Food and Agriculture Organization of the United Nations

KYRGYZSTAN VALUE CHAIN GAP ANALYSIS

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Food and Agriculture Organization of the United Nations

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Abstract

Though the role of agriculture and food industry sectors in the economy of Kyrgyzstan has steadily decreased over the years, the country still greatly relies on these sectors. Currently the growth in agriculture, as well as in the overall economy, stagnates mainly because of political volatility, economic shocks, and frequent natural disasters. FAO and major donors contribute to the development of agriculture value chains. The existing studies usually focus on selected value chains, and there are fewer sources that reveal countrywide value chain development status.

Therefore, the goal of this policy paper is to try to consolidate the information on countrywide value chain development gathered from various open sources and based on materials collected in field missions by FAO officers, with a particular emphasis on the potato value chain in the Issyk-Kul region. The authors did not aim at close examination of the selected value chain; rather, this paper is a general overview that will be a reference point for future field work in the country. The recommendations provided in the paper will assist the FAO country office and the Government of the Kyrgyz Republic in decision-making and will inform other development organisations operating in the country about major value chain development activities.

To get the results, the authors analysed the legislative history related to value chains, collected materials and statistics from open sources, conducted a field mission, interviewed stakeholders, and analysed surveys done by a local NGO.

The first part of the paper examines the overall situation in Kyrgyzstan with a focus on the agriculture sector, food quality, and food safety systems. It reviews related legislation and the environment for doing business. The paper examines existing support measures for agriculture and covers the banking sector and trade policy. In addition, the paper describes main value chain actors and international development programmes.

The second part of the study overviews the potato value chain in the Issyk-Kul region.

The final part provides recommendations on both selected and countrywide value chain development and closely examines ways of improving seed availability, marketing, and ecological tourism. This section also provides options for vitalisation of a non-functioning starch factory in Ak-Suu and recommends transforming logistics centres into food hubs. The recommendations are addressed to FAO, the Government of the Kyrgyz Republic, major donors, farmers and their associations, and other business entities.

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Abbreviations

CSF	Community Seed Fund
EAEC	Eurasian Economic Commission
EAEU	Eurasian Economic Union
EC	European Commission
EU	European Union
GSP +	Generalized System of Preferences
GVCA	Global Value Chain Analysis
IPPC	International Plant Protection Convention
LC	Logistics Centre
MSME	Micro, small and medium enterprises
RTA	Regional Trade Agreement
SPS	Sanitary and phytosanitary
TBT	Technical Barriers to Trade
VC	Value Chain
WTO	World Trade Organization

Introduction

According to FAO's terminology, a sustainable food value chain (SFVC) is defined as "the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society and does not permanently deplete natural resources." (FAO, 2014)

This work is a part of a series of studies on the value chain development gaps and the environment for doing business for farmers done by FAO's Regional Office for Europe and Central Asia, Regional Initiative on Improving Agrifood Trade and Market Integration.

The research presented in this paper is based on a review of existing literature, statistical data from open sources (FAOSTAT, FAO Yearbooks, WB, UN Comtrade),[1] national data (NSC), legal data (FAOLEX, ConsultantPlus), materials collected in a field mission, and a survey of Kyrgyz farmers conducted by a local non-governmental organization in 2017. The main methodological approach of this study is a value chain gap analysis developed by John O'Connell, FAO agrifood economist. The approach aims to assess the constraints to growth and provide solutions to develop more efficient, inclusive, and sustainable agrifood value chains. In addition, some elements of global value chain analysis (as in Gereffi & Fernandez-Stark, 2016) and traditional value chain analysis methodologies are used.

This policy paper includes a context analysis chapter (Chapter 1), which provides background information about the country's recent history, its economy, and its agriculture sector. Chapter 2 reveals some of the value chain actors and presents development projects from international organisations in Kyrgyzstan. Chapter 3 overviews the potato value chain. Chapter 4 provides conclusions and recommendations.

[1] The reason for using different sources of statistical data is varying quality and availability of data.

I. Context analysis

a) Background[2]

The Kyrgyz Republic is a mountainous (only 7 percent of its land area is suitable for arable agriculture), landlocked country located in the northeast part of Central Asia. It borders Kazakhstan, Uzbekistan, Tajikistan, and China. The total population is 5 957 000 people, most of whom are Turkic-speaking Sunni Muslims.

Figure 1. Map of Kyrgyzstan

Source: UN

The Kyrgyz make up roughly 55 percent of the population. The country is multi-ethnic; in addition to the Kyrgyz are Russians, Ukrainians, Uzbeks, Germans,

[2] This part is based on FAO, World Bank, BBC, USAID country profiles, CIA World Factbook and FAO/REU interviews.

Tatars, Turks, Dungans, Kazakhs, Uighurs, Tajiks, ethnic Koreans, and smaller groups from the Caucasus. The ethnic groups primarily of European descent tend to emigrate from Kyrgyzstan.

Bishkek is the capital city (population about 930 000 people). The country has seven administrative provinces, or *oblasts* – Chui, Talas, Issyk-kul, Naryn, Osh, Jalal-Abad, and Badken – which are divided into 45 districts, or *rayon*. People tend to move to the cities (mainly Bishkek and Osh), but the majority of the population is still rural (3.67 million people, or 64 percent of the total population, live in rural areas). The national currency is the *som*.

Kyrgyzstan became independent from the USSR on 31 August 1991. On October 12 1991, Askar Akayev was elected president. By the time of the collapse of the Soviet Union, Kyrgyzstan had a democratic government and a multi-party system. In 1995, there were 19 political parties registered; in 2010 there were 90 parties.

On May 5 1993, the Supreme Council of the Kyrgyz Republic adopted a constitution. The Republic of Kyrgyzstan became the Kyrgyz Republic. Later, the basic law was amended and supplemented. The new constitution was adopted on 27 June 2010. The new constitution does not specify the form of government; it is a de facto parliamentary-presidential republic. Constitutional amendments passed in a referendum in December 2016 include statements that transfer some presidential powers to the prime minister.

Recent revolutions:

1) Tulip revolution, 24 March 2005

2) The Second Kyrgyz Revolution 2010 ("People's revolution"), 7 April 2010

Current instabilities and internal challenges:

- Widespread poverty
- Economic gap between relatively urbanized northern part and rural southern part of the country
- Interethnic insecurities
- Political volatilities
- Political uncertainty in Osh Oblast

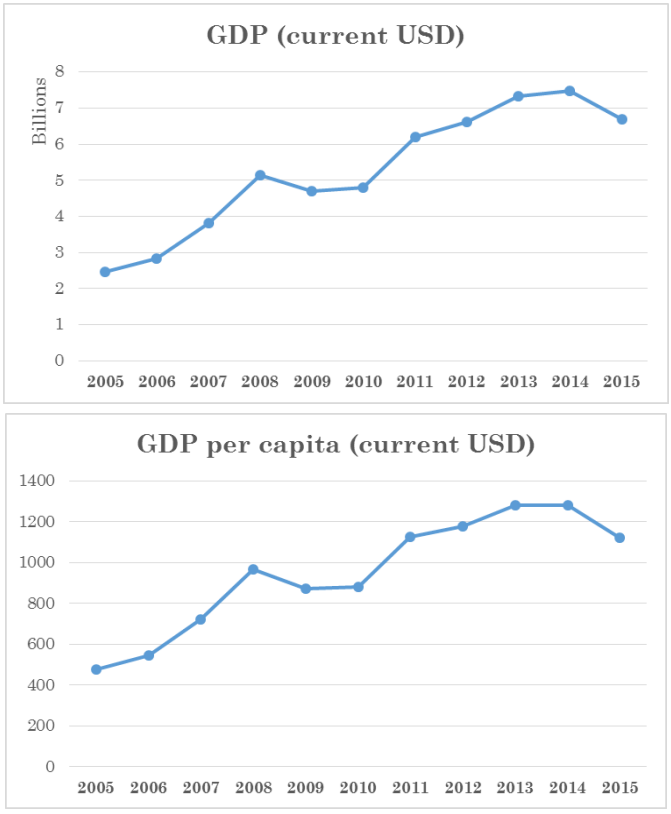
b) Economy and agricultural sector

i. Economy

In general, the economy of the country largely depends on gold exports (from the Kumtor gold mine) and remittances from Kyrgyz workers living abroad (mainly in Russia) (World Bank, 2017). The amount of remittances reaches 30 percent of the country's gross domestic product (GDP).

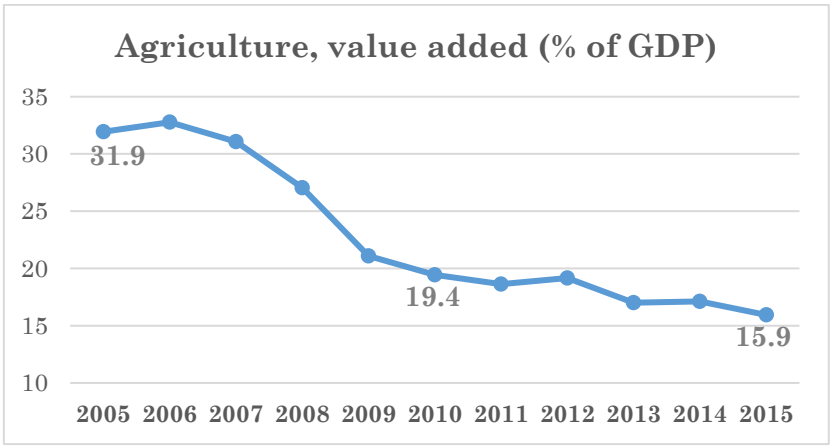
The GDP of the country has been increasing in the periods 2005–2008 and 2010–2014 (See Figure 2). A decline that started in 2008 likely was associated with shocks in the global economy and aggravated by internal political instabilities. Another slowdown in 2015 may be associated with the decline of the Russian economy. Agriculture is one of the most important sectors in the economy of the Kyrgyz Republic. Though the share of agricultural input in country's GDP in the past 10 years has steadily decreased, the agriculture sector still provides about 15 percent of the country's gross domestic product (See Figure 3).

Figure 2. GDP and GDP per capita, 2005–2015



Source: World Bank (2017)

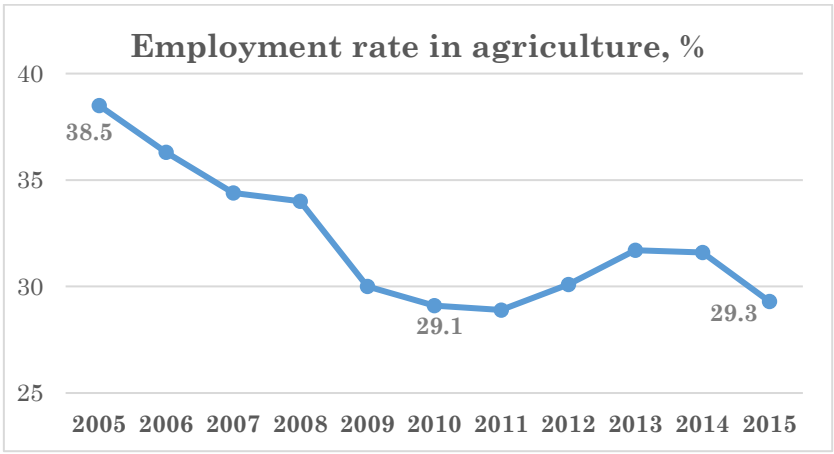
Figure 3. Agriculture share of GDP, 2005–2015



Source: World Bank (2017)

About 30 percent of the total population is employed in the agriculture sector (See Figure 4). The share of the population employed in this sector decreased from 38.5 percent in 2005 to 29.3 percent in 2015 (See Figure 4).

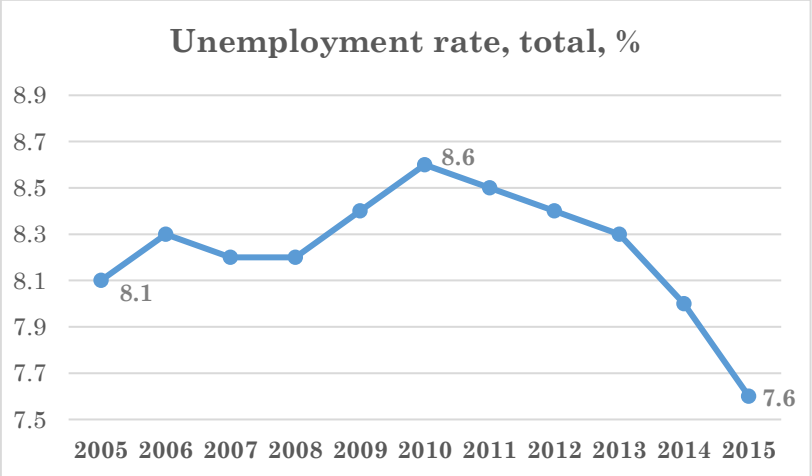
Figure 4. Employment rate in Agriculture, 2005–2015, % of total employed



Source: World Bank (2017)

The total unemployment rate in the country had been slightly decreasing from 2010 to 2015, showing good positive dynamics (See Figure 5).

Figure 5. Unemployment rate in Kyrgyzstan, 2005–2015, % of total population



Source: World Bank (2017)

Agricultural exports steadily amounted to 12 to 14 percent of total goods exports in 2010–2016. The share of imports of these goods has varied between 15 and 18 percent of total goods imports (FAO/REU, 2017d).

i. Major agricultural products

The main crops are wheat, barley, maize (for grain and silage), potatoes, melons, oilseed crops, vegetables of many kinds, and fodder. Sugar beet is an important crop in Chui Oblast, and cotton and tobacco are important for the southern regions.

In Kyrgyzstan, there are more than 22 industrial enterprises and 325 stores and companies dealing with the processing of vegetables and fruits (Horská et al., 2014). The largest are the Bishkek cannery, the Tokmok canning plant and the Issyk-Kul fruit-and-vegetable processing plant. On average, enterprises process about 60 000 tonnes of tomatoes, 10 000 tonnes of vegetables, 40 000 tonnes of berries and fruits per year. Canned fruits and vegetables from these plants can be bought in almost all grocery stores and supermarkets in Bishkek (Horská et al., 2014).

Historical, natural and climatic conditions contribute to the fact that livestock farming develops practically throughout the entire territory of Kyrgyzstan. Dairy production has good quality and a wide selection. Raw milk is produced annually within 1 200 to 1 300 tonnes (Horská et al., 2014). The processing of milk is provided by 61 legal enterprises and 174 individual entrepreneurs. Dairy products

account for 19.1 percent of the total food and processing industry. More than 35 percent of production is exported.

Table 1. Production of major crops, 2014

Item	Volume, tonnes
Potatoes	1 320 700
Wheat	572 734
Maize	556 142
Tomatoes	204 627
Watermelons	200 249
Barley	197 084
Sugar beet	173 609
Carrots and turnips	168 189
Onions, dry	156 190
Apples	145 000
Cabbages and other brassicas	128 003
Vegetables, fresh nes	109 182
Cucumbers and gherkins	101 486
Beans, dry	87 100
Seed cotton	68 995
Cottonseed	45 500
Sunflower seed	34 334
Garlic	33 068
Rice, paddy	28 230
Apricots	28 000
Cotton lint	22 770
Plums and sloes	13 000
Peaches and nectarines	12 000
Pears	12 000
Safflower seed	10 634
Fruit, fresh nes	10 000

Source: FAOSTAT (2017)

In the territory of Chui Oblast, there are about 20 butter factories and mini-shops for processing dairy products. The leading companies for the production of dairy national drinks are Shoro and Artesian. In the meat industry, the Ala-Too breed of cattle is typical. The Ola-Ata cattle breed also is wide-spread. Pork also is produced. More than 15 large meat-processing plants operate in Kyrgyzstan; some

of the largest are the Bishkek Meat Cannery, JSC Kayindy,[3] and JSC Tesh-Tyuk. The leaders in the production of meat products and sausages are the domestic enterprises "Rih," "Cher," "San Sanych" and "Emperor". In total, about 100 small stores for the production of meat products operate in Kyrgyzstan. Sheep breeding is also widespread in Kyrgyzstan; wool and organic meat are produced. Poultry farmers breed chickens, geese, ducks and turkeys. This branch of livestock farming at insignificant expenses provides a stable profit, and therefore it is one of the most effective in Kyrgyzstan.

