted use of funds allocated for school meals; and
- Maintain the level of nutrition of children reached earlier.

The sequence of steps to be taken for the implementation of this option is described in the Policy Recommendations section.

Assignment

1. Analyze the proposed policy measures and discuss the strengths and weaknesses of each one, as well as existing constraints and opportunities for their use. How will the implementation of these measures impact the sustainability of the school feeding program in Armenia?
2. Suggest what additional measures need to be taken to make the National School Feeding Program in the Republic of Armenia more sustainable in the face of the COVID-19 pandemic.
3. Assess the effectiveness of the proposed measures to support the National School Feeding Program in the Republic of Armenia. To what extent are these measures relevant for other countries?

Policy Recommendations

In the context of the ongoing COVID-19 pandemic, when the economic situation in the country is deteriorating, it is necessary to transform the school feeding program from a routine measure of social support into comprehensive food aid provided to a significant share of children, particularly those from socially vulnerable families. A possible response to the current challenge is distributing food packages to elementary school students. To this end, it is vital that the to the Ministry of Education, Science, Culture and Sports of the Republic of Armenia, jointly with other legislative and executive bodies, implement a number of successive steps to adapt the National School Feeding Program to the limitations related to the COVID-19. These steps are listed below.

- Identify acceptable food replacements in schoolchildren's diets, primarily with packaged, non-perishable foods and local agricultural produce.
- Develop and approve regulatory requirements for the distribution of food packages and their recommended contents based on the physiological needs of elementary school students per meal for a specified time — for example, for three months.
- Adopt the necessary decisions to amend the contracts currently in effect or those to be signed for the supply of products for school feeding, taking into account the recommended contents of food packages.
- Ensure the delivery of food packages to elementary school students with the participation of the existing suppliers of products for school feeding or local agricultural producers.
- Institutionalize the participation of schools in the preparation and distribution of food packages to elementary school students.
- Increase the value of contracts with suppliers of products for school feeding, taking into account the need to procure masks, gloves, disinfectants, and disposable packaging, to disinfect vehicles and containers, and to take other COVI-19-prevention measures.
- It is also important to reduce the barriers to local farmers' participation in the supply of produce for school feeding and amend the section of the Law of the Republic of Armenia On Procurement of December 16, 2016 related to increasing the upper limit of products procurement cost for school feeding, without e-tendering up to 10 million drams.
- Provide for the process of monitoring food packages' quality, their timely collection by elementary school students, and their proper use.

The proposed measures will make it possible in the short term to adapt the school feeding program to the new conditions and challenges arising from the COVID-19 pandemic and maintain the level of children's nutrition that had been achieved earlier.

In the medium term, it is important to create a crisis-resistant model of organizing and financing school meals with the participation of local businesses and local communities. Once this model is effective and sustainable, it can be proposed as a model for widespread use in other communities of the country.

In the long term, the development and adoption of a national standard of nutrition for children in schools can become an important element of state policy that ensures nutrition of equal quality for all students in primary school, regardless of the location of schools (in the city or in the countryside), the number of children in school, the provision parents, and the presence of crisis situations.

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Abbreviations

ARMSTAT	Statistical Committee of the Republic of Armenia
CIS	Commonwealth of Independent States
SABER	Systems Approach for Better Education Results
SDG	Sustainable Development Goal
UN	United Nations
WFP	United Nations World Food Programme

Photo credit: Budabar on depositphotos

Transformation of a Farm's Marketing System Prompted by the COVID-19 Pandemic

Natalya Nesterenko, Sergey Meloyan

Executive Summary

Semeynaya Eco-Farm (located in Ryabizi village, Gatchinskiy *Raion* (district), Leningrad *Oblast* (region), the Russian Federation) is engaged in the full cycle of meat and dairy production. It sells organic products to end consumers through stores, a sales van, and an online store. During the first months of the pandemic, the volume of the farm's sales decreased by three to four times because some retail stores terminated their purchase orders. Consumers were increasingly buying food via the internet on a door-to-door delivery basis. In this context, Semeynaya Eco-Farm is developing e-commerce not only as an anti-crisis measure but also as a long-term strategy. To implement e-commerce, the farm used the available digital knowledge and skills of the farm members, which, however, turned out to be insufficient for effective farm management. This led to confusion in orders, irrationality in the supply chain, and excessive transportation costs.

The purpose of this case study is to develop measures to support the transformation of farm marketing systems, including through various forms of e-commerce. The case study offers policy options such as providing consulting support to farmers on the organization of e-commerce, establishing tax breaks, providing loans at reduced rates, and establishing a system of public procurement for surplus produce. The experience of Semeynaya Eco-Farm may be useful for developing a farm development policy for the district in the context of the digital economy, since the farm employs advanced production technologies and actively interacts with the government. Stakeholders include farms, consumers, food retailers, regional government bodies, and nonprofit organizations representing farmers' interests. With the help of voluntary internet surveys of officials of the Government of the Leningrad Region,[1] a representative of a nonprofit organization, and consumers and with the organizational support of the World Bank, the attitude of stakeholders to the problems of declining sales of farm products during the pandemic was determined and possible support policy options were formulated. The policy recommendations include basic e-commerce consulting and training for farmers, development of a marketplace for farm products, and public procurement of surplus farm produce. These measures would make it possible to provide the population of the region with quality farm products while supporting and expanding the development of local agriculture.

Background

Semeynaya Eco-Farm was established in 2013; since then it has been engaged in the production of meat and dairy products. It is located in the village of Ryabizi, Gatchina Raion, Leningrad Oblast, Russia, 40 kilometers from St. Petersburg. Its buyers mainly live in the southern districts of St. Petersburg. Prices for the products of Semeynaya Eco-Farm are 30–50 percent higher than prices for similar products that are mass produced, so the target consumers belong to the medium- to high-income group. The following can be regarded as the farm's competitive factors:

- The high quality of products, because of the humane handling of animals and keeping them in natural conditions;
- The absence of harmful chemical components at both the production and processing stages; and
- The friendly and attentive attitude to customers, which, along with the high quality of products, contributes to building strong confidence in the farm.

Currently, the farm keeps 300 head of beef and dairy cattle. Free grazing is the farm's special feature (Figure 1). The animals spend almost all year free grazing. This method helps increase lactation and prevents many diseases. Beef bulls that free graze gain weight faster than they do in stalls. In addition to increased productivity of livestock, free grazing can reduce capital costs related to the construction of indoor facilities.

The herd is reproduced on the farm by the stock itself in natural conditions. All calves are born in the field. Natural conditions of birth ensure the good health of calves and cows. Veterinary support is called in only for solving urgent medical problems.

Figure 1: Dairy Cows Free Grazing at Semeynaya Eco-Farm

Source: Natalia Nesterenko, Summer 2020.

[1] The survey was conducted by the authors, who collected anonymous opinions from officials in the summer of 2020.

Production processes on the farm are organized to be as independent of external suppliers as possible. Animals feed on organic fodder (hay and haylage) stockpiled by the farm during summer and fall (Figure 2). Fodder supplements such as corn are purchased from local suppliers. Such minimum dependence on suppliers helps reduce direct production costs. Moreover, operational risks related to logistics are also reduced.

Figure 2: Organic Fodder Storage at Semeynaya Eco-Farm

A: Hay **B: Haylage**

Source: Natalia Nesterenko, Summer 2020.

The farm is operated by a family of five members: the head of the farm, Pukhlyakova Larisa; her husband Anatoly; their son Pavel; and their daughter Alexandra and son-in-law Alexander. The family-based business swiftly distributes responsibilities and responds to market changes without involving additional staff. All family members work closely together, which is key to the farm's success. In addition to managing all the production and sales operations, the head of the farm is also responsible for building relationships with the outside world: authorities, nonprofit organizations, suppliers, and credit institutions. Through its active involvement in government support programs, the farm managed to purchase expensive equipment for fodder preparation, milk processing, and packaging finished products. Larisa's husband and son-in-law are responsible for production processes, while her son and daughter are responsible for the sales of finished products.

The farm hires low-skilled labor to perform simple work, including seasonal work. For this purpose, the farm attracts migrants from Central Asia. This is justified not only by the lower wages the migrants receive, but also by their attitude toward work, which is better than the attitude of local residents. Some workers for simple jobs are provided by the Multi-Functional Center for Social and Labor Integration of the Leningrad Oblast. The center provides jobs to people with disabilities in collaboration with the farm. This creates opportunities for social and economic adaptation of such people on the one hand, and it also enables the farmers to save on their payroll on the other, as the larger part of wages is paid by the Center.

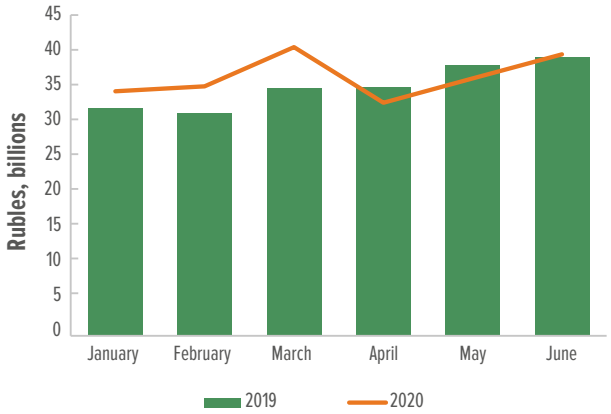
Before the pandemic, Semeynaya Eco-Farm sold its products through retail stores, a sales van (Figure 3), and an online store. The retail sales were arranged through their own on-farm outlet, a small store operating in rented retail space and delivering produce to third-party retail stores. Online sales were carried out through a page in Vkontakte social network and through the farm's website, but the share of online sales out of total sales was insignificant (approximately 5 percent). Buyers would put their order in a personal message, and the account administrator would arrange delivery. The orders were delivered by the sales van on the days when it arrived in the respective area. Thus, the geographical location of regular customers who purchased the produce at the sales van and those who bought their products online was almost identical.

Figure 3: Semeynaya Eco-Farm's Sales Van

Source: Natalia Nesterenko, Summer 2020.

A drop in sales in retail stores due to restrictions on the movement of consumers, as well as the temporary closure of city fairs, led to disruption in the supply of farm produce. In Leningrad Oblast, April 2020 saw an almost 20 percent decrease in retail sales in comparison with the preceding month, including sales of goods by individual entrepreneurs and individuals in retail markets and fairs (Figure 4).

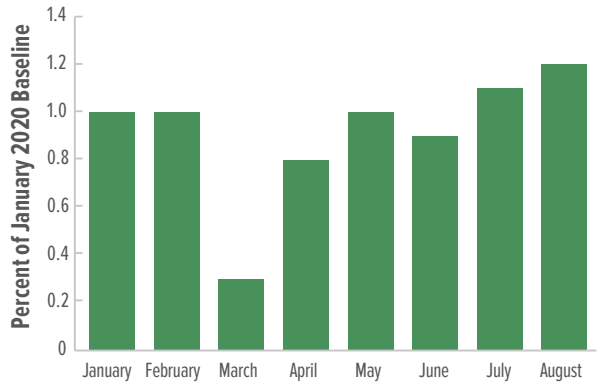
Figure 4: The Dynamics of Retail Trade Turnover in the Leningrad Oblast, 2019 and 2020



Source: St. Petersburg and Leningrad Oblast Department (Petrostat) of the Federal State Statistics Service, https://petrostat.gks.ru/.

During this period, Semeynaya Eco-Farm's sales dropped almost threefold due to the termination of purchase orders by third-party stores. Figure 5 shows the dynamics of the farm's sales in comparison with early 2020 sales. The farm members' response to the drop in sales focused on efforts to develop e-commerce, which resulted in the restoration of the pre-crisis sales level.

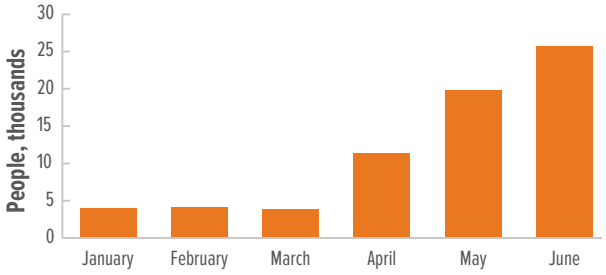
Figure 5: Dynamics of Semeynaya Eco-Farm's Sales, 2020



Source: Original figure for this publication.

The decrease in the level of income and unemployment growth caused by the formal introduction of non-working days led to the reduction of effective demand[2]. In April 2020, the number of unemployed people tripled compared with the preceding month (Figure 6).

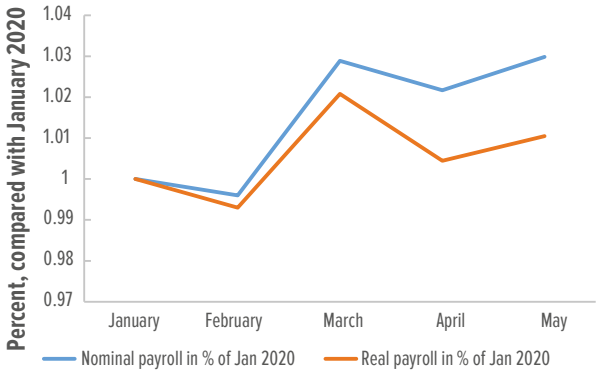
Figure 6: Dynamics of the Number of Unemployed Citizens in the Leningrad Oblast, First Half of 2020



Source: St. Petersburg and Leningrad Oblast Department of the Federal State Statistics Service (Petrostat), https://petrostat.gks.ru/.

Reduced working hours for some employees affected nominal and actual payrolls. Leningrad Oblast saw an almost 2 percent decrease in the level of real income in April 2020 as compared to the level of the preceding month (Figure 7).

Figure 7: Dynamics of Nominal and Real Payrolls in the Leningrad Oblast, 2020



Source: St. Petersburg and Leningrad Oblast Department of the Federal State Statistics Service (Petrostat), https://petrostat.gks.ru/.

Specifics of organic production and the high quality of organic products contribute their higher prices when compared with traditional products. For this reason, the decline in household income led to a decrease in effective demand for the Eco-Farm's products.

The anonymous consumer survey conducted by the authors revealed that the frequency of farm product purchases depends on the average income of the respondent (Table 1). Customers with higher incomes buy farm products more often. Only 12 percent of respondents never buy farm products.

[2] To prevent the spread of the coronavirus pandemic in Russia, non-working days were announced from March 30 to April 5, 2020. The period of non-working days — when workers did not work but kept their salary — was extended twice before ending on May 11.

Table 1: Dependence of Farm Product Purchasing Frequency on the Average Income per Respondent's Family Member

Average per Capita Income in Respondent's Family (rubles)	Frequent or Occasional Buyers of Farm Products (% of buyers)
Up to Rub 40.000	50
From Rub 40.001 to Rub 70.000	57
From Rub 70.001 to Rub 100.000	71
Over Rub 100.000	100

Source: Compiled by authors from the survey conducted in August 2020.

The facts described above led to disruptions in the traditional supply chains of Semeynaya Eco-Farm. A further decline in sales signaled major potential problems with the farm's cash flow. The farm's fixed costs include the cost of keeping animals, payroll, and farm maintenance costs. In addition, the beginning of a new agricultural season required additional costs for seasonal farm activities.

Dairy production processes are characterized by their continuity. It is impossible to reduce milk yield in the short term. A decrease in sales cannot be offset by a corresponding decrease in output. The farm was overstocked with finished products. To avoid waste, the unsold milk was processed into products with a long shelf life, such as butter. However, this meant additional costs for raw milk processing and storing finished products in refrigerators.

Semeynaya Eco-Farm is the subject of this case study because its experience interacting with the external environment can be referred to as "advanced." Environmentally friendly production benefits the environment. Natural ways of keeping animals and the animals' well-being make products extremely valuable for consumers, especially in the dire circumstances of the pandemic. Employing people with disabilities creates a positive social effect. The experience of Semeynaya Eco-Farm helps develop a set of policy measures to support and encourage development of farm businesses.

Policy Issues

The problem of the negative impact of the pandemic and related quarantine restrictions on farmers is not specific to any particular nation. Farmers in many countries have faced a decline in sales (Swinnen and McDermott 2020). In China, roadblocks and sanitary inspections prevented small-scale farmers from selling their produce or buying agricultural inputs; this inability to sell and buy led to losses of income, operating losses, and potentially adverse effects on future crops (Zhang 2020).

Since March 2020, the Russian government has been working to prevent the spread of a new coronavirus infection. The period from March 30 to May 11, 2020, was declared by the president to be a period of paid non-working days. The following organizations were exempt from the Presidential Decree's requirement:

- Continuously operating enterprises and organizations;
- Health care institutions and pharmacies;
- Organizations that provide the population with foodstuffs and basic necessities;
- Organizations that perform urgent work in emergencies or other situations that endanger the lives or regular living conditions of the population; and
- Organizations performing emergency repairs or loading and unloading operations.

Agricultural enterprises officially worked during April despite a number of problems associated with the pandemic quarantine restrictions.

Decrease in Sales

The main reason for the decrease in sales was the termination of product purchase orders from small stores. Some consumers, driven by the fear of infection, wanted their purchases to be delivered to their homes. Decrease in consumer activity and reduced incomes forced stores to narrow their product range. Perishables, particularly farm products, were the first to be eliminated. The decrease in the consumption of

fresh perishables was caused, among other things, by panic-driven stockpiling at the onset of the pandemic.

From March 30, 2020, through June 29, 2020, catering organizations (restaurants, bars, cafés, etc.) were allowed to work only on a takeaway or delivery basis. After June 29, 2020, restaurants and cafés were allowed to open their outdoor verandas. Over this period, a large number of restaurants and cafés preferred to stay closed, while the others adapted their menus to accommodate the takeaway mode of operation.

Semeynaya Eco-Farm suffered a drop in sales due to the termination of contracts with stores. It did not work with restaurants and cafés, so the negative impact of quarantine restrictions was not as severe as it was on farms that were fully focused on supplies to restaurants. Under those conditions, the farm began to vigorously promote its business and its products in social media to attract as many consumers as possible. The transportation workload increased significantly because of the need to deliver on a door-to-door basis.

Farmers' Skills Insufficient to Organize E-Commerce

Reorientation of the farm's sales system toward e-commerce required additional knowledge in online sales, marketing communication in the digital economy, and logistics. The need to promptly respond to market changes presented the farmers with the challenge of quickly acquiring new knowledge and learning how to use new tools and skills. Educational organizations and the governments of St. Petersburg and the Leningrad Oblast failed to promptly implement appropriate short-term educational programs. As a result, those farmers who already had the necessary expertise found themselves in a more advantageous position.

Semeynaya Eco-Farm succeeded in developing online sales of its products using its own website and social media such as Instagram and VKontakte, the Russian online social media and social networking service. The daughter of the head of the farm, Alexandra, began to perform these functions, which were quite time-consuming because the orders had to be processed manually. The delivery schedule was also compiled manually. As a result, there were instances of confused or under-delivered orders. The farm corrected all its errors in orders and deliveries, albeit at an additional cost.

Lack of Vehicles and Drivers

E-commerce implementation difficulties were also partially associated with the lack of vehicles and drivers. The growing volume of e-commerce with door-to-door delivery has led to an increase in traffic. Transport opportunities for farmers are limited by the available cars and workers. It is unprofitable for the farm to use the services of transport companies in a sales crisis. Therefore, the actual volume of sales with door-to-door delivery is limited by the farm's delivery capabilities. The family eco-farm has a trailer with a refrigerator. Farmer Pavel delivers online orders to customers and all products to stationary stores. Since the priority of farm logistics is the delivery of fresh products from online orders, the lack of working time has led to problems with the supply of products to stationary stores.

Problems with Labor, Including the Labor Force for Seasonal Work

Restrictions on entry into Russia from other countries, especially Central Asian ones, have led to a shortage of labor. On-farm fodder conservation work during the spring and summer season is performed by local farmers. Difficulties arose later, when migrant workers from the Kyrgyz Republic left for their homeland due to the pandemic and were unable to return because of transport restrictions in Russia. The low-skilled work of caring for animals was taken over by farmers themselves. This has led to a significant overload of physical work.

A serious problem arose in the production of dough products (*pelmeni, khinkali, etc*.),[3] which was performed by a Kyrgyz woman. The high quality of these products is due, among other factors, to the high quality of work with the dough. The departure of the worker to the Kyrgyz Republic led to a stop in production. The use of local female workers led to a decrease in the quality of the dough. It was therefore decided to abandon the production of these products until the resumption of the transport communication between Kazakhstan and the Kyrgyz Republic. The reduction in the range of products led to a decrease in the revenue and profit of the farm.

The family eco-farm uses family members to do the work of the farm. An important competitive advantage was the fact that all family members are adults who

[3] Pelmeni and khinkali are types of meat-filled dumplings.

were able fully to perform old and new functions, effectively combining production and marketing tasks.

Interruptions in the Supply of Inputs for Production and Marketing Activities

This problem of input supply interruptions was faced by many farmers, including those at Semeynaya Eco-Farm. This was due to the government-imposed requirements to use sanitizer, face masks, and gloves. As a result, the demand for these products increased dramatically. In March, the region experienced a major shortage of personal protective equipment. These products were not available in stores or pharmacies as suppliers and producers failed to cope with the soaring demand. The government at that time was providing humanitarian assistance to other countries. Later on, detergent manufacturers managed to reorient their available capacities to manufacture sanitizer at the expense of cutting back on the manufacture of traditional detergents, which had been used for hygienic measures in food production for many years. As a result of the changes in the production processes, farmers had problems buying detergents that they had used for many years before the pandemic.

A similar situation occurred with the supply of plastic containers. Manufacturers of plastic milk bottles used their production facilities to produce dispensers for sanitizers. According to farmers, the manufacturing of bottles at the factory was limited to one or two days a week. The remaining time was allocated to the production of dispensers.

Semeynaya Eco-Farm also suffered from disruptions in the supply of detergents and plastic containers at the initial stages of the pandemic. Supply disruptions required additional effort and time to find new suppliers. Packaging finished products was problematic during that period.

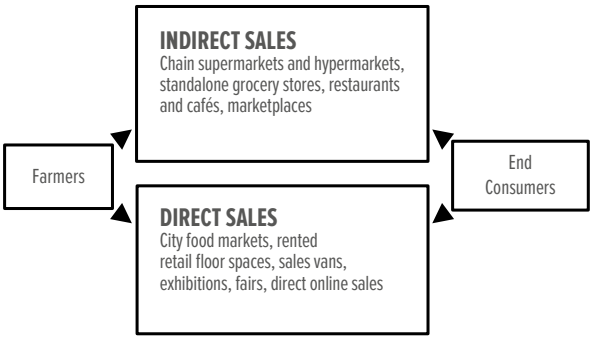
Stakeholder Groups

The circle of stakeholders interested in the digital transformation of marketing systems of family farms includes small full-cycle family farms, consumers, supermarkets, regional government entities, nongovernmental organizations representing farmers, and farmers' cooperatives.

Small Full-Cycle Family Farms

This case study is focused on a farm that produces meat and dairy products for end consumers. Semeynaya Eco-Farm is well advanced and one of the best in its sector because it uses advanced, environmentally friendly technologies for the production of dairy and meat products. The experience of the farm head's interaction with regional authorities makes it possible to use all support measures available. The farm's active participation in exhibitions and conferences is an effective tool of disseminating its development experience to other farms.

Figure 8: A Graphic Representation of Sales Channels for Farm Products



Source: Original figure for this publication.

During the pandemic, farmers are interested in maintaining a steady flow of sales, thus preventing overstocking. The supply of products to food supermarkets and hypermarkets during the pandemic remained stable, thanks to long-term contracts. Work with individual grocery retail stores was less stable. Due to lower purchasing activity, some of them reduced their range, cutting back especially on short-life products. The use of marketplaces for the sale of farm products with a short shelf life in Russia is currently undeveloped. Farmers supplying products to restaurants, cafés, and hotels found themselves in the most difficult situation. The lack of communication with end consumers prevented them from promptly restructuring their sales channels (Figure 8).

During the pandemic, direct sales were impeded by restrictions imposed on city markets, exhibitions, and fairs. However, it should be noted that these channels account for a small share of sales (Figure 8). The drop in sales is offset by sales through own outlets located in rented retail spaces, sales vans, and direct online sales. In this case, enhanced direct online and offline communication with end consumers helps to avoid losses.

Consumers

Consumers of organic farm products are focused on quality food. Their income levels are medium and medium to high, since organic farm products are usually more expensive than mass-produced, conventional farm products. In addition, in the context of a pandemic, consumers are more likely to pay attention to the organic characteristics of food because they believe that organic food improves immunity, and the ability to resist infections, and to recover quickly from illness.

The suspension of catering organizations (restaurants, cafés, and canteens) affected the consumption structure of the urban population. In the premium segment, the people's refocus on home cooking led to an increased demand for quality groceries delivered to their homes. In this sector, farmers did have a window of opportunity; however, taking advantage of the opportunity required timely and prompt switching to different sales channels for finished product.

Supermarkets

As a rule, grocery supermarkets (hypermarkets) belong to retail chains and they purchase and retail farm products in large consignments. To become a supplier to a hypermarket, farmers need to comply with strict sanitary and technological standards. Some retailers allow farmers to rent space and create a so-called farmer's corner. In contrast with the "farmer's shelf" arrangement, the concept of the farmer's corner relieves the supermarket of any responsibility for the quality of products. In this case, in order to expand the range of products, cooperation between a number of farms would be advisable. The only requirement then is to build a range of products that would not overlap with the hypermarket's range — to avoid "brand cannibalism." Supermarkets are interested in the development of farm supplies, and they include such supplies in home deliveries.

Regional Government

The Committee for Agro-Industrial and Fishery Complex of the Leningrad Oblast of the Russian Federation is responsible for the development of state policy, the regulatory and legal framework, and the provision of state services in the agro-industrial complex and fish industry. The activities of the committee are aimed at enhancing competitiveness of products of the agro-industrial and fishery complex; stabilizing and increasing the production of domestic foodstuffs; introducing new resource-saving technologies and effective management methods; ensuring the growth of labor productivity; and so on. The Leningrad Oblast government collects information about the impact of the pandemic on farmers' work. The disruption of supply of inputs; the reduction of the number of seasonal workers, including migrants; and the growing need for new knowledge in the field of online sales have been referred to as some of the negative consequences of the pandemic.

The authors of the case study, with the support of the World Bank, conducted a voluntary, anonymous survey of officials of the Committee on Agriculture and Fisheries. The survey was aimed at determining the level of awareness of the government of the Leningrad region about farmers' problems caused by the pandemic.

The survey showed that the most effective measures to support farmers affected by the pandemic would be tax breaks, preferential lending, training programs for farmers on the use of online sales tools, and procuring surplus products to assist population groups affected by the pandemic. The development of agricultural cooperatives and consumer associations is also deemed essential for supporting farmers. In September, the governments of the St. Petersburg and Leningrad regions organized the Agrorus-2020 trade fair, where farmers sold their products and shared their experiences of working in the context of the pandemic, as well as sought to define development prospects.

Nongovernmental Organizations Representing Farmers and Farmers' Cooperatives

The Association of Peasant (Farmer) Businesses and Agricultural Cooperatives of Russia (AKKOR) currently has 65 regional offices. The Voluntary Union of Farmers of the Leningrad Oblast and St. Petersburg supports farmers in their current activities by representing them in government bodies, in courts, and in credit institutions. This organization maintains personal communication with farmers and collects information about their activities in the context of the pandemic, summarizes their problems, and passes the information to the government.

The Voluntary Union of Farmers of Leningrad Oblast and St. Petersburg organized a conference entitled "How Farmers Survive During the Pandemic" within

the framework of the Agrorus-2020 Fair (Figure 9). The conference was attended by farmers, retail chain representatives, credit institutions, natural monopolies, and academic institutions. Communication in such a multilateral setting enabled the participants to exchange experiences and express their views on the farm production development programs being designed by businesses and nongovernmental organizations.

Figure 9: At the Conference "How Farmers Survive During the Pandemic" at the Agrorus-2020 Fair

Source: Natalia Nesterenko, Summer 2020.

Policy Options

1. E-Commerce Policy Options

Taking into account the increasing activity of food consumers in the internet space, e-commerce is becoming the most promising area for the development of a farm produce sales system. E-commerce may be organized in different forms. The easiest way to organize e-commerce is to establish communications and ordering tools in social media (Instagram, VKontakte, Facebook, etc.). The farm's page enables customers not only to order products but also to get acquainted with farmers and see photos and videos of production processes. For this purpose, the farm should fill the page with interesting and vibrant content that reveals the work's specifics and builds the confidence of potential consumers in its products. The entire range of products should be posted on the page along with prices, packaging, and storage details. It is also advisable to provide information about what makes the offered products healthy and share best cooking methods for particular products. To provide all this information, farmers have to do a lot of work to organize internet communications with consumers; in the context of continuous production, this is very time consuming. The payment system is either built into the social medium itself (VKontakte) or is set up by the farmer independently.

A mobile application is a more sophisticated online commerce channel. These applications tend to be more smartphone-friendly and they have a built-in payment system. Incorporating the products of other farmers into the application expands and complements the product range and helps attract new consumers. It should be noted that developing an application is a more complex, time-consuming, and expensive process than maintaining a page in a social network. This is why mobile applications in the sector of farmer products in Russia are currently underdeveloped.

Global and regional food marketplaces bring together multiple suppliers, including suppliers of farmers' products. The most famous marketplaces are Amazon Fresh and Walmart. Having decided to operate on the basis of these networks, a farmer connects to a working digital platform with an established system of payments, product delivery, consumer base, and producer quality control. Local platforms — such as Local Food Marketplace (in the United States)[4] or Mandi Trades (in India)[5] — help consumers find the nearest farmers and purchase food directly from the farm, bypassing intermediate links in the chain. Yandex-Lavka and SberMarket operate in Russia as marketplaces, but due to the difficulties of delivery they seldom engage with local producers.

A specific feature of online food orders is that there is no opportunity to examine the product beforehand — that is, to look at it, smell it, or taste it. There is no way to check the organoleptic properties of farm products. Moreover, a consumer survey, conducted by the authors with the support of the World Bank, found that tastings are one of the most important ways to promote farmers' products. Therefore, the initial level of consumer confidence in the farmers' products purchased online is quite low. This barrier can be dealt with by

[4] For information about Local Food Marketplace, see https://home.localfoodmarketplace.com/.

[5] For information about Mandi Trades, see https://www.facebook.com/MandiTrades/.

adding tasting samples to the order. Consumers are interested in developing e-sales of farm products; their main priorities are a consumer-friendly method of delivery and the freshness of products.

2. Rural Tourism Policy Options

Rural tourism may become an additional source of income for farm businesses. In the context of the pandemic-related quarantine restrictions on mobility and the closure of urban recreational facilities (such as parks and zoos), people had very few opportunities to spend time outdoors or to watch and feed animals. The relevance of rural tourism is also increasing because of international travel restrictions and the population's declining incomes. In these conditions, farmers offer urban residents an opportunity to take walks, stay on the farm, relax, participate in animal and plant care, and participate in harvesting — all while social distancing. In cooperation with the Tourism Committee of the Government of the Leningrad Oblast, Semeynaya Eco-Farm was included in the regional tourist destinations subject to development. Tourists not only learn about production processes and communicate with animals but also take part in tasting farm products: milk, yogurt, cheese, *pelmeni*, and so on. The tourists can certainly buy the products they like. School tours to the farm are gathering intensity (Figure 10). In summer, when quarantine restrictions were significantly weakened, groups of children visited the farm. During their walk on the premises, children are happy to communicate with animals, learn many interesting things about the life of domestic animals, and get acquainted with the rural lifestyle. At the end of the tour, the owners treat the children to their produce. The tasting turns into a full lunch in the open air (Figure 10).

Figure 10: Schoolchildren on a Tour of Semeynaya Eco-Farm

A: Children after the Tour

B: Farmer Lunch during the Tour

Source: Natalia Nesterenko, Summer 2020.

3. Overstocking Problem Solving Policy Options

To solve the problem of overstocking, a system of public procurement can be organized. In this case, the government assumes the functions of harvesting raw crops, processing them, and distributing produce to state institutions (educational and health care institutions, the army, orphanages). The sharp increase in the number of patients in health care facilities places an additional strain not only on the health care system but also on the food chains that provide food for patients. Under these circumstances, purchasing high-quality food from farmers would not only support producers but also provide healthy and quality food to patients in health care facilities. In order to provide the army with food, raw produce could be processed to extend its shelf life (milk is processed into milk powder; meat, vegetables, and fruits into canned goods). This mechanism allows farmers to avoid disposing of produced goods, reduces the burden on the environment, and gets the money needed to continue production processes.

Nongovernmental organizations providing food support to disadvantaged populations (the homeless, poor, orphanage graduates) can aggregate surplus

farm produce. When the farm's warehouse is overstocked with perishables, selling them for charitable purposes at reduced prices would let farmers earn a small income and reduce their losses. The role of an intermediary in these operations can be assigned to a relevant government committee, since it is the government bodies that accumulate information about farms on the one hand and about the disadvantaged strata of the region's population on the other.

4. Addressing the Mismatch between Farmers' Skills and New Tasks Policy Options

In the context of the pandemic, the emergence of additional e-commerce functions and the growth of door-to-door deliveries created the problem of a mismatch between the existing skills of farm members and skills needed to perform new tasks. Farmers have an excellent understanding of production processes, supply, and traditional sales channels. Online sales include not only communication with consumers but also accounting for the number of orders, their geographical distribution, and the development of transport flows. All these elements make it possible not only to deliver products to the consumer but also to reduce delivery costs. Additional training programs for farmers can be a solution to the lack of skills. Such programs are especially convenient and relevant when using remote technologies. In the past, the main problem with farmer training programs was the lack of time and financial opportunities for face-to-face training. Farmers live far from regional and federal centers, so face-to-face training used to be virtually inaccessible for them. Now the educational environment resolves the problem of geographic dispersion, lack of money for travel and accommodation, and high workload by means of distance-learning technologies. Government authorities and nongovernmental organizations can implement free or paid distance-learning programs on online sales, logistics, and food marketing system specifics.

5. Logistics and Delivery Policy Options

Delivery of farm products in the framework of e-commerce is one of the most important tasks of a farm; if properly performed, it forms consumer loyalty. Logistics can be organized in the following ways:

- **Customer pickup.** Customers collect products directly from the farm. In this case, the geographical location of the farm is very important. Farmers save on transportation costs, but the circle of consumers is very limited.

- **Door-to-door delivery.** Farmers deliver the products themselves or jointly with other farms. Delivery costs depend on the distance to the buyers and their concentration.

- **Delivery to a pickup point.** For a pickup point to function in a supermarket, it is necessary to install a refrigerator. Farmers deliver orders to a predetermined pickup point. Consumers order groceries from the farmer and later collect their orders from a dedicated refrigerator in a supermarket (similar to a food storage point for the retail grocery delivery platform SberMarket). Delivery from a pickup point to the customer's home may be arranged through delivery service providers.

Customer pickup opportunities are very limited. The main problem for the development of this service is the low level of public awareness. Often people simply do not know where the farms are located. The function of informing people should be assumed by the governments of the Leningrad Oblast and St. Petersburg in accordance with the objectives of the development of agricultural sector of the region, including farm production. The delivery of products by the farmers' own means of transport is limited both by the availability of transport and by the number of drivers. Usually, the driving is done by the farmers themselves. Hiring a driver with his or her own vehicle means higher costs, which may be reasonable if delivery volumes are substantial and trips are frequent. In order for the delivery of farm produce to become an interesting opportunity for a business, the number of supplying farmers as well as the volume and frequency of deliveries must be large. These tasks can be accomplished more efficiently in cooperation with other farms. The development of platform-based delivery services, similar to cab services, could change the market for transport services, including in the portion of deliveries of farmer perishable products.

Participation of food hypermarkets in the farmer product delivery system using pickup points is reasonable because there is a well-developed hypermarket network in place, the infrastructure is effectively organized, and appropriate power supply capacities and equipment are available; besides, the hypermarkets themselves achieve a positive result. The customer traffic intensified by people ordering farmers' products to be collected at the pickup point will help increase

the turnover of other products. The availability of large retail space in the hypermarket will not create problems with the location of the appropriate refrigeration units. In addition, many hypermarkets are located on the borders of St. Petersburg, which reduces the distance from the farm to the storage and pickup point and makes delivery more convenient and less expensive.

6. State Financial Support Policy Options

State financial support can be provided to farms with the help of subsidies, tax breaks, and concessional lending.

State subsidies can compensate for the shortage of cash for the wages of hired employees. At the same time, subsidizing means that a certain proportion of the relevant cost item is covered by the farm's own funds and regional or federal budget funds.

Tax breaks (or deferrals) help reallocate financial flows to future periods. It is important to note that this measure becomes effective only for an operating enterprise where a cash gap due to problems with the sales of some products can be solved by postponing mandatory payments to a later date. At the same time, tax breaks as a one-off measure require resumption of a standard schedule for tax and duty payments in the future. In other words, at the end of the tax break period the farmer will have to repay the tax arrears and make the current tax payments.

Granting soft or concessional loans is associated with reduced returns on assets during the pandemic due to the reduction of sales, reduced product prices, and additional expenses for delivery of finished products to customers' homes. Therefore, lower interest rate loans to farmers will help save at least part of their profits. In these cases, the government should provide banks with additional financial resources at reduced rates, otherwise the banking sector's efficiency would decrease.

Since the government of the Russian Federation has not classified agricultural organizations as entities affected by the pandemic, no additional financial support measures are being implemented for farms. Meanwhile, the Association of Peasant (Farmer) Businesses and Agricultural Cooperatives of Russia (AKKOR) has repeatedly informed the government and the Ministry of Agriculture about serious problems faced by farmers during the pandemic. The growth of farms that has been underway over the past few years may come to a halt because of sales problems and the lack of attention from authorities. Financial resources to support farms would be insignificant, as the number of such farms is small compared with the number of other affected organizations. At the same time, the effect of such support would be tangible and would be associated with economic, social, and environmental factors. Anti-crisis support to farms would expand production and engage the local population in economic relations, both in the form of additional employment and through increased sales. It is no secret that rural residents in Russia do not keep as many cows as they used to 30 years ago; therefore, local residents are also consumers of farm products. Environmentally friendly technologies of farm production produce a positive effect on the region's environment, soil quality, and biodiversity.

The complexity of financial support mechanisms is related to budget policy and the need to take into account the regulatory framework for subsidies, both in terms of time and in terms of amounts of financial support.

7. Information Assistance Policy Options

Information assistance from government authorities could be a solution to the problem of temporary gaps in the supply chains of inputs (packaging material, containers, fodder, etc.). The main resource for farmers is time, which is always insufficient because of the high labor intensity of production. In these circumstances, using the assistance of specialists from a relevant government committee to find new suppliers could be more effective.

Larisa Pukhlyakova, the head of Semeynaya Eco-Farm, spent quite a lot of time and effort looking for new suppliers, as supply problems had come up unexpectedly. The consulting assistance of the regional authorities in the search for suppliers would have made it possible to focus on setting up the sales system and communicating with consumers.

8. Labor Shortage Policy Options

Because of the shortage of labor (mainly migrants from the Kyrgyz Republic) and the emergence of new marketing tasks, more demands are made on the time of farmers. In this context, it is very important

to simplify the document flow with public authorities and banks. After a hard working day, the head of the farm is engaged in registering accounting and other documentation. The solution to this problem should be the simplification of document flow, as well as the possibility of remote electronic submission of documents. This will save working time and free it up for recreation and communication with the family. The experience of remote work with public institutions in the context of a pandemic should be extended into the future after the end of the pandemic.

The problem of the shortage of cheap labor from Central Asian countries is quite difficult to solve at the expense of the local population. The salary level of migrant workers is not attractive to local workers. In addition, unemployed local people do not want to engage in heavy physical labor on the farm, as other easier jobs can be found in St. Petersburg. Therefore, the dependence of farmers on migrant workers remains a major obstacle to development during the pandemic and quarantine restrictions. In the strategic view, the emerging global problems of international labor migration should be solved at the state level through the use of domestic resources, including from other regions.

Assignment

1. Assess the potential supply volumes of farm products to orphanages of Leningrad Oblast and St. Petersburg.

2. Assess the effectiveness of alternative methods of product delivery to the customer: delivery by him- or herself, delivery by courier service, self-pickup arrangements, and delivery to pickup point.

3. Develop an organizational plan for the transformation of a farm's sales system focused on the development of online sales.

Policy Recommendations

Three areas of nonfinancial support measures have been chosen as policy recommendations:

Advisory support

Advisory support to farmers should be organized by government authorities through short-term courses, including the use of telecommunication technologies and online courses. Training farmers on the basics of e-commerce and logistics would improve marketing efficiency. The Leningrad Oblast Committee for Digital Development is currently implementing the project DigitalCertificate.rf. Making training on product promotion in e-commerce part of this project would help farmers to organize communications with consumers more effectively. To develop these topics, it would be necessary to interact with universities in St. Petersburg. Organizational support and coordination of farmers' interaction with the regional authorities is provided by the Voluntary Union of Farmers of Leningrad Oblast and St. Petersburg.

Digital platform

The development of a digital platform for joint marketing of farm products can be carried out jointly with regional authorities. The Committee for the Development of Small and Medium Business and Consumer Market in the Leningrad Oblast is currently developing a local producers' marketplace project on the platform mestniyresurs.ru. Connecting farmers to the existing marketplaces Yandex Food and SberMarket will help expand sales markets and find new customers. Logistics in this case is more complicated, as the farmers are located far from the main hypermarkets. Farmers can deliver to a certain pickup point or a point-of-purchase store.

Public procurement of produce

Public procurement of raw agricultural produce to supply hospitals, health centers, kindergartens, and orphanages with fresh farm produce is one of the most important government objectives in ensuring food security during the pandemic. The government may purchase surplus products for redistribution or processing. Digital communications enable coordination of commodity flows online. Specialized committees are interested in developing farm supplies to relevant institutions. Difficulties in logistics limit the development of such activities — but, in this case, the government not only supports farmers but also obtains additional suppliers of quality products, which is especially important in a pandemic.

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Abbreviation

AKKOR	Association of Peasant (Farmer) Businesses and Agricultural Cooperatives of Russia

Photo credit: Bodnarphoto on depositphotos

The Impact of the COVID-19 Crisis on Nutrition in Yerevan, Armenia

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Executive Summary

The ongoing COVID-19 pandemic influences not only public health but also food security and nutrition on a global scale. Eventually, as a result of this pandemic and the consequent quarantine-related situation, alterations in dietary quality can be expected. From this perspective, the collection, analysis, and management of data about the nutrition situation and the development of appropriate policies in the context of COVID-19 should be considered a national priority issue. This case study is the first attempt toward assessing the impact of the COVID-19 crisis on nutrition and dietary patterns in the capital city, Yerevan, where one-third of the population of Armenia resides.

Based on similar surveys conducted by different international organizations, the Diet Survey-COVID-19 questionnaire was developed for this case study. There were 471 of these surveys conducted among the adult (aged 18–65 years old) and elderly (aged 66 years old and above) populations of Yerevan. The survey results highlight the fact that, during the state of emergency, the majority of Yerevan's population has not faced any food availability problems. However, 29.9 percent of the people have had a food deficit and 42.5 percent have been forced to change their favorite food to a cheaper alternative because of financial reasons. Overall, during the COVID-19 confinement, the dietary habits of the population of Yerevan have deteriorated to a greater extent than they have in more developed countries.

The following elaborated policy options are applicable:

- Collect evidence-based data for the assessment of the COVID-19 impact on dietary patterns and quality.
- Craft nutrition policies.
- Establish a multilevel framework of action to support nutrition.
- Invest in e-commerce to support local businesses and reduce the spread of COVID-19.
- Prevent panic buying and hoarding.
- Facilitate financial support for agriculture.
- Implement social protection and food assistance programs.
- Promote enhancing consumer awareness on nutrition.

The stakeholder groups are consumers, including target groups; agricultural producers; state authorities; and donor organizations.

Background

Armenia is an upper-middle-income (World Bank 2019), landlocked, net food-importer country that is vulnerable to external shocks (UN/WFP 2018). On July 10, 2020, the new National Security Strategy of the Republic of Armenia was issued; Paragraph 7.20 of this strategy states that the government is committed to taking active steps to ensure both physical and economic access to diversified foods, thus meeting health requirements among all layers of the population (RA 2020). Besides the diet's quantity, its quality is an essential factor. Armenia's national food security programs concentrate mainly on food availability, emphasizing the rate of growth of agricultural production and self-provision. However, policy gaps in food accessibility (availability), evaluation of sources and diversity of calories, and nutritional status remain.

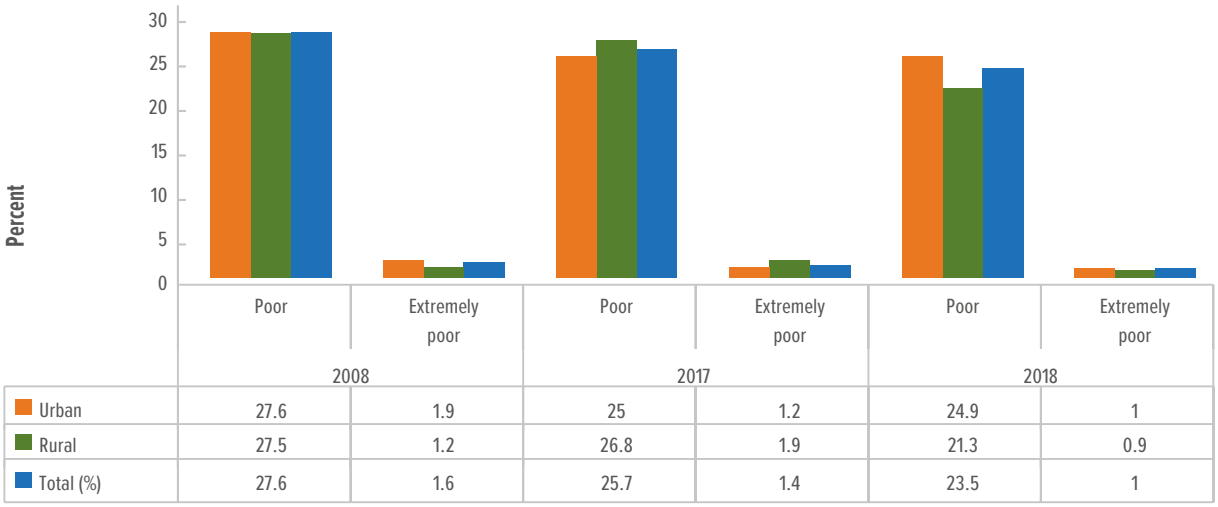
Despite the growth in food availability during 2008–15, the population's food consumption pattern has not changed significantly toward diversification or an increased consumption of more nutritious food items. This is mainly because of limited financial access to nutritious food, a lack of healthy nutritional habits, a lack of awareness of the importance of good nutrition, and a lifestyle that is not conducive to consuming a healthy diet (WFP 2018). Experiences from a number of countries indicate that the state of lockdown contributed to unhealthy eating habits (such as an increase in the intake of high-calorie foods and sugars, frequent snacking, etc.) that can be associated with increased risk of noncommunicable diseases (NCDs).

Existing evidence indicates that a balanced and a healthy diet has an essential role to play in improving human immunity and preventing NCDs, which are risk factors for higher morbidity and mortality of COVID-19 (Kass, Duggal, and Cingolani 2020).

In Armenia, more than 100,000 coronavirus cases have been identified, and more than 1,500 deaths have been reported.[1] It is noteworthy that the majority of those who died from COVID-19 had concomitant diseases, including NCDs.

Even though the poverty rate decreased over 2008–18 both in rural and urban communities, including Yerevan (Figure 1), it is expected that poverty and food access will be a significant problem during the pandemic. During the state of emergency, 48 percent of the population in Yerevan has been unemployed, with 23 percent having lost their jobs due to COVID-19 (Table A3). Sixty percent of the population of Yerevan who had an essential diet change have been unemployed, with 41 percent having lost their jobs directly due to COVID-19 (Table A4).

Figure 1: Poverty Rate in Urban and Rural Communities in Armenia, 2008, 2017, and 2018



	Poor	Extremely poor	Poor	Extremely poor	Poor	Extremely poor
	2008		2017		2018	
Urban	27.6	1.9	25	1.2	24.9	1
Rural	27.5	1.2	26.8	1.9	21.3	0.9
Total (%)	27.6	1.6	25.7	1.4	23.5	1

Source: ARMSTAT 2019.

Note: The *poor* are defined as those whose consumption per adult equivalent is below the upper national poverty line, whereas the *extremely poor* are defined as those whose consumption per adult equivalent is below the food (extreme) poverty line.

This case study is the first attempt toward assessing the impact of the COVID-19 crisis on nutrition and dietary patterns in the capital city, Yerevan, where one-third of the population of Armenia resides. Based on the results of the survey carried out in Yerevan, the majority of the population has not faced any food availability problems during the state of emergency. However, for financial reasons, 29.9 percent of the people have experienced a food deficit and 42.5 percent have been forced to change their favorite food to a cheaper alternative (Table A1).[2]

Seventy percent (336 respondents) of the population of Yerevan has changed their diet during the state of emergency. Out of this, approximately 15 percent of the respondents (70 people) made an essential change in their diet, with females being more inclined to a change than males. Approximately 60 percent (226 people) of the population was exposed to a slight variation in diet, with males being more inclined to a change than females (Table A2). In both cases, the change was not statistically significant (p = 0.187) between male and female groups. Of the population of Yerevan, 27 percent decreased their intake of meat products, 30 percent decreased their intake of fast food, and 40 percent increased their intake of pastry. Regarding fruits and vegetables, 30 percent reported a decreased intake, while another 36 percent reported an increased intake (Figure A1).

Approximately 33 percent of the people who had an essential diet change have an average monthly household income of up to 70,000 Armenian drams (Table A5).[3] This is equal to the international poverty line for a two-person household. During the state of emergency, the decline in fruit and vegetable intake among the population of Yerevan was the highest among those who earn the least. For example, it has

[1] Data are as of November 5, 2020, provided by the National Center for Disease Control, Armenia. Because of the second wave of the pandemic, coronavirus case numbers increased sharply (the country experienced more than 2,000 confirmed cases and 20 deaths per day).

[2] The results of the diet studies and the corresponding tables (Tables A1 – A9) and figures (Figures A1, A2) are presented in the Annex of this case study.

[3] Exchange rate: US$1 = 481.615 Armenian drams. Data are as of November 7, 2020.

decreased among 31 percent of the people who earn up to 70,000 drams and among 25 percent of the people who earn from 70,000 to 150,000 drams (Table A6).

The poultry sector, the HoReCa (Hotel – Restaurant – Café/Catering/Casino) sector, and the tourism sector were exposed significantly. The usage and utilization of poultry has decreased with the drastic drop in the prices, indicative of a steep decrease in demand. The impact of the pandemic on the tourism and HoReCa sectors — especially on travel agencies, hotels, guest houses, and restaurants — has led to unprecedented difficulties. These sectors have to implement partial or complete cessation of companies' activities, job cuts, and lower wages. With no regular flights and drastically reduced international tourism, most tour agencies and operators in Armenia are reorganizing their work to survive the consequences of the pandemic and instead offer Armenians domestic tour packages. However, because of the quarantine-related situation in the country, the rapid decline in jobs and in the sector's opportunities continue.

One of the goals of this case study was to uncover the most vulnerable groups experiencing the most severe nutritional struggles due to COVID-19 in the capital city of Yerevan. Based on the survey, the following targeted group has been revealed: *People exposed to a food deficit for financial reasons during the state of emergency.* This group forms 29.9 percent of the population of Yerevan and is comprised of mainly retail sellers (9 percent), retirees (8 percent), and cleaners (8 percent). Of this vulnerable group, 45 percent has had a food deficit for financial reasons and 87 percent has been forced to change a favorite food to a cheaper alternative for financial reasons (Table A7).

Around 61 percent of these people decreased their intake of meat products, 54 percent decreased their intake of fruits and vegetables, and 39 percent decreased their intake of dairy products (Figure A2). During the state of emergency, 80 percent of the people exposed to a food deficit for financial reasons have been unemployed, with 48 percent having lost their jobs due to COVID-19 (Table A8). Approximately 87 percent of those who experienced an essential diet change have been unemployed, with 57 percent having lost their jobs because of COVID-19. Approximately 27 percent of the targeted population has an average monthly household income below 70,000 drams. Only 17 percent of the targeted group received food aid during the state of emergency, while 82 percent responded that they did not receive food aid.

Overall, during the COVID-19 confinement, the dietary habits of the population of Yerevan have deteriorated. This change in diet and eating habits is somewhat different from that of Italy, Spain, and Poland (Table 1),[4] where the population had a higher adherence to a healthy diet during the state of emergency (Di Renzo et al. 2020; Górnicka at al. 2020; Rodríguez-Pérez et al. 2020; Scarmozzino and Visioli 2020; Sidor and Rzymski 2020; Statista 2020).

Table 1. Food Intake Changes in Different Countries during the COVID-19 Lockdown

Variable	Yerevan, Armenia	Italy	Spain	Poland
Food availability problems	14.9%	6.4%	27%	32.2%
Changed diet	71.3%	50.4%	45.2%	47%
Unchanged diet	28.7%	49.6%	54.8%	53%
Ate more	17.5%	52.9%	36.3%	34%
Ate more homemade products	35%	40%	39.6%	48%
Ate more healthy food	9%	–	–	28%
Ate more unhealthy food	6%	–	–	19%
Fast/junk food intake	6.2% ↑ 32.5% ↓	29.8% ↓	5.1% ↑ 34.9% ↓	8.1% ↑ 36.6% ↓
Fruits and vegetables intake	36.1% ↑ 28.9% ↓	21.2% ↑ 8.7% ↓	25% ↑ 17% ↓	18% ↑ 19% ↓
Pastry/sweet food intake	38.9% ↑ 15.1% ↓	42.5% ↑ 13.5% ↓	26.5% ↑ 31.3% ↓	39.9% ↑ 29% ↓

Data sources: Di Renzo et al. 2020; Górnicka at al. 2020; Rodríguez-Pérez et al. 2020; Scarmozzino and Visioli 2020; Sidor and Rzymski 2020; Statista 2020.

Note: ↑ = increase; ↓ = decrease; — = not available.

[4] These countries were chosen because they were among the more exposed European Union countries.

Overall, both the review of various studies and the statistical analysis showcase the fact that, in Yerevan, COVID-19 had a more hazardous impact on nutrition and on dietary eating habits than it did in more developed countries, such as Italy, Spain, and Poland. More importantly, overall dietary habits in Yerevan have deteriorated, while in Italy and Spain people have shifted toward healthier dietary behaviors.

Policy Issues

Based on the situation review, the following main policy issues are identified.

Absence of Multilevel Framework of Action to Support Nutrition during the COVID-19 Pandemic

The Armenian government's policies were directed to ensure food security during the emergency. Significant improvements have been made in government aid programs to mitigate the economic impact of coronavirus and increase agrifood production by setting interest rates to 0 percent until the end of the year, implementing co-financing or refinancing instruments, and providing loan subsidies for farms and processors. However, the Armenian government's policies do not target vulnerable groups effectively. Very often, aid programs are not targeted to support the most exposed, vulnerable groups. For instance, aid programs for electricity and gas were based not on the income of the family, but on the family's consumption rate, giving the richest families more assistance than the poorer ones. Instead, that money could have been directed to purchasing poultry meat and distributing it to poor families in order to support both exposed farmers and consumers. Another issue is that the government did not implement any policy to provide food aid to vulnerable groups or retirees. Several private donor organizations helped elderly people by providing a basket of staple foods, but they did not consider the nutritional aspect of the basket.

The main reason for such poor targeting is the lack of a multilevel, interdisciplinary task force. Unfortunately, this leads to the implementation of unsuitable policies. An interdisciplinary approach and a multilevel framework of action are crucial for identifying important policies. Therefore, it is critically important for Armenia to establish an interdepartmental council for the coordination of food security and nutrition issues.

Lack of Public Awareness Related to Nutrition Issues during COVID-19

Nutritional disorders are associated with the level of awareness and training of the population; generative and breastfeeding habits; personal and household dietary patterns; and information regarding health promotion. The National Strategic Review of Food Security and Nutrition proposes six suggestions to accomplish the Sustainable Development Goal 2 (SDG2) Targets by 2030; one of the key milestones noted there is increasing public awareness about healthy nutrition building and maintaining a comprehensive evidence base (WFP 2018).

A cross-sectional descriptive study in Yerevan showed that the mean awareness regarding nutritional information was low, particularly concerning relationships between nutrition and diseases (Torchyan 2015). Especially during the COVID-19 pandemic, the health of the individual is strongly connected with his or her own nutritional awareness and choices. Hence, there is a need to actively communicate the information about how to optimize nutritional intake via a balanced diet and the use of good hygiene practices in food selection and preparation. It should be highlighted that, during the pandemic, actions taken to promote this kind of communication was not organized at a government level (for example, by the responsible governmental authority, which, in Armenia, is the Ministry of Health). In contrast, through social media, some nutritionists, health care professionals, and enthusiasts have delivered nutritional information on how to prevent COVID-19. Because of the lack of coordination, the various voices have been at times contradictory or given advice that was not evidence based.

Stakeholder Groups

Stakeholder groups fall into four main categories: state and government authorities, donor organizations, consumers, and agricultural producers.

State Authorities

The government has provided a coronavirus reversal package to support the homegrown economy, including the agricultural part of it (Government of RA 2020).

Ministry of Health (MoH). In order to protect the health of the population, the MoH is responsible for nutrition policy: identifying and assessing existing risk factors and developing a clear policy to resolve them. Although the MoH is responsible for nutrition policy, there is neither a guidance document nor any official information regarding food and nutrition options during quarantine and emergencies or any recommendation for food aid during quarantine and self-isolation.

Ministry of Economy (MoE). The MoE was responsible for the programs to address the macroeconomic impact of COVID-19. The general objective was to support (through co-financing or refinancing or subsidizing the interest rate of targeted loans) separate business entities, including farmers, with a good credit record to solve possible liquidity issues resulting from the COVID-19 outbreak.

The Ministry of Labor and Social Affairs (MoLSA). This ministry is responsible for support programs, particularly for citizens who became unemployed during the state of emergency. Beneficiaries included families with a child under 14 years of age; citizens who lost their jobs between March 13 and March 30; pregnant women who did not have a job as of March 30 or who are not married, or whose husband lost his job between March 13 and March 30; and individuals who were employed in exposed sectors (hotel, public catering, tourism services, etc.). More than 22 actions were adopted and implemented.

Yerevan Municipality. To implement the protection measures for the Yerevan population, a number of activities were adopted, including the provision of food, water, and basic necessities to patients in quarantine (Mayor of Yerevan 2020).

A review of the official websites of the stakeholder ministries and Yerevan Municipality, and discussions with their representatives, showed that in the majority cases only the data on governmental assistance programs (one-time financial aid) are published on the websites. Nutritional assistance policies have not been undertaken. Moreover, there is no developed and published national nutrition policy for the COVID-19 period.

Donor Organizations

The World Bank Group is working with governments and worldwide partners to screen homegrown agricultural and food supply chains, assess the loss of employment and its influence on individuals' capacity to purchase food, and guarantee that food frameworks keep working, regardless of COVID-19 challenges. Numerous projects are set up to improve food and nutritional security status in Armenia, adjusted to basic key structures, including the Armenia Development Strategy for 2014–2025 and the Armenia-United Nations Development Assistance Framework 2016–2020. Vulnerable rural families in Armenia received livestock and feed support from the Food and Agriculture Organization of the United Nations (FAO), can better adapt to the circumstances created by the COVID-19 pandemic and obtain more balanced nourishment (FAO 2020a; FAO 2020b). With the steady evolution of the COVID-19 pandemic from a crisis to a financial emergency, the World Food Programme (WFP) has planned a three-stage response: (1) address short-term needs and tackle the well-being and food crisis; (2) address financial effects; (3) guarantee the extended recuperation of Armenia.

Consumers

One of the crucial stakeholders of the case study are consumers, especially target groups including vulnerable groups in Yerevan, since the COVID-19 crisis poses new challenges for the individual to keep a healthy diet. In particular, people working in casual labor, services, restaurants, and retail, for example, face massive job losses (in part due to social distancing policies, and in part due to the broader economic slowdown) and hence they have had a drop in their incomes. Incomes have an essential impact on dietary patterns of those individuals. Given that many dietary changes relate to affordability and hence food prices, policies directed toward farmers can affect the diets of consumers.

Agricultural Producers

Agricultural producers include both urban and rural producers. Yerevan is highly dependent on rural production. Non-staple food producers face huge losses

as utilization patterns move toward less expensive staples. Supply chain and demand disruptions affect farmers' ability to get meat and produce to market. To reduce the impact of COVID-19, agricultural producers need financial and fiscal support, as well as measures allowing the smooth movement of labor and transportation.

Policy Options

With regard to the country-specific dietary policy issues due to the impact of the COVID-19 pandemic on the nutrition status of Yerevan's population, the following elaborated policy options are applicable.

1. Collect Evidence-Based Data for the Assessment of the COVID-19 Impact on Dietary Patterns and Quality

Understanding who is suffering from hunger and malnourishment is essential to build momentum for action, to guide decision-making, and to engage and empower the vulnerable as agents. To save lives in COVID-19 and in any future crisis requires robust monitoring. The need to invest in enhanced monitoring systems and predictive analysis has become apparent in the context of COVID-19. The collection, analysis, and management of data on the nutrition situation in the context of COVID-19 should be carried out in a continuous manner. At the same time, the appropriate documentation and dissemination of the gathered evidence should be carried out. It is also important to ensure the effective use of the available nutrition-related databases of previous surveys and situation analysis. Unfortunately, neither the MoH nor the MoLSA have this kind of data. The appropriate policy elaboration needs the strong cooperation of responsible ministries, academia, and research organizations that can generate appropriate data. The data community needs to adapt and integrate its tools to provide a timely, reliable measurement of the impact of COVID-19 on nutrition and to make the data easy to access, interpret, and use by policy makers to enable them to make evidence-based decisions (UN 2020).

2. Craft Nutrition Policies

Armenia's national policy for preventing the disease does not include any action to tackle nutritional problems related to the lockdown. Taking into consideration the successful experiences of other countries, Armenia can implement a set of actions to support national food security and nutrition. First and foremost, following the FAO recommendation, the Armenian government should set up inter-ministerial mechanisms responsible for national food security and nutrition strategies, policies, and programs. Also, it is crucial to establish multistakeholder platforms and frameworks at local and national levels to design, implement, and monitor food security and nutrition strategies, legislation, policies, and programs (FAO 2017). Setting up this kind of a platform will help design effective food security and nutrition policies.