Table 2. Production of livestock, 2014

	Volume of production, tonnes
Fresh Cow Milk, whole	1 410 624
Cattle Meat	101 574
Sheep Meat	59 375
Fresh Sheep Milk, whole	31 600
Hen Eggs, in shell[4]	24 979
Horse Meat	19 903
Pig Meat	15 797
Goat Meat	9 600
Chicken Meat	5 811
Fresh Goat Milk, whole	3 317
Honey, natural	1 744

Source: FAOSTAT (2018)

After the collapse of the USSR, roads and bridges that allowed access to remote, highland pastures deteriorated, and the traditional practice of seasonal migration of livestock was stopped. Improving pasture management soon became a national priority. The Law of Pasture of 2009 provides the main framework for pasture management reforms in the country, and it introduced several innovations in pasture management.[5] One of these is that pasture use is based on pasture tickets, for which individual herders pay fees according to their number of livestock. This replaced the previous system in which pastures were leased on the basis of the payment for the area that was rented. The guidelines for pasture management reforms are further reinforced by two policy documents, namely the Pasture Sector

[3] Data on companies as of 2008, may be obsolete

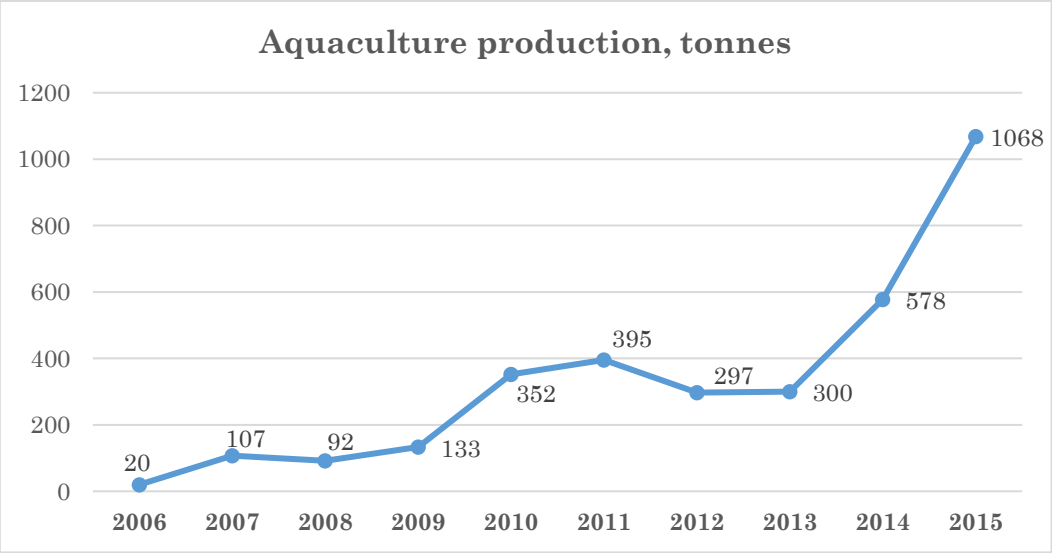
[4] Total number of eggs – 445 800 (FAOSTAT)

[5] See Annex 1, 1. General Laws and Policies, p. 71

Development Concept 2012–2015 and the Strategy of Pasture Sector Development and Plan of Action 2012–2015. The goals of these documents are the improvement of living standards of the Kyrgyz population, the guarantee of food security, and the preservation of pasture ecosystems (FAO MAPS, 2017).

The fisheries sector is less developed in Kyrgyzstan. Several aquaculture farms exist in the country, and several trout and carp farms were launched with FAO support. The low development and small size of the sector is associated with traditional eating habits of Kyrgyz people – fish has never been widely eaten. The current fish consumption in Kyrgyzstan is almost 15 times less than the world's average consumption of fish and three times less than low-income countries (FAO/REU, 2017a). However, the dynamics of the sector's development are positive. In the period 2006–2015, aquaculture production had grown from only 20 tonnes a year to 1 068 tonnes a year (See Figure 6).

Figure 6. Dynamics of aquaculture production in Kyrgyzstan, tonnes, 2006–2015



Source: FAO Yearbook of Fishery and Aquaculture Statistics, 2015

ii. Access to land and water

In Kyrgyzstan, more than 40 percent of the agricultural land is seriously degraded, and 50 to 85 percent of overall land is exposed to erosion (Aidaraliev, 2010). Land degradation is largely the result of poor pasture management in recent years. Access to land is better in the northern part of the country because the density of the rural population in the southern part is higher (average land area owned by a farmer is only 0.02 ha to 0.03 ha in Osh (FAO/REU, 2017c), while in Kyrgyzstan it is 0.8 ha to 3 ha). The land cannot be owned by foreigners. However, buying land in the name of Kyrgyz citizens has been practised. The majority of landowners are

men (FAO/REU, 2017c). During privatization, 25 percent of land was kept in state ownership for future needs.

Access to water used to be problematic. The situation in recent years has been addressed by the World Bank, which supported a rehabilitation of irrigating systems (USD 1.5 million projects, with 25 percent of costs paid by local communities).

iii. Gender profile

The study of agriculture and rural livelihoods' gender profile finds that women in Kyrgyzstan do not participate in agriculture on an equal basis with men (Duban et al., 2016). Although women are engaged in agriculture in all sub-sectors, the study concludes that women's contributions along agricultural value chains are not visible. The authors note that women experience such challenges as a lack of protection of their rights to ownership of land and other resources, in addition to "limited access to financial capital, a lower level of technical agricultural knowledge, and constraints of tradition and culture that reinforce women's role as farm workers rather than as leaders of agribusiness." (Duban et al., 2016)

c) National Development Programmes

This section lists and briefly describes development programmes developed by the Kyrgyz Government. The assessment of an implementation of these programmes is not a subject of the current paper.

Kyrgyzstan's economic development has been driven by medium-term programmes since 2007. The National Strategy for Sustainable Development of the Kyrgyz Republic for the period of 2013–2017 expresses the government's vision of ensuring sustainable economic development and macro-economic stability, improving the agro-industrial complex, increasing agriculture production levels and product quality, and expanding infrastructure. Development is underway on the National Sustainable Development Strategy mid-term (2018–2023) and long-term (to 2040) programmes aligned with Sustainable Development Goals (FAO MAPS, 2017).

To implement the National Strategy for Sustainable Development 2013–2017, the country adopted the Programme of Transition to Sustainable Development of the Kyrgyz Republic for the period of 2013–2017, a five-year plan whose main

priorities are economic and environmental sustainability and human development. For the implementation of the new development strategy, the government is developing the Rural Development Strategy, which identifies development priorities in the crop, livestock, and forestry and fisheries sectors and in the sustainable management of the natural resources supporting these sectors.

The long-term vision for food security is defined by the Concept of Food Security (2009–2019), which sets out ways and mechanisms aimed at minimizing food insecurity by stimulating development of domestic production. The legislative base for food security is the country's law "On Food Security of the Kyrgyz Republic."[6]

In 2015, the government adopted the National Food Security and Nutrition Programme (2015–2017), which aims to ensure the availability of food through intensive development of the agriculture sector and regulation of food imports and exports. In addition, the programme aims to ensure people's physical and economic access to food, particularly for vulnerable rural populations. Another priority of the programme is to increase dietary quality, diversity and caloric intake, in addition to the control and supervision of food safety. The planning process for the 2018–2022 Food Security and Nutrition Programme recently started and will be aligned with the Scaling Up Nutrition Movement Strategy and Roadmap (2016–20).

The measures to strengthen social safety nets, reform the system of social care, step up child protection and improve social security for the elderly are expressed in the Social Protection Development Strategy and Action plan 2012–2014. The government also developed its Social Protection Strategy 2015–2017 to ensure that food security and nutrition are integrated within the framework and to implement the National Social Protection Programme 2015–2017.

d) Business and institutional environment

According to the World Bank Doing Business 2017 report, Kyrgyzstan ranks 75 (out of 190 countries), in the second tier of countries that also contains the Russian Federation and the Republic of Moldova. In 2008, Kyrgyzstan was 99th in this rating. The business environment in the Kyrgyz Republic has improved

[6] See more in *Legal environment – laws* section

significantly compared to 2008, but exploitation of power remains one of the key obstacles to doing business. Free economic zones were created. The government makes an effort to improve the national banking system, aiming to enhance its reliability and foster confidence among investors and business community. In 2008, a moratorium on inspections of tax services was introduced, and inspections of other state supervisory bodies were limited.

The FAO Country Factsheet reports that in 2014 there were 363 701 registered small businesses (FAO MAPS, 2017). Main activities of the MSME sector are agriculture, mining, transportation, trade, construction and manufacturing. Total contribution to employment from the micro, small and medium enterprises sector increased from 15.5 percent in 2011 to 18.9 percent in 2013 (FAO MAPS, 2017).

Kyrgyzstan's accession to the Eurasian Economic Union in 2015 is the most significant change in state policy that has occurred in recent years. Eurasian Economic Union membership assumes the realization of a package of measures to harmonize legislation, modernise and expand the spectrum of existing quality laboratories, and ensure their accreditation with the authorised Eurasian Economic Union structures (Sedik et al., 2017).

i. Banking

As of March 2017, 25 commercial banks (including the Bishkek branch of the National Bank of Pakistan) and 323 branches of commercial banks operated on the territory of the Kyrgyz Republic. The sector is dominated by five banks – Optima, Rosin Bank, RSK Bank, Demir Bank and Kyrgyz Investment and Credit Bank – which together comprise 57.7 percent of the total sector assets and 64.2 percent of deposits. While credit in Kyrgyzstan has typically been available to the commercial sector and larger businesses, micro and small businesses have found it difficult to obtain credit, because lenders impose high administrative costs relative to loan size. The provision of financial services to most of the population remains severely constrained.

Bank loans and unofficial loans are the main forms of financing for micro, small and medium enterprises (MSMEs). Despite difficulties in lending to the sector, bank financing to MSMEs has grown as Kyrgyzstan banks begin to look increasingly at the MSME sector as a potential opportunity to diversify their lending portfolio and increase interest margins.

In 2016–2017, the monetary policy of the National Bank of the Kyrgyz Republic was of a stimulating nature. After the country's economy began slowing down in

March 2016, the country's main bank has begun to lower its basic interest rates. The discount rate in 2016 decreased twofold, from 10 percent to 5 percent.

ii. Support measures for the agriculture sector in Kyrgyzstan

The following measures of support exist in the Kyrgyz Republic:

• *Subsidizing the interest rate*. This concerns those farmers who take subsidized loans from partner banks of the governmental program. The government compensates banks for the difference in the percentage of the average market interest rate on loans. Thus, farmers pay a 10-percent interest rate regardless of the market rate (which reaches 20 percent). The volume of support is limited. The total amount of loans is USD 50 million to 60 million per year, and the government compensates banks for a sum of USD 7.5 million to 9 million per year (Government, 2018). The legislative base of this program is the law "On the Development of Agriculture of the Kyrgyz Republic," (Ministry of Justice, 2009) and the program is implemented within the framework of the project "Financing of Agriculture – 5." (Ministry of Justice, 2017).

• *Distribution of wheat seeds to farmers in the form of an interest-free loan* (Ministry of Justice, 2014).

• *Support for the production of wheat seeds* (Government, 2017). State subsidies to seed farms that produce and sell certified seeds.

• *Distribution of fuels and lubricants at discounted prices to farmers during the spring field works* (Ministry of Justice, 2016).

• *Lower tax burden*. Farmers are exempt from the payments of value-added tax, profit tax and turnover tax. They pay only land tax, social tax and animal tax (Ministry of Justice, 2000).

• *Incentives for the business.* There is a draft of the law on subsidizing agricultural production, particularly egg production, in Kyrgyzstan. It might be that the list of the products for subsidizing can be expanded. Another draft law is expected to provide tax incentives to agricultural cooperatives, machine-tractor stations, trade centres and logistics centres (FAO MAPS, 2017).

• *Measures to promote exports.* To promote exports, the State Agency for the Promotion of Investments and Export under the Ministry of Economy of the Kyrgyz Republic was established in 2016. The government adopted a concept for developing the halal industry; this concept aims at the development of national

halal standards based on international experience, the creation and development of the infrastructure of the halal industry, and improvement of the epidemiological, veterinary and sanitary and phytosanitary systems (FAO/REU, 2017d).

In March 2015, the plan to develop exports for 2015–2017 was approved by the government. The plan specifies traditional agrifood export products (dairy products, fresh and processed vegetables, fruits and nuts, wool and animal skins, and cotton) as priorities, in addition to meat products and bottled water.

To facilitate the access of products from Kyrgyzstan to the market of the European Union, the government sent a request to the European Commission to provide the country with tariff benefits under the Generalized System of Preferences. This request was received by the commission on 25 May 2015 and approved six months later. These benefits entered into force on 27 January 2016 after the publication of the European Commission's decision in the Official Journal of the European Union. As a result, producers from Kyrgyzstan were able to supply more than 6,000 items of goods free of duty to the European Union, including fresh and processed fruits (e.g. canned food and juices), dried fruits, nuts, beans, food products and tobacco. It should be noted that eliminating tariff barriers does not exempt goods from Kyrgyzstan from the need to comply with the sanitary and phytosanitary requirements of the European Union.

iii. Trade policy

This section covers the trade policy of Kyrgyzstan, including tariff quotas, bans, trade relationships and associations. This section is based on the FAO annual review of agricultural trade policies in post-Soviet countries.

Imports are dominated by wheat, tea, sugar, vegetables and fruits (Table 3). Export crops include dry beans, cotton, fresh apricots, apples, potatoes, tomatoes, other fruits and vegetables, and milk (Table 4).

As of 2017, the country does not apply quantitative restrictions and bans on imports (FAO/REU, 2017d). In 2016, Kyrgyzstan applied tariff quotas on imports of pork (3 500 tonnes), poultry (58 000 tonnes), beef (200 tonnes) and whey (100 tonnes). To support the flour-milling industry, imports of wheat grain and the production of flour from imported wheat were exempted from 12-percent value-added tax in 2015. Duties were imposed on the exportation of unprocessed cattle and horse hides to countries outside of the Eurasian Economic Union and Commonwealth of Independent States Free Trade Area.

Table 3. Most imported in Kyrgyzstan products by HS-4 groups, 2016

Commodity group	**Net weight (tonnes)**	**Trade value (thousands USD)**
Meat and edible offal, of the poultry of heading, fresh, chilled or frozen	23 714	16 334
Tea	3 922	9 355
Apricots, cherries, peaches (including nectarines), plums and sloes	21 743	7 710
Citrus fruit, fresh or dried	15 883	7 572
Tomatoes, fresh or chilled	9 220	4 634
Bananas, including plantains, fresh or dried	7 045	3 958
Fish, frozen, excluding fish fillets and other fish meat of heading	2 625	3 557
Grapes, fresh or dried	10 569	3 357
Other vegetables, fresh or chilled	7 118	3 168
Butter and other fats and oils derived from milk; dairy spreads	786	2 468
Apples, pears and quinces, fresh	8 627	2 417
Other fruit, fresh	3 195	1 812
Buttermilk, curdled milk and cream, yogurt, kefir and other fermented or acidified milk and cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa	1 636	1 786
Meat of swine, fresh, chilled or frozen	793	1 573
Cheese and curd	689	1 467

Source: UN Comtrade (2017)

Kyrgyzstan's accession to the Eurasian Economic Union on 12 August 2015 required review of Kyrgyzstan's World Trade Organization tariff commitments. During the accession to the Eurasian Economic Union, the Government of the Kyrgyz Republic approved quarantine phytosanitary rules and immediate veterinary and sanitary requirements to prevent animal diseases, in accordance with the Eurasian Economic Union legislation. As of October 2016, the list of Kyrgyzstan-based enterprises entitled to export products subject to veterinary control to the Eurasian Economic Union included 19 enterprises mainly engaged in dairy product supplies (FAO/REU, 2017d). Deliveries of raw meat and live cattle

from Kyrgyzstan to the Eurasian Economic Union were subjects of prohibition for sanitary and phytosanitary reasons.

Table 4. Most exported agricultural products from Kyrgyzstan by HS-4 groups, 2016

Commodity group	**Net weight (tonnes)**	**Trade value (thousands USD)**
Dried leguminous vegetables	83 762	55 011
Fruit, dried	4 219	14 405
Butter and other fats and oils derived from milk; dairy spreads.	1 979	7 581
Cheese and curd	2 089	4 968
Milk and cream, not concentrated nor containing added sugar or other sweetening matter	8 450	3 490
Buttermilk, curdled milk and cream, yogurt, kephir and other fermented or acidified milk and cream	4 722	3 388
Other nuts, fresh or dried	1 697	2 998
Milk and cream, concentrated or containing added sugar or other sweetening matter	1 245	2 677
Apples, pears and quinces, fresh	4 525	2 277
Vegetables provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions) but unsuitable in that state for immediate consumption	2 404	2 221

Source: UN Comtrade (2017)

An important external factor that influences the country's foreign trade is the fluctuation of the Kyrgyz som's exchange rate against the currencies of its key trade and economic partners. This caused a decline in the price competitiveness of Kyrgyz-produced commodities in these export markets. The situation became more favourable for imports from the Russian Federation and Kazakhstan. Meanwhile, Kyrgyz imports from China, the European Union and countries that have their national currency exchange rates pegged to the US dollar became more expensive.