3. Establish a Multilevel Framework of Action to Support Nutrition

It is important to highlight that many countries implemented a multilevel framework action to mitigate the risks of the pandemic on nutrition and food security. For example, the Chinese government targeted its problems by immediately adopting multi-framework "Vegetable Basket" policies, which not only prevented the collapse of the food supply chain but also lessened the adverse impact on food supplies and farmers (Zhang et al. 2020). Following the examples of China and Italy — where from the very beginning of the pandemic several ministries (such as the Ministry of Transport and Ministry of Agriculture and Rural Affairs) came together and jointly issued a notice ensuring the normal circulation of agricultural produce — in Armenia, the MoE and the Ministry of Territorial Administration and Infrastructure should have coordinated the smooth transportation of agricultural inputs and outputs since the early stages of the lockdown by complying with the social distance and sanitary measures (FAO 2019). Thus, it is crucial for Armenia to design policy options taking into consideration the importance of setting up inter-ministerial mechanisms as well as multistakeholder platforms and frameworks.

4. Invest in E-Commerce to Support Local Businesses and Reduce the Spread of COVID

To mitigate the risks of the second wave of the pandemic arising from visiting public eating places, in most European countries, all the restaurants, bars, and cafés operate until midnight at the latest (The Guardian 2020). China used e-commerce and delivery companies for contactless delivery of fresh groceries. It must be stated that the Chinese government played a major role in boosting e-commerce. China's Ministry of Industry and Information Technology (MIIT) announced plans to accelerate digital infrastructure development and increased funding for e-commerce innovation. These actions led to an increased number of online shoppers in China, and there has been a surge in the orders of easy-to-prepare meals as well as fresh groceries (MFAT 2020). To address short-term labor shortages at some companies, China's Ministry of Commerce, jointly with the National Development and Reform Commission, encouraged closed restaurants, hospitality, and domestic service companies to negotiate with retail and express delivery firms to share their labor resources (Zhang 2020).

In Armenia, until now, most of the population prefers going to the shops. However, this leads to overcrowding, long queues, and, thus, to a higher risk of getting infected. E-commerce remains a novelty for many groups of people in Yerevan — because of unfamiliarity, a lack of disposable income, poor delivery infrastructure, or other reasons (Trade.gov 2020). Following the example of China and considering the adverse effect of the pandemic, the Ministry of High-Tech Industry of Armenia, jointly with the MoE, can work toward boosting online shopping in Armenia by providing funding for e-commerce. So, instead of giving funds to information technology (IT) companies (for providing online education to beginners), which are not significantly impacted by COVID-19, the government of Armenia should direct these finances toward developing an e-commerce sector and encouraging consumers to shop online more often. Moreover, instead of merely giving a one-time cash subsidy to service industry workers, the MoLSA could encourage redistribution of labor from closed companies (restaurants, cafés, etc.) to delivery services. This would encourage delivery services to hire more workers to meet the increased demand of online orders and would in some way offset the income lost by workers of closed companies.

5. Prevent Panic Buying and Hoarding

Since the spread of coronavirus in January and February, several countries have been subject to panic buying. For example, in China and Singapore, despite the urging of the government to stop hoarding, there was still a surge in demand for products for several days (CBS News 2020). Studying the examples of these countries, the government of Armenia could have prevented or controlled the panic buying that occurred in Armenia in mid-March and led to rapid inflation of certain products. During these kinds of shocks, the Market Surveillance Inspection Body of Armenia should act in a timely manner and spread awareness at the community level against panic buying in order to sustain food access and availability. Taking this action is crucial not only for preventing the possible disruption of market supply chains, but also for avoiding crowded queues in shops, especially when the virus has already entered the country and wearing masks is not mandatory.

6. Facilitate Financial Support for Agriculture

To ease the burden on farmers and promote local production, the government of Georgia encouraged farmers to produce more goods with import substitution potential, exempted them from paying both the 2020 irrigation tax and the accumulated irrigation tax of past years. Moreover, the government provided 50 percent state financing to purchase agricultural equipment and wrote off amelioration activity debts accumulated from previous years (StopCoV.ge 2020). A similar policy implemented in China benefitted farmers as a large stakeholder group. To ease the burden on farming enterprises, the Chinese government decided to reduce, defer, or exempt farmer's tax payments, rent, and social insurance premiums till the end of the year (Zhang 2020). In contrast to this, in Armenia the government helped farmers only by providing new loans of 0 percent interest and co-financing several of these loans only in special cases. So, instead of directing all financial institutions to provide interest-free loans to farmers, the government should have first targeted and supported those farmers who could not sell their produce to closed restaurants and hotels by at least waiving some of their accumulated taxes or debts. Therefore, although promoting local agricultural produce and avoiding reliance on food imports is important for countries such as Armenia, helping farmers who

have already been hit hard through tax waiving is more imperative than providing interest-free loans for future operations.

7. Implement Social Protection and Food Assistance Programs

From the perspective of supporting the nation's food security and the population's nutritional status, it is important to implement social protection and food assistance programs. During the first stages of the state of emergency and lockdown, some governmental and nongovernmental assistance programs were implemented in Armenia, including Yerevan. Nevertheless, it should be mentioned that the state assistance programs have not considered nutritional aspects and requirements in their assistance. Within the framework of this study, it was discovered that the ministries lacked proper guidance and support programs to tackle food security and nutrition problems. In this case, one of the most important and relevant policy options is for the competent authorities (as a separate stakeholder group) to respond appropriately to the issues raised by the pandemic. For example, the MoH, in collaboration with the corresponding organizations working in the field, should develop a national guidance on nutrition. The MoLSA must collect data on food vulnerability and design recommendations on how to prepare food aid programs. While designing support programs, the MoE must take into consideration the most vulnerable groups as well as nutrition. This policy option would help design food aid programs that consider the availability of nutrition-dense foods instead of only energy-dense and staple foods. This would merit consumers, who comprise a very large stakeholder group, and the most vulnerable groups would be targeted as well.

8. Promote Enhancing Consumer Awareness on Nutrition

Especially in the days of the pandemic, the promotion of consumer awareness — at both the individual level and the community level — is of high importance. Consumers should be informed that their daily diet and nutritional habits can contribute to the development of noncommunicable diseases, which is one of the considered risk factors for COVID-19. From this perspective, the promotion of healthy eating habits should be prioritized. This can be done in form of public awareness campaigns organized especially by the MoH, since it is becoming more and more crucial to avoid and prevent distribution of any kind of pandemic-related misinformation in social and mass media. As seen during the first days of the state of emergency, people thought that some food could be used as a cure for, or a treatment of, the virus infection, since the media provided a set of promising messages related to this false claim. From this perspective, specific methods to inform the public about adequate food consumption and intake might include public awareness campaigns, nutrition education, and television and radio announcements and interviews. Social safety net programs should likewise improve dietary quality, not just provide quantity.

There is a need to share knowledge, skills, and resources among partners as well as to enhance the involvement of stakeholders at policy and implementation levels to increase coherence and coordination of efforts. Stakeholders would include communities, civil society groups, the private sector, and farmer organizations. To fight malnutrition and hunger, a combination of policy-implementation instruments and public awareness campaigns to advocate for healthy diets and lifestyle is needed. There is a need to review and revise existing public awareness programs to promote SDG2 and its targets among the population. Approaches directed to social and behavior changes and their communication should be implemented at different disaggregation levels, including territorial and population group levels.

Assignment

Consider yourself in the position of a government with a limited budget and limited information about how to target the most vulnerable groups. Which of the policy options above needs to be prioritized in order to help the population deal with the short and long-term effects of COVID-19? Explain why these priority options should be emphasized more than the others and suggest ways this could be done.

Policy Recommendations

Based on the aforementioned information and options, the following recommendations are provided.

Continuously collect, analyze, and update information on the nutrition situation of the population, including identifying vulnerable and most exposed target groups who already faced nutrition issues (i.e., malnutrition) prior to the COVID-19-induced crisis. The MoH must be responsible for data collection and analysis. External data providers, such as research organizations and the Statistical Committee of RA, should be involved. The analysis should consider the vulnerable groups. The information must be shared with the MoLSA, which will be responsible for coordinating the governmental and nongovernmental net safety programs. These programs should prioritize the support and protection of the most vulnerable groups by implementing tailor-made nutrition-sensitive social protection programs.

In order to implement a multilevel framework to support national food security and nutrition quality, the Armenian government should establish an interdisciplinary working group or joint technical task force (JTTF), taking into consideration both the short- and the long-term impacts of COVID-19 pandemic. The working group or JTTF must be inclusive and involve governmental (MoH, MoE, MoLSA), nongovernmental (consumer and farmer associations and nongovernmental organizations, or NGOs) and donor organizations (e.g., the World Bank, the WFP, FAO), and the Yerevan Municipality, as well as research institutions. With regard to the effective practices of other countries, the working group or JTTF should establish a strategy and corresponding timeframe of actions on the promotion of a balanced diet and dietary diversification for the population. The COVID-19 pandemic has highlighted the need to raise public awareness and promote nutritional education among population. The healthy diet–related information should be simple and clearly presented through different platforms of social and mass media by the relevant stakeholders, especially by Armenia's MoH, in cooperation with scientific organizations and the Food Safety Inspectorate Body of RA.

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Abbreviations

FAO	Food and Agriculture Organization of the United Nations
HoReCa sector	Hotel – Restaurant – Café/ Catering/Casino sector
IT	information technology
JTTF	joint technical task force
MIIT	Ministry of Industry and Information Technology (China)
MoE	Ministry of Economy
MoH	Ministry of Health
MoLSA	Ministry of Labor and Social Affairs
NCDs	noncommunicable diseases
NGO	nongovernmental organization
RA	Republic of Armenia
SDGs	Sustainable Development Goals
SPSS	Statistical Package for the Social Sciences (software)
WFP	World Food Programme

Annex 1

Based on similar surveys conducted by different international organizations (the University of Nottingham, the University of Granada in collaboration with other partners in Europe, the International Food Information Council Foundation, etc.), the Diet Survey-COVID-19 questionnaire was developed. The questionnaire included 16 questions divided into four different sections: (1) personal data, (2) food security information, (3) dietary eating habits information, (4) and income and financial support information.

The survey was conducted by telephone from July 23 to August 11, 2020, among 471 adult (aged 18–65 years old) and elderly (aged 66 years old and above) people of Yerevan, including target groups.

Since the survey aimed to also include a target group of the population in the diet survey, the NGOs that were involved in some food assistance programs during the quarantine period have been asked to provide the contacts (only phone numbers) of people who received the support.

Each questionnaire was transmitted to Statistical Package for the Social Sciences (SPSS) software for further statistical analyses.

Table A1: The State of Food Security of the Population of Yerevan (% of Respondents) during the COVID-19 Emergency

Food Security Questions	Yes (%)	No (%)	Prefer not to answer (%)
During the State of Emergency have you ever faced any food availability problems after March 16?	14.9%	84.9%	0.2%
During the State of Emergency have you ever had a food deficit due to financial reasons?	29.9%	69.9%	0.2%
During the State of Emergency have you ever been forced to change your favorite food to a cheaper alternative due to financial reasons?	42.5%	57.1%	0.4%

Table A2: Changes in Diet of the Population of Yerevan (% of Respondents) during the State of Emergency

Has your diet changed during the State of Emergency?	Total (%) (*n* = 471)	Male (%) (*n* = 230)	Female (%) (*n* = 241)
Yes, essentially	14.9%	11.3%	18.3%
Yes, slightly	56.5%	59.6%	53.5%
No	28.7%	29.1%	28.2%
Total	**100.0%**	**100.0%**	**100.0%**

Note: n = number of respondents.

Figure A1: Change in Food Intake among the Yerevan Population (% of Respondents) During the COVID-19 Emergency

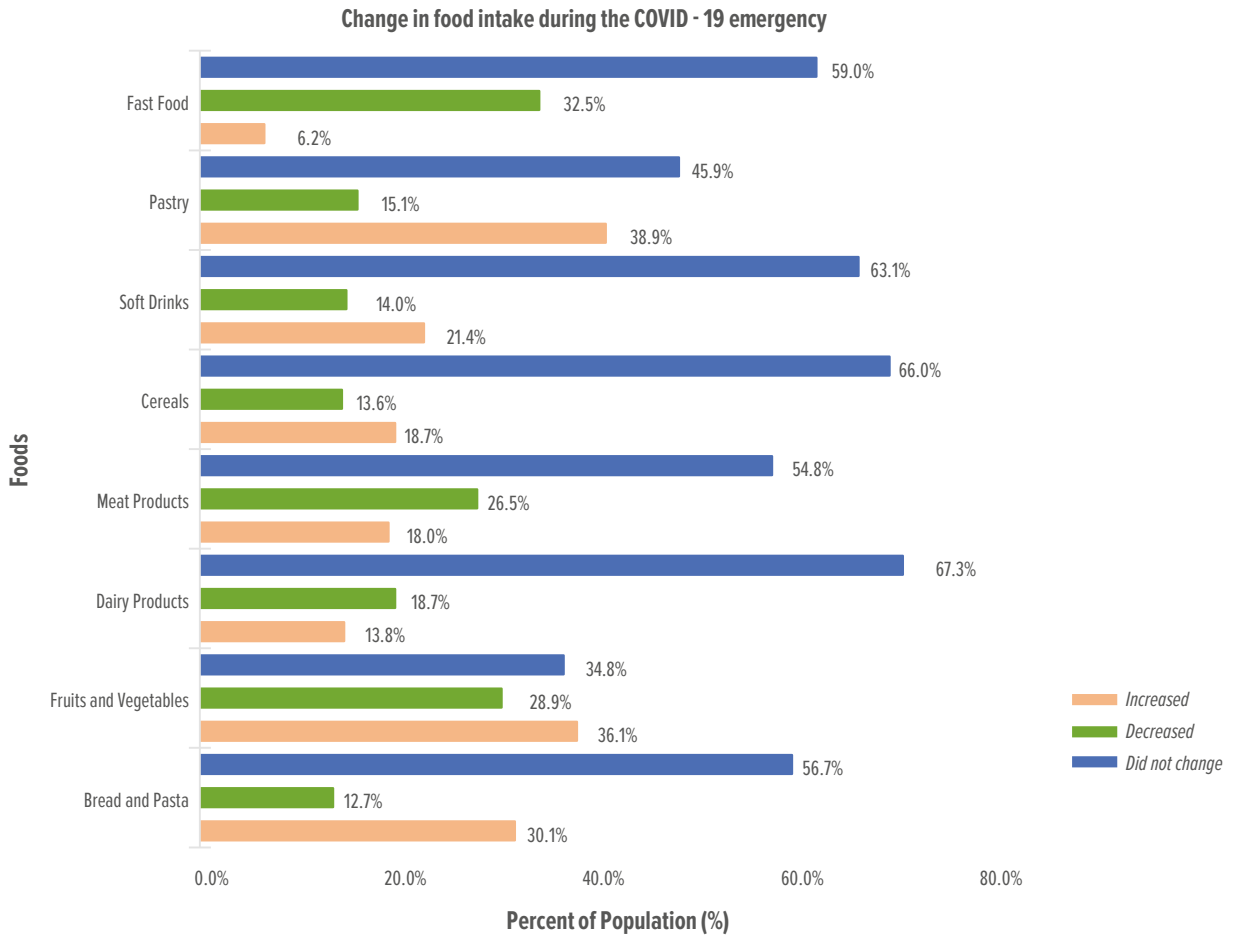


Table A3: Employment Status of the Population of Yerevan (% of Respondents) During the State of Emergency

Employment Status	Percent of Respondents (%)
Employed	52.0%
Unemployed due to COVID-19	24.8%
Unemployed	23.2%

Table A4: Changes in the Diet of the Population of Yerevan (% of Respondents) Depending on Employment Status During the State of Emergency

Has your diet changed during the State of Emergency?	Employment Status	Percent of Respondents (%)
Yes, essentially	Employed Unemployed Unemployed due to COVID-19	37.1% 21.4% 41.4%
Yes, slightly	Employed Unemployed Unemployed due to COVID-19	57.5% 17.7% 24.8%
No	Employed Unemployed Unemployed due to COVID-19	48.9% 40.7% 10.4%

Table A5: Changes in the Diet of the Population of Yerevan (% of Respondents) Depending on Income During the State of Emergency

Has your diet changed during the State of Emergency?	How much is your average monthly household income? (Armenian drams)	Percent of Respondents (%)
Yes, essentially	Up to 70,000	32.9%
	71–150,000	17.1%
	151–250,000	7.1%
	251–400,000	18.6%
	More than 400,000	7.1%
	Prefer not to answer	17.1%
Yes, slightly	Up to 70,000	9.8%
	71–150,000	19.9%
	151–250,000	26.3%
	251–400,000	17.3%
	More than 400,000	9.0%
	Prefer not to answer	17.7%
No	Up to 70,000	14.1%
	71–150,000	17.8%
	151–250,000	17.0%
	251–400,000	14.1%
	More than 400,000	9.6%
	Prefer not to answer	27.4%

Note: Exchange rate: US$1 = 481,615 Armenian drams.

Table A6: The Decline in Fruit and Vegetable Intake among the Population (% of Respondents) of Yerevan Depending on Income Curing the State of Emergency

Has your fruits and vegetables intake changed during the State of Emergency?	How much is your average monthly household income? (Armenian drams)	Percent of Respondents (%)
Declined	Up to 70,000	30.9%
	71–150,000	25.0%
	151–250,000	17.6%
	251–400,000	10.3%
	More than 400,000	4.4%
	Prefer not to answer	11.8%

Note: Exchange rate: US$1 = 481,615 Armenian drams.

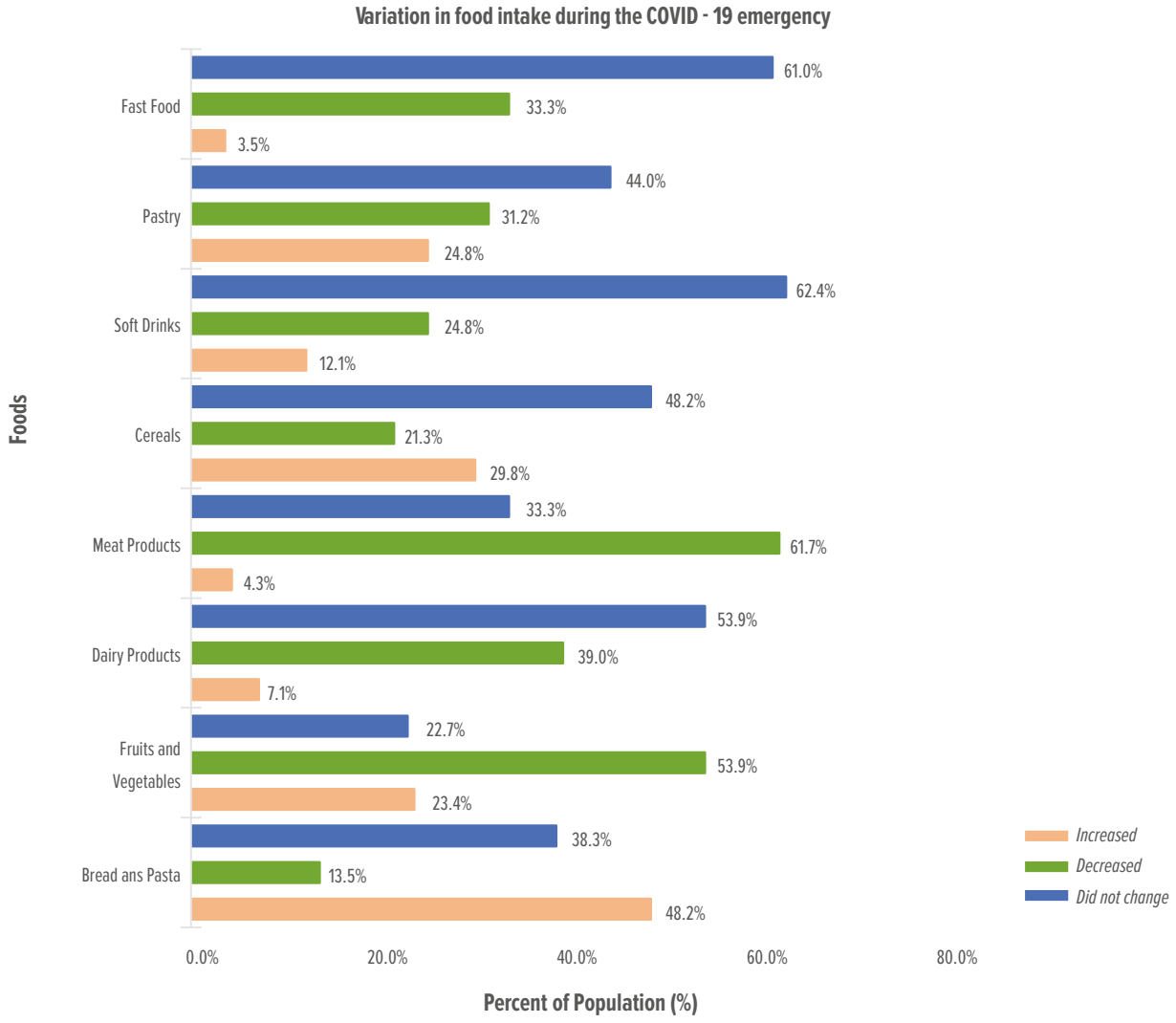
Table A7: The State of Food Security of the Targeted Population of Yerevan (%) During the COVID-19 Emergency

Food Security Questions	Yes (%)	No (%)	Prefer not to answer (%)
During the State of Emergency have you ever faced any food availability problems after March 16?	44.7%	54.6%	0.7%
During the State of Emergency have you ever been forced to change your favorite food to a cheaper alternative due to financial reasons?	87%	13%	0.0%

Table A8: Employment Status of Targeted Population of Yerevan (% of Respondents) During the State of Emergency

Employment Status	Percent of Respondents (%)
Employed	21.3%
Unemployed due to COVID-19	31.2%
Unemployed	47.5%

Figure A2: Variation in Food Intake among Targeted Populations of Yerevan (% of Respondents) During the COVID-19 Emergency



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The Impact of COVID-19 on the Armenian Fruit and Vegetable Sector

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Executive Summary

This case study aims to present key challenges faced by the Armenian agriculture sector as a result of the COVID-19 pandemic and to formulate policy recommendations. It will assist policy makers determine their actions for overcoming implications of the crisis and will aid higher education teachers and students to delve into the real-world cases for studying policy responses to crises. The case study focuses on the fruit and vegetable sector as the main production and export component of the agriculture sector in Armenia.

The main COVID-19-related policy issues concern logistical disruptions, agricultural input constraints, market performance disturbances and uncertainties, soaring costs, and income losses within the agricultural sector. In this unprecedented COVID-19 crisis setting, there is also a lack of experience and understanding of impacts and challenges — especially in the agrifood sector, which is at the core of ensuring food security and nutrition. The need is highlighted for evidence-based support and mitigation policy measures to prevent the health crisis from becoming a food crisis.

Within the scope of the study, relevant stakeholder groups include (1) producers: smallholder farmers, farmer cooperatives, and agribusiness small and medium enterprises (SMEs); (2) processors that process and market vegetables and fruit; (3) traders that market and trade vegetables and fruit, including wholesalers and retailers as well as international and national logistical entities; and (4) government bodies, financial entities, scientific community organizations, donors, and nongovernmental organizations that support, regulate, and monitor the functioning of the food value chain.

Policy options that have been formulated include bridging logistics gaps and enhancing the enabling institutional environment for effective delivery of fruit and vegetable products, enhancing vegetable seed production systems, developing domestic demand for fruits and vegetables and promoting a healthy diet, improving conditions for the export of fruits and vegetables, developing consolidation centers for fruits and vegetables, and accelerating digital transformation.

Background

During both stable and crisis times, agriculture and food systems have always been critical for addressing the issues of reducing hunger and poverty and ensuring food security and nutrition by increasing the quantity and diversity of food and nutrition, driving economic transformation, and providing a primary source of income for the poorest (EC 2016). The COVID-19 pandemic reinforced this role by spotlighting the vulnerability of food systems on many fronts, including logistical bottlenecks; travel and trade restrictions that influence the complex flow of people, production inputs, and foodstuffs; and price increases and falling revenues that have devastating effects, especially for food-insecure countries, that compound the health crisis (Hamilton 2020). In some countries, one of the biggest impacts of COVID-19 is on food security, seen through limited access to food, restrictions on labor and imports, and price fluctuations (Buchler 2020).

Armenia, along with the rest of the world, has also faced the spread of COVID-19. The first imported COVID-19 cases in the country were registered in March 2020 and spread across all regions. Unfortunately, confirmed cases have been increasing during the writing of this paper in the fall of 2020.

To defeat the pandemic and minimize the risks, in March 2020 the government declared a state of emergency that was extended several times. Travel restrictions were imposed at all border checkpoints of Armenia. Measures also included shutting educational and recreational entities, prohibiting events, restricting movement within the country, and imposing quarantine actions. Some of the restrictions on business and movement were removed starting in May 2020.

The unprecedented health crisis was accompanied by socioeconomic challenges for all sectors and their impact on people's lives, exemplified by Armenian businesses being closed, people losing their jobs, and shrinking remittances, causing additional stress to already vulnerable groups. Poor households, including small farmers, often depend on income from casual labor along food value chains that became unavailable under lockdowns. Though the agriculture sector is in a relatively resilient edge of vulnerability, its supply chain is highly dependent on other service subsectors that have experienced strong adverse impacts, especially related to export industries, tourism, and entertainment. The Armenian fruit and vegetable sector is no exception. It played a particularly relevant role during the COVID-19 crisis by guaranteeing the supply of safe, nutritious, and healthy food, which is set among key priorities for the government. The government initiated an unprecedented economic package of US$300 million to mitigate the impacts of the current situation, including in the agriculture sector (Inecobank 2020).

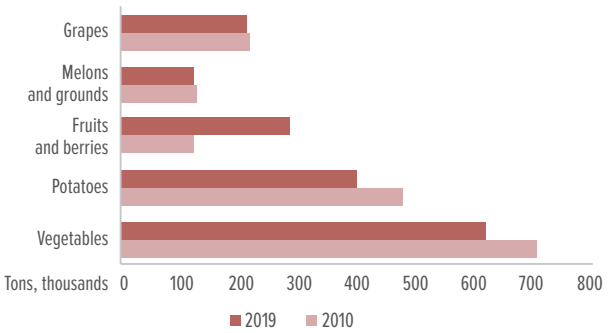
Armenia's economy in the pre-COVID-19 period showed 7.6 percent growth in 2019 (Azatutyun 2020). However, the situation changed radically in March 2020 with the stringent lockdown introduced to fight the pandemic. Unprecedented national and global realities are expected to impact Armenia's economy and livelihoods in both short- and long-term perspectives, particularly hitting the poor and vulnerable groups. In the meantime, 24 percent of the population was already living below the poverty line (ARMSTAT 2019) and about a half million people were food insecure (WFP 2018). Government projections for 2020 show an economic contraction of 1.5–2.0 percent. Already, in March 2020, overall economic activity in Armenia declined by 5 percent in comparison with the same period last year (ARMSTAT 2020). Moreover, the International Monetary Fund (IMF) projects a 5.5 percent recession (Azatutyun 2020) for Russia, Armenia's main trading partner and the source of multimillion-dollar migrant remittances that comprise 12 percent of the country's gross domestic product (GDP) (World Bank 2018). A fall in remittances will affect households' demand for improved nutrition and their ability to pay for food, creating a food shortage and jeopardizing immediate livelihood needs. Furthermore, Armenian exports and imports of goods and services are also projected to drop by 22 percent and 18 percent, respectively (Azatutyun 2020). Armenia is a net importer of food. Reduced demand and reduced exports will negatively impact food production, supply, employment, and earnings within the system. All these elements raise the country's vulnerability to disruptions of food systems and food security. Moreover, the largest share of the rural population's revenues comes from agriculture and hired labor, making poverty and vulnerability largely contingent on agriculture and food system development.

The Fruit and Vegetable Sector in Armenia

Development of the fruit and vegetable sector in Armenia is important because it is complementary to ensuring food security and nutrition, it enables farmers and other value chain businesses to generate income, and it is relatively more interconnected and therefore more influential than other agricultural subsectors. The regular consumption of a variety of fruits and vegetables is also crucial for a well-balanced diet and avoiding noncommunicable diseases (FAO 2015).

Overall, the fruit and vegetable sector is one of the most important agricultural sectors and it accounts for the highest production volumes. During last few pre-COVID-19 years, this sector has shown stable development in terms of produced volumes, with a registered significant increase in the production of fruits and berries (Figure 1). At the same time, the fruit and vegetable sector suffers from postharvest losses reaching 30–40 percent loss during harvest and postharvest stages (Urutyan 2013).

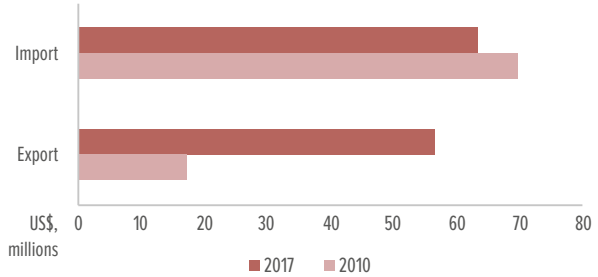
Figure 1: Production of Fruits and Vegetables in Armenia



Source: Original figure based on data from ARMSTAT, https://www.armstat.am/en/?nid=82&id=2236.

Fruits and vegetables are mostly exported to Russia: over 90 percent of total exports. The rest goes to Belarus, Belgium, Georgia, Iraq, Kazakhstan, Qatar, the United States, among others (Arka News Agency 2018). Since 2010, the export of fruits and vegetables has increased more than threefold — from US$18 million to US$57 million (Figure 2). Though fruit and vegetable imports dominate over exports, a positive trend was observed in the significant cutoff in the trade gap.

Figure 2: Import and Export of Fruits and Vegetables



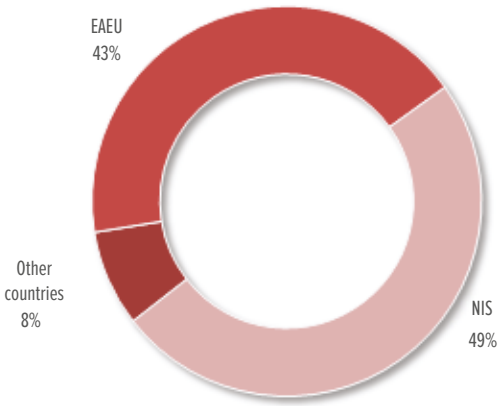
Source: Original figure based on data from FAOSTAT, http://www.fao.org/faostat/en/#data.

Generally, fruits and vegetables grown in Armenia are widely known for their taste, aroma, and external commercial interface. This is explained by the geographic position of Armenia, its natural climate conditions, its abundance of sunlight, the presence of qualitative fresh mountain waters, and other perfect conditions

for production of a wide variety of fruits and berries (grapes, apricots, peaches, plums, pears, walnuts, peanuts, watermelons, strawberries, cherries, raspberries, and so on) and vegetables (potatoes, tomatoes, cucumbers, eggplants, peppers, beans, cauliflower, garlic, and different leafy herbs: cilantro, dill, tarragon, basil, and so on).