One of the most affected sectors because of country's accession to the Eurasian Economic Union and exchange rate fluctuations was the milling industry (FAO/REU, 2017d). In 2015, flour produced in Kyrgyzstan became more expensive than flour imported from Kazakhstan. To help the industry, imports of wheat grain and flour production from imported wheat were exempted from value-added tax. This measure reduced the costs of flour mills but did not fully compensate for their price competitiveness in comparison with flour from Kazakhstan (FAO/REU, 2017d). Accession to the Eurasian Economic Union so far has not solved all challenges in Kazakh-Kyrgyz trade relationships, and periodic Kazakh border closures for Kyrgyz products still occur.

iv. Cooperatives and associations

Since the collapse of the Soviet Union, Kyrgyzstan has undertaken land and agrarian reform by reorganizing former collective enterprises through distribution of land and property shares to rural residents, leading to an increased number of household plots and the emergence of new family farms. Agricultural growth in the country, which historically has been focused on the poor, has led to the redistribution of land assets to small family farms and to their subsequent accumulation of livestock assets.

A survey of cooperatives and cooperative members in Kyrgyzstan in Lerman and Sedik (2017) has shown that, in addition to joint production based on member labour inputs, production cooperatives also provide farm services to non-members (independent peasant farmers and household plot operators who are not part of the joint production system). The activities of service cooperatives are thus a subset of the activities envisaged for production cooperatives in legislation of the post-Soviet countries.

There are 422 agricultural cooperatives officially registered in the country (FAO MAPS, 2017). According to Lerman and Sedik, the majority of cooperatives are not functioning and exist only on paper. In general, Kyrgyz farmers are reluctant to form cooperatives because the notion of cooperatives is still associated with Soviet-style collective farms. Existing cooperatives in the country are mainly production cooperatives; only a small number of service cooperatives exists.

The government's concept for development of the agricultural cooperative system in the Kyrgyz Republic for 2017–2021 (Ministry of Justice, 2018b) if implemented, can improve the situation in the country. The concept provides plans for the creation of trade and service cooperatives in the country based on: 1) processing

enterprises; 2) trade and logistic centres (sales and procurement offices); and 3) machine and tractor stations.

The concept includes state commitments to subsidize cooperatives formed around processing enterprises; to provide cooperative members with quality seeds and mineral fertilizers; and to support cooperatives in the purchasing of farm equipment. The members of the cooperative will supply processing enterprises with their products for processing. Therefore, value chain systems will be improved. The same scheme will be applied to cooperatives formed around trade and logistics centres and around machine and tractor stations.

Chapter IV of this paper presents the case study of two potato cooperatives. One of the cooperatives is a production cooperative formed around the prospective logistics centre. Another cooperative is a smaller service cooperative that is focused on joint distribution, marketing and sales of seeds.

v. Institutional environment

Laws

In general, legislation related to agriculture in Kyrgyzstan is adequate, but the implementation could be improved. The Kyrgyz Republic has solid legislation on land use, pasture management,[7] and agriculture inputs (e.g. seeds, fertilizer and artificial insemination).[8] Accession to the Eurasian Economic Union launched the process of legislation in phytosanitary control harmonization, and therefore Kyrgyzstan attempted to adopt new legislation and harmonize existing legislation on food safety, food quality and animal health.[9] Kyrgyzstan adopted laws on veterinary issues, plant quarantine, public health issues and state inspection. As of 2017, Kyrgyzstan has not developed harmonized legislation on food safety. There is a lack of veterinary-sanitary inspection regulation. Moreover, the legal gap is aggravated by the implementation gap – the state inspectorate focuses only on exported goods at the expense of the examination of imported goods, which increases the risk of dangerous products penetrating the internal market.

Though Kyrgyzstan has legislation on cooperatives, there is no clear definition of service and production cooperatives.[10] A significant obstacle to business

[7] See ANNEX 1, 1. General Laws and Policies

[8] See ANNEX 1, 2. Inputs (seeds, fertilizer, artificial insemination)

[9] See ANNEX 1, 4. Food safety, 5. Food quality, 6. Animal health (domestic, transboundary diseases)

[10] See ANNEX 1, 3. Cooperatives

development and foreign investment is the big number of laws regulating business activity. Kyrgyzstan currently has more than 15 000 laws related to business, and many of them are outdated or inconsistent with the existing legislation. The new Tax Code of 2008 was drafted with the express purpose of easing the tax burden and significantly improving the quality of tax administration.

Institutions

This section briefly covers how the systems of food quality and food safety control in the country are organized. A more comprehensive explanation can be found in Sedik et al. (2017).

a) Food quality.

The Department for Disease Prevention and *State Sanitary Epidemiological Supervision of the Ministry of Health* of the Kyrgyz Republic is the state authority responsible for public health (sanitary) regulation. The fundamental regulation of the Kyrgyz Republic in the area of public health (sanitary) regulation is the law "On public health." According to this law, hygiene requirements for the manufacture of ingredients for food products and for finished food products are established by technical regulations.

The World Trade Organization Secretariat has emphasized the weaknesses of the Kyrgyz sanitary and phytosanitary control system. A 2013 "Trade policy review - Kyrgyz Republic" highlighted frequent changes in the direction of policies and institutions pertaining to sanitary and phytosanitary measures, noting that there seems to be no clear strategy for the building of a stable and effective system of sanitary and phytosanitary control. The report identified inconsistencies with internationally recognized norms and with the WTO Agreement on the Application of Sanitary and Phytosanitary Measures. For example, the government did not have a working WTO enquiry point for a long time.

b) Food safety.

The key obligations related to veterinary and sanitary measures in public regulation are distributed between the *Ministry of Agriculture, Food Industry and Amelioration* and *the State Inspectorate for Veterinary and Phytosanitary Safety*.

Since 2015, Kyrgyzstan has been a member state of the Eurasian Economic Union. In terms of food safety systems, as of 2015: (i) Veterinary control matters are vested in the state veterinary and phytosanitary safety inspectorate under the Government of the Kyrgyz Republic; and (ii) Certain powers pertaining to the

development and implementation of veterinary policy, to the public regulation of veterinary medicine sales and maintenance of the state registry, and to the analysis of veterinary and sanitary risks are vested in the Ministry of Agriculture, Food Industry and Amelioration. At the same time, neither the ministry nor the agency has been formally granted the functions of the competent veterinary authority, as required by the provisions of the Eurasian Economic Union regulations and the law of the Kyrgyz Republic "On veterinary issues."

In November 2016, the government established the new *Department of Pastures, Livestock and Fisheries under the Ministry of Agriculture, Food Industry and Amelioration.* It was established by merging the *Department of Pastures, the State Selection and Breeding Centre, and the Department of Fisheries.* The reorganisation of the structure was aimed at harmonization with Eurasian Economic Union regulations and the law of the Kyrgyz Republic "On veterinary issues."

The Kyrgyz Republic is typical of post-Soviet states in terms of its sanitary and phytosanitary system (Sedik et al., 2017). The following institutions participate in sanitary and phytosanitary regulation:

- *The Ministry of Economy* (coordinating the activities carried out by state authorities and other stakeholders of the technical regulation system in the Kyrgyz Republic, as well as ensuring fulfilment of the obligations assumed by the Kyrgyz Republic under the WTO Agreement on Technical Barriers to Trade);
- *The Department for Sanitary and Epidemiological Surveillance of the Ministry of Health* (domestic registration of specialized food products, new types of food products, and food and feed additives in accordance with the Eurasian Economic Union technical regulations "On food safety" and other "vertical" Eurasian Economic Union technical regulations);
- *The State Inspectorate for Veterinary and Phytosanitary Safety under the Government of the Kyrgyz Republic* (state inspection service tasked with assessing compliance with veterinary and phytosanitary articles of the Eurasian Economic Union technical regulations; after November 2016 (Government, 2016), the inspectorate kept only oversight functions, mainly regarding the veterinary sector, in areas such as controlling the violation of legislation in the field of veterinary medicine, assessing the compliance of products with requirements for product safety and veterinary and quarantine phytosanitary rules, controlling veterinary drugs, ensuring

product conformity, protecting consumers' rights, and protecting the country's territory from the introduction and spread of infectious animal diseases).

- *The Department of Plant Quarantine under the Ministry of Agriculture, Food Industry and Amelioration* (state inspection services tasked with plant quarantine phytosanitary control) [11]
- *The Department of Crops Expertise under the Ministry of Agriculture, Food Industry and Amelioration*[12]
- *The Kyrgyz Standardization and Metrology Centre under the Ministry of Economy* (national standardization authority)
- *The Kyrgyz Accreditation Centre under the Ministry of Economy* (establishes accreditation rules for compliance assessment authorities)
- *Accredited laboratories* (test products, issue Eurasian Economic Union uniform compliance declarations).

In accordance with the Eurasian Economic Union technical regulation "On food safety," unprocessed raw food of animal origin (e.g. raw milk) is subject to veterinary and sanitary examination before delivery to the market. Veterinary-sanitary examination is to be carried out in accordance with the national law of the member state of the Eurasian Economic Union. Member states of the Eurasian Economic Union take different institutional approaches to this task; in Kyrgyzstan, independent accredited veterinary laboratories are given the right to inspect.

e) Conclusions

The Kyrgyz Republic is a mountainous country largely dependent on gold exports and remittances from abroad. Kyrgyzstan cultivates wheat, barley, maize, potatoes, melons, oilseed crops and other vegetables and fruits. Sugar beet is an important crop in Chui Oblast, and cotton and tobacco are important for the southern regions. In the dairy sector, Kyrgyzstan produces milk from cows, sheep and goats; meat from cattle, sheep, horses, pigs, goats and chickens; and honey.

[11] Established on November 11, 2016 by Government Decree 576.

[12] The Department was established by Decree 576 by merging the following units under the Ministry of Agriculture, Food Industry and Amelioration: State centre for testing varieties and plant genetic resources, the Republican state seed Inspectorate and the Center for examination of grains.

The fisheries sector is less developed but has demonstrated a positive trend in the past few years. Access to land is better in the northern part of the country. The land is exposed to degradation and erosion. Access to water is difficult.

Kyrgyzstan has a number of national development programmes, but their implementation was not assessed in this paper.

Kyrgyzstan is currently harmonizing its food safety and quality systems with Eurasian Economic Union standards. In the past 10 years, the country has significantly improved its business environment, which is proved by the World Bank's Doing Business ranking, which listed Kyrgyzstan in the second tier of countries.

The legal base of the country, in theory, covers all major elements in agriculture, but it could be improved. Emphasis should be given to the actual implementation of laws. The banking sector of the country is satisfactory. The Kyrgyz Government provides a number of support measures to agriculture. Access to high-quality seeds should be improved. There are banking products targeting farmers and agriculture enterprises, but despite their relative affordability their maximum maturity is only three to five years, which is not enough to enable larger loans.

Infrastructure improvement projects are being conducted by the Ministry of Agriculture, Food Industry and Amelioration, the International Fund for Agricultural Development, the United States Agency for International Development, and the Japan International Cooperation Agency.

The country is planning to concentrate on traditional agrifood export products (dairy products, fresh and processed vegetables, fruits and nuts, wool and animal skins, and cotton) as well as meat products and bottled water. Kyrgyzstan aims at three main destinations for its exports: the Eurasian Economic Union, Asian countries (China and the Republic of Korea), and the European Union.

The majority of cooperatives in the country are production cooperatives. There are practically no service cooperatives. In 2017, the country initiated a programme on the development of a service cooperatives system.

II. Value Chain Enabling Actors and Programmes

a) Value Chain Enabling Actors

General actors

The main state bodies related to agriculture and agro-industry development in the Kyrgyz Republic are the *Ministry of Agriculture and Land Amelioration* and the *Ministry of Economy and Antimonopoly Policy*.

The State Inspectorate on Veterinary and Phytosanitary Security was established in 2012. The main function of the department is border control, with a main focus on products that are exported from the country. The inspectorate has less emphasis on inspecting imported agricultural products. The department has 32 inspectorates, each district is served by at least one inspectorate. The department provides certification, except for organic certification, which is conducted by the Department of Chemicalization. Inspectorate veterinary services are stronger than phytosanitary ones; their phytosanitary capacities should be strengthened.

The inspectorate provides training to district inspectors. The inspectorate needs help in building the capacity of their officers; they request trainings for their district (*raionniy*) staff. The inspectorate has no laboratories; instead, staff members conduct tests in private laboratories. They notice that there is a lack of laboratories in Batken Oblast.

The inspectorate requests help in examining soil contamination and erosion in the country. Their capacities in veterinary control are sufficient, but the phytosanitary capacities require development.

Another actor is *The Department of Plant Quarantine of the Ministry of Agriculture*, Food Industry and Amelioration of the Kyrgyz Republic.

Access to market

Improving access to market is supported by the following organizations:

- *Kyrgyz Agriculture and Food Corporation* (AFC) (established in 2009), which ensures stable functioning of the food market in the interests of producers and in meeting public demand for food;
- *Agribusiness Competitiveness Centre* (established in 2006), which helps food processors be more efficient and profitable;
- *State enterprise "Centre One-Stop Shop"* in the field of foreign trade under the Ministry of Economy and Antimonopoly Policy;
- *Food Security Council* (established in 2009);
- *Fruit and Vegetable Association* (private sector); and
- *Agricultural Market Information System* (private sector).

Access to finance

Access to finance in the Kyrgyz Republic is provided by the government, microfinance institutions, banks and international donors.

The government measures include *subsidising interest rates* and l*owering the tax burden*. Farmers who take a loan from partner banks for agricultural purposes may have a lower interest rate. Farmers pay a 10-percent interest rate regardless of the market rate (which reaches 20 percent). Farmers are exempt from paying value-added tax, profit tax, and turnover tax. They pay only land, social, and animal taxes.[13]

Kyrgyz major bank Aiyl Bank O.J.S.C. offers a number of products for farmers (See Table 5). A subsidised interest rate makes bank products relatively affordable, but a very short maturity period limits farmers' ability to take medium and large loans.

Though the image of microfinance companies is very poor, they have managed to cover some gaps in governmental and international donors' programmes. One example is the BT Innovations financial fund. It started as a microcredit company in 2009 and grew into a bank and financial fund. The fund concentrates on the management of investments and providing loans and inventory. It has capacity to conduct value chain-related research. It provides loans and increases the capacities of farmers. BT Innovations has collaborated with the United States Agency for International Development and the German Federal Enterprise for International Cooperation (GIZ), and it also receives resources from the Kyrgyz-Russian Fund.

[13] See more details in II.d.ii Support measures for agriculture sector.

Table 5. Credit and leasing products of Aiyl Bank

Name of bank product	Maximum maturity (subsidised/from bank's funds)	Interest rate (subsidised/from bank's funds)
Crop production	up to 3 years/up to 2 years	10-12% / 20%
Financing the export-oriented and import substituting enterprises	up to 3 years/up to 5 years	
Production/processing	up to 3 years/up to 2 years	6% / 16-18%
Business invest	up to 5 years for each of three tranches	5-10%
Profitable	up to 5 years	10-15%
Gosleasing-3	up to 7 years	9-11%
RKDF – leasing	up to 5-7 years	5-10%

Access to infrastructure

The infrastructure of Kyrgyzstan requires improvement and additional funding. The capacity of the Kyrgyz Government to invest in infrastructure is very limited. The government relies mainly on international organizations, donors and other sources of support from abroad. The International Fund for Agricultural Development, the United States Agency for International Development, the United Nations Development Programme, GIZ and the Japan International Cooperation Agency are currently involved in the development of infrastructure (e.g. roads, bridges, marketplaces, irrigation and electricity).[14]

Seeds and planting materials

The Japan International Cooperation Agency and the Korea International Cooperation Agency assist Kyrgyzstan in the development of the seed-production sector. The Japan International Cooperation Agency assists in promoting exports

[14] See more in III b) Major Donor-led Value Chain Development Programmes

through supporting the production of hybrid vegetable seeds. To achieve this, they have formed a cooperative. Within the Korea International Cooperation Agency project, Kyrgyz experts undergo trainings in the Republic of Korea. Kyrgyzstan is a member of The International Union for the Protection of New Varieties of Plants. About 50 to 60 percent of seeds in the country are certified.

The Ministry of Agriculture is also involved in the development of the seeds sector. The *Department for Farming, Seed and Organic Agricultural Production* is supposed to be one of the main actors in sector development, but it is not involved in production of seeds. Seed multiplication takes place in the Issyk-Kul and Osh regions.

The Agricultural Crops Department of the Ministry of Agriculture provides a special service for seed certification. This department is a relatively new structure. Three bodies were merged into the *Agricultural Crops Department* in 2016: (i) *Centre for testing varieties*, (ii) *Seeds inspection*, (iii) *Grains inspection*. The department maintains a state registry, allows for testing, inspects the quality of seeds, and issues certification. The department certifies the following crops: wheat, barley, cotton plant, maize, and sugar beet. They have a main laboratory and a number of small laboratories in 19 areas.

The head of the department notes that the insufficient supply of seeds is associated with their high prices. Because of high levels of soil contamination, seeds should be renewed regularly, but this is currently not possible. The state does not subsidise seed breeding and multiplication.

The control of seed quality is also conducted by the *Department of Quarantine of the Ministry of Agriculture*.

The country has a good scientific basis for seed production, but the potential cannot be realized because of limited funding. A major challenge is a timely renewal of seed material. Because Kyrgyz farmers are unable to buy quality seeds and renew them, they significantly exceed the maximum term of seed usage, which negatively impacts harvest output and quality while increasing the contamination of the soil.

Trade Associations

The Chamber of Commerce and Industry of the Kyrgyz Republic is the main organization that lobbies for interests of small and medium agriculture enterprises. The Chamber of Commerce unites 980 companies composing about 50 unions and associations. Its main goals are to support members, lobby for and

protect members' interests, and help find partners. It deals with issues related to taxes, inspections, visas, and quotas for foreign labour. It has agreements with 50 international organisations, and its members undergo trainings financed by GIZ, JICA, UN and USAID.

The chamber has a branch office in the southern part of the country. It receives no dotation from the government, but it would like to have offices in all regions of Kyrgyzstan.

Chamber members highlight the following problems:

1. "small commodity production" (a so-called *melkotovarnoye proizvodstvo*)[15];
2. certification (difficult and expensive to obtain);
3. transportation (mainly motor transport);
4. access to finance (high interest rate, short credit period, prevailing "shuttle business"[16]); and
5. difficult transition to organic production (main obstacles: price and quality).

The chamber is engaged in the promotion of Kyrgyz products. The members request support for honey sector, because there is a lack of knowledge in that sector regarding innovative technologies and funds.

Access to knowledge and information is provided by the *State Enterprise Information and Marketing Centre.*

[15] This is a widespread term in post-Soviet countries (because of the influence of Marxism). It is usually used not in its original meaning. Originally, this term meant a production of goods for market by people who usually were not able to hire workers. Here, the trade association implied the scattered production that occurs when small farmers experience difficulties uniting because of the difference of the varieties they grow and the quality of land they possess.

[16] Another term specific for the post-Soviet area. This is a special kind of international trade developed in the 1990s in post-Soviet countries. A shuttle business is a business engaged in the import of consumer goods by individuals for the purpose of retail sales or small wholesale on the domestic market.

b) Major Donor-led Value Chain Development Programmes

International Fund for Agricultural Development (IFAD)

IFAD has contributed to the development of the local pasture management system and the development of the livestock market. Its project has been implemented since 1996 in three stages. During the first stage (1996–2007), pasture committees were formed, and in the second stage (2007–2017) they were strengthened. The third stage, which starts in 2018, will target the development of selected value chains to improve access to market for the established pasture committees and farmers. IFAD has three main goals: create pasture management by the local population to improve pastures, reduce conflict, and fight degradation of the environment. IFAD has a special committee in the Ministry of Agriculture.

The first phase focused on pastures and covered the whole country. Within the implementation, the pasture-management legislation (law on pastures[17]) and many legal regulations and documents were adopted, and 76 committees were created at the rural district level. The administrative approach was changed: fodder pastures were placed under regional administrative bodies, intensive pastures were placed under rayon administration, and rural/village pasture were placed under local control. This project has the following problems: upper governmental control (oblast–rayon–centre); local government (local pasture committee); and local committee repair infrastructure (roads and bridges).

The second phase focused on the development of the livestock market in five to seven oblasts, while the World Bank covered two more regions. The main challenge of this phase was the survival of pasture communities.

The third phase starts in 2018. IFAD will focus only on livestock value chains. In the Issyk-Kul and Narin regions, the project will finish in 2018; in Jalal-Abad and Osh, it will finish in 2019. Local villages will decide which value chains to work on. The problem noted is limited funds.

Thus, three IFAD projects logically follow each other: 1) create committees; 2) strengthen committees; and 3) develop markets (value chains).

[17] See Annex 1, 1. General Laws and Policies

World Bank

The World Bank projects focus on improving irrigation infrastructure and water usage as well as improving nutrition. USD 1 billion was allocated for construction of public infrastructure. There was a proposal to develop a logistics centre, but the World Bank did not identify a rationale for its construction. As a result, the World Bank invested in building training facilities for farmers who work in dairy, cereals and wheat sectors instead. Students also are trained. Earlier, the World Bank gave matching grants to farmers' associations for purchasing equipment.

Community seed funds project

This project aims to supply farmers with high-quality seeds to improve the productivity of their businesses. The project started in 2013 and is expected to finish in 2018. The project's budget of USD 2.8 million is provided by the Japanese Government. During implementation, the World Bank has established more than 100 Community Seed Funds, with over 2 200 members covering 148 villages (World Bank, 2016).

Farmers were provided with certified seeds of potato, alfalfa, sainfoin, maize, spring barley, and winter wheat, as well as fertilizers. Average yields in the 20 Community Seed Funds that received potato seeds in 2015 have increased by 48 percent, from 17.2 tonnes/ha before the project to 25.4 tonnes/ha with the project. The World Bank developed 502 self-help groups with 3,474 members in 118 villages across the country. They were provided with certified seeds of tomato, cucumber, carrot, onion, cabbage, red beet, and potato, depending on demand and the preference of each group. Except for potatoes, yields are reported to be substantially higher than before the project. In addition, the World Bank provided trainings to farmers.

The Community Seed Funds programme has a point that is subject to improvement: The reproductivity vigour of potato seed is only three years (in case of super elite variety, four years), therefore, when the project stops, the farmers' access to new seed stock will be limited.

Japan International Cooperation Agency (JICA)

JICA has a programme for supporting vegetable seeds production for export promotion, and it is involved in the development of logistics centres in Kyrgyzstan. JICA also supports the formation of cooperatives, and it provides trainings to cooperative members.

Korea International Cooperation Agency (KOICA)

KOICA's assistance in the Kyrgyz Republic covers fields such as governance, public administration, agriculture and rural development, health and education. Kyrgyz experts and farmers go to the Republic of Korea for training. KOICA is working to strengthen partnerships with international organizations such as the United Nations Development Programme, the Organisation for Economic Co-operation and Development, the World Bank, and the World Food Programme and to establish mid-to-long term ties with these international institutions. In the Kyrgyz Republic, KOICA has established a framework of cooperation with the World Food Programme to implement the "Food Security Program (2016–2018)" for vulnerable communities and households in Osh, Jalal-Abad, Batken, Talas and Naryn provinces. The following projects have been and are implemented by KOICA:

- *Land Information System (LIS)* in the Kyrgyz Republic development (2015–2017)
- *Strengthening the Capacity of Forest Conservation of the Kyrgyz Republic* (2012–2015)
- *My Village Project in the Kyrgyz Republic* (planning stage) to improve the living conditions and social environment of the rural community in Kyrgyzstan.
- KOICA FELLOWSHIP PROGRAM (training program) to share technical skills and knowledge as well as to build capacities for sustainable socio-economic development.

United States Agency for International Development (USAID)

Agro Horizon Project.

The project started in October 2014 and will finish in September 2018. The project is implemented by ACDI/VOCA in Osh, Jalal-Abad, Batken and Naryn. The funding amounts to USD 22 million. The project aims to increase smallholder farmers' incomes by improving productivity, expanding markets, and creating private, sector-led partnerships to increase competitiveness in selected agricultural value chains. The project creates jobs in the agricultural sector – especially for women and youth – while improving the availability of nutritious

foods. Over 42 000 households are expected to benefit from the implementation of the project. The project supports alternative financing mechanisms, such as embedded financing and mobile payment systems, that will leverage the partnership between the private sector and the USAID Agro Horizon Project to provide access to inputs and services for farmers to increase their productivity and ensure the availability of raw materials for the private sector. USAID partners with women farmers to construct greenhouses in the mountainous areas of Naryn and Osh. USAID pays attention to generating new commercial opportunities for farmers and small and medium enterprises in foreign and local markets. Nearly 44 000 rural households have benefited from training and technical assistance.

Farmer-to-farmer

This project is being implemented by ACDI/VOCA and USAID in the period October 2013 to September 2018. It addresses the fragmentation of the agricultural production base in Kyrgyzstan, which continues to prevent the region's farmers and agribusinesses from reaching the scale necessary for efficient production. Most production comes from small farms, which yield produce of inconsistent quality and in quantities that are too low to meet market demand. The project brings technology transfer innovations through U.S. agricultural specialists. The farmer-to-farmer project has attracted 118 experts to support technology transfer and organizational development among value chain actors in Kyrgyzstan. End results include improving the trade of fruits and vegetables, improving livestock production, encouraging import substitution with food processors, and enhancing input supply channels to increase productivity and thus allow profitable access to known domestic and regional markets. The Agricultural Education Farmer-to-Farmer project helps public and private agricultural extension and advisory service providers improve their capacity to transfer relevant technologies to serve agricultural development needs. Rural Financial Services supports non-bank financial institutions in developing their agricultural loan portfolio through risk-mitigation strategies.

United Nations Development Programme (UNDP)

The UNDP, in cooperation with national partners, is implementing the “Integrated Development in Osh Oblast, Kyrgyz Republic” programme, funded by the Russian Federation (UNDP, 2017). The programme, which focuses on creating economic opportunities for high-risk groups and communities, is expected to reduce the risks of conflicts and their vulnerability in the short and medium terms. The programme tries to diversify economic activities; improve access to water,

employment and rehabilitation of the socio-economic infrastructure; and establish a more sustainable use of resources. The main objective of the project is to assist the Kyrgyz Government in establishing conditions for prevention of violent conflicts and to secure sustainable human development in Osh Oblast through the implementation of inter-linked comprehensive measures aimed at significantly reducing poverty, improving the welfare of target communities at risk, and establishing more favourable conditions for the sustainable development of human capital in three target districts of Osh Oblast.

European Union

In general, the European Union is engaged in bilateral cooperation with Kyrgyzstan regarding education, the rule of law, and rural development. The European Union delegation mainly focuses on the southern, less-developed part of Kyrgyzstan. They were working on several value chains – in particular, plum, apple, apricot and rice – and they studied water management. The European Union delegation cooperates with both international and local development organizations. In cooperation with the German Federal Enterprise for International Cooperation (GIZ), they are developing a four-to-five-year project related to the improvement of agricultural value chains. They are planning to focus more on poverty reduction in the Jalal-Abad region. They have provided high-quality potato seeds in Botken Oblast.

Though it is a difficult task, Kyrgyzstan aims to reach the European markets. Kyrgyzstan has joined the European Union's Generalised Scheme of Preferences, which exempts Kyrgyz products from custom duties to promote their exports to the European Union. In particular, in 2015 the Kyrgyz Government sent a request to the European Commission to provide the country with tariff benefits under the Generalised Scheme of Preferences, and in the end of 2015 the Commission granted these preferences. The benefits entered into force on 27 January 2016. However, the eliminating of tariff barriers did not exempt goods from the need to comply with the European sanitary and phytosanitary system, which was always the main barrier. The European Union specialists also conducted a number of technical assistance missions to Kyrgyzstan on the Generalised Scheme of Preferences within the framework of the Border Management Programme in Central Asia.

c) FAO Value Chain Development Activities

FAO in 2017–2018 is focused on strengthening the value chains of beans, fish and potatoes. Earlier, FAO worked on the dairy and sheep value chains.

A group of FAO consultants examined a kidney beans value chain and provided recommendations on the improvement of the kidney beans sector (Tilekeyev et al. 2017). A local non-governmental organization analysed the Kyrgyz fish market (FAO/REU 2017a), and FAO built up the agricultural business skills of 120 fish farmers. More effort on creating the demand for fish in the country is required. A local NGO conducted the potato value chain analysis (FAO/REU 2017b), and the current study contributes to the development of potato and other value chains.

d) Conclusions

The Ministry of Agriculture and Land Amelioration and the Ministry of Economy and Antimonopoly Policy are the main state value chain development actors in Kyrgyzstan. A number of institutions under these ministries help improve the situation in the agriculture sector. Access to finance and markets are provided by state, private and international organisations. The Ministry of Agriculture, IFAD, USAID and JICA have infrastructure improvement projects in the country. Access to seeds is one of the major problems in agriculture production, especially with regard to potato production. Access to knowledge is provided by the majority of the value chain actors in the country.

The presence of international development organizations in Kyrgyzstan is sufficient – in a way, even excessive. The organizations are targeting different sectors of the economy, in several cases complementing each other's activities. Main challenges and areas of work for international organizations are poor infrastructure and higher risks of conflict.

Kyrgyz farmer is collecting potato seeds.
@FAO/Pavel Kiparisov

III. Sample Value Chain Overview - Potatoes in Issyk-Kul Region

The authors conducted a two-day field trip to examine the status of the potato value chain in the Issyk-Kul area. They visited farms, associations, cooperatives, storage facilities, and a starch factory and interviewed stakeholders. The authors observed the implementation of a Community Seed Funds project by the World Bank and met with representatives of Japan International Cooperation Agency, which supports the development of multifunctional warehouses and logistics centres in Kyrgyzstan. The findings presented in this chapter are based on conducted interviews (FAO/REU, 2017e), a survey done by a local non-governmental organization (FAO/REU, 2017c), and desk study. Fifteen farmers were surveyed, and eight were interviewed. The authors did not aim at comprehensive examination of the value chain; some sections cover additional products produced by potato farmers in addition to potatoes (see section *V. Marketing*). The main goal was to assess the status of the potato and related value chains and identify areas for future work.

a) General characteristics of the region

Geography

The region occupies the northeastern part of the country. Lake Issyk-Kul is located in this oblast. The area is mountainous (See Figure 7). The northern part of the basin is framed by the slopes of the Kungei-Ala-Too mountain range, and above the southern shore lies the Terskey Ala-Too range. The inner high-altitude areas of the region are occupied by the mountains of the Central Tien Shan, where sit the Jetim Bel, Borkoldoi and Kakshaal-Too ridges.

Socio-economic situation

The population of the Issyk-Kul region is 463 900 people. The regional centre is the city of Karakol (named Przhevalsk before 1991). The population of Karakol is 70 400 people (Wikipedia, 2018).

Figure 7. Rural landscape

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Issyk-Kul Oblast is located in the more industrialized northeastern part of the country. Poverty rates in the period of 2010–2016 were gradually decreasing, with the exception of the year 2013 (See Table 6). In 2016, one-fourth of the population of the Issyk-Kul region was below the poverty line. Overall, the Kyrgyz poverty rate is similar (See Table 6).

Table 6. Poverty rate in Kyrgyzstan, percentage

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Issyk-Kul Oblast	38	29.5	28.1	39.5	26	28.9	24.7
The Kyrgyz Republic	**33.7**	**36.8**	**38**	**37**	**30.6**	**32.1**	**25.4**

Source: National Statistical Committee of the Kyrgyz Republic (2017)

The official unemployment rate slightly decreased in 2015 compared to 2011 (See Table 7). The unemployment rate for men is lower than the unemployment rate for women. In 2015, unemployment amounted to 8.7 percent of men and 9.6 percent of women in the Issyk-Kul region. The unemployment situation in Issyk-Kul does not differ much from the situation in the country as a whole (See Table 7).

Table 7. Unemployment rates in the Kyrgyz Republic and in the Issyk-Kul region, 2011–2015

	2011	**2012**	**2013**	**2014**	**2015**
male Issyk-Kul	8.9	10	9.5	8.7	8.7
male Kyrgyz Republic	**8.4**	**8.7**	**9.8**	**9.6**	**7.6**
female Issyk-Kul	10.8	8.9	9.4	10.1	9.6
female Kyrgyz Republic	**9.9**	**9.5**	**9.7**	**9.5**	**9**

Source: National Statistical Committee of the Kyrgyz Republic (2017)

The official unemployment statistics do not provide the full picture in the country. The employment rates for men and women differ more than the unemployment rates (See Table 8). In 2015, 67.9 percent of Kyrgyz men in the Issyk-Kul region were officially employed, while only 38.7 percent of Kyrgyz women in the same region worked officially.

Table 8. Employment rates in the Kyrgyz Republic and in the Issyk-Kul region, 2011–2015

	2011	**2012**	**2013**	**2014**	**2015**
male Issyk-Kul	69	68.3	66.6	66.6	67.9
male Kyrgyz Republic	**71.6**	**71.3**	**70.7**	**69.7**	**70.6**
female Issyk-Kul	44.4	44.4	37.6	38.6	38.7
female Kyrgyz Republic	**47.6**	**46.9**	**44.4**	**45.6**	**45.4**

Source: National Statistical Committee of the Kyrgyz Republic (2017)

Figure 8. Kyrgyz woman – an owner of potato farm and underground storage.