A huge potential for growth is encapsulated in the export of high-quality processed fruits and vegetables. Largely, food processing is a basis for developing an export-oriented agriculture sector and safeguarding employment and incomes, especially for the rural population. The production of processed fruits and vegetables accounts for only 5 percent of the total food industry, but it dominates exports: processed fruits and vegetables make up over 70 percent of total food exports (ERDSC 2017). The majority of these exports are destined for the Eurasian Economic Union (EAEU) countries and Newly Independent States (NIS), excluding EAEU (Figure 3). In the meantime, food-processing capacities are not sufficient for the potential of farm production. Hence, further investments in the processing industry, along with development of small and medium size enterprises, are priorities (ERDSC 2017).

Figure 3: Export Destination of Processed Fruits and Vegetables



Source: Original figure based on data from ARMSTAT, https://www.armstat.am/en/?nid=82&id=2233.

Note: EAEU = Eurasian Economic Union; NIS = Newly Independent States.

Policy Issues

The policy issues revolve around limits to mobility and the transportation of goods and services, which have had far-reaching effects on supply chains and the entire agriculture sector. The issues are presented by type: disruptions to logistics, agricultural inputs constraints, market uncertainties, and the costs of inputs coupled with loss of income.

Logistical Disruptions

To repress the spread of COVID-19, the Armenian government introduced measures limiting mobility and the transportation of goods and services. This led to disturbances of the logistics in food supply chains with the effect of hindering the delivery of food and agricultural inputs and threatening food security and nutrition, particularly for the most vulnerable population. Viability of logistics is essential for the agrifood sector, especially for the fruit and vegetable subsectors of perishable goods. Logistics in food value chains embraces all activities that conditions the movement of agriculture inputs, products, and agriculture-related services (for example, processing, packaging, warehousing, and so on).

According to a Food and Agriculture Organization of the United Nations (FAO) study, in the fruit and vegetable sector of Armenia, 48 percent of respondents faced market access issues including transportation and boarder passing problems, with 9 percent reporting these issues as severe or extremely severe (FAO 2020a). All those that tackle transportation issues are engaged in the food processing sector and export products (for example, fruits) that are directed primarily to Russia and other EAEU countries. Transportation problems mainly relate to border and mobility restrictions. Moreover, those engaged in agrifood export activities had to wait longer than usual on the Georgian-Russian border checkpoints in Lars, which, in sequence, aggravated the issues related to sales. As a result, some of exporters ended up with enormous losses. This was especially the case for strawberry exporters. One respondent of the authors' survey for this case study noted that, at the Russian border, customs officers do not allow the drivers to present their documents themselves. Drivers are obligated to do this through brokers, which charge additional service fees for each truck. Furthermore, the procedures are now even more time-consuming: last year it took 1.5 hours to pass through the border; during the pandemic period it takes 24 hours. Moreover, before the crisis, drivers were accompanied by the owners of freight who were dealing with marketing and all related issues. Now only drivers are allowed to pass, and they need to solve all the marketing and other issues themselves.

Agricultural Input Constraints

Lockdown and transportation restrictions have also affected the availability of important agricultural inputs and services. An FAO (2020b) study highlighted a deficit of quality seeds, plants, and fertilizers and the lack of financial means to buy seeds, plants, and fertilizers. A United Nations Development Progamme (UNDP) survey reconfirmed the disruption of input value chains: almost 12 percent of respondents involved in the agricultural sector experienced challenges with the accessibility of seeds, fertilizers, and veterinary products (UNDP 2020).

Market Performance Disturbances and Uncertainties

There are market performance disturbances and uncertainty issues related to food service closures that halted demand, increased focus on local markets, and disrupted foreign trade performance because of external border closures and restrictions to movement. Armenian exports and imports of goods and services are projected to drop by 22 percent and 18 percent, respectively (Azatutyun 2020). Furthermore, Armenia is a net importer of food. Disruptions across the food value chain increase the probability of price volatility that — along with reduced demand and reduced exports — negatively impact food production, supply, employment, and earnings within the system. Moreover, the largest share of revenue of the rural population comes from agriculture and hired labor, making poverty and vulnerability largely contingent on agriculture sector development.

Mobility and transportation restrictions affected Armenian farmers' ability to access markets, hindered the sale of fruits and vegetables, and affected agricultural supply chains. According to the UNDP 2020 study, about 79 percent of respondents in the agriculture sector experienced decreased demand of their products and services. Agriculture sector impacts differ by sales markets. Exporting businesses were impinged upon the most severely. About 86 percent of exporting businesses and 35 percent of companies operating in local and foreign markets of agricultural products were negatively affected by COVID-19. This particularly relates to exporters of perishable food (strawberries, cherries, and apricots), which were also hit by border-crossing issues and weakened purchasing capacity of people in domestic and external markets.

In the meantime, according to the UNDP (2020) survey, 35 percent of businesses expect substantial economic decline in the upcoming one to two years, and business decisions are made according to these perceptions.

Soaring Costs and Income Losses

During the COVID-19 pandemic, the fruit and vegetable sector contrived to shift toward the channels for product distribution that were still open and adapted to the new realities. Nevertheless, fruit and vegetable production and marketing process actors encountered increased costs and income losses throughout all levels of the value chain. Production decreased because of logistical disruptions, emergency measures, and changes in distribution channels. The FAO study (2020a) shows that, even though greenhouse industry production volumes have not dropped substantially, the price decrease due to export restrictions and lower consumption was registered by more than half of the respondents. Moreover, respondents reported a shortage of seeds, plants, and fertilizers. Furthermore, the requirement of protective material, sanitizer, hygiene facilities, and organization of transportation for labor have increased production costs throughout the chain.

Income losses have made it difficult for farmers to pay the cost of loans and utility services. One of the respondents of the authors' survey noted that governmental assistance, which comes with a prolongation of loan payment, was of no help. After three months, people were required to pay immediately the total amount for three months, and significant fines have been imposed.

The workforce is also challenged by COVID-19 crisis. In the fruit and vegetable greenhouse industry, over 17 percent of respondents had to cut the number of workers by 10–30 percent (FAO 2020a). Job loss was higher in rural communities, where 40 percent of respondents mentioned losing employment. Generally, more young people lost their jobs than other age groups. Every third young employed person lost his or her job because of COVID-19 (UNDP 2020).

Stakeholder Groups

Several groups of stakeholders are impacted by the policy issues related to the pandemic. These include

agricultural producers, processors, traders, consumers, and government entities.

Producers

Agricultural production in Armenia is dominated by smallholder farms that, on average, possess 1.4 hectares, operate under a diversified production model, and ensure 96 percent of total agricultural production (Harutyunyan 2018).

Fruit and vegetable production is widely practiced in 500 communities in all regions of the country. During unfavorable years, up to 90 percent of the fruit yield can be lost because of early spring frosts or heavy late spring hail storms (OXFAM and BSC 2012). The situation is somewhat better in the vegetable sector. In the meantime, besides climatic hardships, poor irrigation, and lack of hail protection systems and other advanced systems, lack of cold storage facilities and inaccessibility of commercial storage facilities, lack of access to quality inputs, and immature post-harvest marketing techniques comprise the list of hardships that farmers face. All these challenges are exacerbated by COVID-19 and caused poverty and vulnerability in rural areas to increase drastically (UNDP 2020).

COVID-19 impacts on producers are manifested by worsening conditions for the sale of products, higher costs, lower incomes, and lower living standards of families. Producers are interested in improving product sales, including expanding supplies to supermarkets (which are increasingly developing), reducing costs, and getting financial support for both production and family income from the state.

Processors

The development of a competitive processing industry with high-quality and high-value agricultural products is among the priorities of the government (MOE 2020). The fruit and vegetable processing industry is an important branch of this effort. The strength of the sector lies in the high quality of local agricultural produce, the availability of qualified workers, and relatively low labor costs. The weakness lies in the lack of infrastructure, seen in a lack of structured cold chains, idle processing capacities, lack of contracting, and insufficient marketing. However, the processing industry is considered by experts to have high development potential, in particular via the establishment of foreign cooperation and investments.

Because of COVID-19, processors faced problems with the supply of raw materials, a decrease in demand for products due to a decrease in consumer purchasing power, and uncertainty of export sales channels, as well as increase in costs, including those related to sanitary requirements. The scope of their interests includes the stability of raw materials supply, lower prices for raw materials and other resources, improved conditions for the sale of products, and an increase in prices for their products.

Traders

Trading and logistics of the supply chain of fruits and vegetables in Armenia is relatively short if it terminates at the local markets, at the processors gate, or in the markets of the capital city Yerevan. In the case of longer supply chains, farmers passively wait for traders, intermediates, or exporters on farm gates or wholesale markets. Traders or their intermediaries can be entrepreneurs or representatives of processing enterprises. Formal agreements with traders or intermediaries are not common. Exporting companies and large processors are increasingly entering into the long-term contract business models with farmers; this helps in planning sales and creates incentives for better use of inputs. However, some farmers interviewed by the author of this study mentioned that, during the current COVID-19 year, processors did not comply with their contract agreements.

Fruits and vegetables in Armenia are sold through wholesale and retail agents. The retail segment is categorized into agricultural markets, shops, and supermarkets. Selling fruits and vegetables can also be performed on streets. E-commerce and food product delivery platforms are scarce in Armenia. However, with the mobility restrictions due to COVID-19, many consumers have intensified online purchases.

Overall, for this group of stakeholders, COVID-19 impacts include isolated interruptions in the supply of products, along with decreased demand and income. Traders are interested in stable supplies, reduced purchase prices, and the development of new sale channels and increasing sales, including via e-commerce.

Consumers

With the background of reduced outdoor food consumption and increased home consumption due to COVID-19, the fast-moving consumer goods sector remained robust, but risks associated with supply chains are still existent, especially in view of uncertainties related to the evolution of COVID-19 and its variants, both locally and globally.

The effects of COVID-19 on consumers also include loss of work and a drop in income, a decrease in the consumption of fruits and vegetables, and a change in shopping venues. Consumers are interested in purchasing fruits and vegetables in epidemiologically safe conditions, as well as in increasing economic and physical availability of those fruits and vegetables.

Government

The main responsible agency is the Ministry of Economy, which has authority over the agriculture department. Generally, decision-makers are challenged with establishing a business environment that would include small producers into the longer supply chain in the fruit and vegetable sector, which is complicated by the availability of many small producers (MOE 2020).

Since the COVID-19 outbreak, the government has introduced support programs to address social and economic impacts of the pandemic. Several programs refer to the agriculture sector. However, because of a number of issues, only a limited number of agricultural businesses could benefit from these support schemes (UNDP 2020). A USAID study (2020) shows that 29 percent of households in rural areas and 28 percent in urban areas are beneficiaries of any of the governmental social and economic programs intended to mitigate the results of the coronavirus. In the meantime, on the question of which programs they would advise the government to pay attention to during COVID-19 and immediately after, programs for farmers and agriculture have gotten the second most popular rating after health care services.

The government is interested in creating sustainable fruit and vegetable value chains that can function in emergency situations and continue producing fruit and vegetables, increase export earnings, and enhance the population's consumption of fruit and vegetables, as well as reduce poverty in rural areas enlarged by the pandemic.

Policy Options

1. Immediate Policy Options

Bridge logistics gaps and enhance the enabling institutional environment for effective delivery of fruit and vegetable products

In the conditions of a pandemic, measures are required for developing regulations for the operation over all stages of the fruit and vegetable value chain, taking into account the requirements of anti-epidemic protection, creating "green corridors" for all phases of the fruit and vegetable chain, and communicating information to all participants in the chain using digital technologies. Measures must also be taken to create a favorable institutional environment for the development of an effective delivery system by farmers and trade enterprises of fruit and vegetable products to end consumers. Sanitary and epidemiological requirements for people engaged in delivery services (personal protective equipment and health control), conditions for movement under quarantine conditions, as well as sanctions if the order is violated, are to be followed. This list can be supplemented with the development of a system of electronic payments and private transfers during a pandemic.

The development of rules for the movement of goods and mobility of people involved in the vegetable and fruit value chain and the sanitary and epidemiological rules requires interaction and cooperation of the Ministry of Finance, the Ministry of Economy, the Ministry of Health, the Food Safety Inspection Body, and farmer associations for finding compromise solutions. Tightening requirements for the actors in the fruit and vegetable value chain increases the costs of production, demotivating fulfillment of rules. In this regard, it is proposed that part of increased costs be reimbursed by the government — for example, expenses incurred in the provision of personal protective equipment.

2. Policy Options for Improving Access to Inputs

Enhance vegetable seed production systems

Issues of access to quality seeds, aggravated during COVID crisis, urgently demand solutions. Various policy options can be followed for improving the availability of quality seeds in Armenia. The first option is to develop

a national system of seed breeding and producing vegetable crops. This would enable the country to reduce the dependency on seed imports, increase seed production efficiency, and ensure availability and easy access of farmers to seeds that in its turn will enhance food security in Armenia — especially during crisis situations, such as COVID-19. It would also contribute to the creation of more jobs in rural areas, along with enhanced yields and increased income. Implementation of this option presupposes significant efforts from the government, including the allocation of special zones for seed production, support for the development of scientific developments in the field of breeding and seed production, provision of technical support, training, and the creation of a knowledge dissemination system.

Another option can involve the creation of conditions for facilitating seed imports, subsidizing additional costs associated with price increases and creating a system that is resistant to emergencies related to importation. This approach would help to quickly solve the problem of access to high-quality seeds, increase production efficiency, and improve food security and nutritional quality through the possible increase in farmers' incomes. However, in the long term, these measures could escalate the import dependence that leads to growth of production costs; it would also increase the risks associated with importing seeds in emergencies. In the meantime, the development of competitive seed production within the country incurs high costs and requires significant governmental support. It may also conflict with the interests of individual stakeholders — for example, local farmers — when creating special zones required to produce high-quality seeds.

Another option for solving the problem of providing local producers with high-quality seeds is cooperation within the EAEU. The creation of a reserve seed fund would ensure sustainable access in emergency situations to the seeds of EAEU member states.

3. Policy Options for Increasing Income of Fruit and Vegetable Value Chain Actors

Develop vegetable and fruit processing at the local level

During COVID-19, the problems of production sales was intensified. Demand shrunk both within the country and in Russia, the main importer of Armenian vegetables and fruits. As a result, the income of farmers declined, impacting overall rural population, which is already vulnerable. One of the proposed policy measures to reduce the impact of negative factors is the development of processing of vegetables and fruits (drying, freezing, and canning) at the local level, including at the farm level. This would increase the added value produced at the local level, reduce the loss of vegetables and fruits, diminish the influence of seasonality factor, and escalate shelf life of products, thus improving opportunities for marketing products, both domestically and for export, increasing the income of local producers and contributing to better nutrition, and generally enhancing the resilience of local food chains.

The following measures should be taken to stimulate the development of local processing of vegetables and fruits:

- Support the establishment of high-quality sorting, sulphuring, and packaging facilities.
- Improve access to finance through partial subsidies and grants supplemented by equity or loan financing, where interest expenses can also be subsidized.
- Provide trainings and capacity building measures.
- Support enhancement of logistical and marketing paths, including for exporting purposes.

Freezing promotion should be carried out taking into account the following points: From a technical point of view, compared with other commercial preservation techniques, the freezing process is among the most convenient and easiest of food preservation methods. The flexibility of the process is dictated by the availability of different types of equipment for several different food products, and it results in a flexible process (Barbosa-Cánovas, Altunakar, and Mejía-Lorío 2005). An important consideration for the development of the freezing industry is the high capital investment required and the further cost distribution of the freezing process and storage, which has high energy consumption that may comprise over 10 percent of total costs (Person and Lohndal 1993). Therefore, governmental support can relate to equity finance support and subsidize the energy costs of producers to promote production. Developments throughout the whole chain should be considered, with accompanying developments and facilities for transporting, storing, logistics, and marketing the products from the processing plant through to the consumer.

4. Policy Options for Increasing Domestic Demand and Promoting Exports

Develop domestic demand for fruits and vegetables and promote a healthy diet

To enhance the health of the population, including boosting resistance to diseases such as COVID-19, a wider dissemination of healthy diet practices is necessary. A key element of this effort is to encourage the increased consumption of fruits and vegetables. The increase of demand for fruits and vegetables can be promoted through the development of school feeding programs with the introduction of dishes and drinks (for example, compotes) made from dried fruits and vegetables. Catering in other social settings, such as hospitals and group homes, is another venue that can be targeted. In this case, priority should be the use of domestic, preferably local, products. Involving local producers in school feeding programs and supplying other social institutions with vegetables and fruits, especially processed fruits, will also help to develop local food supply chains and increase the incomes of local producers. The need for compliance with the requirements for products supplied for school meals and other social institutions will contribute to the growth of a culture of production and expand the competence of local participants within the value chain. However, for this to happen, the government should provide institutional and informational support as well as training for the participants of the value chain. Enhancing social support programs that will mitigate income reduction of the population can also contribute to increased demand for fruits and vegetables. Finally, advocacy for a healthy diet that involves an increase in the consumption of vegetables and fruits can also be implemented.

Improve conditions for exporting fruits and vegetables

As a result of COVID-19, a number of export-related conditions deteriorated. These include logistical problems and a decrease in demand caused by a decrease in purchasing power of the population due to a drop in household incomes, aggravated by the depreciation of the Russian ruble and a corresponding rise in the cost of imported products. All these conditions negatively affected Armenian exporters. To assist them to adapt to the changed conditions, it is necessary to establish an export development program for the current conditions. Policy measures can be directed to improving the commodity structure of exports — in particular, by increasing the share of products with high added value and those that are nonperishable (canned, dried, and frozen foods, juices, jams, and so on). Other measures can be directed to changing the commodity structure of exported greenhouse products — for example, reducing the share of tomatoes and cucumbers (because of increased local production in Russia, shrinking exports, and high competition from Uzbekistan and Turkey) and increasing the export share of products such as peppers, eggplants, zucchini, and so on. The geography of exports can be expanded more actively, including by increasing exports to the Middle East. Other measures can target logistical improvements in the conditions faced during a pandemic, as well as compensation of exporters' costs related to anti-epidemiological safety requirements.

All these measures will contribute to the growth of exports and increase export earnings, including through the growth of the added value of exported products. They will also contribute to an increase of famers' income, which is especially important in the context of decline of income of the rural population as a result of COVID-19. Finally, there would be a need to convey related information to producers and exporters, via digital technologies and platforms among other things, about state support for agricultural producers.

Develop consolidation centers for fruits and vegetables

Consolidated centers for fruits and vegetables for the purpose of warehousing, refrigerating, or other logistical services can provide smarter, better, and speedier services to ensure increased product quality in accordance with safety standards, as well as to provide a better opportunity for marketing in the reality of gradually increasing international trade. This is important especially for fresh fruits and vegetables. This can also be supportive in the case of pandemics such as COVID-19 as it will enable better tracking and managing of supply and demand, reducing product losses and ensuring safety and quality control criteria that are becoming stricter. For Armenia, the support can be directed at conducting assessments on geographic locations where the consolidation centers can be created, deciding upon their ownership mode (options include cooperatives, other legal entities, group of farmers, and so on) and on the business process and management modalities. As an option, the creation of a wholesale distribution center for fruits and vegetables can be done on the basis of a public-private partnership, which would perform the following functions:

- Consolidating production producers by farms;
- Pre-processing (washing, sorting, freezing, drying, and so on);
- Packing produce;
- Storing produce;
- Transporting produce;
- Performing phytosanitary control;
- Complying with customs service requirements; and
- Organizing and marketing online and offline wholesale functions, including international trade.

Advanced modality for consolidation centers should incorporate digital technologies into the design with a focus on the following:

- Improving farmers' access to consumers of their products;
- Improving access to export markets;
- Improving the quality and safety of products;
- Adding value for the products sold through its refinement;
- Ensuring compliance of products with phytosanitary requirements;
- Ensuring compliance with the requirements of epidemiological safety during the movement of products from the manufacturer to the consumer; and
- Developing e-commerce.

The creation of consolidation centers requires significant investments, time expenditures, and governmental support. In the meantime, it may happen that the control over the consolidation center falls into the hands of a private company, which will take a monopoly position in the logistics services market, increase prices, and dictate its conditions to small farmers. For this reason, it is important to ensure the possibility of farmers' participation in the consolidation center business, as well as the development of local primary processing of products, packaging, and logistics, which will provide farmers with direct access to consumers.

Accelerate digital transformation

Accompanied by unprecedented mobility restrictions, COVID-19 made all economic players and governments accelerate distance and digital service solutions with the application of digital technology innovations for promoting global transformations. These innovations also relate to the agrifood sector, which experienced increased demand for digital logistics services and products adapted to epidemic circumstances. Support for digitalization in the agriculture sector at both the on-farm and off-farm levels can yield far-reaching benefits long after the pandemic has passed.

Technological adaptation and increased digital savviness of domestic businesses and consumers in Armenia in the post-COVID-19 era will help to increase the productivity of the economy overall, improve its standards of living, and help the nation catch up with its more advanced peers. At the farm level, it will assist in making rapid, evidence-based decisions based on data about soil, climate, irrigation, markets, pests, and the availability of governmental support options and subsidies. Businesses and start-ups that provide new products to "tech-progressive" customers can succeed not only in the domestic market but also abroad when initiating services and products in more established markets (Avetian 2020). For decision-makers, there are opportunities to have near real-time information on market prices, projected yields, beneficiaries of government programs and subsidies, and so on. Traders and wholesalers can benefit from information on the quantity of products available and plan proper measures to adjust prices and product quality. Financial institutions can design more tailored products, customizing them for rural communities. Finally, consumers will benefit from traceability, food safety, better quality, and lower prices of food products. All this is particularly relevant development in times of crisis such as COVID-19 pandemic, when it is crucial to make well-informed and quick decisions in the most appropriate way to focus measures and policies. In the meantime, there is a shared a concern to recognize and protect digital rights — in particular around the areas of privacy and inclusion. These aspects need to be taken into careful consideration.

Assignment

Purpose

The assignment is based on the RAFT (Role, Audience, Format, and Topic) teaching and learning strategy that helps students understand their role as decision-makers or writers, the audience they address, varied formats for writing or action, and the topic they work or write about. RAFT components are:

R: Role of presenter/writer: Who are you?

A: Audience: To whom is this written?

F: Format: What form will it take (for example, letter, report, etc.)?

T: Topic: What is the subject of the work/writing?

Materials

Case Study: The Impact of COVID-19 on the Armenian Fruit and Vegetable Sector

Procedure

1. Provide the students with the case-study.
2. Divide the students into two groups and give them topics and roles to work in groups according to Table 1.
3. Explain that each group needs to consider all four components for every presentation or writing assignment.
4. After the set time of 20–30 minutes, groups make a presentation on the results of their group activities to the class, which takes on the role of the Audience, and debates and poses questions to each group.

Table 1: RAFT Group Assignment

Group	Role	Audience	Format	Topic
Group 1	International aid institution	Ministry of Economy/ Agriculture	Emergency aid project	COVID-19 emergency measures targeting the most vulnerable in the agriculture sector
Group 2	Scientists	Policy makers	Policy action recommendation	COVID-19 mitigation measures for agriculture sector in the long-term

Policy Recommendations

Enhance Vegetable Seed Production Systems

In the long term, to solve the issue of providing high-quality seeds, which has been aggravated by the COVID-19 crisis, and to remove currency risks associated with the purchase of imported seeds, it is recommended to follow the option of developing a seed production sector within the integrated framework of the EAEU. This approach will enable selecting zones that have the best conditions for seed production for various crops within the territorial boundaries of the EAEU and will allow the use of its financial resources and the scientific potential of member countries for applied science development. While saving the resources of each country, this option will allow the creating of effective, competitive seed production, which will increase the efficiency and sustainability of fruit and vegetable value chains. To implement these measures, it is necessary to design a harmonized seed production regulatory framework and legal mechanisms for establishing and operating a reserve fund and devising seed production development programs and actions plans.

Critically important would be ensuring that the interests of each participating country are considered and realized through specific solutions. Additionally, the development of seed production presupposes a high level of production culture and business in seed farms; this is a serious obstacle to the development of seed production, both within the country and within the framework of integration programs.

Accelerate National Digitalization

Accelerating national digitalization can have a significant impact on food systems' sustainability, profitability, and disaster resilience. This may include single or multiple agricultural platform(s) that unite governmental and nongovernmental information systems related to agrifood supply chains, including information on conditions for export. Functions of the system may include:

- The collection, processing, integration, and analysis of information from different sources;
- The provision of digital extension and agricultural advisory services. E-extension services can mitigate impacts of pandemics such as COVID-19 by the means of:
  - Establishing partnerships to address market disruptions and ensure supply chain functioning via facilitating farmers' access to e-commerce, enhancing short value chains and local production;
  - Facilitating the process of solving emerging social problems; and
  - Facilitating increased production and quality of agricultural products, raising awareness among farmers and other agripreneurs, and informing decision-makers during and after the pandemic;
- Intelligent forecasting at all stages of the value chain, taking into account production conditions, including soil conditions, weather and climatic conditions, market conditions, transport accessibility, and other factors;
- Informing and consulting chain participants based on the obtained forecasts, including the conditions of foreign economic activity;
- The introduction of business-to-consumer and business-to-business e-commerce platforms that during pandemic times will assist with accessing perishable products such as fruits, vegetables, meat and dairy products, and semi-prepared and prepared foods. These will include services such as inputs, finance, storage, and logistics and will connect food sector producer organizations, cooperatives, trade associations, and consumer organizations;
- The development of logistics solutions for chain participants. Digital applications in logistics will enable real-time quantification of stocks, product tracking all over the chain, increased efficiency in transport, and so on; creation of consolidation centers may further advance to the promotion of temperature-controlled logistics chains; e-extension will enable to locally address disruptions in logistics, inputs, and food losses;
- The creation of a bank of available smart solutions for chain participants (smart greenhouse, smart field, smart garden, and others); and
- The provision of information on government support schemes and options for application via platform.

Accelerating the national digitalization plans for the agrifood sector should be based on cross-sectoral dialogues between institutions responsible for information and communication technology infrastructure, trade, and agriculture. The difficulties of developing digitalization include:

- Lack of knowledge in the field of digital technologies and their development, implementation, and use among the participants of the vegetable and fruit value chain;
- Psychological unreadiness;
- Lack of sufficient hardware and software among the actors of fruits and vegetables value chain; and
- The need to change business models, to change the professional functions of workers, and the possible loss of business as a result of the development of digital technologies.

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Abbreviations

EAEU	Eurasian Economic Union
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
IMF	International Monetary Fund
NIS	Newly Independent States
RAFT	Role, Audience, Format, and Topic
SMEs	small and medium enterprises
UNDP	United Nations Development Progamme

Note: All tons are metric tons.

Photo credit: Kannap on depositphotos

Regulating the Russian Wheat Export Trade during the COVID-19 Pandemic

Sergey Kiselev, Sanat Seitov

Executive Summary

To eliminate the risk of grain shortages in the domestic market, the Russian government limited its exports by establishing an export quota from April 1 to June 30, 2020. This was done with the aim of protecting the interests of milling plants and food companies, animal feed plants, a number of livestock sectors (pig and poultry farming subsectors), and the general population so that they were not affected by higher prices in the grain market — in particular, wheat prices.

The existing system of state regulation of wheat exports has a number of shortcomings that adversely affect the efficiency of trade and production in the agriculture and food-processing sectors. An analysis of the COVID-19 pandemic and the export quota mechanism in the wheat market identified a number of issues:

1. Export restrictions with a relatively small quota size created uncertainty in the grain market, and exporters rushed to fill the quota. The quota-setting procedure lacked transparency, which only exacerbated these shortcomings. The quota was depleted many months ahead of schedule.

2. Inefficient and dishonest schemes to export grain from Russia by transporting it through the countries of the Eurasian Economic Union (EAEU) to third countries were used by some Russian exporters to bypass the export quota.

3. The restrictions undermined the image of Russian grain exports in international markets and had a negative impact on the attractiveness of the wheat sector for investors.

4. The restrictions aggravated logistics issues and increased problems in the market and transportation infrastructure.

5. The response to COVID-19 and subsequent quarantine measures have had a negative impact on the interests of wheat consumers (both the population as well as wheat processing companies and livestock farmers).

It is recommended that restrictions on wheat exports be lifted or, at least, procedures for imposing the quota and agreeing on its amount be changed. The negative impact from distorted market signals is stronger than the risk of wheat shortages in the Russian domestic market.

To avoid situations where the affordability of bread for the population is jeopardized, the government can increase the amounts of targeted food aid provided to vulnerable groups (such as the elderly and those below the poverty line). Financial support for wheat consumers (milling plants, animal feed plants, and animal farms) is recommended to protect their interests if grain prices increase.

It would be advisable to develop a market information system, improve the transportation infrastructure, enhance the efficiency of the phytosanitary control system, and undertake safety measures for grain truck drivers as such measures would mitigate the negative impact from COVID-19.

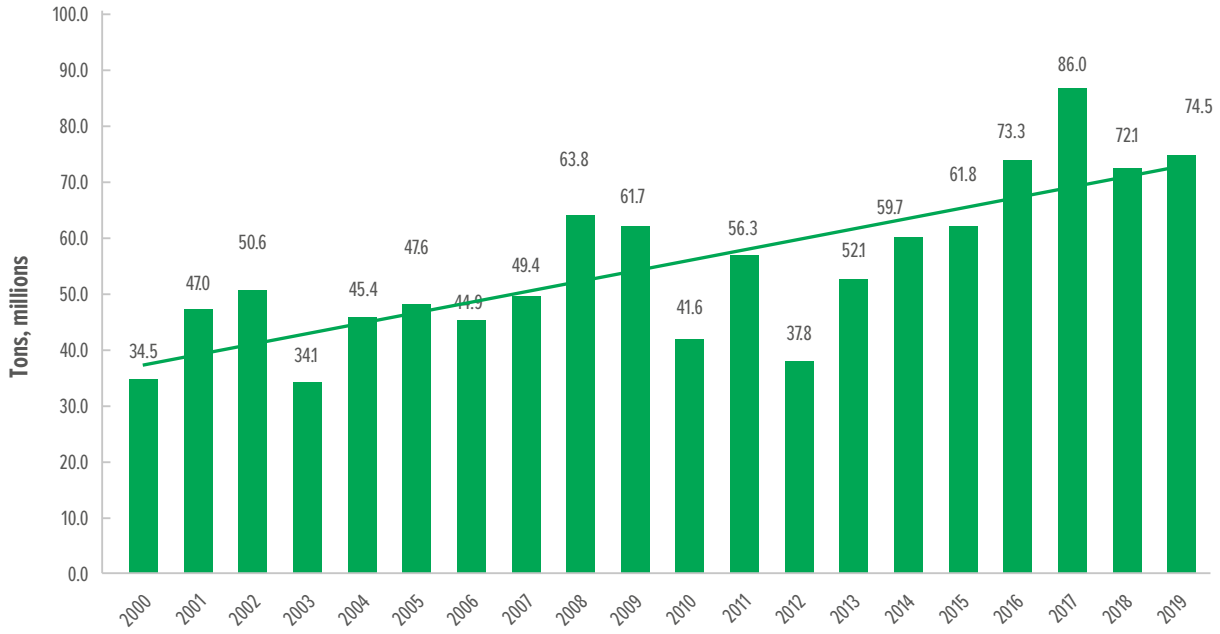
Background

Today, wheat production is the most important sector of Russian crop farming. Wheat production determines opportunities for producing staple foods (bread and cereals) as well as feed for agricultural animals. Because of the coronavirus outbreak and the consequent reduction of people's real income, the importance of the grain sector in securing a sufficient domestic supply of food has been increasing. In recent years, land brought under wheat cultivation has accounted for 34–35 percent of the total cultivated area under crops (Rosstat 2020a).

Russia is a major exporter of wheat; every year the country exports on average around 32 million tons; average annual domestic consumption of wheat is more than 40 million tons (Rosstat 2020b). Conditions in the Russian wheat market can vary considerably. However, the general upward trend in production remains. The Rusagrotrans analytical center is forecasting a substantial increase in wheat output in Russia in 2020, to 82.5 million tons (Kulistikova 2020a)[1] — 6 percent higher than it was in 2019 and 7.5 percent higher than the average harvest over the previous five years (FAO 2020) (Figure 1).

[1] Rusagrotrans is the country's largest infrastructure operator in the field of grain freight rail transport. Further information about Rusagrotrans can be found at https://www.agroinvestor.ru/companies/a-z/rusagrotrans/.

Figure 1: Changes in Gross Output of Wheat in Russia, 2000–19



Source: Original figure based on data from Rosstat, http://www.gks.ru.

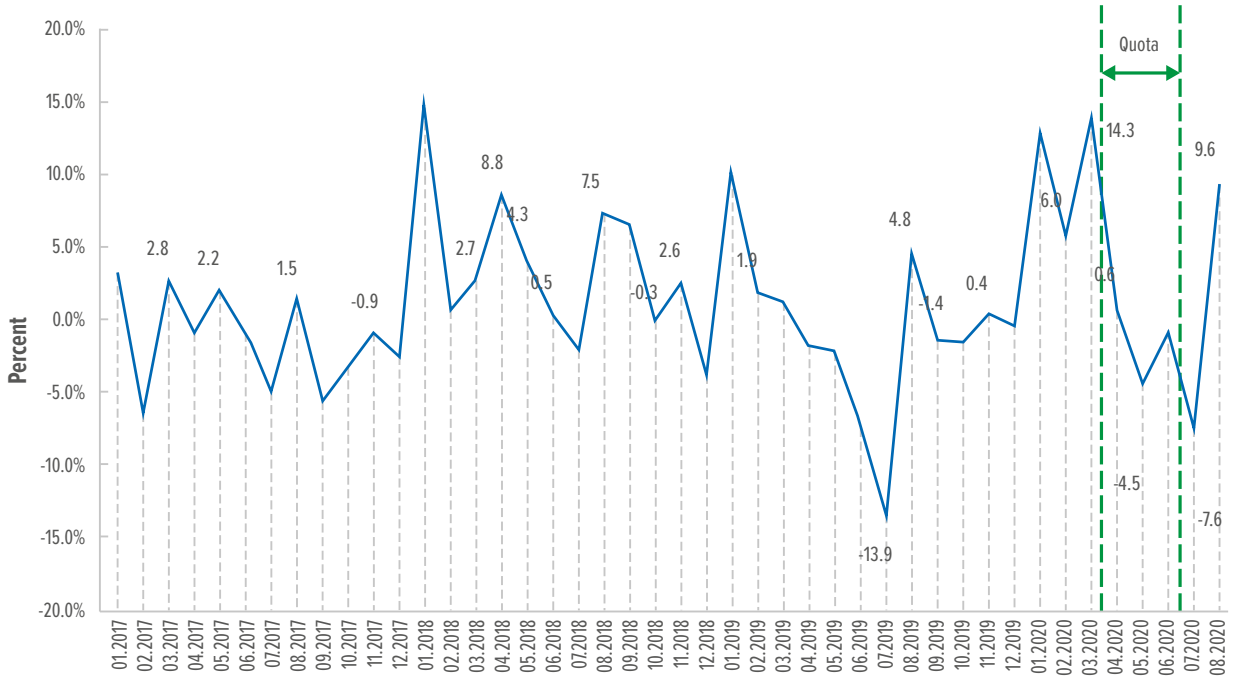
Note: The trend is shown by the straight line.

As noted earlier, the wheat market is essential for some agriculture subsectors. Higher wheat prices have a negative impact on the development of animal husbandry subsectors that rely on supplies of feed grain. In periods of grain crop failure, poultry farms, pig farms, and feeding stations are hit by higher prices for wheat, which is the main feed for animals and poultry. Furthermore, milling plants, animal feed plants, and the general population are also at a disadvantage when wheat prices increase. For the population, bakery and pasta products as well as confectionery are important foods. Bakery and pasta products account for a large share of dietary intake, particularly of the poor population. Today, the COVID-19 pandemic is also affecting the situation. Lower household incomes are increasing demand for bakery and pasta products.

The importance of wheat and other grain products amid the COVID-19 pandemic is the reason that, in spring 2020, the Ministry of Agriculture intervened. The ministry's action was discussed beginning in January 2020. The Ministry of Agriculture found that Russian wheat is in high demand in foreign countries. In a bid to stabilize the domestic food market and the EAEU market as well as to meet domestic demand in grain and grain products, the ministry decided to set an export quota of 7 million tons for April 1 through June 30, 2020, and also to use trade interventions, such as the sale of grain from the state intervention fund. Currently, the government is discussing re-imposing the export quota mechanism for the first six months of 2021 (Grain Business 2020).

In 2020, export prices for wheat in Russia were influenced by export restrictions that resulted from the COVID-19 pandemic. As shown in Figure 2, during the quota period, prices showed a downward trend. The fall in prices was also caused by trade interventions for 1.4 million tons of wheat in 2020 (Zerno.ru 2020). Starting in July 2020, wheat prices have been rising because the quota was lifted and there is a higher demand for grain in the pig and poultry farming subsectors. This increase in demand for grain from poultry and pig farming is due to an increase in the production of pork and poultry meat in Russia in 2020. The demand for grain has increased because of the growing demand for feed for the growing population of pigs and poultry (Shokurova 2020).

Figure 2: Average Monthly Increase Rates in Russian Wheat FOB Export Prices for Non-CIS Countries, January 2017–August 2020



Source: Original figure based on data from the Unified Interdepartmental Statistical Information System (UISIS), https://www.fedstat.ru.

Note: CIS = Commonwealth of Independent States; FOB = free on board.

The government's main economic task is to stabilize fluctuations in prices during the year (Rubinchik 2008). Price stabilization must strike a balance between the interests of wheat producers and those of wheat consumers. The government fulfills this task by conducting commodity interventions (in spring, to reduce grain prices when supply decreases) and purchasing interventions (in autumn, to increase grain prices when supply increases) in the wheat market, as well as by using trade policies (grain export restrictions to prevent higher prices in the country; import restrictions to maintain domestic prices at the high level) (Kiselev and Romashkin 2008).

The beginning of 2020 saw two cataclysms affect the Russian food market: the spread of the coronavirus pandemic in Russia and the drastic depreciation of the ruble in February–March.

The economic impact from the COVID-19 pandemic in Russia is much more severe than it was during previous epidemics, such as the avian influenza in spring of 2003 and the swine flu in summer–autumn of 2009, as no quarantine measures were undertaken in those years.

Potential restrictions of free movement in cities during the quarantine and the risks of closing down production facilities and shops because of workers falling ill, as well as psychological concerns generated by restrictions of cargo flows, caused panic buying of cheap products with a long shelf life. In particular, this affected food products of which Russia is a net exporter — that is, cereals, flour, and pasta products. Because of supply interruptions and the panic buying of these products, their prices rose, hitting the population hard. Subsequent policy measures are aimed, primarily, to ensure the affordability of products for the population — the main consumer of flour and cereal products — by reducing grain prices and processing costs.

Imposing a grain export quota was discussed as early as January 2020 (Kulistikova 2020b). At first, the Ministry of Agriculture intended to set an export limit of 20 million tons in the second half of the season (Kulistikova 2020b). To ensure that domestic need in grain was met, the ministry decided to restrict grain exports and begin commodity interventions. A government resolution stated that, in 2020–21, it could sell up to 1 million tons of wheat and barley purchased in 2008–2016 (Russian Government Resolution No. 817). The ministry planned to supply up to 1.5

million tons of grain from the state stockpile to the Russian market to meet the needs of the flour and bakery subsectors and the livestock sector (Kulistikova 2020b).

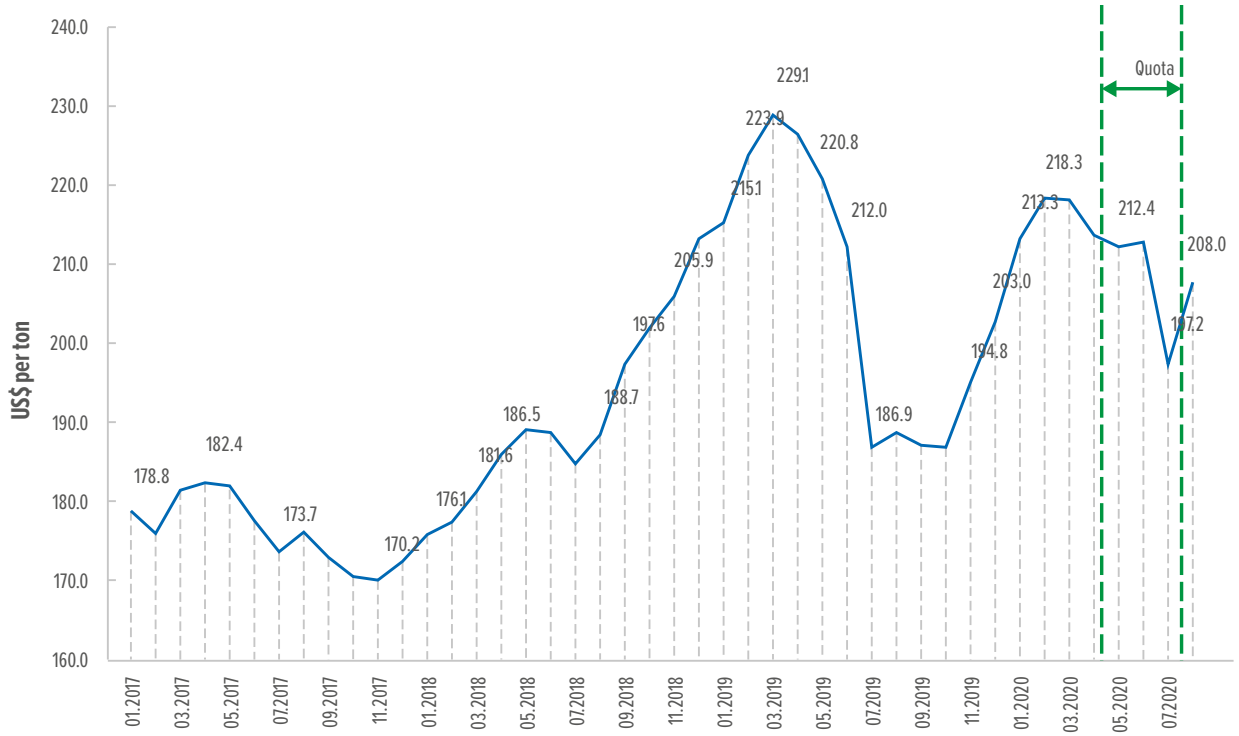
The Russian Government Resolution imposed a non-tariff rate quota for exporting grain outside Russia to countries that are not members of the EAEU from April 1 to June 30, 2020 (FAO 2020). The grain quota was set at 7 million tons of various grains, not wheat alone.

This measure was in response to the coronavirus pandemic and considered the potential risks of a wheat deficit in the Russian market in the face of challenges encountered by companies and the population. Moreover, after the devaluation of the ruble in 2020, global wheat prices in March were higher than domestic prices (Figures 3 and 4). The threat of its export in large quantities was aggravated further (Mau et al. 2020). The government set a quota on exports.

Figure 3: Average Monthly Global Wheat Prices, November 2015–September 2020

Source: IndexMundi, https://www.indexmundi.com/commodities/?commodity=wheat&months=60.

Figure 4: Average FOB Export Prices for Russian Wheat for Non-CIS Countries, January 2017–August 2020



Source: Original figure based on data from the Unified Interdepartmental Statistical Information System (UISIS), https://www.fedstat.ru.

Note: CIS = Commonwealth of Independent States; FOB = free on board.

This was the second time in Russia's modern history that the country imposed a quota; the first was in 2010, when Russia fully banned the export of wheat from August 15 to December 31 of that year (Interfax 2020). The 2010 ban was introduced because of a drastic drop in harvested crops (by 32.6 percent) due to drought, whereas in 2020 Russia is expecting to harvest a large, bumper crop. In 2008, Russia levied a 40 percent export tax on wheat (Dollive 2008).

The quota in 2020 was introduced during the spring wheat sowing campaign. However, this quota had only a small effect on decisions made by spring wheat sowing companies, and the area under wheat in Russia increased by 4.7 percent over that of 2019 (Rosstat 2020c).

"The set of proposed measures will make it possible to guarantee required quantities of grain in the domestic market, prevent a surge in prices for staple crops as well as consumer prices for end products of the milling, cereal, bread-baking and meat and dairy subsectors for the population," declared Russian Minister of Agriculture Dmitry Patrushev (Karabut 2020).

On what grounds was the quota set specifically at 7 million tons of grain? In the 2019/20 season, Russia's output of winter wheat, rye, barley, and maize reached 110.7 million tons. Besides, there were some carryover stocks from the previous year (17.9 million tons). Based on the results of the first half of 2020, domestic consumption was estimated at 69.5 million tons. Meanwhile, according to the estimate prepared on March 26, exports amounted to 32.4 million tons of grain. In the opinion of the Ministry of Agriculture, to meet domestic needs Russia had to retain not less than 17.5 million tons in the country. Therefore, total exports could not exceed 41.7 million tons. To maintain the required stockpile within the country, exports could not exceed 7 million tons (Karabut 2020).

According to SovEcon data, by March 20, 2020, in one week alone the average wheat price set by wheat producers in Russia increased by 8.4 percent (Karabut 2020). It got to the point that the

Russian Union of Milling and Cereals Plants sent a letter to the Russian Ministry of Agriculture requesting it (the ministry) take measures to combat increases in prices (Karabut 2020).

Policy Issues

The COVID-19 pandemic caused concerns about stability of the wheat market as a major staple food. In a bid to stabilize prices, the Russian government undertook policy measures on setting quotas for grain. The implications of this policy are described below.

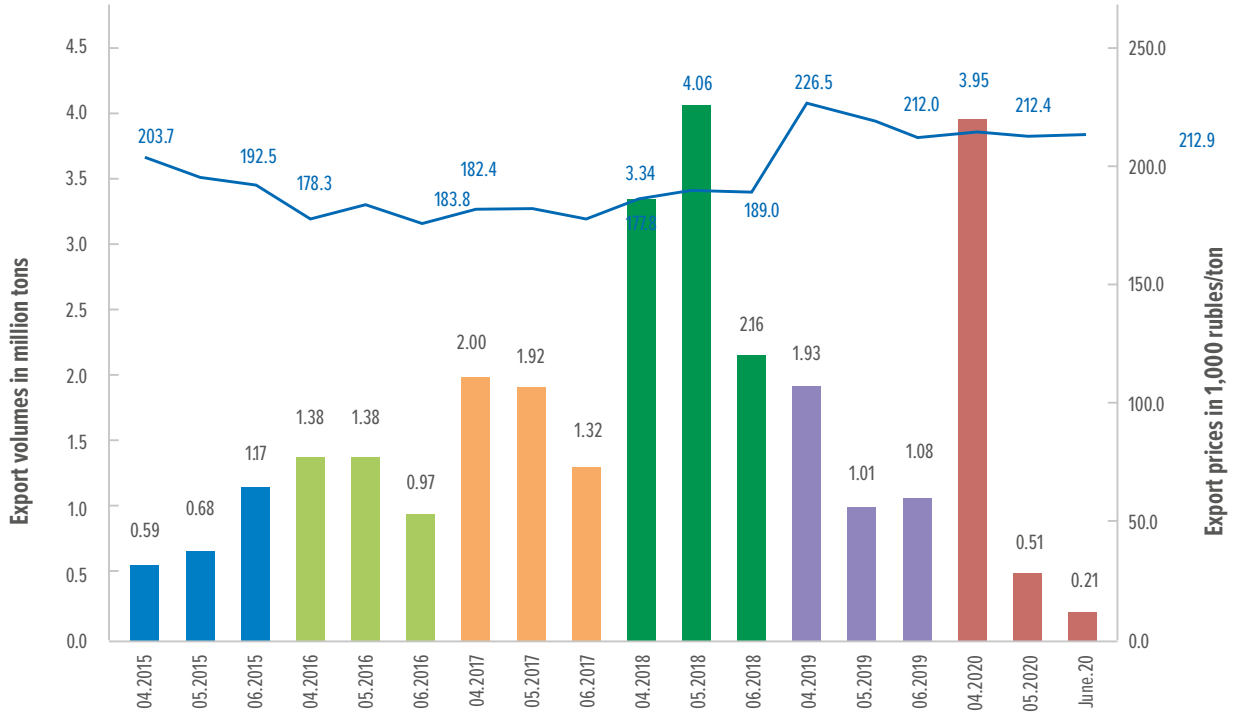
Uneven Access of Exporters to Wheat Exporting Opportunities (Because the Wheat Quota Was Depleted Very Quickly)

The entire grain export quota was exhausted on April 26, 2020. Large exporters had been able to export their grain quickly before the quota limit was reached, but other, smaller exporters were unable to export because of quota depletion. From April 23 to April 26, 2020, alone, around 2.5 million tons of grain were declared for export. In the second quarter of 2020, the process of filing customs declarations for export by months was clearly erratic (Figure 5).

Many exporters filed their customs declarations not only for grain actually delivered to the terminals but also for grain planned for delivery "from the farm gate." As a result, those exporters who had no time to declare grain for export were affected by the quota. The issue was exacerbated by a lack of market information about the volumes of wheat shipments and the pace with which the export quota was being depleted. Furthermore, a certain portion of the quota was released because some exporters, trying to avoid administrative responsibility, refused to file fictitious declarations for the export of non-existent grain. The result was that the quick depletion of the quota remained an extremely urgent issue in Russia (Litvinova 2020b).

A lack of information and delays in the information that was available, including information on when the quota limit would be reached, created additional difficulties for market participants. When the

Figure 5: Monthly Export Volumes and Average Monthly Export Prices for Russian Wheat in April, May, and June, 2015–20



Source: Original figure based on data from the Unified Interdepartmental Statistical Information System (UISIS), https://www.fedstat.ru.

Note: Blue numbers represent wheat prices; black numbers represent export volumes.

quota was expected to be exhausted months ahead of schedule, the wheat market did not strike a balance between the interests of wheat consumers and the interests of wheat producers. This opinion is confirmed by Boris Tovalev, Deputy General Director of LLC AgroLand (an exporter). He noted that buyers were afraid that the export quota would be exhausted before the agricultural season was over (Grains Digest2020).

Besides, one of the consequences of the grain export quota is a substantial reduction in the number of exporters in Russia; this led to less intensive competition between exporters. For this reason, the active involvement of the antimonopoly service in these processes will be needed. Trade monopolization can hurt the economic interests of agricultural producers. This issue was mentioned repeatedly by Alexander V. Korbut, Vice-President of the Russian Grain Union, who said that, for this reason, agricultural producers would be able to sell their wheat to fewer exporters (Grains Digest 2020).

Therefore, the quota distorted a natural course of the wheat market operations. This created higher uncertainty in the market, which manifested itself in uneven supplies of grain by exporters, which in turn rushed to get access to the quota as early as possible and sell it in April of 2020.

Dishonest Schemes to Export Grain from Russia by Transporting through the Countries of the EAEU to Third Countries

According to the Russian Glogos Project freight company, such shady schemes were used by some Russian exporters to bypass the export quota. These schemes were based on fictitious contracts for exporting wheat to EAEU countries, though the wheat was to be re-exported to third countries. For example, in Russia some firms began offering services to export grains to Armenia through Georgia, whereas the export of wheat to Kazakhstan from Astrakhan and then to the Islamic Republic of Iran also increased. However, the Iranian scheme was difficult for Russian exporters to use because the Iranian government also imposed a quota on wheat exports (Litvinova 2020b).

Restrictions and Less Transparency and Predictability of Russian Wheat Exports Generated Uncertainty in the Grain Trade

This issue applies both to the export and import of grain. Importers responded to quota setting both by attempting to make early purchases and by refraining from purchases of Russian wheat from the quota, switching to other partners.

The quota discouraged some countries from buying Russian wheat at all (for example, Bangladesh purchased wheat from Ukraine instead of Russia) (Reuters 2020a). Considering, first of all, the high export potential of this crop, investors began to be concerned about further measures to limit wheat exports. Barriers to the export of the harvest reduce incentives for investors and agricultural producers to increase crop production in the next season. A transition to the cultivation of crops with low probability of export restrictions is likely to occur.

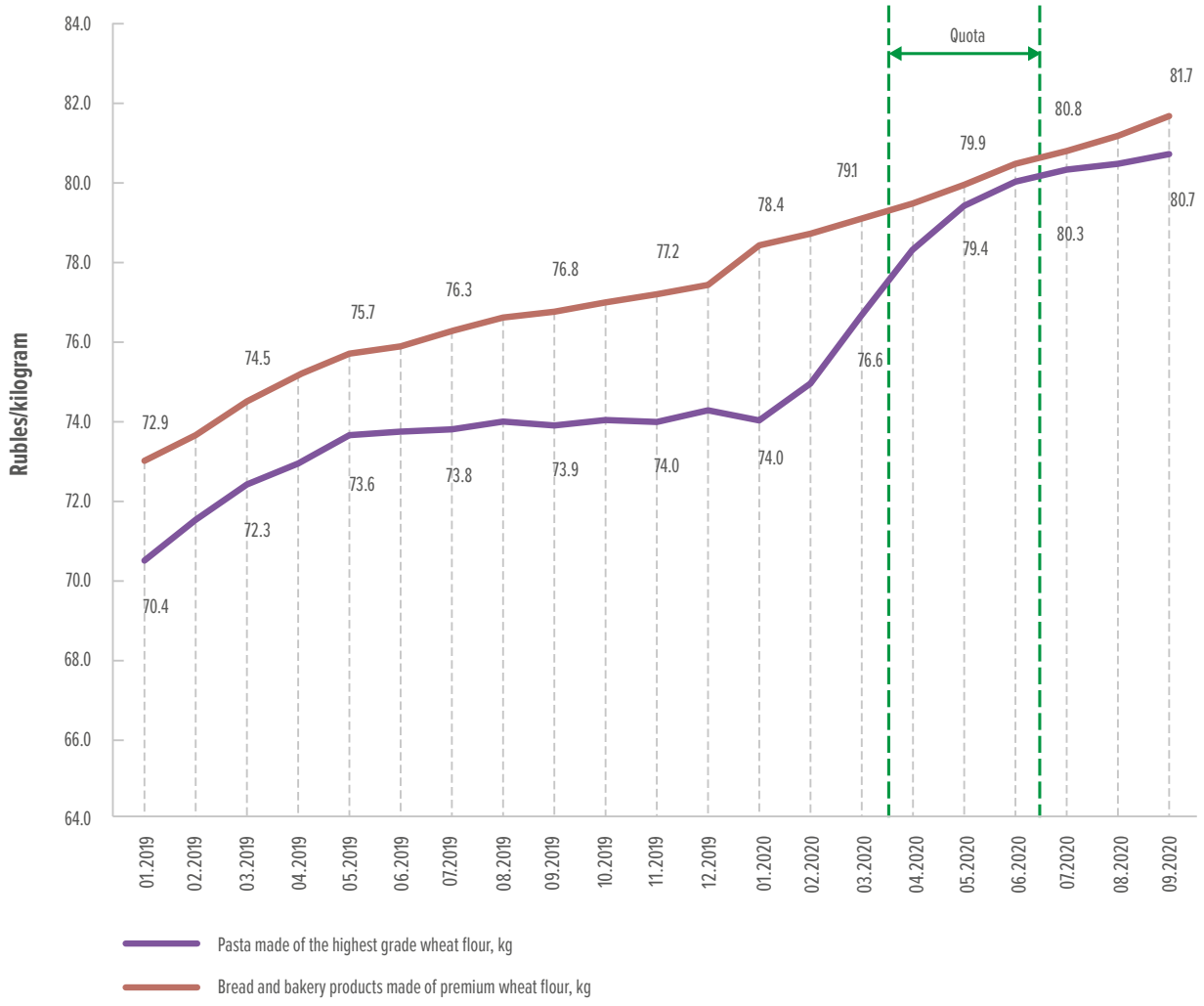
Issues of the Market and Transport Infrastructure Were Aggravated under Quarantine Measures

Disruptions to the transportation chain caused by the quarantine created some obstacles for supplies of agricultural inputs to agricultural producers and also impeded the transportation of harvested crops between the regions and between countries. Quarantine measures reduce operational efficiency at all levels of the wheat supply chain. Long medical checks of truck drivers to identify infected persons and getting stuck in traffic jams on poor rural roads for a long time increase costs because of the longer time needed to transport wheat. Costs are passed down the grain value chain and, ultimately, it is the grain consumers that bear the brunt of these costs. Imposing quotas on wheat exports is creating an additional financial burden for Russian farms already affected by higher prices for plant protection agents and fertilizers.

COVID-19 Affects the Livelihoods Primarily of Vulnerable Populations in Russia, Who Are Forced to Consume Cheaper Food Products

These cheaper foods include many cereal food products, such as bread, pasta products, semola, and so on. Prices for flour-based food have been demonstrating an upward trend (Figures 6 and 7).

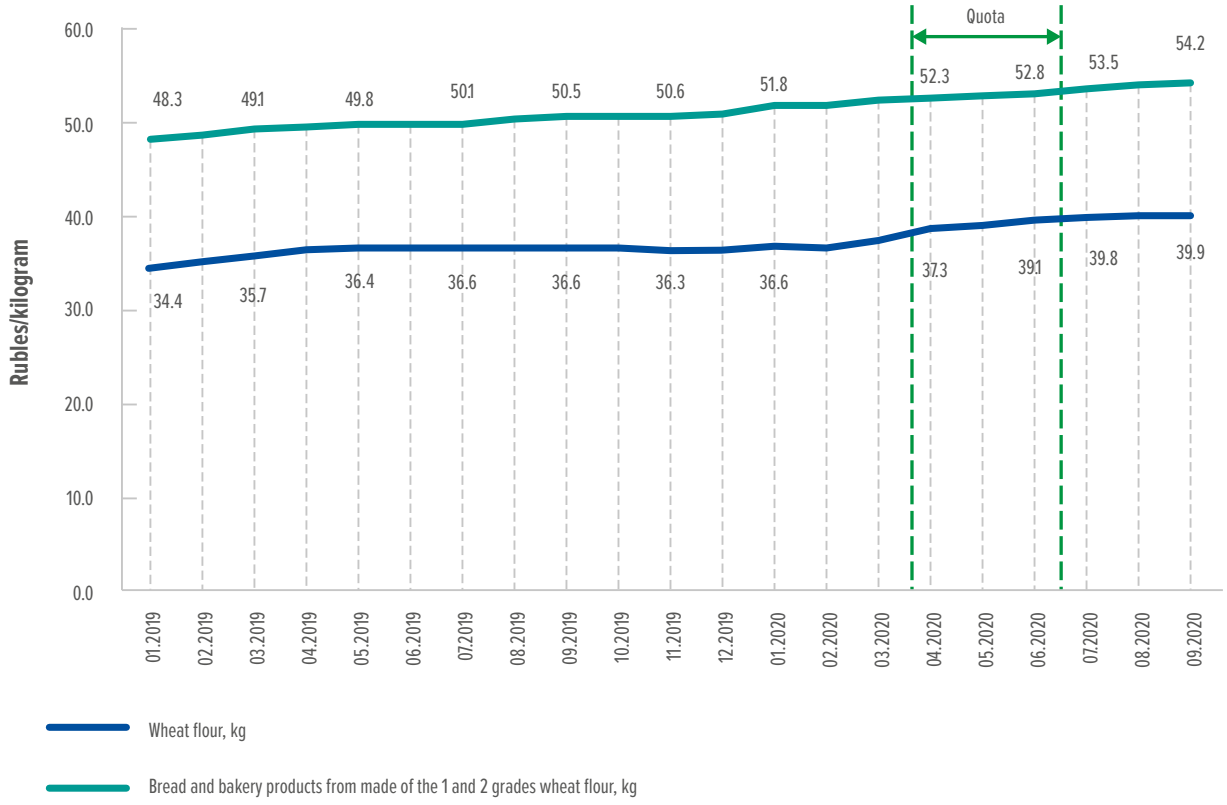
Figure 6: Average Monthly Retail Prices for Pasta Products and Bakery Products from High-Grade Wheat Flour in Russia, January 2019–September 2020



Source: Original figure based on data from the Unified Interdepartmental Statistical Information System (UISIS), https://www.fedstat.ru.

Note: kg = kilograms.

Figure 7: Average Monthly Retail Prices for Wheat Flour and Bakery Products Made from First- and Second-Grade Wheat Flour in Russia, January 2019–September 2020



Source: Original figure based on data from the Unified Interdepartmental Statistical Information System (UISIS), https://www.fedstat.ru.

Stakeholder Groups

Summarizing policy options aimed at reducing trade and price risks for grain producers during the COVID-19 pandemic in Russia, seven stakeholder groups can be singled out.

Large Grain Producers

Large grain producers, agri-business companies lose from the non-tariff grain export quotas set for EAEU member countries to prevent grain shortages in the domestic market amid the coronavirus pandemic. The export of grain is a substantial part of the revenues earned by grain producers.

Small Grain Producers

Small grain producers need protection from the reduction of wheat prices. In contrast to large producers, small producers sell their harvest primarily in the domestic market. Despite the fact that they receive decoupled fixed payments tied to their farm's number of hectares (area subsidies), they are not always able to recover their costs; for this reason, they are not very interested in land under wheat. The financial standing of small grain producers is exacerbated both by unfavorable weather conditions and by a surplus of wheat in the market. Large agri-business companies, traders, and grain producers can store their harvest in their own granaries and sell it on the domestic market when the market offers the best price. In this situation, small agricultural producers, which do not have adequate wheat storage facilities, are hit the hardest. As a result, they are forced to keep their harvest in grain elevators, which in turn are trying to use the difficulties caused by COVID-19

to their advantage, offering grain storage services at high prices.

The Russian Grain Union

The Russian Grain Union (RGU) protects the interests of grain producers and exporters. The heads of the RGU are opposed to policies that limit the ability of grain producers to earn revenue. For this reason, the RGU does not accept wheat export restrictions. For example, Alexander V. Korbut, Vice-President of the RGU, has publicly criticized the grain export quota many times, declaring that it leads to chaos (higher uncertainty) in the grain market and undermines investment attractiveness of the grain sector (Reuters 2020a).

Trade Firms and Exporters

Trade firms and exporters involved in the purchase and sale of wheat need protection from price reductions during the period from the purchase or execution of a contract for purchasing wheat from farmers to its sale. Trade firms and exporters also need protection from wheat price increases under already-signed deferred delivery contracts, with no shipments yet taking place. In expectation of a new export quota, in November–December of 2020 the number of wheat exporters in Russia halved (compared to the same period in 2019) to 110 (AgroTrend 2020b). The largest Russian grain exporting companies are LLC TD RIF, LLC MiroGroup Resources and JSC Aston, among others; their market share has been increasing as exporters that sell less than 30,000 tons of wheat per year have been leaving the market (AgroTrend 2020b). It should be added that, when the grain export quota is set as a result of the pandemic, exporters incur the highest losses in revenues compared to other stakeholders.