@FAO/Pavel Kiparisov

The majority of landowners in Kyrgyzstan are men (FAO/REU, 2017e). In the field mission to the lake Issyk-Kul, the authors interviewed two women farmers who owned the land and met women farmers who helped their husbands manage businesses (See Figure 8). Women's role in managing family businesses is of paramount importance. Though their role in doing business is less visible, observations and interviews from the field study prove women's capability in managing businesses and resolving problems in their communities.

b) Potato value chain assessment

i. Production

Potatoes have a long history of cultivation in Kyrgyzstan, centred mostly around the Issyk-Kul region. In 2015, potatoes were grown in the Issyk-Kul region on an

area of 27 770 hectares. Table 9 shows yearly changes in the cultivated area of potatoes. In general, the cultivated area in the period of 2006–2015 expanded countrywide while decreasing in Issyk-Kul Oblast, which contained 32.9 percent of the total cultivated area in 2015 (See Table 9). The decrease is likely associated with a decline in demand and a decrease in exports to Kazakhstan.

Table 9. Dynamics of potato cultivated area, ha, 2006–2015

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Kyrgyz Republic	81 150	86 553	83 725	87 227	84 313	84 880	81 570	80 517	78 892	84 488
Issyk-Kul	33 322	34 887	32 762	34 620	32 874	32 416	28 955	27 493	27 503	27 770
Share of Issyk-Kyl Oblast	41.1%	40.3%	39.1%	39.7%	39.0%	38.2%	35.5%	34.1%	34.9%	32.9%

Source: National Statistical Committee of the Kyrgyz Republic (2017)

Issyk-Kul Oblast in 2015 provided about 35 percent of total potato production in the country (See Table 10). Its share of production had been gradually decreasing, from 50 percent in 2006 to 35 percent in 2015. The decrease was compensated by Jalal-Abad and Osh oblasts, where the production of potatoes significantly increased during that timeframe.

Table 10. Production of potato by region, 2015

Region	**Production of potato by region, thousands of tonnes**	**Share of potato production**
Batken	34.7	2.5%
Jalal-Abad	136.1	9.6%
Issyk-Kul	505.5	35.7%
Naryn	84.7	6.0%
Osh	202.5	14.3%
Talas	258.1	18.2%
Chui	192.1	13.6%
Osh city	2.6	0.2%

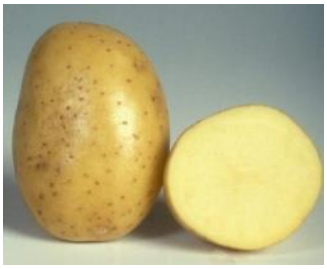
Source: National Statistical Committee of the Kyrgyz Republic (NSC)

Seeds availability

One of the major problems in the potato value chain is access to quality seeds. Farmers usually continue using seeds long after their productivity vigour is lost. Farmers cannot afford quality seeds, and they receive only a limited support from international donors and practically no support from the government (FAO/REU, 2017e).

Table 11 presents a list of varieties of potatoes common to the Issyk-Kul region. Farmers grow two main varieties of potato: Picasso and Jelly. The Picasso variety is considered better by farmers because there is a bigger demand, it can be stored longer, and its selling cost is higher. However, there is a shortage of Picasso seeds in the country, and farmers usually cannot procure enough seeds to renew their seed stock.

Table 11. Classification of the most common varieties of potatoes in the Issyk-Kul region

Name	**Short description**	**Picture**
Jelly (Джелли) Originator: Europlant Pflanzenzucht GbR (Germany)	A high-yield table variety with large smooth tubers of a yellow colour. Resistant to most viruses. Good for fries and soups. Period of maturation: 90–110 days Starch content: 14–18% Weight of tubers: 84–135 g	
Picasso (Пикассо) Originator: AGRICO U.A (The Netherlands)	Medium late variety of Dutch selection. Skin colour is yellow with pink splashes. It tolerates drought and high temperatures well. Characterized by smooth tubers and the possibility of long-term storage. Period of maturation: 120–140 days Starch content: 8–13.5% Weight of tubers: 75–150 g	

Name	Short description	Picture
Sante (Санте) Originator: AGRICO U.A (The Netherlands)	Medium-ripened Dutch high-yielding table variety of a yellow colour. Suitable for mechanical cleaning and processing, including frying. Requires large row spacing. Period of maturation: 85–90 days Starch content: 10–14% Weight of tubers: 90–120 g	
Rozara (Розара) Originator: SaKa-Ragis Pflanzenzucht GbR (Germany)	The early German selection, adapts to the climatic conditions of the region and tolerates transportation well. Period of maturation: 50–65 days Starch content: 12–16% Weight of tubers: 81–115 g	
Riviera (Ривьера) Originator: AGRICO U.A (The Netherlands)	Extra-early potato of Dutch selection. It is characterized by drought resistance and resistance to mechanical damage. Period of maturation: tubers can be harvested on the 40th day, full maturation 80 days after planting Starch content: 12–16%. Weight of tubers: 101–177 g	

Source: FAO/REU, 2017e

According to farmers, the best varieties in terms of growing and storing are Picasso and Sante. Jelly is considered a less-preferable variety, but it sells very well (FAO/REU, 2017e).

Surveys and interviews from the FAO Regional Office for Europe and Central Asia show that the majority of farmers grow more than one variety. Only four farmers out of 23 grew only one variety. Three farmers reported that that they plant potatoes using their own seeds; other farmers buy seeds. All farmers who buy seeds indicated a problem with the availability of seeds (FAO/REU, 2017d). Many farmers cannot afford to buy quality seeds. The state has limited resources to improve the availability of seeds in Kyrgyz agricultural markets.

Farmers use mineral and organic fertilizers. The most widespread pests reported were Colorado potato beetle and wireworm. One farmer reported the presence of

aphids. In terms of potato diseases, three farmers named late blight (*phytophtoroz*), rot caused by Phytophthora capsici bacteria (*chernaya nozhka*), and potato nematodes. Eight farmers used chemical substances (herbicides) and seven did not use them. Only two farmers used biological substances; others did not use them, reporting that they were too expensive (60 percent of farmers) or not available (40 percent of farmers), meaning that there is a lack of supply (FAO/REU, 2017e).

Potato cooperatives

In this section, we study two cases – the production cooperative *Kochkor Logistics* and the service cooperative *Agroleader*.

The cooperative *Kochkor Logistics* unites 200 potato farmers. It is currently at the early development stage. The cooperative was supported by the Japan International Cooperation Agency and the Ministry of Agriculture in terms of financing and consulting. Its goal is to help farmers assist each other in selling and storing. Though the cooperative is already created, farmers still have little faith in this form of association. In Kyrgyzstan, as well as in all other post-Soviet countries, the word "cooperative" has a negative association. Farmers usually are not aware of forms of cooperatives other than the production cooperative. Service cooperatives are significantly much wider spread and have proved to be a more effective form of association (Lerman & Sedik, 2017). Members of this cooperative provide services together (e.g. sorting, packaging and branding) but they also aim to jointly produce potatoes. They would like to use one amalgamated (united) field for growing potatoes, thus making their cooperative one of the production variety.

In autumn, cooperative members sell potatoes for 10 soms (roughly USD 0.15) per kilo, and resellers sell them in Bishkek for 25 soms (roughly USD 0.37). Farmers share debts and revenues according to negotiations among members. They hope that resellers will be excluded from the chain, prices will stabilize, and sales will be guaranteed.

Farmers want to position themselves as organic commodity producers. They already use no chemicals, but obtaining an organic certification may take up to three or four years.

The Japan International Cooperation Agency offers training to Kyrgyz cooperative members in Japan and, in collaboration with the Kyrgyz Ministry of Agriculture, supports construction of the logistics centres (FAO/REU, 2017d) that would improve cooperatives' ability to store more potatoes, decrease the rate of potato

losses, and improve sorting and marketing. Farmers note that they need mechanized sorting equipment. A leader of the cooperative noted that small commodity production was one of the main problems because:

- Farmers grow different varieties;
- Soil quality varies from to farm; and
- Harvesting time differs.

The cooperative *Agroleader* is led by a professional agronomist. Fifteen farmers are members of the cooperative, and they have a legal certification. Early attempts to create a cooperative were unsuccessful because of the farmers' reluctance due to the reasons mentioned above. The United Nations Development Programme and the Agribusiness Competitive Centre supported this cooperative. *Agroleader* is focused on the commercial and service side and less on production; therefore, this cooperative may be classified as a service cooperative, which are rare in Kyrgyzstan.

The members of *Agroleader* participate in potato seed distribution. Every three or four years, when seeds' reproductivity vigour is lost, they renew their seed stock.

Contrary to the *Kochkor Logistics* cooperative, the head of *Agroleader* cooperative believes that the role of intermediaries in the potato supply chain is significant. Intermediaries establish and stabilize the system, he said; when there are no intermediaries, the government should intervene (e.g. by constructing logistics centres) (FAO/REU, 2017d).

ii. Processing

The majority of Kyrgyz farmers either do not sell their potatoes for processing or are not aware that they do, in fact, sell potatoes for processing. In general, there is a lack of potato processing facilities. As of 2017, only a limited number of fried potato and potato chip processors operated in the country (FAO/REU, 2017d). Farmers usually are neither aware of processors nor of where processors buy products. Farmers sometimes sell potatoes that are suitable for processing (e.g. for making fried chips) at lower prices than those on the market. Farmers are not aware of the future use of sold potatoes, therefore because of the incomplete information they miss opportunities for selling their potatoes at higher prices. Links between processors and farmers are not optimal.

In the village of Teplokluchenka in the Ak-Suu district, the *Tunuk-Kurulush* construction company recently built a potato-processing factory financed by investors from the Republic of Korea (See Figure 9 and Figure 10). USD 3 million

was invested in the construction and purchasing of equipment. According to the head of the district, the factory was expected to generate tax revenue amounting USD 100 000 each year (YouTube, 2018).

Figure 9. Non-functioning starch factory – a view from outside

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However, the factory has not functioned since 2015. The reason is unclear; different actors name different reasons. One of the evident reasons was a lack of cultivation of potato varieties suitable for the production of starch. According to surveys from the FAO Regional Office for Europe and Central Asia, the most common potato varieties in Issyk-Kul are 14- to 16-percent starch (See Table 11); for production of starch, potato varieties with starch content of over 18 to 20 percent are recommended (FAO/REU, 2017d).

The authors developed options for starch factory vitalization that can be found in Annex 2. Farmers in the Ak-Suu district who were interviewed expressed their interest in supplying the factory with their potatoes.

Figure 10. Non-functioning starch factory – a view from inside

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The authors conclude that links between producers and processors in the potato value chain currently are not optimal or not established, and the starch factory requires the attention of the government and international organizations to begin operations. Besides the starch factory, there is only a small number of potato processors (fried potato producers) that were not studied in this paper.

iii. Storage

Farmers harvest potatoes in October and store them until spring, but in some cases only until February. Farmers only sell all or part of their harvest in February when they need money. They try to store their harvest until April or May to sell potatoes when prices are most favourable. Out of 23 farmers only two used mechanized cold storage facilities, while the remainder utilize non-mechanised traditional cellars. The duration of storage reported by farmers did not differ between those who stored potatoes in cellars and those who used cold storage facilities. Farmers sell their harvests to agents in their villages (75 percent) or conclude contracts with buyers (25 percent) (FAO/REU, 2017e).

Figure 11. Traditional potato storage – a view from outside

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Figure 12. FAO officers examine a traditional potato storage facility.

@FAO/Pavel Kiparisov

The authors observed storage facilities with capacities varying from 5 to 120 tonnes. Most of them are traditional underground cellars. The conditions of cellars vary; most of them are sound but could use some improvement. The percentage of losses in older cellars (See Figure 11 and Figure 12) may reach 25 percent (FAO/REU, 2017e). The share of losses in improved cellars (See Figure 13, Figure 14) is only 5 to 6 percent. The improved storage facility shown in Figure 13 is ten to 15 years old. It was built using stones and covered with reeds and metal. Its capacity is 50 tonnes. For three years, an owner of this facility had been receiving support from the World Bank, which allowed him to improve his facility.

Figure 13. Improved traditional potato storage

@FAO/Pavel Kiparisov

What is interesting is the way of storing used by the farmer. The farmer stores potatoes not in bags, but in bulk (See Figure 14). He says it helps save potatoes from rats, significantly reducing losses. The farmer believes that when potatoes are in bulk, rats are able to damage only potatoes lying on the surface, while when potatoes are stored in bags, rats cause more damage. At the same time, the authors would recommend that the farmer use a solid door, without holes, and install protection screens over the ventilation areas.

Figure 14. Improved traditional potato storage

@FAO/Pavel Kiparisov

Some farmers modify cellars that were earlier used for other purposes into potato storage (See Figure 15).

Figure 15. Cellar transformed into potato storage

@FAO/Pavel Kiparisov

Development of logistics centres

The Government of the Kyrgyz Republic, in cooperation with international partners, is constructing 15 local, seven regional, and two international logistics centres. According to the European Economic Interest Grouping (EEIG, 2014), the development of a logistics centre can reduce the costs of transport, production and personnel while increasing the profit of transport operators. The territory of logistics centres may reach hundreds of hectares. Located nearby may be customs authorities, post offices, bus stations, stations for the handling of operations, warehouses, quarantine zones, packing services, restaurants, cafés, gas stations and car washing stations. The headcount of the largest logistics centres in the world that are not solely focused on agriculture may reach thousands of people (up to 45 000).

The selection of a logistics centre's location is a comprehensive decision that includes the consideration of many factors, including those related to politics, economics, infrastructure, environment, competition, development, regional/city specialization, logistics cost and customer service levels (Rao et al., 2015). The Government of Kyrgyzstan used a set of criteria to determine the location of the logistics centres, including proximity to roads, intersections, producers and markets location, demand, etc. Thus, the selection of logistics centre locations in Kyrgyzstan is supported by research and is analytically sound. Figure 16 shows an example of a future location for the development of a logistics centre.

Energy efficiency and the rationale for using logistics centres should be studied further.

The authors recommend elaborating logistics centre concepts with additional services and functions to develop high-grade food hubs (See Table 12). Though logistics centres are multifunctional, they do not provide a platform for social interaction and have less focus on food services.

In practice, logistics centres provide a good base and can be easily transformed into food hubs. The Government of Kyrgyzstan, with the support of international development organizations, should set up potato commissions in villages that would be entry points for providing hubs. The problem of the insufficient amount of phytosanitary control laboratories may be addressed by moving local and regional laboratories to relevant food hubs. A food hub should also contain seed-distribution centres and stores that sell seeds. Having rooms for training will allow the delivery to farmers of trainings that build agricultural and buisness skills.

Table 12. Hybrid Food Hub in Kyrgyzstan (as in Horst et al., 2015)

Description	**Components and Elements**	**Function**	**Purpose**
A centrally located facility with a business management system that facilitates the aggregation, storage, processing, distribution and marketing of locally or regionally produced food products and serves as a knowledge-sharing and agricultural-skills-training platform and supports agricultural microenterprise project planning. The hub contains seeds sellers or seed distribution centres. Access for low-income people is prioritized.	1. Aggregation and distribution of wholesale products 2. Active coordination of activities along the food supply chain 3. Provision of permanent facilities for storage, packaging, processing and sale 4. Value-added food processing facility 5. Education (training) 6. Phytosanitary tests 7. General support	Aggregation and distribution of locally produced foods, providing easy access, opportunity and viability for small producers and low-income consumers, along with a platform for social interaction, capacity building and knowledge sharing	Increase small- and medium-sized producers' access to wholesale market channels

iv. Transportation

At present, the public transport network of the Kyrgyz Republic consists of 34 000 km of highways. Of the total length of roads in the country, 18 810 km are serviced by road units of the Ministry of Transport and Roads of the Kyrgyz Republic. Of these, 15 190 km of roads belong to cities, villages, agricultural, industrial and other enterprises. The length of highways of international importance is 4 162 km. The length of state roads is 5 678 km, and the length of roads of local significance is 8 969 km. Among public roads, the length of roads with a hard surface is 7 228 km, the length with a gravel cover is 9 061 km, and the length of dirt roads is 1 621 km.

Figure 16. Prospective location for placing a multimodal logistics centre

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The city of Bishkek is a regional trade centre and an important junction for Kazakhstan and the Russian Federation, and it's potentially an important junction for China and Europe in the future.

As of 2017, in the country there are about 120 000 registered trucks. About 6 000 of them are involved in the international transport of goods, but the majority of freight vehicles are involved in the transport of goods inside the country (Kambarova & Isagalieva, 2017). In order to protect the interests of domestic road haulers and create favourable conditions for them on the international market of road transport services, Kyrgyzstan has concluded bilateral intergovernmental agreements on road transport with 19 countries.