Flour Producers, Animal Feed Producers, Feedlots, and Poultry Farms

Flour producers, animal feed producers, and feed suppliers of cattle (feedlots) and poultry farms need protection from an increase in input costs or reduction in the market cost of their stocks. An important issue of supply of inputs to grain processing companies — in particular, milling plants, cereal plants, and animal feed plants — should be also highlighted. In 2018, 224 companies were producing flour, cereals, and ready-made feeds for animals in Russia (MOA 2019). Difficulties in relations between grain producers and grain processing companies are key factors constraining the increase of wheat output in Russia. In March 2020, the Russian Union of Milling and Cereals Plants sent Dmitry Patrushev, the Minister of Agriculture, a request to initiate measures to contain the increase in wheat prices (Karabut 2020). According to the union data, high export prices led grain producers to begin retaining grain instead of supplying it to mills in the region. This practice led to a situation where the largest regional milling plants had only a two- to three-week supply of grain (Karabut 2020). Suppliers of cattle and poultry farms need protection from an increase in feed prices. One issue of interest to consumers of feed grain is the saturation of the domestic market with cheap grains that will help them reduce animal feed costs. Russia has 590 poultry farms (based on data from early 2019; Shabaev 2019); this is a considerable number for a country with its population size. The cost of feed makes up 60–70 percent of the production costs for poultry meat — that is, this issue is very important. Animal feed plants (JSC Krasnoyarsk Animal Feed Plant, JSC Balashov Animal Feed Plant, and JSC Markorm) that are integrated into the value-added chain (which is based on grain processing) are interested in the lowest prices for inputs — that is, wheat.

Population

Because of the impact of COVID-19 impact, real income of the population has been decreasing. Demand has switched to cheaper food, including cheap bread, flour, and cereals (Tass 2020). The population may be adversely affected by higher prices for these food products.

The Russian Ministry of Agriculture

The Russian Ministry of Agriculture has been actively promoting ideas about further export restrictions for wheat despite the rising dilemma of questioning the implementation of the federal project on the Export of the Agri-Business Products (MOA 2016). By the end of 2020 it was planned to export

US$7.9 billion worth of grain, and US$8.3 billion worth of grain by the end of 2020 (MOA 2016). Because the current situation with COVID-19 has changed agricultural policy, it may be concluded that, for the Ministry of Agriculture, the task of ensuring food security for grain is more important than implementing the export program. The Ministry of Agriculture has been trying to maintain lower prices for grain, which serves as a strategically important raw material for many industries and is widely used as feed in the livestock sector. Undesirable swings in grain prices may severely damage the ministry's reputation. Furthermore, the ministry is concerned about stronger negative sentiments among the population because of a potential increase in bread prices, which is a socially important product.

Policy Options

It is important to streamline export regulation to maintain a balance between (1) the food security of Russia during the pandemic and (2) revenue support of grain exporters and producers.

The first point refers to efforts to prevent wheat shortages in the Russian market during the lockdown as a result of excessive export. The second point refers to preventing a drop in the revenues earned by grain exporters and producers. Three policy options can be used to help streamline export regulations. The first focuses on export quota issues; the second considers export duties, and the third addresses tariff rate quotas.

1. Increasing the Wheat Export Quota in Russia to 20 Million Tons and Introducing a Partially Targeted Quota-Setting Mechanism

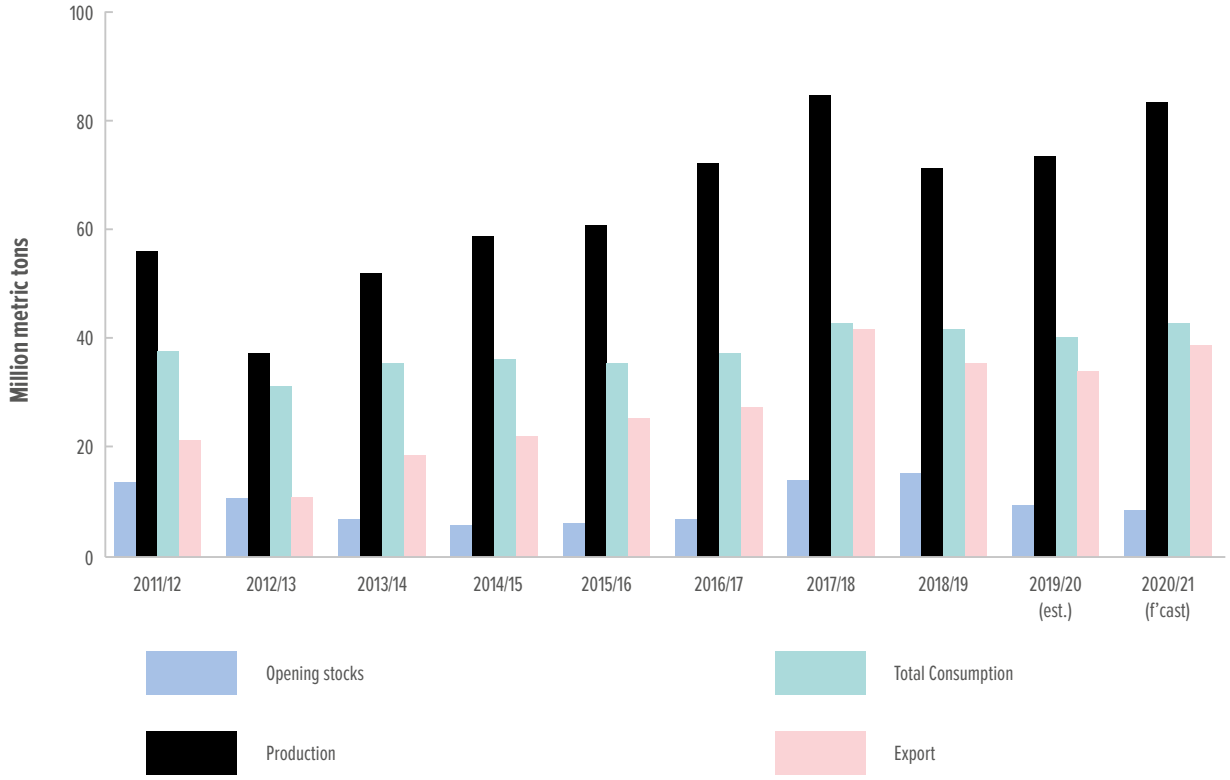
This policy option relies on the Ukrainian experience, which takes a large volume of wheat export as a quota. For example, in the 2020–21 marketing season, Ukraine set an export quota of 17.5 million tons of wheat (85.4 percent of the total Ukrainian wheat export; Reuters 2020b); this is much larger than the wheat quota in Russia, where wheat exports are 56 percent higher than they are in Ukraine. Before imposing a quota, the Ukrainian Ministry of Economy reached an agreement with wheat exporters and traders. Only after consensus was reached was the decision on the size of the quota made. In Russia, the introduction of the quota in 2020 was not preceded by any preliminary agreements between the government and the exporters. Fully taking into account the wheat exporters' views could enable the government to conduct jointly agreed-upon trade policy. Ukraine is also adjusting the quota depending on the current situation in the agricultural sector. So, if there is an increase in the country's wheat harvest, the authorities promptly expand the volume of quotas for the current season. Flexible regulation of the export quota mechanism, the practice of coordinating the quota with exporters, and the possibility of adjusting it depending on the course of the current agricultural season have shown their high efficiency on the example of Ukraine. This successful experience of export quotas may be useful for Russia.

The heads of the Russian Ministry of Agriculture declared repeatedly that they were planning to use the quota mechanism regularly in the market of wheat and other crops. Moreover, the Minister of Agriculture Dmitry Patrushev said that, in order to allocate quotas in a more equitable way, the Russian Ministry of Agriculture was looking into the possibility of using a partially targeted quota mechanism instead of a free model of quota allocation. According to the ministry's plans, only the part of the quota that was intended to be allocated among the exporters based on their share of grain exports in the previous season will be used as targeted (Litvinova 2020a). The quota size could increase to 17.5 million tons and would be applicable from February 15 to June 30, 2021 (AgroTrend 2020a).

Amid the COVID-19 pandemic and because of the potential for crop failure, in order to prevent panic buying, it is necessary to develop a transparent mechanism for quota setting that would strike a balance between the interests of producers and those of exporters, processing companies, and the population. Under normal conditions (in the absence of the pandemic and in the case of a normal harvest), setting up rigid quotas is not advisable.

On the whole, the threat of grain shortages is not something Russia should worry about now because its wheat production and stockpiles are consistently higher than its consumption and export by a significant margin (Zerno.ru 2020) (Figure 8).

Figure 8: Changes in Wheat Opening Stocks, Production, Consumption, and Export, 2011/12–2020/21



Source: International Grains Council, https://www.igc.int/en/markets/marketinfo-sd.aspx.

2. Implementing an Export Duty on Wheat Exported Abroad

First, the impact from the export quota is compared with the impact from export duty using the model of the Russian wheat market:

The domestic supply of wheat in Russia is Q_4 = 79.5 million tons; domestic demand is Q_1 = 42.5 million tons (Figure 9, Panel A), where Q is the quantity of wheat in million tons (Rylko 2020).

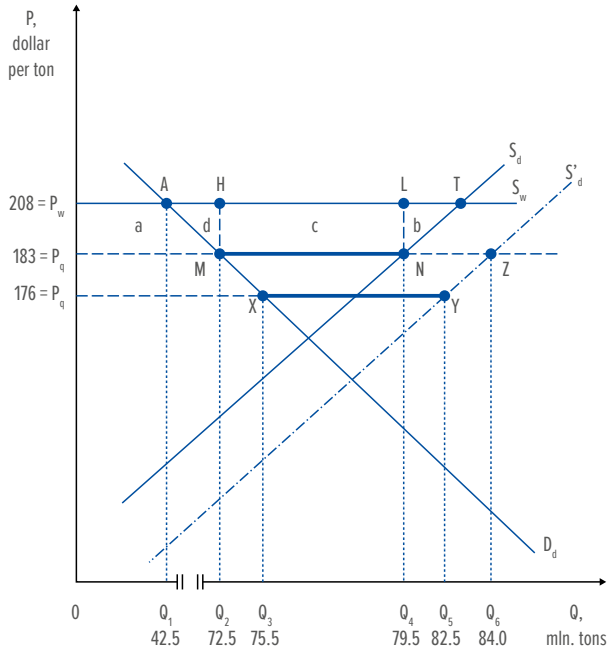
Assume that the supply of Russian wheat to foreign countries is Q_1Q_4 = 37.0 million tons at the world price of US$208/ton (Figure 9, Panel B). In this situation, domestic consumption of wheat will equal Q_1 = 42.5 million tons whereas domestic production will be equal to Q_4 = 79.5 million tons and export will equal Q_1Q_4 = 37.0 million tons. Russia restricts wheat export by setting an export quota at Q_2Q_4 = 7 million tons. Because of a reduction in exports, domestic wheat prices will drop to P_t = $201/ton, domestic consumption of wheat will go up to Q_2 = 72.5 million tons, external demand will go down to Q_3 = 75.5 million tons, and exports will decrease to the quota size — that is, Q_2Q_4 = 7 million tons. As is the case with export duty, reduction in the producer's surplus will equal the sum of the areas *(a + b + c + d)* = US$2,025.0 million. Total economic losses for society will equal *(b + d)* = US$412.5 million (Figure 9, Panel A).

The economic difference between the tariff and the quota does not lie so much in different redistribution effects as in a different degree of restrictive impact that the tariff and the quota make on export.

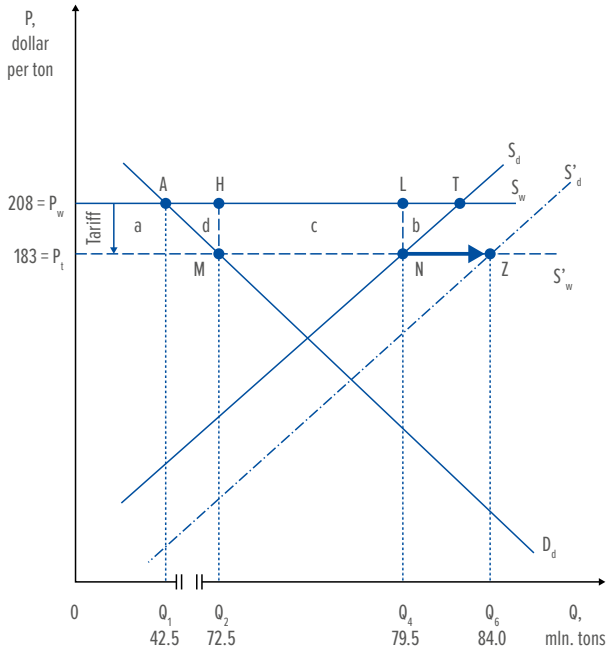
Assume that, because of bumper wheat crops, the domestic supply of wheat has increased from S_d (79.5 million tons) to S'_d (84.0 million tons). As shown in Figure 9 (Panel B), despite higher supply, the domestic price P_t = US$208/ton protected by the tariff has remained the same; however, the wheat export volume has increased by Q_4Q_6 = 4.5 million tons. Assume that the export duty rate is 12 percent (Figure 9, Panel B). A higher supply of wheat has increased export. In the case of the export quota (Figure 9, Panel A), an increase in wheat demand by the same amount generates a different economic effect. Given that the main task of the quota is to maintain the volume of export at a specified level rather than to keep prices unchanged, the increase in domestic supply

Figure 9: Difference between the Wheat Export Quota Mechanism (Panel A) and The Wheat Export Duty Mechanism (Panel B) in Russia

A: Export Quota Mechanism



B: Export Duty Mechanism



Source: Original figure for this publication.

will bring down the domestic price for this commodity to P'_q = US$176/ton (Figure 9, Panel A). Domestic consumption of wheat will increase to Q_3 = 75.5 million tons, while domestic supply will increase to Q_5 = 82.5 million tons; in this case, the volume of exports will remain the same within the quota — that is, $Q_2Q_4 = Q_3Q_5$ = 7 million tons, which means that the greater supply of wheat has driven down its domestic price (Figure 9, Panel A). So, in the case of higher demand for the commodity, the export quota is more restrictive in nature than the export tariff because it provides an opportunity to keep export within strictly specified volumes.

In the example with export duty, the domestic price would remain the same (US$183/ton of wheat); however, export would increase by Q_4Q_6 = 4.5 million tons (Figure 9, Panel A). Because of higher supply of wheat due to the quota, export would remain the same at 7 million tons; however, the domestic price would fall to US$176/ton (Figure 9, Panel A).

Usually export quota policy is better administered than tariff policy. In emergency situations, it is easier and faster to introduce quotas than tariffs, which typically require review in the parliament (Kireev 1997). On the other hand, export quotas may trigger monopolization of the market by wheat exporters, as the latter know that they will be able to reduce the purchasing price for grain supplied by producers.

"Export restrictions substantially distort the operations of grain markets, and hinder sector development of the countries that introduce them," warns Natalia I. Shagayda, Director of the Center of Agricultural Policy at the Institute of Applied Economic Studies in the Russian Presidential Academy of National Economy and Public Administration (RANEPA). From her point of view, export duties could be useful if they are refunded — that is, redistributed — to producers of commodities facing export restrictions. This requires a mechanism to consolidate export duties on agricultural products and agricultural commodities as well as a mechanism to refund retained duties to producers of commodities facing export restrictions because of duties (Mau et al. 2020).

The downside of the export tariff is that it leads to a higher tax burden for exporters and producers that, because of the tariff, are forced to keep a portion of their wheat in the domestic market, thus losing a margin from wheat sales abroad. In the end, the burden from duties is passed through to consumers. A share of the producers' revenues is redistributed to the state budget and their disposable income is

reduced. Furthermore, the export tariff leads to a drop in wheat prices in the country. The tariff on exportable goods implicitly undermines exports of the country, deteriorating the financial standing of exporters and grain producers.

Export duty can lead to a substantial decrease in the domestic price; however, it does not protect the market from large export. "With high external market prices for grain, the duty will not halt exporters," says Oksana N. Lut, Deputy Minister of Agriculture (Kulistikova 2020c).

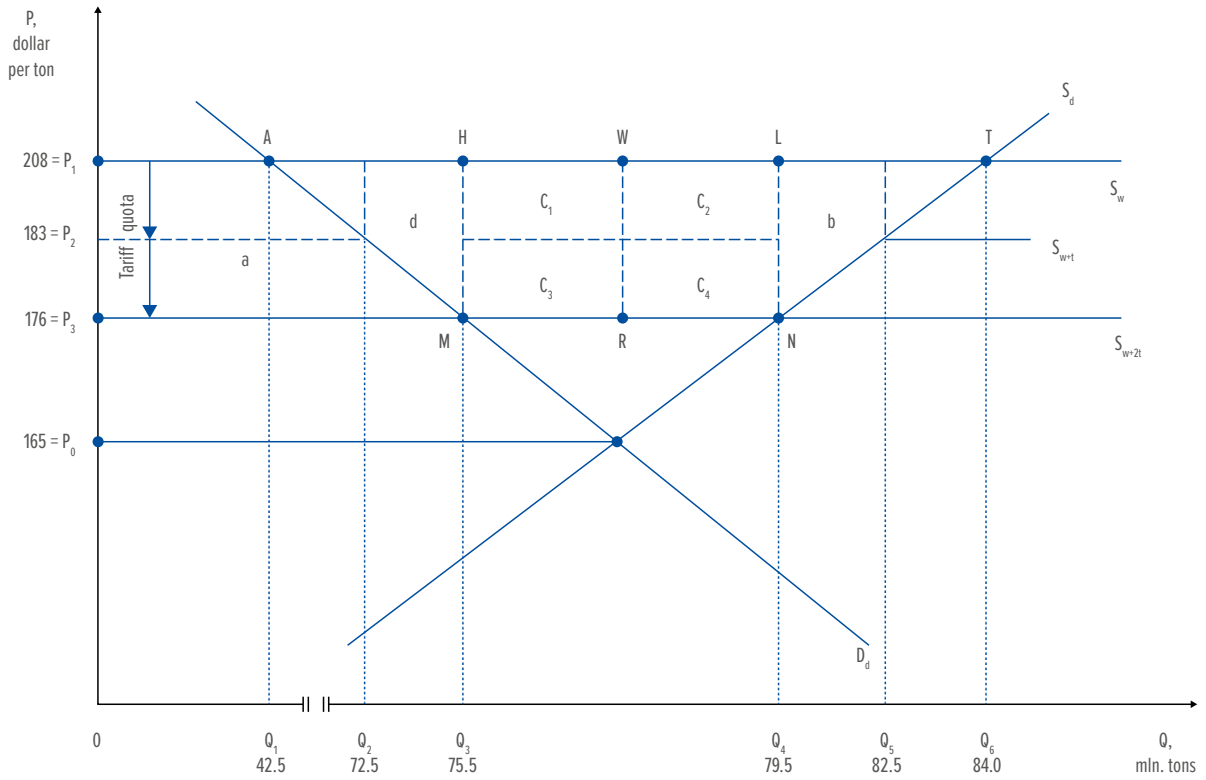
The positive side of export duties is that they are used as an important source of replenishing the budget (in January–August 2020, the share of export duties by all types of products in the revenue part of the federal budget was 25 percent) (Federal Customs, Government of Russia 2020). Amid the pandemic the government is facing a reduction in the taxation base. From the organizational point of view, export duties are easier to collect than most other types of taxes, because they are paid when the goods physically cross the customs border (Kireev 1997).

3. Setting a Tariff Rate Quota for Wheat Exports

The export tariff rate quota has an intrinsic contradiction that manifests itself in a mismatch between the interests of local producers and of consumers. On the one hand, wheat consumers approve such a quota so that they will be protected from higher domestic prices for wheat (in extraordinary circumstances, such as during the pandemic); on the other hand, exporters may start voicing their discontent with the imposed export quota. This contradiction is addressed by using an export tariff rate quota.

Assume that, before the start of trade, the market clearing price for wheat is US$208/ton. In free trade, the wheat price is US$176/ton. At this price, the country produces Q_6 = 84.0 million tons of wheat, consumes Q_1 = 42.9 million tons, and exports Q_1Q_6 = 41.1 million tons. After introducing a tariff to protect national producers of this product, the government would introduce a tariff rate quota under which the first 3 million tons to be exported are taxed at 12.0 percent (P_1P_2 = US$25/ton), whereas the exports above the threshold of 3 million tons are taxed at a rate of 15.4 percent (P_1P_3 = US$32/ton) (Figure 10).

Figure 10: Illustration of the Export Tariff Rate Quota Mechanism



Source: Original figure for this publication.

Since, from the very beginning, the country exports much more wheat than it should under the quota, a tariff consisting of two components that reduce the domestic price of the product to P_2 = US$183/ton is introduced; as a result, domestic production decreases to Q_4 = 79.5 million tons, consumption increases to Q_3 = 75.5 million tons, and export drops to Q_3Q_4 = 4.0 million tons. The redistribution effect will be a = US$1,894.4 million, enabling local consumers protected by the tariff to redistribute a portion of revenues in their favor at the expense of producers. Direct economic losses due to export restrictions will equal, as shown in the earlier cases, the area of two right-angled triangles *(b + d)* = US$593.6 million (Figure 10).

Revenue area *(c)* is divided into several subareas. Since, after the tariff is implemented, the country exports 4.0 million tons (which is substantially above the tariff quota), the rates of the export duty applied to the volumes over and under this limit will be also different. The first 3 million tons of this export are taxed at the within-quota rate (12 percent), and relevant revenues totaling US$74.88 million ($c_1$ = 0.120 × US$208/ton × 3 million tons = $74.88 million) are used to replenish the budget. The remaining 1 million tons of export are taxed at the over-quota rate, with revenues in the amount of US$32.0 million ($c_2$ + c_3 = 0.154 × US$208/ton × 1 million tons = US$32.0 million) also being paid to the state budget. Subarea c_4 = [(0.154 × US$208/ton × 3 million tons) — (0.154–0.120) × (US$208/ton × 3 million tons)] = $74.88 million is a windfall profit for the companies — that is, foreign importers, which, after buying 3 million tons of wheat at US$183/ton within the quota, can then resell wheat at the higher domestic price of US$208/ton. However, when Russian exporters discover that foreign importers, which have purchased grain under the tariff rate quota, resell it at the over-quota price, they will also wish to get this windfall profit received by foreign importers and will increase their export price. If, in the analyzed example, the export price increases to US$208/ton, all windfall profit earned from the tariff rate quota will be redistributed back to Russian exporters (Figure 10). For this reason, the tariff rate quota can be used as a trade policy tool only within a limited period of time (Kireev 1997).

A serious problem related to the tariff rate quota is that, in practice, it is extremely difficult to calculate (Sizov 2020).

4. Supporting Wheat Consumers at All Levels of the Food Product Chain

Restricting grain prices and setting up quotas create advantages for producers of livestock products that can be exported even in the absence of a surplus of the recommended foods. Budget support for wheat consumers (milling plants, feed mills, and livestock farmers) to enable them to buy grain at stable and predictable prices would be a possible solution in providing affordability and accessibility of food products during the pandemic. In this way producers would have a source of effective demand for wheat during the pandemic in the case of wheat overproduction. However, in this situation it would be necessary to consider whether the budget is sufficient to provide such support.

Food aid to vulnerable population groups (pensioners, students, the unemployed, and single mothers) would enable them to buy bread high in vitamins and micronutrients. Products made from wheat according to science-based recommended dietary intake norms in amounts not less than before the pandemic is becoming especially important in the face of a decline of real income. The objective of this measure is twofold. First, it would help maintain high demand for processed wheat and flour-based products, thereby supporting wheat producers and processing companies. Second, this measure would protect poor population groups from reduced consumption of socially important types of food products, such as bread and other flour-based food products.

5. Supporting the Development of the Market, Transportation, and Logistics Infrastructure as well as the Safety of Wheat Truck Drivers

This policy is gaining relevance amid the COVID-19 pandemic, which has exacerbated the situation in the system of wheat transport both between Russian regions and from Russia to other countries. It is proposed to implement a quick medical check of drivers who transport grain to identify people infected with the coronavirus; and to provide them with personal protective equipment (masks and sanitizer) free of charge. It would reduce waiting times at check points for grain truck drivers. The entire transportation infrastructure needs to be modernized, as road capacity in Russia remains low (in particular, this affects road capacity on rural roads that face too great

a load because of congestion during the quarantine). It is necessary to repair roadways in rural areas that see a high concentration of grain trucks.

The market information system requires improvement because, during the pandemic, actors in the grain market need information on prices, traded values, shipped values, and export supplies of wheat without any interruption. Today, the Federal Customs Services and the Russian Ministry of Agriculture are often late in providing such information. That is why it is necessary to ensure the steady operation of the market information system.

In conclusion, this section emphasizes that issues of high uncertainty in the market should be brought to the fore — in particular, in situations when wheat export is restricted in the absence of transparency along with failures in administration. In this case, it would be more efficient to focus policies to improve transparency in decision-making, reconcile interests of various actors in the market, improve infrastructure, and provide targeted assistance to food consumers.

Assignment

The assignment includes three tasks:

1. Allocate the roles of stakeholders listed in this case among the trainees.

2. Analyze all policy options and assess the pros and cons of each option from the point of view of the stakeholder that the trainee represents.

3. Prepare a list of policy options and give reasons in support of these policy measures; show how these measures are intended to help maintain a balance of interests among the various stakeholders.

As part of this assignment, it is advisable to hold debates (similar to parliamentary debates) when a trainee describes the position of the stakeholder whose interests he or she is to defend during a specified time (7 minutes). Furthermore, the trainee should describe policy options oriented to solve issues. Other participants — that is, stakeholders with opposing interests — have the right to criticize or reject the position presented by the trainee regarding the stakeholder he or she represents. The participant whose arguments and the position on articulated policy options are recognized by the trainer as the most clearly justified and efficient from the economic, social, and policy points of view is declared winner of the debates. Scores are given to the trainees acting as opponents for useful criticism.

Policy Recommendations

The issue of food security in Russia is largely driven by household income, the level of consumer prices, and stability in the market. Amid the COVID-19 pandemic, income has been decreasing and the share of population consuming bakery and pasta products has been increasing. To avoid the potential destabilization of the grain market, the government used export restriction as a response to the volatility of wheat. And while these measures produced the quick effect of containing a further increase in prices, they also led to low prices for farmers, reductions in domestic production, loss of the market share, reductions in revenue in hard currency, and damaged reputation (IFPRI 2020). At the same time, given the balance of grain production and consumption, its shortage is unlikely.

Russia should not impose a ban or any restrictive measures on exports, because measures aimed at regulating exports after accounting for domestic output is sufficient to meet all domestic needs. In the extreme case, if Russia faces a shortage of grain, it can change its procedures for imposing and agreeing on the quota among the stakeholders, increase the import of wheat from foreign countries, and use grain from state reserves.

As an alternative option, it is possible to offer budgetary support to wheat consumers (milling plants, animal feed plants, and livestock farms), protecting them in this way from volatility of prices for crops.

Support of vulnerable population groups (pensioners, the unemployed, and single mothers, for example) in the form of food aid can be an efficient policy option. This aid should take the form of targeted benefits for the purchase of bread and flour-based products. It is recommended to promote the purchase of food products high in vitamins and micronutrients because such food products boost the consumer's immune system, which is even more important during the epidemic. More importantly, an increase in demand benefits wheat producers and processing companies.

Unpredictable and unclear trade policy in the grain sector, disruptions in the operation of the transport infrastructure due to the quarantine, and limited possibilities for agricultural producers to purchase resources can reduce the profitability and investment attractiveness of grain production. For this reason, the Russian Ministry of Agriculture should develop a system of adequate information support for grain market participants, implement methods of quick medical checks of truck drivers to identify persons infected with the coronavirus, and incentivize an expansion of road capacity to avoid traffic congestion.

Such measures will help maintain the balance between interests of wheat producers and interests of wheat consumers in Russia.

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Abbreviations

EAEU	Eurasian Economic Union
RANEPA	Russian Presidential Academy of National Economy and Public Administration
RGU	Russian Grain Union

Note: All tons are metric tons.

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Impact of the COVID-19 Pandemic on Livestock Farming in Ak-Talaa District, Kyrgyz Republic

Nurila Mukashevna Ibraeva

Executive Summary

Livestock husbandry in the Kyrgyz Republic has been a leading agricultural sector, accounting for 48.3 percent of total gross agricultural output (Нацстат КР 2020a). More than 60 percent of the population reside in rural areas, and the development of livestock husbandry plays a key role in the production of food and contributes significantly to the sustainability of the country's food security. Ak-Talaa district was chosen for the study as a socially vulnerable remote area with a harsh climate, where almost the entire population has been engaged in free-range animal husbandry since ancient times, using the natural forage base of the vast mountain pastures with abundant vegetation. The district has a high poverty rate, with nearly 30 percent of the population living on welfare, receiving pensions and benefits. In an area where 51 percent of the local population are employable, 35 percent are young people and 13 percent belong to the retirement age group (Гареева и др. 2016), there is virtually no industry and the services sector is underdeveloped. This causes increased unemployment and internal migration to the capital (12 percent of the population of Ak-Talaa make this migration). For the majority of the population, livestock farming is not only a source of food, but it also becomes a source of income and financial security. Therefore, livestock farmers seek to increase the number of livestock, which leads to reduced yields and degradation of pastures.

This case study is relevant because of the need to assess the impact of the COVID-19 pandemic on livestock farmers in Ak-Talaa district in the context of measures taken by the government to prevent the spread of the virus. The purpose of the study is to identify the COVID-19-induced problems facing livestock farmers in the Ak-Talaa region of the Kyrgyz Republic and to develop policy measures to address them.

The main stakeholders in the resolution of the emerging problems in livestock breeding in the high mountainous areas are the government authorities, livestock farmers, livestock buyers/brokers, private veterinarians, grazing land committees, and international donors.

The policy measures aimed at resolving livestock farmers' COVID-19-induced problems, identifying food security issues, and reducing rural poverty developed in this study can be implemented if they are directly supported by the public and private sectors.