A new alternative North-South road (433 km) is currently being built. This road is expected to increase the transit potential of the Kyrgyz Republic, improving the access to agricultural markets for producers from both southern and northern regions.

The practice of the keeping of rural roads by rural communities is being implemented and maintained. The total length of roads supported by rural communities is approximately 15 000 km. This process is progressing slowly

because of resource constraints, low skill levels and poor technical equipment in the field (Kambarova & Isagalieva, 2017).

Harvests are realized using the following schemes:

- Intermediaries on trucks take potatoes to Kazakhstan or Bishkek; and
- Farmers themselves sell potatoes in Bishkek.

v. Marketing

Farmers store and sell their potatoes in Chinese bags bought at the market (See Figure 17). The potatoes are usually not sorted; bags contain potatoes of different sizes and sometimes of different varieties. No marketing of potatoes at the farm level was observed by the authors.

Figure 17. Potato bags in the underground cellar

@FAO/Pavel Kiparisov

Usually, farmers do not focus only on potato production. In addition to potatoes, they grow other crops. The Community Seeds Fund leader in the village of Svetlaya Polyana produces beans along with potatoes. In addition to his 25 hectares of potatoes, he grows 20 to 23 hectares of beans (FAO/REU, 2017d). Thirty-five people, including all members of his family, are engaged in harvesting. The beans are dried, packed in small, transparent bags and exported to

Kazakhstan and Russian Federation for retail sale as snacks. Fried beans are sold on Bishkek (Kyrgyz) and Moscow (Russian) markets, and fresh beans are brought to the Almaty (Kazakh) market. The package has no distinguishing label (See Figure 18).

The farmer requires packaging and processing to become more competitive. He is planning to organize the processing and construct a processing centre for himself and nearby farmers. The farmer claims that beans are more profitable than potatoes, and the price of beans is more stable. The farmer could be better off if he used packaging and developed labels for his products.

Figure 18. Dried beans are exported to the Russian Federation as snacks

@FAO/Pavel Kiparisov

Another example of marketing was observed in the village of Novovoznesenovka. One farmer there has apple orchards in addition to potato fields, and his family produces fresh apple juice. The juice is poured into glass jars, and the jars are provided with a label (See Figure 19). All of his family is engaged in all farming activities. They sell jars of apple juice to neighbours and friends. They sell only limited amounts to retail. Given that the juice produced by the farmer has no impurities, there is a big potential for promoting his products as ecologically pure and for developing the ecotourism in that area. This requires farmers' will and support from the government and international organizations.

Figure 19. Freshly squeezed juice ready for sale

@FAO/Pavel Kiparisov

vi. Wholesale and Retail

The potatoes produced in the country are mostly sold fresh. Farmers themselves sell potatoes to vendors in city markets, or intermediaries buy potateso from farmers and sell to wholesalers and retailers. Wholesale and retail are concentrated in big cities, mainly in Bishkek and Osh. The Dordoi market in Bishkek is the largest wholesale and retail market in Central Asia. A number of other markets operate in Bishkek: Osh (market), Alamedin (market), Orto-Sai (market), Ala-Archa-2 (market), Narbato, and Kudaibergen. In wholesale markets, potatoes are usually sold in bags. An average seller in the wholesale market sells ten to 100 sacks of potatoes daily.

There are seven main retail chains in Bishkek: Frunze, Narodnyi, Globus, Boorsok, 7 Days, Alma and Beta Stores. Supermarkets require from potato suppliers a regular delivery (three to four times a week); potatoes must be supplied clean and in mesh bags for visual inspection by a supermarket specialist (FAO/REU, 2017e).

In addition, there is a large number of small retail food stores and vegetable kiosks selling potatoes in every city and town. Most of these shops have a small shelf on

which fresh vegetables and potatoes are offered for sale. The price of potatoes in small shops is slightly higher compared to potato prices in supermarkets. The requirements to potato suppliers of small retail shops and vegetable kiosks are less strict. The small shops prefer clean potatoes. A major factor in accepting the potatoes for sale is price. The quality of potatoes is in second place (FAO/REU, 2017e).

Restaurants and cafes buy potatoes in the wholesale markets and from retail stores.

c) Exports of potato

Table 13. Export of goods, agricultural exports and potato share in exports, 2010-2016

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Export of all products, USD	1 488 400 507	1 978 932 373	1 683 236 842	1 773 228 304	N/A	1 441 467 621	1 423 028 427
Export of agriproducts, USD	233 767 501	273 250 282	280 334 237	285 120 174	N/A	169 009 128	176 711 112
Share of agricultural products in export	15.7%	13.8%	16.7%	16.1%	N/A	11.7%	12.4%
Export of potato, USD	10 281 775	18 528 863	10 541 455	7 569 704	N/A	1 321 363	1 090 191
Export of potato, kg	75 829 756	90 333 828	62 025 184	50 017 930	N/A	19 987 920	6 367 000
Share of potato	4.4%	6.8%	3.8%	2.7%	N/A	0.8%	0.6%

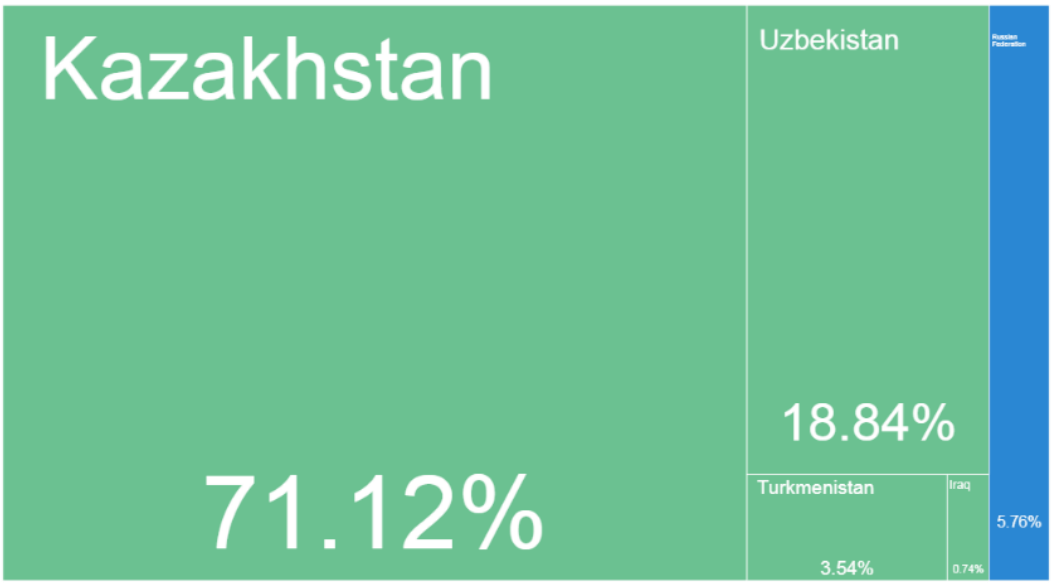
Source: UNCOMTRADE (2018)

In 2015–2016, on average 11 to 12 percent of the total exports of Kyrgyzstan in terms of value were agricultural products (See Table 13). In 2015–2016, the share of potatoes in the total exports of agricultural goods decreased to 0.6 to 0.8 percent, down from an average of 4.4 percent in 2010–2013 (See Table 13). A significant

decrease is observable in exports in terms of volume. The volume of exports in 2010 was almost 12 times what it was in 2016 (See Table 13).

Such a fall in exports (as well as in production) is mainly associated with the decrease in Kazakhstan's importation of potatoes. Kazakhstan is historically the main consumer of Kyrgyz potatoes. In 2016, the share of exports to Kazakhstan amounted to 71.1 percent (See Figure 20). Nineteen percent of exports went to Uzbekistan, 5.77 percent to the Russian Federation and the rest to Turkmenistan and Iraq. Kyrgyz potatoes are exported mainly by trucks (FAO/REU, 2017d).

Figure 20. Countries importing potatoes from Kyrgyzstan, 2016



Source: Atlas of Economic Complexity http://atlas.cid.harvard.edu/ based on comtrade.org

Given the significant dependence of Kyrgyzstan exports on the Kazakh market, any interruptions in exports to Kazakhstan are associated with severe consequences for the majority of actors in the Kyrgyz potato value chain. Since 2013, Kazakhstan has several times closed the borders for Kyrgyz potatoes because of phytosanitary issues – both alleged and proven. Improving phytosanitary standards and improving access to high-quality seeds would help find new export markets and ensure uninterrupted exports to Kazakhstan.

d) Disruptions in the potato value chain

Global value chain analysis methodology helps identify four leading catalysts that impact actors and agriculture businesses (Ahmed et al., 2017):

- environmental events (such as droughts, disasters, etc.);
- market conditions and trends;
- trade dynamics (challenges that influence supply and demand, such as bans and restrictions); and
- public policy (such as tariff and subsidy support policies).

The authors have summarized the market disruptions in Table 14.

Table 14. Major catalysts for disruptions in the potato value chain

Catalyst	**Description**	**Impact on the value chain**		**Impact on Food Security**
		Segment	Actors	
Environmental events	Droughts and severe climatic conditions; potato diseases and soil contamination	Production Trading	Farmers: output is lower, profit is lower	Decrease in potato domestic supply and exports
Market conditions	Non-optimized relations between actors in the value chain; small commodity production	Production Processing Storage	Farmers: profit is lower; processors when buying potatoes for processing do not reveal that they are processors. Farmers sell potato for processing for regular market price; contract farming is not practised; processors' supplies in potatoes are not secured	Decrease in welfare of farmers; interruptions in supply of potato to processors

Catalyst	Description	Segment	Actors	Impact on Food Security
Trade shifts	Kazakhstan bans on Kyrgyz potato imports	Production Export	Farmers: fewer opportunities to sell harvests, lower prices, harvest losses because of limited space in storage; exporters lose money because they are unable to pass the border	Decrease in potato exports and welfare of smallholder farmers
Public policy	Slow transition to a market economy	Production Processing Trading	Producers largely depend on the support of the government and international donors	Inefficiencies and weak administrative capacities may disrupt investments

e) Potato Value Chain Assessment Conclusions

General:

- Farmers do not suffer from land degradation, the soil is fertile;
- Farmers in Issyk-Kul Oblast do not experience problems leasing land;
- Farmers grow other crops in addition to potatoes;
- In some areas, the labour supply is insufficient; and
- Logistics centres may be transformed into food hubs.

Production:

- Potato seed, especially quality seed supply, is inadequate;
- Some farmers aim at obtaining an organic certification, but the procedure is very difficult; and
- Recent Kyrgyz-Kazakh border closures have negatively affected Kyrgyz potato producers.

Cooperatives:

- Individually, farmers are not able to export, and they have less potential for selling potato in the domestic market; a so-called "small commodity production" (*melkotovarnoye proizvodstvo*) prevails and is considered a big obstacle by farmers;
- Cooperatives have a bad name, inherited from the Soviet period; Kyrgyz farmers have no trust in this form of collaboration; and
- Cooperatives are still formed as production cooperatives rather than as service cooperatives.

Processing:

- There is a lack of processing;
- Farmers are willing to process their potatoes; and
- The linkage between existing processors and farmers is not optimal – farmers sometimes are not aware that they sell their potatoes to the processor, which allows processors to buy more expensive varieties suitable for processing at a lower price.

Storage:

- Farmers often store their harvest in traditional underground cellars, and the potatoes are usually not sorted;
- Most of traditional potato storage facilities are basically sound but could use improvements;
- The rationale behind the use of logistics centres should be further studied; and
- Expansion of logistics centres into food hubs is recommended.

Post-farm:

- Farmers sell a part of their harvest to cover harvesting costs, and the rest is kept for own consumption; what remains is sold out when the price is favourable.

Access to market and finance:

- Farmers have limited access to market information; and
- Access to finance is a subject of improvement.

Access to training:

- Farmers have access to training provided by international organizations, and potato farmers could have more trainings regarding business skills and cooperative development.

Marketing:

- The marketing of potatoes is poor;
- Farmers usually do not sort their potato; and
- The area has a big potential for ecotourism development, which is not utilised;

Gender aspects:

- Men are owners of farms, and women's contributions are difficult to assess; and
- Though the role of women is less visible, the observations based on interviews show that women demonstrate capability in managing businesses and resolving problems in their communities.

Main disruptions:

- climatic conditions;
- soil contamination and potato diseases; and
- Kazakh border closures.

IV. Conclusions and Recommendations

a) Conclusions – Status of the Development of Value Chains

- Too many laws are outdated or inconsistent with existing legislation related to business.
- Non-optimized relations in the market chain: producer–buyer–processor–implementer–consumer. Links in this important chain in Kyrgyzstan are not well established.
- Lack of a functioning market infrastructure in the industry. The infrastructure that was developed and that had functioned in the planned economy is destroyed, and the modern market infrastructure has not been fully developed.
- Lack of innovative technologies in the fields of plant and animal production, post-harvest, technology and marketing.
- Science and research are not well-connected to the agricultural sector.
- Kyrgyzstan has knowledge and research capacities for the multiplication, selection and modification of quality seeds but has limited production capacity to satisfy farmers' needs.
- There is a lack of laboratories in the country, and the situation is especially difficult in the Batken region.
- The country has scientific capacities, but the lack of funding does not facilitate connecting science to the business sector.
- In the institutional setup of the sanitary and phytosanitary system, there is a tendency for merging bodies in an attempt to improve the efficiency of the system and reduce costs.
- There is a very limited budget for conducting veterinary audits, in particular laboratory examinations and inspections of sanitary and phytosanitary objects.
- Internal phytosanitary safety is not sufficient. The relevant governmental authorities focus on controlling the quality of exported products and have

less capacity for inspecting imported products and internal markets. This negatively influences internal food safety and creates more risks for people's health.

- Food safety standards are being harmonized with the Eurasian Economic Commission standards.
- Deliveries of raw meat and livestock from Kyrgyzstan to the Eurasian Economic Union are not permitted, and this eliminates a potential export market.
- Lack of processing leads to low growth of surplus value of agricultural products produced. Because of insufficient development of the processing industry agricultural products produced in the country are realized in an unprocessed form; as a result, farmers and the country lose income.
- Border control issue on the Kyrgyzstan-Kazakhstan border.

b) Recommendations for Future Value Chain Development

1. Recommendations to state bodies

a. Legal Environment

- There are more than 15 000 laws related to business, and many of them are outdated or inconsistent with existing legislation. Therefore, it is recommended that the government simplify legislation and introduce codified laws.
- Address the legislation on food safety.
- Though in 2016, veterinary-sanitary inspection regulations were attempted to be improved, additional attention to the implementation should be given. In particular, inspection of goods for export should not be conducted at the expense of careful inspection of imported goods.

b. Business Environment

- Attend to a non-functioning starch factory in Ak-Suu and collaborate with international organizations to identify possible solutions.
- Raise awareness among farmers on forms of cooperatives and associations.

c. Post-Farm

- Raise awareness among farmers on certification.
- Raise awareness among farmers on export opportunities.

d. Production Support (inputs)

- Seed breeding and multiplication requires governmental subsidies.
- Farmers require quality seeds, and supply should be supported.

e. Access to Finance, Infrastructure, and Civil Society

- Revisit bank financial products and measures of support.
- Increase the maximum maturity of subsidized credit products to allow farmers to take larger loans.
- Regulate the maximum interest rate for microcredit.
- Improve access to finance and knowledge for organic-aimed farms.

2. Recommendations to farmers and their associations

- Taking into account the bad image of the word "cooperative" in Kyrgyzstan, inherited from Soviet times, the formation of associations instead of cooperatives is more preferable.
- Farmers in Ak-Suu, in case production is initiated at a local starch factory, may start an *association (or cooperative) of starchy potato producers* that can be supported within the implementation of Government Decree 237 "About of the approval of the Concept of development of agricultural cooperative system in the Kyrgyz Republic for 2017–2021"

3. Recommendations to the Ak-Suu Starch Factory management[18]

- Research market opportunities.
- Research varieties suitable for starch production and geographical-climatic conditions in Kyrgyzstan (such varieties as Eurostarch, Kuras, and Karuzo

[18] See details in Annex 2 - Vitalisation of the Ak-Suu Starch Factory Proposal

may be considered), and consult with seed producers like Agrico, Solana, HZPC, and Europlant Pflanzenzucht.
- In cooperation with FAO and local authorities, conclude a contract with farmers on seed supply to vitalize the production of starch.
- Procure seeds and supply them to farmers.

4. Recommendations to development organizations

Food and Agriculture Organization of the United Nations (FAO)

- Assist the *State Inspectorate for Veterinary and Phytosanitary Safety* in building the capacity of its district inspectors.
- Examine existing phytosanitary issues in the country; in particular, assess the issue of soil contamination.
- Raise awareness among farmers about plant and animal health, and, through workshops, build their capacities to identify diseases and alert the relevant authorities.
- Raise awareness among farmers on forms of cooperatives and associations, and showcase successful examples.
- Vitalize production of the starch factory in Ak-Suu through the Technical Cooperation Programme Facility, and consider exit strategies.
- In a possible collaboration with the World Bank, develop a new project on potato seed distribution in Kyrgyzstan.
- Support the improvement of traditional potato storage facilities in the country.
- Support the development of greenhouses in the country.

Korea International Cooperation Agency (KOICA)

- Consider participation in vitalization of the starch factory in Ak-Suu.

Japan International Cooperation Agency (JICA)

- Raise awareness among farmers on the existing forms of cooperation, and emphasize the development of service cooperatives.
- Focus on supporting service cooperatives rather than production cooperatives.

- Conduct a study on the energy efficiency of logistics centres.

World Bank (WB)

- Revisit the Community Seed Funds project and take into consideration the limited reproduction vigour of potato seeds. For example, seeds that were purchased three to four years ago have already lost their reproduction vigour.
- In a possible collaboration with the FAO, develop a new project on potato seed distribution in Kyrgyzstan to help farmers renew their seed stock.

5. Specific Value Chains requiring further Study/Support

- Honey countrywide
- Wool in Narin Oblast
- Demand for the study of the value chains of other fruits and vegetables in Issyk-Kul and Batken oblasts.
- Carp and trout countrywide, as well as the development of a strategy for the increase in fish demand in Kyrgyzstan.

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ANNEX 1 - Laws and Regulations impacting Kyrgyz agriculture

The core legal document of Kyrgyzstan is its **Constitution (2010)**.

According to the Constitution, the Kyrgyz Republic shall elaborate social programs aimed at establishing decent conditions of life and free personal development as well as assistance to employment. The Kyrgyz Republic shall ensure support to socially vulnerable categories of citizens, a guaranteed minimal level of labour remuneration, and protection of labour and health. The Kyrgyz Republic shall develop a system of social services and medical services, establish state pensions and benefits, and provide other social security safeguards (Article 9). In the Kyrgyz Republic, the diversity of forms of property shall be recognized and equal legal protection shall be guaranteed to private, state, municipal and other forms of property. Property shall be inviolable. No one can be arbitrarily deprived of his/her property. Appropriation by the state of property belonging to citizens and legal entities (nationalization) shall be effected in accordance with the law, with compensation for the value of such property as well as for other losses. The Kyrgyz Republic shall protect the property of its citizens and legal persons, as well as its property located on the territory of other states. The land, its resources, airspace, waters, forests, flora and fauna, as well as other natural resources, shall be the exclusive property of the Kyrgyz Republic; these shall be used for the purpose of preserving a unified environmental system as the basis of life and activity of the people of Kyrgyzstan and shall enjoy special protection from the state. Land may also be in private, municipal and other forms of ownership, except for pastures, which may not be in private property. The limits of and procedure for the exercise of rights by owners and implementation of guarantees of their protection shall be determined by law (Article 12). The Kyrgyz Republic shall respect and ensure human rights and freedoms to all persons on its territory and under its jurisdiction (Article 16). The Kyrgyz Republic shall ensure a favourable ecological environment (Article 48). International treaties to which the Kyrgyz Republic is a party that have entered into force under the established legal procedure and the universally recognized principles and norms of international law shall be constituent parts of the legal system of the Kyrgyz Republic.(Article 6).In the Constitution there are no specific provisions on rights to water and no provisions related to energy, agricultural and rural development, livestock, or fisheries.

1. General Laws and Policies

Law	Description
Law on pastures, 1997	The subjects for the utilization of pastures shall be juridical and natural persons. Pastures shall be exclusive property of the government and shall be transferred to economic entities on lease in the order of land-tenure. Pastures shall be leased to foreign juridical persons on the basis of international and inter-governmental agreements. The lease of pastures to joint Kyrgyz-foreign and separate foreign ventures, firms shall be done by the Government of the Kyrgyz Republic. The lease of pastures to foreign citizens and stateless persons shall not be possible.
Land Code, 1999	Land legislation shall be based on the principles set out in Article 3. In accordance with the Constitution of the Kyrgyz Republic, land may be in state, communal, private or other ownership (Art. 4). Article 4 also defines state lands and communal ownership. Article 5 concerns rights of foreigners to use land. Transactions with rights to a land plot shall be subject to state registration and shall not require notarization, except for the cases provided by law (Art. 9). Article 10 defines the Land Fund of the Kyrgyz Republic. Other articles of main body of this act concern the administration of land, allocation of land and land use rights, transfer of land use rights, mortgage, common use of land, public land, easements, use of land for exploration works, etc. Chapters 12 to 18 each make provision with respect to one type of classified land, such as agricultural land (Ch. 12), land settlements (Ch. 13), land used for transportation or industrial purposes (Ch. 14), specially protected areas such as nature parks (Ch. 15), land of the Forestry Fund (Ch. 16), land of the Water Fund (Ch. 17), and land of reserve (Ch. 18). Chapters 19 and 20 concern the protection of land from bad use and degradation. Chapter 21 provides for the registration of land, the monitoring of land and assessment of its quality, and land surveys. A specially authorized state agency shall be established for these and other purposes related to the carrying into effect of this act. Chapter 22, finally, provides for the settlement of land disputes and liability for violation of provisions of this act and other legislation relating to land. Kyrgyz citizens are entitled to land free of charge for individual housing construction and agricultural production.
Law No. 2 amending Land Code, 2000	Article 1 shall be supplemented with items 23 and 24 of the following contents: "23) homestead land – is not a plot of arable land but an allotment granted by state executive bodies or local self-government to citizens for individual construction with the adjoining plot of land; 24) lawn-and-garden land – is a plot of land granted by state executive bodies or local self-government to enterprises, institutions and citizens for the

	organization of gardening cooperatives for the purpose of production of agricultural commodities, vegetables and fruits."
Law No. 22 amending Land Code, 2007	The title of Article 9 shall acquire a new wording: "The use of the plots of land for prospecting, exploration and subsoil management." Article 60 shall be supplemented with Item 3 of the following wording: "Authorization for the occupation of a plot of land for mineral extraction and construction and running of underground works not related to mineral extraction shall be issued by the authorized body within its sphere of competence within the boundaries of the plot of land and for the period of time established by the technical project and licensing agreement." Article 69 shall be supplemented with Item 2 of the following wording: "In case of termination (cancellation) of the right of subsoil management, expropriation of the plot of land shall be carried out by the body that has carried out the allotment of land for temporary use."
Law No. 73 amending Land Code of the Kyrgyz Republic, 2013	Article 5 shall be amended to add the following wording: "Foreign citizens, stateless persons and foreign legal persons, except for ethic Kyrgyz people, cannot be allotted on condition of temporary tenancy land plots located in border areas."
Law No. 131 amending Land Code of the Kyrgyz Republic, 2015	Article 7 shall be amended to add the following wording: "Agricultural land out of the public fund of agricultural land as a general rule shall be allotted on lease for the period of five years, except for land plots allotted for the period of 20 years for seed growing, pedigree stockbreeding, experimental farming, scientific research, experimental selection and plant variety testing and to agricultural cooperatives."
Law No. 134 amending Land Code of the Kyrgyz Republic	Article 74 shall be amended to add the following wording: "Transfer of particularly valuable agricultural land to other land categories shall be performed in cases established by the national legislation."
Law No. 137 amending Land Code of the Kyrgyz Republic	Article 1 shall be amended to add the following wording: "Greenhouses shall be considered specially equipped light construction destined for the growing and cultivation of agricultural crops (vegetables, cucurbit crops, decorative plants, tropical, sub-tropical and other species), scientific research and other purposes complying with acting national legislation."
Law No. 3 amending Land Code, 2016	Item 3 of Article 8 acquires a new wording: "Rent and the modalities of collection thereof shall be established on contractual basis. Land granted in lease cannot be granted in sublease. The amount of rent granted to foreigners except for agricultural land shall be calculated in conformity

	with the rates of land charges with the application of coefficient established by the government."
Law No. 156 amending some Laws	Article 72 of Land Code shall be amended to add the following wording: "Agricultural land plots of dimensions within 5 ha shall be indivisible. Agricultural land plots of dimensions over 5 ha can be split in separate land plots for the dimensions exceeding 5 ha on condition that the dimension of new separated land plots shall not be less than 5 ha." Article 15 of Law No. 4 on management of agricultural land shall be amended to add the following wording: "Owner of agricultural land share shall have the right to sell it without payment of state duty. Agricultural land share of dimensions within 5 ha can be sold exclusively as a single indivisible lot."
Law No. 4 on management of agricultural land	This law establishes that agricultural land shall be exclusive property of the state and of citizens permanently living in rural areas for at least two years. Allotment in ownership and transfer of agricultural land shall be prohibited to: (a) foreign natural and legal persons, and foreign states; (b) stateless persons living in the territory of Kyrgyzstan; (c) legal persons of Kyrgyzstan and joint-ventures; and (d) married couples if one conjoint is a foreigner or stateless person. The act consists of 12 sections divided into 36 articles: (1) general provisions; (2) right of ownership; (3) state registration of rights to agricultural land; (4) purposeful use of agricultural land; (5) lease; (6) exchange of agricultural land; (7) purchase and sale of agricultural land; (8) mortgage of agricultural land; (9) inheritance and donation of agricultural land; (10) purchase of agricultural land for public purposes; (11) expropriation for settling debt; and (12) entry into force of the law. The state registration of the right of ownership to agricultural land shall be carried out by the authorized governmental institution. The state registration of the plots of agricultural land re-shaped without authorization shall be prohibited. Agricultural land shall be used and given in lease exclusively for agricultural purposes. Owner of a share of agricultural land shall be authorized to sell it exclusively to the owners of land shares of the same plot of land without payment of the registration fee. The buyer of agricultural land shall be Kyrgyz nationals beginning from 18 years of age. Maximum land area owned by a single citizen shall not exceed 50 hectares. Pasture land shall be exclusively public property. Private agricultural land can be expropriated for public need through purchase at the market price.
Governmental Decree No. 600 validating basic guidelines for organization and promotion of trade and logistics centres	This governmental decree determines basic guidelines for the organization and promotion of trade and logistics centres for agricultural commodities for the period of 2015–2017 with a view towards ensuring food security, export capacity of agricultural commodities, and organization of a competitive agro-industrial sector. Organization of trade and logistics centres shall pursue the following objectives: (a) increase of storage and processing capacity for agricultural commodities; (b) ensuring food security; (c) minimization of logistics losses and optimization of

for agricultural commodities for the period of 2015-2017	competitiveness of the national agricultural commodities; (d) introduction of advanced technologies in the agricultural sector; and (e) increase of rural employment.
Law No. 41 "On state regulation of international trade", 2011	This law sets forth the fundamentals of state regulation of international trade and establishes rights, duties and liability of state bodies in this sphere. The scope of this law shall be promotion of international trade and efficient integration of the national economy to the global economy. National state bodies shall be responsible for: (a) certification of imported and exported commodities; (b) establishment of compulsory safety standards and criteria; and (c) determination of the modalities of import and export of genetic materials and hazardous waste. Restrictions or bans can be imposed on the import and export of produce and commodities for protection of human life and health, protection of wild flora and fauna, and conservation of cultural heritage.
National Sustainable Development Strategy for the Kyrgyz Republic for the period of 2013–2017, 2013	Policy measures to address the quality of servicing and technical services for agriculture and creating conditions for technical and technological modernization of agricultural production will focus on the following areas: improvement of the availability of financial resources for producers and the expansion of the number of financial services for rural areas (development of financial institutions in rural areas, lending, leasing, insurance, etc.). Agriculture will become a reliable and guaranteed source of income and livelihood for rural populations and will also ensure the food safety of the country.

2. Inputs (seeds, fertilizer, artificial insemination)

Law	**Description**
Law No. 12 "On use of chemicals and plant protection", 2003	This law establishes common legal, economic, ecological, social and organizational grounds for the use of chemicals and plant protection with a view towards ensuring the protection of public health, animals, environment, and the prevention and mitigation of the consequences of pollution of soil and products of animal and plant origin. Circulation of pesticides and agrochemicals not recorded in the state register of pesticides and agrochemicals is prohibited. Pesticides and agrochemicals are manufactured in accordance with standards and are subject to compulsory certification.
Law No. 116 amending Law No. 12 "On use of	Article 5 shall be amended to add the following wording: "Registration testing of pesticides and agrochemicals shall be performed by legal persons

chemicals and plant protection", 2012	accredited in accordance with the modalities established by the national legislation."
Presidential Decree No. UP-86 "On development and support of enterprises for procurement, processing and trade of agricultural commodities", 2000	The president, for the purpose of development and support of enterprises for procurement, processing and trade of agricultural commodities, decrees as follows: local state administration shall organize peasant cooperatives for the procurement, supply and trade of agricultural commodities and to enforce veterinary, sanitary and technological requirements in the process of procurement, processing and trade of agricultural commodities. The government shall ensure state purchase by public sector entities of foodstuffs from national producers through tenders.
Seed Law, 2007	This law includes the main provisions regulating the production, certification, distribution and use of seeds and planting material of all plant species, provides the legal basis for seed production entities, and regulates their interrelation with other persons and entities in the sphere of seed production. The subjects in the sphere of seed production are: (a) the author of plant variety; (b) the originator of plant variety; (c) seed producers and traders; (d) seed enterprises; (e) seed users, except for individuals producing seeds for personal use; and (f) physical and (or) legal entities rendering the services of identification of varietal and sowing characteristics and state testing of varieties and hybrids of agricultural crops. This law is applicable to local and imported seeds of all species of agricultural, forestry, fruit, berry, ornamental, flower and medicinal herbal plants intended for propagation and breeding. The varietal seeds intended for sowing and trade are subject to compulsory certification. Varieties and hybrids released for use on the national territory are registered in the National Catalogue. Plant variety should meet the following requirements: (a) complete description of plant variety, its origin and breeding methods; (b) attribution of name; and (c) availability of samples at the plant variety testing agency. Seeds destined for trade must be appropriately packaged and labelled. Storage of seeds should be done in compliance with the requirements set by the authorized state agricultural (forestry) institution. Production and trade of seeds should be licensed.
Law No. 1 amending Seed Law, 2007	Article 4 shall be amended to add the following wording: "Plant varieties and hybrids authorized for use on the national territory shall be recorded in the State Register. Plant variety must conform to the following requirements: (a) comply with plant variety description, origin and selection method; (b) have corresponding plant variety name; and (c)

	samples of plant varieties must be stored at the testing authority." Article 10 shall be amended to add the following wording: "Genetically modified organisms shall not be authorized for use prior to testing and study in the respective ecosystems. Growing of genetically modified organisms shall be carried out under supervision of the authorized bodies that must assess impact thereof upon environment and human health."
Law No. 120 amending Seed Law	Article 1 shall be amended to add the following wording: "Seed growing farm shall be considered an economic entity, irrespective of the type of ownership, growing and (or) trading seed and planting material of one or more agricultural crops, complying with criteria set for seed growing farm by provision on seed growing validated by the government."
Law No. 257 "On moratorium on transfer of irrigated arable land to other categories of land", 2011	This law establishes a moratorium on the transfer (transformation) of irrigated arable land to other categories of land. This provision shall not be applicable to cemeteries. Irrigated arable land transferred to cemeteries shall not be used for other purposes.
Law No. 119 amending Law No. 257 "On moratorium on transfer of irrigated arable land to other categories of land", 2016	Article 1 shall be amended to add the following wording: "Transfer of irrigated public land stock to category of land under perennial fruit growing species shall be prohibited."
Ministerial Decree No. 63 validating the Regulation on payment of subsidies to seed farms performing production and trade of certified seeds of grains, 2014	The scope of this ministerial decree shall be to grant state support to peasants and farmers for raising motivation thereof for the purchase of certified seeds of winter wheat and spring wheat for raising crop productivity and yield. State subsidies shall cover 30 percent of expenditure as reimbursement to seed farms growing elite seeds.