Policy options are subdivided into three groups:

1. Policy measures aimed at improving access to markets;

2. Policy measures aimed at improving the fodder reserve; and

3. Policy measures aimed at improving access to food.

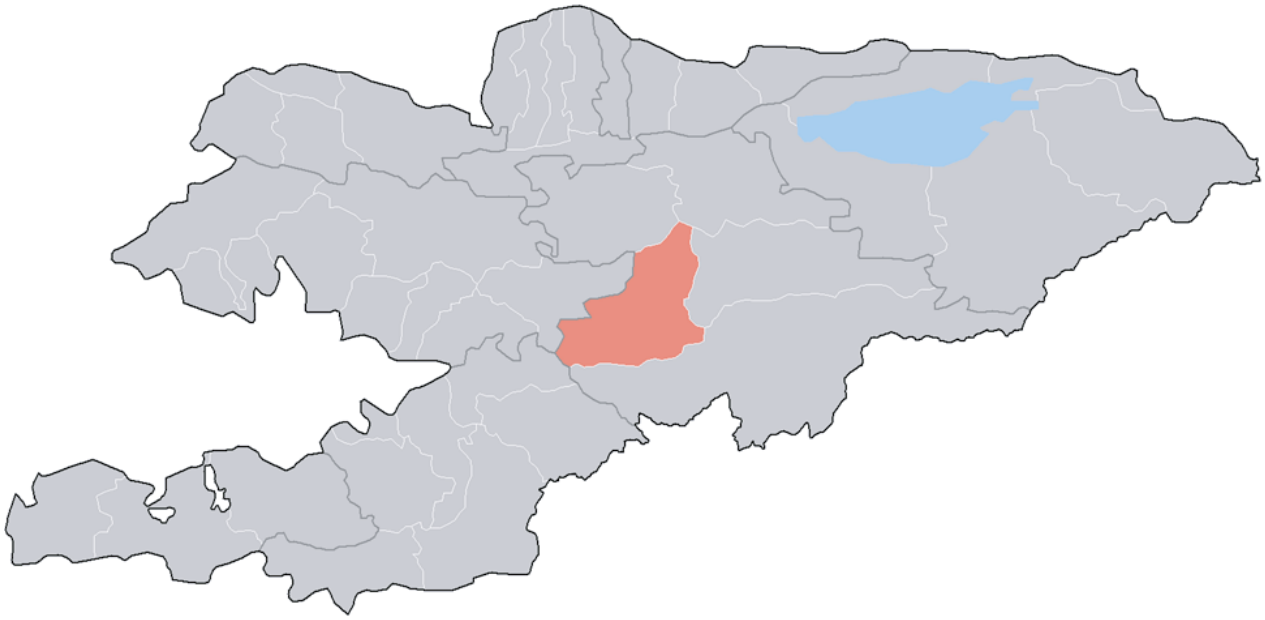
In the context of ensuring food security of the Kyrgyz Republic, policy makers should be focused on implementing policy measures in the area of the production and sales of organic meat products, as well as developing measures to support the development of animal husbandry and encourage farmers to transition to pedigree livestock breeding, thus improving their production and resource base.

Background

The Ak-Talaa *raion* (district) in the Naryn *oblast* (region) is a mountainous area with extensive rangelands offering the local population free-range animal husbandry as one of its main sources of income. The district's area is 7,266 square kilometers (Figure 1); its elevations range from 2,600 to 4,737 meters in the mountainous areas and from 1,500 to 2,600 meters in the valley (Гареева и др. 2016).

The lack of industry in this district, along with its low levels of air pollution and the abundance of its natural grazing lands, create conditions favorable to the inexpensive production of economically cheap and environmentally friendly livestock products.

Figure 1: Location of the Ak-Talaa District in the Kyrgyz Republic



Source: Wikipedia, https://en.wikipedia.org/wiki/Ak-Talaa_District#/media/File: Kyrgyzstan_Ak-Talaa_Raion.png.

Note: The Ak-Talaa district appears in orange; the blue shows the Issyk-Kul Lake.

Out of 38,000 people who live in the district, the average salary is only 15,303.54 Kyrgyz som (US$204) (Нарынстат 2020).[1] While the poverty rate in the Kyrgyz Republic in 2019 was 20.1 percent, in the Naryn Oblast it was 8 percent higher — 28.1 percent, with 81,496 people living in poverty. The value of the general poverty line per capita in 2019 was som 32,980.5 (US$420 at the 2019 exchange rate) per year (Нацстат КР 2019). According to a 2020 report assessing the social and economic impacts of climate change on the rural population, "the absolute poverty rate in Ak-Talaa district is even higher and stands at 33.6 percent, while the extreme poverty rate is 4.6 percent. Within Ak-Talaa, the poverty gap index (PGI) is 6.9 percent, and the poverty severity index (PSI) is 2.2 percent. Not only is the share of the poor greater in the district, but the poverty itself is much deeper there than the oblast and national averages" (FAO 2020). The COVID-19 pandemic has exacerbated the situation of poor households (which make up almost 30 percent of the population) who live on social welfare and receive pensions and benefits. Almost all households (94.2 percent) have access to agricultural land, usually irrigated (66.8 percent), with an average plot size of 2 hectares. The average livestock population per household includes 8 cattle, 31.7 sheep, 9.7 goats, and 5.7 horses (FAO 2020).

Almost the entire able-bodied population of the district is engaged in herding livestock and cropping for their own consumption and for sale.

Livestock plays a central role in the development of food systems in the Kyrgyz Republic and directly affects such aspects as demand for animal feed, market concentration in agricultural commodity turnover, intensification of production at the farm level, farmer income and land use, and nutrition and public health (Нацстат КР 2020a).

According to the country's National Statistics Committee, 6,059 tons (live weight) of livestock and poultry for slaughter were produced in January–September 2020, which is 2 percent more than over the same period the previous year; the production of milk, eggs, and wool also increased, by 3.6 percent, 1 percent, and 0.7 percent, respectively. The average milk yield per cow in Ak-Talaa district is low, amounting to only 74.7 percent of the respective figure for the whole country, which indicates the low productivity of cows in this region. Wool yield per sheep is 2.7 kilograms, which is 0.3 kilograms higher than the average yield in the country (Нацстат КР 2020b).

[1] 1 US dollar = 75 Kyrgyz soms as of June 2020.

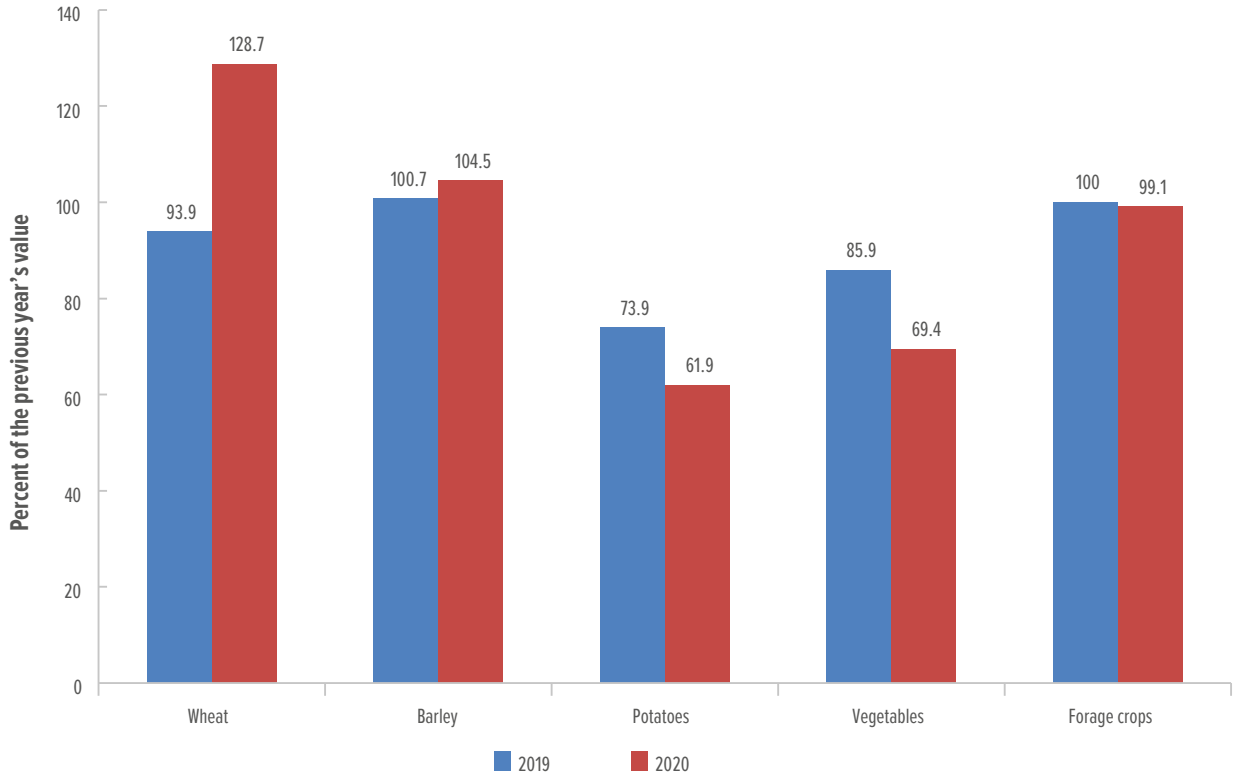
The local population consumes mostly household-produced food: lamb, milk, homemade jam, *kurut* (traditional dried cottage cheese), *sarymai* (homemade melted butter), and *ayran* (kefir). Food consumption is oriented toward bakery products, potatoes, milk and meat products, sugar, and vegetable oil due to economic affordability. Households spend more than half of their income on consumer goods and food, which is a sign of the high poverty in the region (FAO 2020).

Sales of horses, bulls, and cows generate the largest part of income for most households, but sheep and lambs are also important. The average sales of live animals per farm ranges from som 80,000 to 100,000 per year (about US$1,000–1,250). Meat is very rarely offered for sale. Crop production is focused on providing fodder for livestock and household needs. Because of severe climatic conditions (cold winters and short summers), the only crops grown in the area are cereals (wheat, barley), perennial herbs, potatoes, and vegetables. Therefore, the share of livestock farming proceeds of the total income generated by agricultural activities amounts to at least 75 percent (FAO 2020).

Both the small scale of farm production and outdated machinery affect crop yields, which are cultivated primarily for domestic consumption. Thus, according to the National Statistics Committee, in 2019, the yield of main crops were: for wheat, 19.4 centners/hectare; for barley, 18.5 centners/hectare; for legumes, 10.5 centners/hectare; for potatoes, 137.5 centners/hectare; for vegetables, 129.0 centners/hectare; for perennial herbs, 41.2 centners/hectare; and for fruits and berries, 18.2 centners/hectare (Нацстат КР 2020c). Only small surpluses of hay, grains, and potatoes are sold.

During the pandemic, rising flour prices influenced farmers' decisions to increase their acreage under wheat. A farmers survey (see Annex 1 for details) and national statistics (Нацстат КР 2020c) confirm that, although wheat grown in the Ak-Talaa district is inferior in quality (it has a lower gluten content) to the flour imported from Kazakhstan, in 2020 total cropping acreage in the district devoted to wheat increased from 1,400 hectares to 1,800 hectares, and an area 101 hectares larger than the area in 2019 was sown with barley (Figure 2). Forage crops account for 72 percent of the cropping acreage structure.

Figure 2: Acreage for Main Crops, 2019 and 2020



Source: Original figure based on data from the National Statistics Committee of the Kyrgyz Republic, accessed October 16, 2020, http://www.stat.kg/ru/publications/o-sbore-urozhaya-selskohozyajstvennyh-kultur.

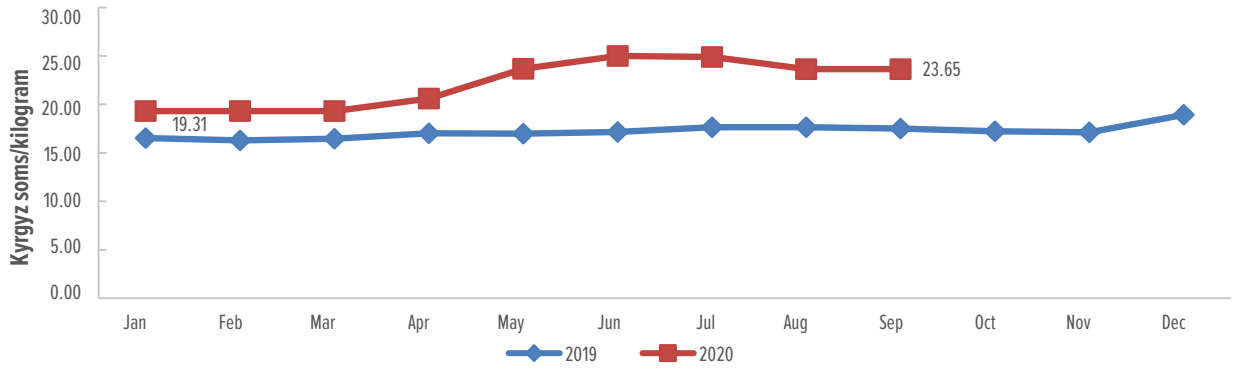
Law No. 183 of the Kyrgyz Republic "On the Food Security of the Kyrgyz Republic" (Kyrgyz Republic 2008) and Law No. 166 "On the Development of the Agricultural Industry of the Kyrgyz Republic" (Kyrgyz Republic 2009) define the long-term vision of agriculture; these laws pay special attention to ensuring food security, developing the agro-industrial sector, and creating favorable conditions for living in rural areas. The purpose of food security is to create conditions that allow the population's access to the necessary amounts of food in accordance with the minimum standards of food consumption, which are based on food availability, affordability, and safety, as well as to ensure conditions that allow access to healthy food (Закон КР 2008, 2009b).

Food Prices Increased

Under the influence of the COVID-19 pandemic, average consumer prices for basic foodstuffs have increased despite the existence of a green corridor to allow cross-country transportation of foodstuffs.[2] In January–September 2020, average consumer prices for rice increased by 4.2 percent. and Prices for vegetable oil increased by 5.8 percent, prices for different grades of flour increased by 3.9–6.5 percent. Average monthly wheat prices rose during the pandemic and the price of wheat in September 2020 was 22.4 percent higher than it was in January 2020 (Figure 3).

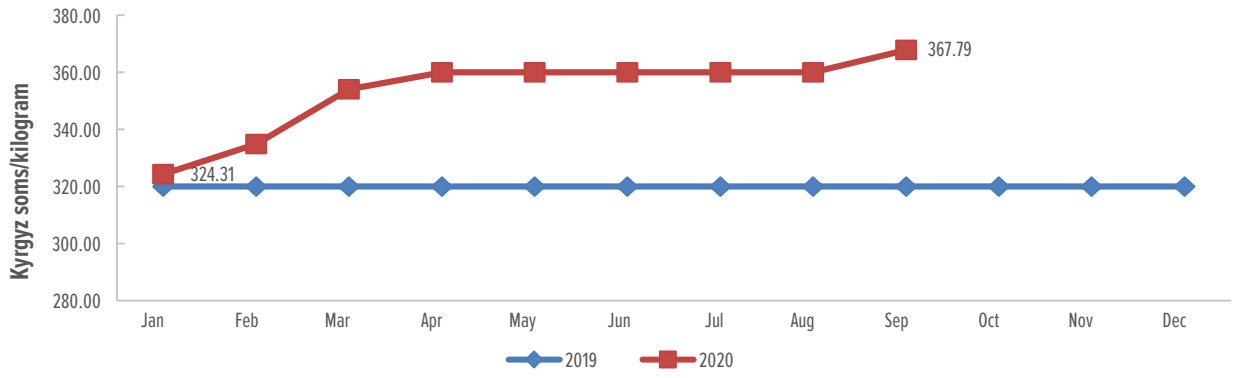
During the pandemic, travel restrictions and the closure of roads and livestock markets caused an acute problem with livestock sales: no livestock was sold. Meat prices increased by 13.7 percent, with beef prices increasing by 13.4 percent (Figure 4), mutton prices by 13.9 percent (Figure 5), and horse meat prices by 10.8 percent.

Figure 3: Average Monthly Consumer Prices for Wheat, Ak-Talaa Raion, 2019 and 2020



Source: Original figure based on data from the interviews for this study; National Statistics Committee of the Kyrgyz Republic, accessed October 16, 2020, http://www.stat.kg/ru/daily-prices/.

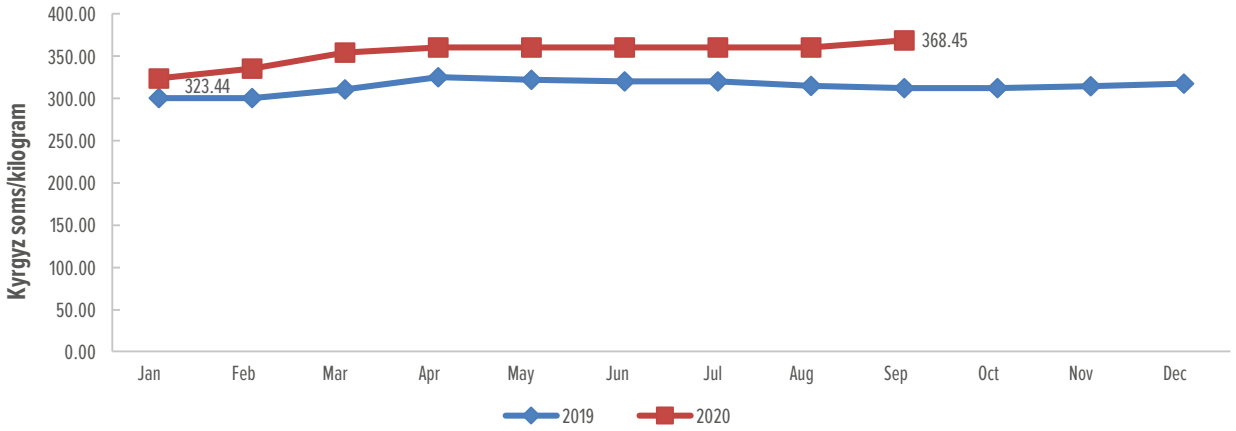
Figure 4: Average Monthly Consumer Price for Beef, Ak-Talaa Raion, 2019 and 2020



Source: Original figure based on data from the interviews for this study; National Statistics Committee of the Kyrgyz Republic, accessed October 16, 2020, http://www.stat.kg/ru/daily-prices/.

[2] The "green corridor" implies a temporary simplification of customs procedures for the uninterrupted supply of humanitarian goods, essential food products, and medical products.

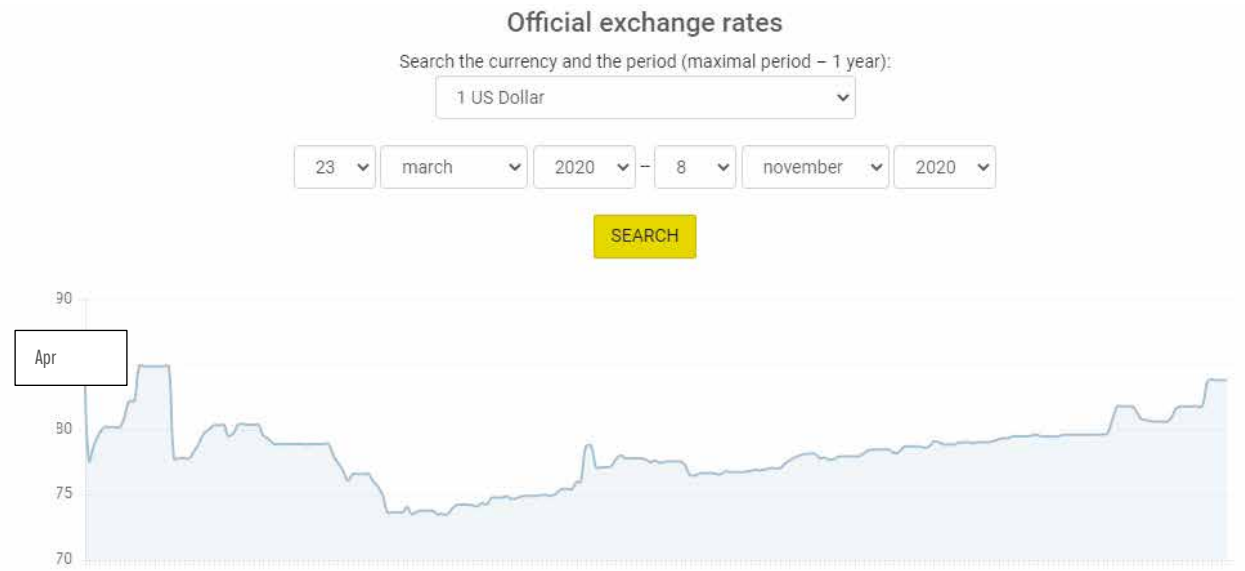
Figure 5: Average Monthly Consumer Prices for Mutton, Ak-Talaa Raion, 2019 and 2020



Source: Original figure based on data from the interviews for this study; National Statistics Committee of the Kyrgyz Republic, accessed October 16, 2020, http://www.stat.kg/ru/daily-prices/.

There are multiple explanations for the increase in meat prices. First, the State Agency for Antitrust Regulation linked the increase in the cost of lamb and beef in the Kyrgyz Republic with the increased exports of livestock and meat to Kazakhstan, Tajikistan, and Uzbekistan, as well as with the growth in the number of resellers.[3] Second, the majority of consumers introduced the "compulsory" addition of meat broth into their diets, believing that it enhances immunity to viral diseases. Third, panic buying was widespread: meat price spikes were primarily observed in April and September; this was the result of panic driven by the fear of higher prices and the spread of rumors on social media about the second wave of the pandemic. Fourth, higher demand for livestock was also caused by the fact that many migrants had returned home and decided to engage in livestock breeding. Finally, according to Lenara Niyazbekova, Chair of the Kyrgyz Association of Exporters and Importers "Kyrgyzland," "the reason for the rise in meat prices is not the export of livestock and meat, but the growth of the US dollar exchange rate and intensive activities of livestock smugglers" (Makanbay Kyzy 2020). Since early March, the som to US dollar exchange rate has dropped by more than 20 percent (Figure 6).

Figure 6: Official Dollar Exchange Rate of the National Bank of the Kyrgyz Republic



Source: National Bank of the Kyrgyz Republic, official exchange rate, https://www.nbkr.kg/index1.jsp?item=1562&lang=ENG&valuta_id=15&beg_day=23&beg_month=03&beg_year=2020&end_day=08&end_month=11&end_year=2020.

[3] For details about the State Antitrust Agency, see http://antimonopolia.gov.kg/.

The COVID-19 pandemic has severely impacted livestock revenues from smallholder livestock breeders and the socially vulnerable population of Ak-Talaa district. During the COVID-19 quarantine, humanitarian aid was provided by the State Reserve Fund, the local reserve fund, international organizations, and individual entrepreneurs to needy families. In total, 3,189 families out of 3,259 families who were citizens received assistance; assistance was also provided to citizens from 798 families who lost their jobs and remained at home. Thus, the number of families received assistance in the district has reached 3,987.

During an interview on October 19, Kenzhe Karagulova, deputy head of the Ak-Talaa district administration, said that the overall district received 181,880 kilograms of flour, 1,880 kilograms of pasta or noodles, 8,478 liters of vegetable oil, 3,390 kilograms of rice and buckwheat, 1,398 kilograms of sugar, 990 kilograms of meat, and 308 kilograms of tea from the government, individuals, and international organizations.

The following additional assistance, described by specialist J. Sidikov of the Ak-Talaa district administration, including personal protective equipment, was provided: 6,350 face masks; 87 tanks of oxygen; 365 liters of antiseptic; 4,350 protective suits; money for medicines to the tune of som 1,749,525; som 22,500 for thermometers; 550 protective glasses; 5,150 pairs of gloves; and an additional som 368,843 was allocated for various other medical products. The total amount of the humanitarian aid was som 5,732,201.

Nevertheless, the farmers survey (Annex 1) and an analysis of the consumer price and tariff index in the Kyrgyz Republic for 2020 revealed that, for most farmers, the loss of income, cash shortages, and rising food prices adversely affected spending on education and non-food items, so that people are buying food such as flour, vegetable oil, sugar confectionery, fruit and vegetables. This has certainly had an impact on the diet of rural residents, causing a deterioration of families' diets, a reduction of food consumption, and a shift to cheaper (less nutritious) foods.

Thus, the COVID-19 pandemic has had a strong impact on low-income and vulnerable households, reducing their purchasing power and food security. All this requires increased attention from the government, international organizations, and the local community.

Policy Issues

To assess the situation, a questionnaire was formulated and telephone interviews conducted in September and October 2020 with representatives of municipalities, veterinary service providers, health care workers, farmers, livestock traders, fodder producers, and representatives of grazing land committees of the Ak-Talaa district (Annex 1).

As a result of an analysis of official sources and data from interviews, the following key policy issues were identified as impacted by the pandemic:

Reduced Access to Markets Exacerbated by the COVID-19 Pandemic

Closed livestock points of sale: The COVID-19 pandemic revealed the vulnerability of the primary incomes of livestock breeders and the absence of a meat production and marketing chain in Ak-Talaa. It exacerbated the problem of livestock sales. The existing livestock marketing chain was well tuned for the sale of livestock. As a rule, when selling livestock through intermediaries, small livestock producers effectively lose up to 40 percent of the income they could have generated by selling directly to the consumer. A livestock breeder sells livestock to a neighbor or an intermediary in his village, and at the district's livestock market to consumers and brokers. Because of the closure of the local livestock market and restrictions on movement, there were no sales of livestock and farmers lost their income from this essential source.

Closed markets and increased seed prices: Farmers could previously travel to Bishkek city and Naryn city to buy quality seeds in specialized stores at lower prices. During the pandemic, farmers were stripped of this opportunity and the price of seeds almost doubled in comparison with prices before the pandemic. Thus, according to the interview with Ulanbek Kaziyev, the head of the Raion Agricultural Development Department (RADD), subsidized wheat and barley were allocated for all interested farmers. However, many farmers could not afford to buy the subsidized seeds because they lacked the needed financial resources.

Restricted access to credit: The quarantine coincided with the spring sowing season, which began in the district on April 8 and ended on May 21, 2020. Due to the delayed disbursement of loans during the quarantine and the lack of money, not all farmers

received subsidized seeds in time and thus had to significantly delay sowing, which negatively affected the grain maturing period. According to the interview with Zhohomart Makeyev, the head of a seed farm in Ak-Chiy village, sowing, irrigation, and harvesting turned out to be unprofitable because, by the fall, the prices for wheat and barley had dropped almost two-fold compared to the prices at which the seeds had been purchased in spring.

The Supply of Animal Fodder

Increased fodder prices: Because of the closure of markets during the pandemic, fodder prices rose by 50–80 percent.

Deterioration of pastures: During the pandemic, because of the increased cost of fodder, farmers simply began to drive their cattle to the grazing lands near villages, thus affecting the condition of those lands. So far, the district has enough grazing grounds and the condition of the pastures is satisfactory. However, in his interview, Bakyt Itikulov, a leading pasture specialist of the Ak-Talaa RADD, said that if the rate of livestock growth continues, pasture productivity will decrease in the next 10 years and cattle breeding will become unprofitable and risky.

Small farmers' access to pastures is limited: During the quarantine, many small livestock farmers lost income from livestock sales and failed to get loans, pay taxes, or buy pasture tickets in time.[4] They found accessing grazing grounds more difficult because they did not have enough money to drive livestock to distant pastures and pay the shepherds based on the pasture productivity. Large farmers were not affected by the pandemic because they were able to buy pasture tickets and have access to the best highland pastures.

Food Access for Vulnerable Residents of Ak-Talaa Negatively Impacted by the Pandemic

Increased prices for basic foodstuffs (discussed above): The amount of food spending (som 1,217 per month on average for the district) is unaffordable for vulnerable households (1–3 quintile groups) whose average per capita income is much lower than the minimum subsistence level (Table 1). These groups include large families, people with disabilities, single elderly people, and pensioners receiving minimum pensions (som 4,287 for the second quarter of 2020; see Kalinina 2021). The subsistence minimum wage in the second quarter of 2020 in Ak-Talaa was som 5,481.

Table 1: Level of Income and Expenditures Distributed by Quintile Groups in Ak-Talaa District, for Q2 of 2019–20

Population Quintile	Average per Capita Income (soms/person/month)		Average per Capita Spending on Food (soms/person/month)		Share of Income Spent on Food (%)	
	2019	2020	2019	2020	2019	2020
Entire population	**4,360**	**4,105**	**1,102**	**1,217**	**25**	**30**
1st quintile	1,614	1,631	761	833	47	51
2nd quintile	3,315	3,242	955	1,157	29	36
3rd quintile	4,709	4,575	1,537	1,470	33	32
4th quintile	6,424	6,397	1,275	1,669	20	26
5th quintile	12,121	11,511	1,866	1,913	15	17

Source: Original table based on data from the Information Bulletin of the Kyrgyz Republic on Food Security and Poverty, National Statistics Committee of the Kyrgyz Republic, 2020, p. 68, accessed October 16, 2020, http://www.stat.kg/media/publicationarchive/0c9a0505–1f0c-4974–8e1d-fd59dc409119.pdf.

Note: Quintiles are five 20 percent groups of the population, distributed according to the level of average per capita income.

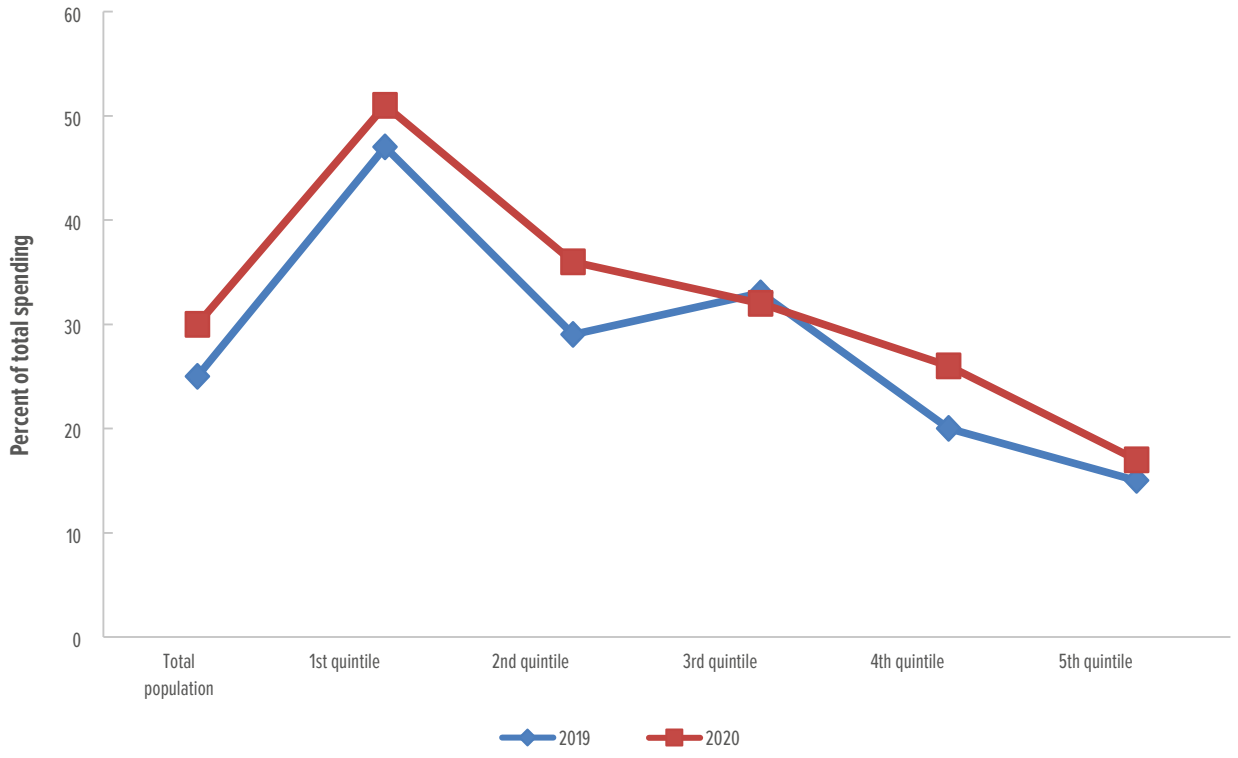
[4] A *pasture ticket* is a document granting the right to use pastures for cattle grazing and granting the pasture user the status of a member of the pasture user association.

The level of per capita food spending in the first quintile group is the highest and stands at 51 percent of the average per capita income, while the average for the district is 30 percent, and for the fifth quintile group — which makes up 20 percent of the population with the highest incomes — this figure is the lowest and stands at 17 percent.

The specific weight of food expenditures for Quarter 2 of 2020 is higher than that of the same period in 2019, in almost all quintile groups (Figure 7). This is primarily because, during quarantine, the population of the district — indeed, of the entire country — had to stay at home, schools and kindergartens were not in session, and food expenses increased.

The purchasing power of the population of Ak-Talaa district decreased: During the pandemic, the monetary income of the population decreased as a result of restrictive quarantine measures, especially in the second quarter of 2020, which was characterized by strictest restrictions and self-isolation regime. Farmers lost their main sources of income from sales, income from migrants decreased, many lost their jobs, and unemployment — which had been quite high even before the pandemic — increased. Average per capita incomes in the Ak-Talaa district decreased in all quintile groups during quarantine compared to incomes for the same period in 2019. The increase in food prices resulted in an increased share of food in total expenditures. All of this has had an impact on the purchasing power of the population.

Figure 7: Food Expenditures as a Percentage of Income in Quarter 2 of 2019/20



Source: Original figure based on data from the Information Bulletin of the Kyrgyz Republic on Food Security and Poverty, National Statistics Committee of the Kyrgyz Republic, 2020, pages 68, accessed October 16, 2020, http://www.stat.kg/media/publicationarchive/0c9a0505–1f0c-4974–8e1d-fd59dc409119.pdf.

Thus, the COVID-19 pandemic contributed to the growth of prices for basic foodstuffs, a decrease in income and purchasing power, and reduced consumption and access to food for the population of Ak-Talaa district.

Stakeholder Groups

State Authorities

The government of the Kyrgyz Republic plays an important role in improving the country's food security by implementing measures to support the agricultural sector, such as subsidizing the interest rate, providing wheat seeds to farmers through interest-free loans, supporting wheat seed production, distributing fuel and lubricants at reduced prices to farmers during spring field work, and other measures to promote exports. The government also supports farmers by subsidizing indirect prices for the use of irrigation services and by subsidizing leasing and rental fees charged for the use of agricultural machinery and equipment.

The Ministry of Agriculture, Food Industry and Melioration (MAFIM) develops and implements the government's agricultural policy and is a key stakeholder in the development of livestock breeding and value chains of livestock products, as its goal is to ensure food security and to promote the development of agricultural production and the food industry.

Its functions include enhancing the export potential of agricultural production, regulating agricultural markets, implementing measures to develop livestock breeding, and introducing effective livestock breeding methods (Положение 2016).

The Ministry of Labor and Social Development implements state policy in the area of labor, including by the promoting employment and social development and ensuring effective social protection. This ministry is responsible for implementing social support programs and providing services to unprotected categories of citizens (Положение 2015).

The State Inspectorate for Veterinary and Phytosanitary Safety is a stakeholder in the regulation of veterinary and sanitary measures and executes oversight and monitoring in the area of veterinary and phytosanitary security (Положение 2013).

The District Agrarian Development Department conducts analysis and prepares reports on livestock, poultry, fish farming, beekeeping, breeding, veterinary, phytosanitary measures, and pasture use.

Livestock Breeding Farmers

The harsh climatic conditions of the mountainous area with extensive pastures enable farmers of Ak-Talaa district to engage in off-farm animal husbandry and agriculture. There are farmers who are engaged only in crop production, farmers involved exclusively in livestock production, and mixed farmers. The livestock farmers of Ak-Talaa district are mostly mixed, as they combine raising livestock and growing fodder crops. The overwhelming majority of local residents, even if they have permanent jobs elsewhere, are still engaged in agriculture and livestock breeding; their main source of income is the sale of live cattle and sheep. Farmers may benefit from government preferential agricultural loans provided at 6 percent to 10 percent per annum. Farmers are exempt from value added tax, as well as from taxes on profit and turnover. They pay only the land tax, social tax, and animal tax (О'Коннелл and Кипарисов 2018). Livestock farmers, on average, are men aged about 40 years with inherited livestock-breeding experience.

Livestock Brokers/Resellers

Livestock are sold by farmers independently through the following channels (more than one channel can be used at a time):

- Within their own community — that is, the farmer sells live animals to fellow villagers;
- Through a livestock buyer-intermediary; and/or
- Through a specialized livestock market, both to end consumers and brokers/resellers.

Most brokers run their businesses on a household basis without formal registration. Some resellers acquire patents and operate as individual entrepreneurs. Very few hire workers on a permanent basis. As a rule, they have premises for keeping and fattening animals, warehouses for fodder storage, and their own vehicles for livestock transportation. According to the intermediaries themselves, sales are mainly dependent on the

season, quality of the animals for sale, and location and specifics of the sales channels.

In order to sell livestock on regional markets, the resellers must obtain a certificate for each head of livestock from the veterinary surgeon at the *aiyl okmotu*.[5] The cost of delivery from Ak-Talaa district to the livestock market in Tokmak city is som 1,000 per head of cattle or som 200 to 500 per head of small ruminants. The resellers bear transportation costs and pay the livestock market entrance fee and parking fees. Nevertheless, the net margin per animal averages from 9 to 12 percent and may vary depending on the "high" or "low" season (Тилекеев и др. 2016).[6]

The challenge for resellers is that they do not know the exact selling price for the livestock purchased from local residents. Prices are determined by supply and demand at the market. The resellers then can resell cattle and small ruminants at other regional markets, or sell them to slaughterhouses, meat packing plants, mini-processing plants, or livestock buyers from Kazakhstan, Tajikistan, and Uzbekistan.

Veterinarians

Livestock breeding farmers actively use veterinary services for a variety of purposes, such as vaccination, identification, treatment, and consultation. Veterinarians perform animal identification and registration. Information about the animals is entered in the registration log and contains such basic characteristics as age, weight, breed, vaccinations. They test for brucellosis and the presence of parasites. Veterinary services are provided by both public and private veterinarians, which are regulated nationally.

Grazing Land Committees

The Pasture Law of 2009 (Закон КР 2009а) provides the main framework for grazing land management reforms in the country by introducing several innovations. One of these innovations is that pasture use is now based on pasture tickets, which are way to collect fees from individual shepherds. The fee for the use of pastures is set or modified depending on the number and type of livestock.

A grazing land committee is the executive body of a pasture user association, which develops and implements pasture use plans (Закон КР 2009а).

Grazing land committees determine the procedure of pasture use, establish the pasture fee, and assess the status of grazing lands. This body develops and implements pasture use plans. Monitoring and systematic assessment of pastures provides an overall picture of the quantity and quality of pastures.

International Donors and Agricultural Development Organizations

International donors implement infrastructure improvement projects and provide direct financing in the form of loans, grants, and credits. The Food and Agriculture Organization of the United Nations (FAO) and major donors contribute to the development of value chains in agriculture. The International Fund for Agricultural Development (IFAD) contributes to the development of local grazing land management systems and livestock markets. The World Bank implements projects aimed at improving nutrition, irrigation infrastructure and water use. The United States Agency for International Development (USAID) implements projects aimed at increasing the incomes of smallholder farmers by boosting productivity, expanding markets, and establishing private partnerships.

Policy Options

1. Policy Measures Aimed at Enhancing Market Access

The COVID-19 pandemic has revealed the vulnerability of incomes of livestock farmers in Ak-Talaa raion and demonstrated the need to launch a new format of sales and develop the meat value chain. Farmers in Ak-Talaa raion are striving to constantly increase the livestock herd because they are interested in increasing their incomes from livestock sales, since it is their main source of livelihood and food supply. However, because of the lack of adequate infrastructure

[5] The *aiyl okmotu* is the executive-administrative body of local government, the village government.

[6] The "high" season is the period in August-September when cattle arrive from the distant pastures for wintering; the "low" season is the period from December to spring, when cattle are sold after fattening.

for processing and marketing livestock products, the farmers are unable to sell at a profit and increase their income, although it is believed that the meat of cattle and small ruminants raised in mountainous areas have better taste characteristics ensured by keeping the animals on mountain pastures in spring and summer.

a. Using a new format of livestock marketing

From telephone interviews with farmers from Ak-Tal village, which is closer to the regional center — the city of Naryn (80 kilometers away) — the author learned that to help farmers during the quarantine, intermediaries were allowed to help sell livestock to farmers in great need, subject to strict compliance with the prescribed quarantine measures: wearing face masks and hand disinfection. Farmers told the brokers by telephone which livestock they wanted to sell. The brokers traveled to the sites together with a veterinarian, who inspected the livestock and issued a certificate. During quarantine, they were able to use their existing marketing channels, since even before the pandemic they had been transporting and marketing livestock through an established supply chain to slaughterhouses and butcher pavilions in Naryn. Thus, they began to carry out point-to-point transportation and point-to-point services through arrangements and phone reservations, based on established schedules. However, residents of other villages, more remote from the regional center, were totally unable to sell their livestock during the quarantine.

This sales format is beneficial for the livestock brokers, as they operate at a margin on both the purchase and the sales ends of the deal. Farmers are also interested in selling livestock to the intermediary on an ex-farm basis: although the livestock is sold at a lower price, the farmers do not incur transportation costs and receive their money immediately. Visits to livestock farmers are also useful for veterinarians, who can identify animal diseases in a timely way and take urgent measures to treat them. The aiyl okmotu has an increased responsibility for issuing permits and creating a green corridor for uninterrupted food supply and providing assistance to rural residents, especially to socially vulnerable segments of the population.

b. Using online livestock trade

During the pandemic, farmers in Issyk-Kul, Chui, and Talas oblasts began to use online livestock sales. Farmers made deals over the phone via WhatsApp: animals were examined using a video connection, the price was negotiated through the chat function, and animals were then delivered to the customer's house. Online trading proved to be beneficial and convenient for both livestock farmers and dealers, as there was no need to take cattle to the market every weekend, pay for the trading space, and stand there all day. A virtual livestock market shortens the livestock supply chain while ensuring that farmers get more income and consumers pay less money than when they buy livestock through intermediaries.

To develop online livestock trade, it is necessary to create a special website, open a general chat in popular messengers such as WhatsApp or Telegram, and have a proper internet connection.

In his interview, Ulanbek Kaziev, the head of the Ak-Talaa RADD, said that the development of online trade in the district has possibilities and it is necessary to help livestock farmers master digital skills, which will help them benefit from e-commerce.

Ak-Talaa is remote and far from large livestock markets and consumers in densely populated areas, which limits the possibilities of online livestock trade. However, quality advertising of meat from Ak-Talaa that tastes better than other meat because the animals are kept in high mountain pastures would help to find regular customers and consumers who would purchase livestock at negotiated prices and develop e-commerce, which would be beneficial for both farmers and consumers.

c. Developing infrastructure for processing livestock products

According to the majority of interviewed livestock farmers, to improve the livestock sales chain for livestock breeders in Ak-Talaa, it would be very important to build slaughterhouses or encourage the private sector to build more slaughterhouses through subsidies and grants. Each slaughterhouse would need to meet all standards and regulations of the regional Customs Union, comply with the Hazard Analysis and Critical Control Points (HACCP) safety standards (which is the most effective tool for preventive food safety measures), and comply with halal principles as well. No less important would be the opening of small facilities for processing animal products (milk, wool, meat, hides, skins, etc.). Each slaughterhouse should have its own product quality control laboratory complying with all domestic standards of the Kyrgyz Republic, the Eurasian Economic Community (EAEC), and broader international standards. A quarantine unit for animals and a fattening facility should also be included in the slaughterhouse.

Also, at present, according to the Ak-Talaa RADD, a land plot in Baetovo rural district has been allotted to individual entrepreneur Narynbek Zhehenaliev for

the construction of a slaughterhouse, and Aiyl Bank is considering extending a loan of som 1,500,000 (US$12,000) at 6 percent per annum.

However, construction of a slaughterhouse with modern equipment with a capacity of 50 head of cattle and 100 head of sheep per shift, which would create 40 to 50 new jobs, requires an average of som 40 to 50 million (US$500,000–600,000). At present, most farmers' assets and incomes are not sufficient for obtaining bank loans that would cover the construction of modern slaughterhouses and processing facilities. Therefore, government support and external sources of financing are needed to create a value chain for growing beef cattle and small ruminants for meat.

The following financing options are possible:

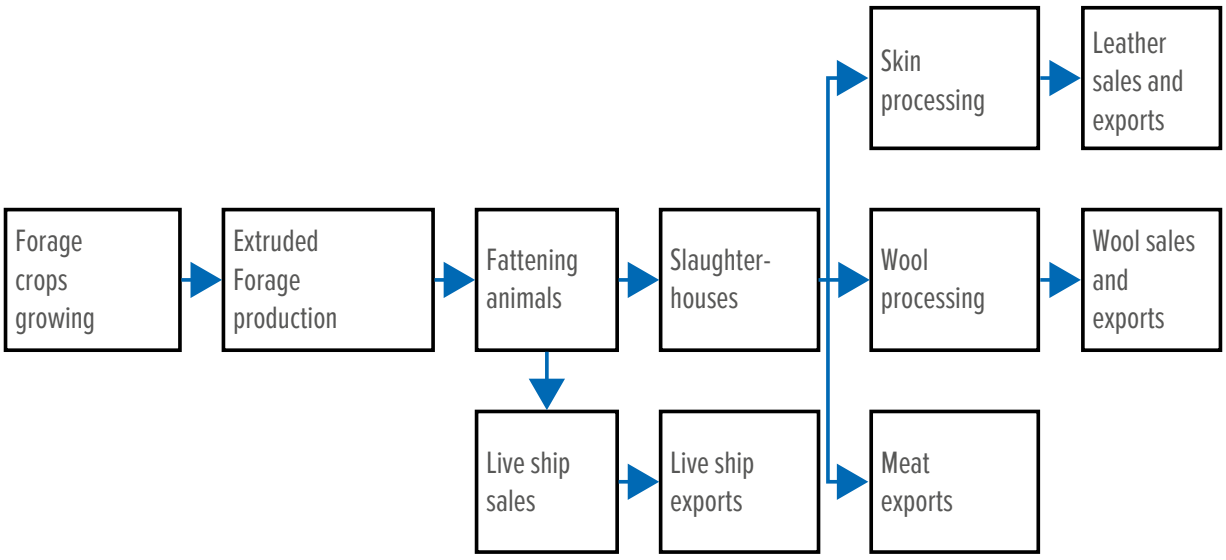
1. *Attracting investments from international donors:* IFAD, USAID, the United Nations Development Programme (UNDP), and the Japan International Cooperation Agency (JICA) have infrastructure improvement projects in the country that provide direct financing in the form of loans, grants, and credits. At the same time, MAFIM, the Ministry of Economy, and the State Inspectorate for Veterinary and Phytosanitary Safety should be the main government actors in the development of value chains for export-oriented meat products.

2. Uniting farmers in a livestock breeding cooperative would enhance access to technology and capital, encourage investment in training and technology, and increase responsibility for grazing land status and the veterinary condition of animals. Consolidation of the farmer's own assets would make it possible to use bank loans focused on agribusiness and animal husbandry development. However, although the bank loans are relatively affordable (6 percent annual rate), their maximum repayment period is only three to five years, which is not long enough for larger loans.

3. The use of own funds by a large farmer with a herd of 1,000–2,000 sheep could obtain a guarantee under the program Development of Intensive Sheep Breeding in the Kyrgyz Republic, which involves the use of the stall method of breeding sheep for meat.

According to the Decree of the President of the Kyrgyz Republic "On Declaring 2019 the Year of Regional Development and Digitalization of the Country" (Kyrgyz Republic, Ministry of Justice 2019) and the Concept of Regional Policy of the Kyrgyz Republic for 2018–2022 (Kyrgyz Republic, Ministry of Justice 2017), JSC "Guarantee Fund" has developed its own program to support farmers seeking to obtain a bank loan for the purchase of livestock and extruders (machines for the in-situ production of fodder). Implementation of such programs will make it possible to implement a value added chain in sheep and cattle breeding (Figure 8) from fodder production to meat production and from processing wool, hides, and skins and to exports (Акчабар 2019).

Figure 8: Added Value Chain in Sheep and Cattle Breeding



Source: The Guarantee Fund on the Development of Sheep Breeding in the Kyrgyz Republic, 2019, https://gf.kg/wp-content/uploads/2019/12/Prezentatsiya-po-razvitiyu-ovtsevodstva.pdf.

Creating a value chain for the production, processing, and sale of meat will ensure the production of meat products that meet international standards of quality and food safety, increase income and improve living standards of livestock breeders, boost employment, and reduce labor migration.

d. Encouraging improved breeding stock

Currently, farmers are raising local indigenous breeds of sheep for meat. However, as noted in the draft National Strategy and Action Plan on Animal Genetic Resources of the Kyrgyz Republic for 2015–2026, "due to the lack of targeted breeding work, the Aikol mutton-fat, Tien-Shan semi-fine-wool, and Alai medium-wool sheep breeds are on the verge of extinction" (Тилекеев и др. 2016).

To create a cattle value chain, it is important for farmers to work on improving their breeding activities and engage in pedigree breeding of more productive animals.

According to RADD, there are six breeding farms in Ak-Talaa district; they are in the process of obtaining an 8 percent loan for the purchase of Hissar lambs and are beginning to breed Aberdeen Angus.

The highly productive Aberdeen Angus beef breed is perfect for fattening. Raising this breed would enable local farmers to start producing premium meat and ensure a new quality and competitiveness of beef cattle breeding in the Kyrgyz Republic. However, because of a lack of financial resources, the farms are unable to purchase pedigree animals, since pedigree breeding makes them operate at a loss. Purchase prices for pedigree products do not cover the production costs. Artificial insemination services should be established to improve the livestock genetic potential.

2. Policy Measures Aimed at Improving the Fodder Reserve

The improvement of fodder reserves is the first stage in improving the livestock value chain. In summer, farmers send their cows to pasture, leave two or three dairy cows in the village, and look after them in turns. Many farmers stock dry fodder for winter. In rainy years, 1 bale of this dry fodder costs som 130–140, and in dry years from som 150 to 200. However, without juicy fodder in winter, milk production is significantly reduced and cost inefficient. According to the final report of the project Ensuring Access to Markets (Отчет базового исследования 2019), experts estimate that ideally 6 kilograms of compound feed should be added to the dry fodder; that would cost som 220 per day per cow. A cow fed with dry fodder produces no more than 10 liters of milk; even if the milk is sold at the maximum price, the farmer operates at a loss of som 20 per day. However, should the farmer use succulent fodder instead, he would spend som 180 and get 20 liters of milk per day, thus securing a daily profit of som 220. Farmers of this district do not observe this ratio and do not provide a special diet for dairy cows because of the high cost; as a result, the maximum productivity of one cow does not exceed 5 liters per day in the low season. Compound feed of wheat and barley is used only within the period of severe frosts. Farmers say they are unable to prepare juicy feed using beets or carrots, as beets are to be harvested in November while the cattle return from summer pastures in the fall (Отчет базового исследования 2019). Because of the shortage of succulent fodder, concentrates, and standard facilities for keeping dairy stock, cow milk yield in the mountainous areas remains very low, while the costs are high.

a. Developing grazing land infrastructure and ensuring access to pastures

Many smallholder livestock farmers — because of the lack of transport, financial resources, and disappearing infrastructure (roads, watering places, etc.) — do not drive their stock to distant grazing areas. Instead, they keep their herds on near-village pastures, thus increasing the load on these pastures and reducing their yield by 1.5 to 2 times (Дэвис и др. 2018).

Surveys of farmers and members of grazing land committees indicate that work focusing on the rational use of pastures and restoration of degraded pastures is underway. At present, the system of the rational use of pastures is the cheapest and most acceptable method of improving and preserving grass forage lands. This system involves observing the frequency of use and the admissible load in the pasture rotation system. To improve access to pastures and ensure the sensible use of grazing lands, infrastructure (roads, bridges) should be developed and effective measures should be taken to counter degradation of pastures and animal morbidity.

b. Organizing preventive measures to preserve natural pastures

The government needs to take measures to combat weed vegetation, which grows at a high rate and causes disease and loss of livestock, as well as contributes to the degradation of pastures. Currently no measures

are taken to counter weeds and poisonous vegetation, although the problem is already present.

Weeds, as a rule, are an indicator of pasture health. If the pastures are not adequately managed and used, weeds occupy those niches left vacant by the disappearance of fodder plants. Natural pastures in a number of sites are covered with non-forage grasses and thorny shrubs. In contrast to traditional pasture breeding of sheep, the stall method of keeping and breeding sheep keeps pastures from degradation. The main causes of land degradation and the deterioration of their fertility and productivity are the unsound use of land and uneven grazing.

c. Training livestock breeders in modern fodder production processes, meat production, storage, and processing methods and techniques

Degradation of pastures leads to fewer fodder reserves. In this connection, to preserve and improve the status of fodder reserves, farmers need, first of all, to know the fundamentals and technology of fodder production and to study the variety of fodders, feeding methods, and so on.

At present, the stall method using intensive feeding technology is a more efficient method of livestock breeding; the creation of a strong fodder reserve using extruded fodder and the improvement of veterinary services would increase meat productivity. Thus, according to experienced sheep breeder Aralbek Abdyrasulov, "Conventional feeding provides a daily weight gain of 90–100 grams, while the use of extruded fodder ensures a daily weight gain of 130–140 grams per sheep. While it takes 100 days for the sheep to reach the desired weight using conventional feeding, only 80 days are needed to achieve this result with extruded feed. Thus, farmers can reduce the time needed to achieve the desired weight by 20 days" (Гарантийный Фонд 2020). The use of extruded fodder contributes to faster and more significant weight gain for sheep and considerably reduces the fattening period.

d. Improving seed stocks

To increase the yield of grain crops in Ak-Talaa raion, it is necessary to shift to the use of highly productive inputs (new varieties of crops, improved seeds, irrigation methods). Significant work is being done within the framework of international projects to improve the seed stock. The existing fleet of agricultural machinery in the raion is outdated and worn out. Small farmers are effectively unable to purchase new agricultural machinery. Therefore, it is imperative that the government take measures to improve seed reserves, increase the level of small-scale mechanization, and introduce new methods of soil cultivation (which conserve soil and reduce emissions) for mountainous regions. International organizations can use various projects to support farmers in solving the above-mentioned issues.

3. Policy Measures Aimed at Providing Access to Food

In the context of the COVID-19 pandemic, food security issues became more acute because of border closures. As discussed above, prices for many consumer goods increased rapidly during the pandemic. Rising food prices limit access to food and actual consumption. This problem can be addressed through the following measures.

a. Strengthening the control and regulation of price increases for basic foodstuffs

Comparative analysis of data on the actual consumption of basic food security items (per capita, in kilograms per month) shows that, of the nine basic food security products, consumption of only one — bread and bakery products (19.2 kilograms per month per capita) — significantly exceeds the average physiological norms (9.6 kilograms). An excessive actual consumption is also observed for potatoes and meat (2.3 percent and 7.5 percent higher than the norms, respectively). Regarding the other six food security products, the level of actual consumption is 22–90 percent lower than the average physiological norms; see KP 2010 for Resolution No. 111 "On Approval of the Average Physiological Norms of Consumption of Basic Food Products for the Population of the Kyrgyz Republic" (Положение 2016).

This fact clearly demonstrates the low-income population's limited access to basic foodstuffs, especially poor people in rural areas, whose daily diet may consist mainly of bread, pasta, potatoes, and fatty meat. The diet of Ak-Talaa raion residents is unbalanced and characterized by excessive consumption (versus recommended levels) of carbohydrates and fats and underconsumption of fruit, vegetables, and dairy products.

As a result of inadequate nutrition — namely, the excessive consumption of fatty meat and carbohydrates — people develop high blood pressure (hypertension). The high and increasing prevalence of hypertension leads to very high health risks for individuals and

causes social and economic problems for the country related to increased hypertension management costs, as well as losses caused by disability and premature mortality. Therefore, it is necessary to strengthen the monitoring and regulation of prices for basic foodstuffs.

b. Encouraging small farmers' gainful employment

To ensure access to an adequate diet, it is necessary to increase farmers' incomes. Such an increase may be achieved by improving the productivity of livestock breeding, discussed above. Improved access to veterinary services for small livestock breeders will reduce livestock death rates and increase their productivity through reduced morbidity and disease spread. Increased animal productivity will undoubtedly have an impact on income growth, which will ultimately lead to improved diets, reduced poverty, and increased economic growth in rural communities.

c. Determining policies of adaptation to climate change.

Climate change must be taken into account when looking to develop crop production and provide the population of Ak-Talaa raion with fruits and vegetables. Global warming will have a favorable impact on the possibilities for outdoor vegetable growing with extensive use of innovative technologies and the introduction of modern irrigation systems in the fields such as drip irrigation, sprinkling, developing organic agriculture, and breeding drought-resistant varieties and hybrid crops.

In the face of current climatic changes — such as increased temperature, reduced rainfall, dry weather in summer and short summer periods — growing vegetables in greenhouses will become an indispensable, attractive, and profitable business for farmers of Ak-Talaa raion.

d. Ensuring fortification and biofortification of foodstuffs

Ak-Talaa raion lags far behind in terms of the quality of its people's diet; there is still a notable lag in terms of more expensive and nutritious foods. In this connection, measures to enrich food with nutrients (vitamins and minerals) are needed. A good diet before, during, and after illness is extremely important. The body needs additional energy and nutrients to fend off disease, so maintaining a healthy diet during pandemics is very important. Continuous consumption of nutritional foods such as fortified flour and iodized salt can increase the immunity of the population, which is so important in outbreaks of viral diseases such as COVID-19.

Assignment

1. Analyze proposed policy measures and discuss their possible impact on value chain formation from the perspective of interests of different stakeholder groups.

2. How will the adoption of these measures contribute to the increase of farmers' income and the reduction of poverty in this district?

3. What other policy measures would you suggest to address the challenges posed by COVID-19?

4. Suggest additional measures aimed at raising public awareness on how to ensure an adequate and well-balanced diet.

Policy Recommendations

In the context of the COVID-19 pandemic, three groups of policies are recommended.

To improve access to markets and provide effective support to livestock producers:

- *Establish weekly distribution points for procurement and transportation of livestock.* These distribution points would allow access to slaughterhouses in Naryn Region and major supermarkets in the capital, using point-to-point transportation and point-to-point services, through telephone booking. These activities can be organized on the basis of aiyl okmotu's district administration with strict adherence to prescribed standard hygiene requirements by all participants in the value chain, including wearing masks and using antiseptics.

- *Conduct e-commerce campaigns.* An e-commerce online information platform (under the aegis of the Ak-Talaa RADD) should be created to organize e-sales of livestock using existing data on the availability of livestock in the households.

- *Construct one modern slaughterhouse, a mini skin and hide processing facility, and a mini wool processing facility in the district center Baetovo.* The

government and MAFIM could provide financial support in the form of subsidizing the already-proposed initiative of the private entrepreneur, as well as providing subsidized loans to large livestock farmers and agricultural cooperatives to construct a modern livestock slaughter and processing complex, granting maximum repayment periods for soft loans.

To improve the fodder reserve and preserve pastures:

- *Train and consult livestock farmers on modern feeding technologies, topical issues of breeding animals that will increase milk yields and meat quality, cost-effective stockkeeping, prevention of animal diseases, and so on.* The trainings and consultations can be organized by specialists of relevant MAFIM departments using facilities of the district agrarian development department, thus avoiding additional costs. Representatives of the academic community and international experts should be involved in the training.

- *Teach livestock breeders online in the form of training seminars, placing educational and reference materials in the media to widely disseminate useful knowledge to farmers during the less active winter period.*

To improve access to food in case of food shocks:

- *Pursue the policy of countering price inflation and strengthen controls on basic food prices.* As regards the government's involvement, MAFIM should introduce strict regulation and containment for livestock prices by restricting livestock exports to neighboring countries (Kazakhstan, Tajikistan, Uzbekistan), intensify efforts against livestock smuggling, and develop guidelines on anti-crisis state regulation of prices for basic foodstuffs.

- *Educate and inform the population on healthy nutrition in order to increase fruit and vegetable consumption.* MAFIM, RADD, aiyl okmotu, veterinarians, and dieticians should provide information on food security and nutrition through videos, information stands, and presentations in the media.

- *Strengthen the social support provided to vulnerable groups of citizens.* The district administration, on the basis of aiyl okmotu, should assist in the collection of funds from international foundations and private individuals to provide emergency financial assistance to needy households.

Implementation of these measures will help improve resilience of the livestock production sector to various kinds of pandemics, maintain food security, boost farmers' income, and make the farmers' products more affordable.

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Abbreviations

EAEC	Eurasian Economic Community
FAO	Food and Agriculture Organization of the United Nations
HACCP	Hazard Analysis and Critical Control Points
IFAD	International Fund for Agricultural Development
JICA	Japan International Cooperation Agency
MAFIM	Ministry of Agriculture, Food Industry and Melioration
NSC	National Statistics Committee
PGI	poverty gap index
PSI	poverty severity index
RADD	Raion Agricultural Development Department
UNDP	United Nations Development Programme
USAID	US Agency for International Development

Note: All tons are metric tons.

Annex 1

Questionnaire
Impact of the COVID-19 Pandemic on Livestock Farming in Ak-Talaa District, Kyrgyz Republic

Hello, my name is _____. Every year, the Eurasian Center for Food Security at the M. V. Lomonosov Moscow State University together with the World Bank conduct case studies on various aspects of food safety. In 2020, the theme was the impact of COVID-19 crisis on food and nutrition security in the Eurasian region. To conduct this study, I have chosen Ak-Tala region as the most remote and vulnerable area, where the local people are traditionally engaged in animal husbandry. The study's objective is to understand how COVID-19 has affected the socio-economic well-being of farmers in this area. The data obtained from the interviews will provide guidance at the local and national level to mitigate the negative impact of Covid-19 on livestock farmers. Responses to the questionnaire will only be used in a common format (in the form of diagrams, spreadsheets, etc.). Thanks in advance for participating in the interview!

1. What types of agriculture activity/branch are you engaged in (animal husbandry, farming, or both)?
2. Where do you purchase seeds, fertilizers, fuel and other resources for agricultural activities you're engaged in? How do you rate their availability during pandemic?
3. Where and how do you sell your products (local markets, medium and large markets, export)?
4. If you are involved in animal husbandry, how many and what kind of livestock do you keep?
5. Where do you buy feed?
6. Do you seek help from veterinarians, are they available in your area?
7. Where and how do you sell your livestock?
8. What major problems have you faced with Covid-19?
9. What challenges do you encounter with during the spring field work?
10. How can smallholder farmers improve productivity to successfully cope with the negative impact of Covid-19?
11. How have prices changed since Covid-19? (For your products) Do you expect any risks or problems when selling your products?
12. How do you assess the government's measures to ensure food safety during quarantine? What measures need to be taken to ensure food security of rural households (both on the part of the households themselves and on the part of government agencies)?
13. How have food prices and your household expenses (food, essentials) changed?
14. Was there an increase in the price of seeds, fuel and fertilizers during the quarantine?
15. How do you assess the provision of healthcare, schooling and public transportation in the aftermath of the COVID-19 outbreak?
16. Have you heard of government initiatives or support for farmers affected by Covid-19?
17. Did you receive any agricultural assistance during the Covid-19 pandemic?
18. Do you get preferential loans for farmers?
19. What initiatives or assistance will benefit farmers in reducing the negative impact of Covid-19?
20. Do you have any other recommendations?

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