3. Cooperatives

Law	Description
Regulations on rural credit co-operatives and associations, 1996 **(may be outdated)**	Rural Credit Cooperatives (RCC) are established for the allocation, target use and repayment of the state resources. RCC shall be a legal voluntary entity established by "free and good will" of heads of families or heads of peasant farms and possess the Certificates for the Right to use land plots. Main principles: to be economic and business independent and self-financed and self-governed and to participate equally in its management. The second part of the regulation deals with the organizational structure of cooperatives. Heads of families and heads of peasant farms wishing to establish RCC shall hold a foundation meeting and adopt the Charter with obligatory participation of representatives of rayon land and agrarian reform centres. RCC and associations shall bear the responsibility for targeted and effective use of allotted state resources.
The Civil Code of the Kyrgyz Republic, 1998	The code is very liberal in terms of cooperative activities: they can engage in any activity not prohibited by the legislation of the Kyrgyz Republic. Another feature of the code is the high norm of the minimum number of members of the cooperative – at least seven (unless otherwise specified in legislation, based on the specialized activities of cooperatives).
Law No. 111 "On non-commercial organizations", 1999	This law regulates public relations originating from the setting up, functioning, re-organizating and liquidating of non-commercial organizations, including foreign ones. It shall be applicable to non-commercial organizations set up in the form of social associations, funds and entities. It shall not be applicable to political parties, religious organizations, trade unions and cooperatives. The act consists of five sections divided into 40 articles: (1) general provisions; (2) social associations; (3) funds; (4) entities; and (5) conclusive provisions.
Law No. 47 on peasant farm, 1999	The present law establishes the legal basis, the modalities of setting up and functioning of peasant farms, and their rights and obligations, and is aimed at creation of the conditions for their equal development together with other forms of economic activity. A peasant farm is an economic entity based mainly upon personal work of a household producing jointly with relatives and other members agricultural commodities on a plot of agricultural pertaining to a peasant farm on condition of ownership or lease. The law consists of 15 articles. Article 1 gives the definition of a peasant farm. Article 2 regards setting up and registration of a peasant farm. Article 3 deals with general meetings of peasant farms. Article 4 concerns the head of peasant farms. Article 5 determines the rights of peasant farms. Article 6 determines the obligations of peasant farms. Article 7 deals with management of natural resources. Article 8 regards ownership (property) of peasant farms. Article 9 regards cessation of the right to the plot of land pertaining to peasant farms. Article 10 regards

	taxation of peasant farms. Article 11 regards the relationship between the state and peasant farms. Article 12 regards relationship between peasant farms and legal and natural persons. Article 13 regards the division of property of peasant farms. Article 14 regards reorganization and liquidation of peasant farms. Article 15 regards enactment of the present law.
Law 'On cooperatives', 2004	The law sets rules for and regulates activities of Kyrgyz cooperatives. Cooperatives should be established on a voluntary basis.
Tax Code of Kyrgyzstan, 2008	The code exempts agricultural service cooperatives from value-added tax on transactions with members (Article 239).

4. Food safety

Law	**Description**
Meat standard, 1995 **may be obsolete**	This meat standard sets rules to conduct certification for meat and meat products in compliance with safety requirements and covers domestic and imported products. This standard is mandatory for all state authorities and bodies, as well as for entrepreneurs, enterprises of all forms of ownership and types of activity, and for public organizations in the Kyrgyz Republic. It establishes that certification of meat and meat products shall be compulsory. Meat and meat products are classified in two groups: (a) products with guaranteed shelf life (storage, trade) up to 30 days, i.e. perishable products; and (b) products with more than 30 days of shelf life (long shelf-life products). Selection of certification scheme depends upon the period of shelf life. Meat and meat products should be identified before conducting certification tests specifying place of origin, organoleptic qualities and conformity of product to accompanying standardization normative documents. Testing of products shall be conducted by the competent certification authority.
Law on application of chemicals and crop protection, 1997	This law defines the general legislative, economic, social and administrative basis for the application of chemicals and crop protection with a view towards the protection of human and animal health and of avoiding pollution of the environment, soil and crops. The law establishes the competences, functions and responsibilities of the authorized state institutions in the sphere of the application of chemicals and crop protection and, in particular, the mandate of the State Service of Chemical Application and Crop Protection, including: (a) prevention of the import of prohibited agrochemicals; (b) application or lifting of quarantine; (c) issuance of licences to enterprises for provision of agrochemical services; (d) production control of chemicals for farming and biological agents; (e)

	training programmes for agrochemists; and (f) research. The uniform system of state phytosanitary and agrochemical control comprises regional crop protection stations, prospecting research chemical stations, toxicological and biological control laboratories, bioproduce factories, provincial agrochemical laboratories, and state production corporations. Persons guilty of infringement of this law shall be subject to disciplinary, administrative and criminal liability.
Law No. 12 "On use of chemicals and plant protection", 2003	This law establishes common legal, economic, ecological, social and organizational grounds for use of chemicals and plant protection with a view towards ensuring the protection of public health, animals and the environment, and prevention and mitigation of the consequences of the pollution of soil and products of animal and plant origin. The act consists of seven sections divided into 28 articles: (1) general provisions; (2) state management in the sphere of the use of chemicals and plant protection, supervision and control over safe management of pesticides and agrochemicals; (3) general requirements for safe management of pesticides and agrochemicals; (4) rights and duties; (5) liability; (6) international agreements; and (7) conclusive provisions. Circulation of pesticides and agrochemicals not recorded in the state register of pesticides and agrochemicals shall be prohibited. Pesticides and agrochemicals shall be manufactured in accordance with standards and shall be subject to compulsory certification.
Law No. 116 amending Law No. 12 "On use of chemicals and plant protection", 2012	Article 5 shall be amended to add the following wording: "Registration and testing of pesticides and agrochemicals shall be performed by legal persons accredited in accordance with the modalities established by the national legislation."
Law No. 116 "On organization of public health protection", 2004	This law regulates the issues of social relations originating in connection with the functioning of the public health protection system, determines the types of public health protection, and classifies the levels of medical and sanitary assistance. Public health protection organizations shall ensure sanitary supervision and shall carry out sanitary, hygienic and anti-epidemiological arrangements for ensuring the strengthening of public health. Public health protection shall ensure scientific research and education of the population in relation to protection of public health.
Ministerial Decree No. 750 validating the Regulation on State Plant	This ministerial decree establishes that the State Plant Quarantine Service shall be the authorized state institution in the sphere of plant quarantine and shall coordinate the activity of territorial plant quarantine bodies. The scope of the State Plant Quarantine Service shall be to protect national territory against introduction of pests, diseases and weeds from foreign states. The State Plant Quarantine Service shall carry out the following functions: (a) state quarantine arrangements; (b) phytosanitary

Quarantine Service, 2009	inspections; (c) issuance of phytosanitary certificates; (d) issuance of clearance upon fulfilment of quarantine inspection; (e) scientific research; and (f) international cooperation.
Law No. 248 “On public health”, 2009	The scope of this law is the protection of public health. State sanitary and epidemiological supervision shall be aimed at prevention, identification and suppression of the offences with a view towards ensuring the sanitary and epidemiological well-being of the population, and, in particular, the prevention of mass intoxication, the prevention of the spreading of infectious diseases and negative environmental impacts, and the granting of access to correct and reliable information on the safety and quality of products. The purpose of this law shall be to guarantee the quality and safety of foodstuffs during processing, handling, storage, transportation and trade thereof, and also to ensure the quality and safety of potable water.
Law No. 171 amending Law No. 248 “On public health”, 2014	Article 2 shall be amended to add the following wording: "Sanitary and epidemiological well-being of the population shall be considered the state of public health and human environment with the absence of negative impact on human beings and ensuring favourable living conditions."
Law No. 166 “On agricultural development”, 2009	This law establishes legal relations between citizens, legal persons, state executive bodies and local self-government for the development of the agrifood sector of the national economy. It regulates the relations between rural producers of agricultural commodities, state bodies and local self-government directed at implementation of state policy in the sphere of agricultural development and production of agricultural commodities with a view towards provision of the population with food. The scope of this law shall be: (a) to ensure food security; (b) to ensure stable development and functioning of the agro-industrial sector; and (c) creation of favourable conditions for rural livelihoods. Achievement of the aforesaid objectives shall be ensured by: (a) crediting of agro-industrial complex; (b) export regulation in the agro-industrial sector; (c) ensuring veterinary, sanitary and phytosanitary safety; and (d) training of staff for the agro-industrial sector. State regulation of agrifood markets shall be carried out by: (a) state purchasing and commodity interventions; and (b) protection of the internal market.
Order of the Minister of Agriculture validating the Regulation on State commission on	This order establishes that the State Commission on Testing of Crop Varieties shall be the authorized state institution in the sphere of testing of plant varieties of agricultural crops and silkworm, state registration of plant varieties, state testing of plant varieties and ensuring protection of intellectual property rights to plant varieties. The aforesaid institution shall carry out the following functions: (a) annual publication of the State Register of Plant Varieties authorized for use in the national territory; (b)

testing of crop varieties, 2010	examination of application for testing and registration of plant varieties; (c) elaboration of testing methods; and (d) extension.
Law No. 183 on food security, 2008	This law establishes the main directions for ensuring food security, which is an integral part of the national security. The objective of food security shall be to grant the population access to the required amount of foodstuffs, corresponding to minimum rates of consumption of foodstuffs based upon availability, accessibility and safety thereof. Food security shall be ensured through: (a) food quality control in accordance with technical requirements, regulations and standards; (b) distribution of foodstuffs among socially vulnerable strata of the population in case of the outbreak of a food crisis; (c) validation of the list of basic foodstuffs; (d) state control and supervision over manufacturing, storage and trade of foodstuffs in accordance with the national legislation; and (e) availability of state food reserves.
Ministerial Decree No. 173 validating the Regulation on disinfection, 2011	This ministerial decree shall be applicable to public institutions, departments, social associations, enterprises and other economic entities irrespective of the form of ownership thereof, officials and citizens carrying out disinfection, including disinfection, disinsection and deratization arrangements. It establishes hygienic requirements related to storage, transport and trade of disinfection means, including insecticides, repellents and rodenticides. Disinfection means shall be packaged with labels specifying the name of preparation, its purpose, concentration of active materials, date of manufacturing, certification, expiry date, safety management requirements and requisites of manufacturer and supplier.
Ministerial Decree No. 135 validating the Regulation on State Sanitary, Veterinary and Phytosanitary Inspection, 2012	This ministerial decree establishes that the State Sanitary, Veterinary and Phytosanitary Inspection shall be the state executive body authorized to carry out supervision and control related to sanitary, veterinary and phytosanitary issues. The scope of inspection shall be to ensure the protection of human life and health, flora and fauna, and the environment. The inspection shall carry out the following tasks: (a) prevention, identification and suppression of offences in the sphere of sanitary, veterinary and phytosanitary; (b) state supervision over compliance with sanitary, veterinary and phytosanitary provisions; and (c) prevention of introduction and spreading of diseases common to animals and human beings, and also of pests.
Law No. 88 "Technical Regulation "Hygiene of processing of foodstuffs", 2013	The scope of this law ensures the protection of human life and health, animals, plants and the environment against hazardous impacts originating in the process of industrial processing of alimentary raw materials and foodstuffs. Hygienic and sanitary requirements shall be set for enterprises (including production lines, processes and edifices), water supply, ventilation and sewerage systems, waste disposal, technological processes, equipment, packaging, storage and transportation of alimentary raw materials foodstuff ready for use. Economic entities operating in the

	sphere of processing and handling of alimentary raw materials and foodstuffs must comply with the provisions of this technical regulation.
Law No. 02 "On plant quarantine", 2015	The scope of this law shall be to ensure plant protection in the national territory against introduction and propagation of species subject to quarantine. State phytosanitary quarantine ensures plant protection and compliance with quarantine phytosanitary requirements of importing countries. State phytosanitary quarantine supervision includes inspection of species subject to quarantine and phytosanitary treatment of plant varieties and species subject to quarantine inspection. The national territory is subject to constant phytosanitary monitoring.
Decision No. 41 of Eurasian Economic Union (EAEC) board validating laboratory support of quarantine phytosanitary measures	This decision sets forth a set of arrangements for quarantine phytosanitary support of testing of produce subject to phytosanitary inspection and issuance of certificates. The scope shall be harmonization of testing methods in conformity with international and regional standards with a view towards prevention of the introduction and spreading of pests and diseases.

5. Food quality

Law	**Description**
Law No. 8 "On standardization", 1996	Standardization shall be the establishment of norms, rules and regulations for ensuring the safety of products, works and services for environment, health and property, and also for the protection of animals and vegetables. Normative documents on standardization shall be classified as: (a) state standards; (b) regional standards, rules, norms and recommendations on standardization; (c) classifiers of technical and economic information; (d) branch standards; (e) standards of enterprises; (f) standards of scientific-engineering societies and other public associations; and (g) technical conditions. Compliance of products and services with requirements set by state standards may be confirmed by marking products and services with mark of compliance.
Law No. 7 on trademarks, service marks and places of origin of	The present law regulates relations connected with registration, legal protection and utilization of trademarks, service marks and places of origin of commodities. Trademarks and service marks are symbols serving for the distinction of commodities (service) produced by some legal or natural

commodities, 1997	persons from similar commodities (service) produced by other legal or natural persons. The law consists of 12 sections composed of 44 articles.
Law No. 67 "On technical regulation", 2011	This law establishes legal grounds for elaboration, adoption and application of compulsory requirements set for processing, handling, storage, transportation and trade of produce and compliance assessment thereof. It establishes the modalities for the accreditation of legal persons for assessment and certification of compliance of produce with environmental standards and safety of produce for human beings and animals, and also issuance of compliance certificates for produce. The scope of adoption and application of technical regulations shall be as follows: (a) protection of human life and health; (b) environmental protection; (c) protection of life and health of animals and plants; and (d) prevention of fraud and deceit due to indications and labelling misleading consumers.
Law No. 163 amending Law No. 67 "On technical regulation", 2014	Preamble shall be amended to add the following wording: "This law shall not be applicable to relations concerning elaboration, approval, application and compliance with requirements in the sphere of industrial safety, safety of technological processes at hazardous industrial facilities, requirements for safety of electric energy systems and electric energy industrial facilities, except for cases of elaboration, application and compliance with produce and/or requirements for produce and designing processes (including exploration), industry, construction, assembling, adjustment, storage, transportation, trade, operation and recycling."
Law No. 230 amending Law No. 67 "On technical regulation", 2015	In the preamble shall be inserted the following wording: "This law shall be applicable to elaboration, validation and enforcement of the mandatory requirements for veterinary drugs, pesticides and foodstuffs."
Law No. 86 "On labeling of foodstuffs", 2013	The scope of this law shall be protection of human life and health and consumer protection in the process of labelling of foodstuffs; it is aimed at preventing fraud and deceit of consumers. It establishes compulsory requirements for labelling of foodstuffs: (a) traceability and identification of a product; (b) requirements for labelling of foodstuffs; and (c) compliance assessment of foodstuffs. The provisions of this law shall be compulsory for all legal persons and individual entrepreneurs performing handling, processing, vending and internal trading of foodstuffs. It shall not be applicable to public catering. Basic principles of labelling shall be as follows: (a) information of consumer shall be clear, consistent, complete and reliable; (b) producer must submit the necessary and reliable information to the consumer on foodstuffs ensuring correct choice of products by consumer; (c) information shall be supplied in the form of text, conventional symbols, identification marks and drawings on packaging;

	and (d) text of information for consumers shall be written both in state and official languages.
Law No. 145 "On trademarks", 2014	This law regulates state registration of trademarks of legal persons registered in accordance with the national legislation, legal protection of trademarks and utilization thereof. Trademarks shall be subject to registration by the authorized state body in the sphere of intellectual property. State registration of trademarks shall be voluntary. Use of denominations "Kyrgyz," "State" and "National" and also indication of the denomination "Kyrgyz Republic" shall be performed by special authorization by the president and by the Government of the Kyrgyz Republic. It also establishes the modalities of application for registration of trademarks.

6. Animal health (domestic, transboundary diseases)

Law	**Description**
Law on Veterinary, 1992	The present law determines the general legal, economic, social and organizational basis of veterinary in favour of the protection of animals' health and the prevention of diseases common to animals and people. Veterinary is a complex of state, public, economic and special measures on protection of animals from communicable and non-communicable diseases and their treatment, provision of production of high-quality cattle breeding products, prevention of morbidity of people with diseases characteristic of animals and also resolution of veterinary-sanitary problems of environmental protection. Veterinary activity is performed by the state veterinary service under the Ministry of Agriculture of the Kyrgyz Republic and also sectoral veterinarian services of other ministries, institutions, organizations, enterprises and privately practicing specialists-veterinarians. Competence of the bodies of the state veterinary is outlined in article 5, whereas article 6 states the main objectives of the state veterinary.
Law No. 133 "On pedigree stockbreeding", 2009	This law establishes legal, economic and organizational grounds for pedigree stockbreeding, production and use of pedigree materials of animal origin, conservation and improvement of genetic fund of pedigree animals, reproduction of pedigree animals, and improvement of productive qualities of animals. Pedigree animals shall be subject to compulsory state registration with a view towards marking, identification, and establishment of the origin and productive qualities thereof. The tasks of pedigree stockbreeding shall be as follows: (a) selection and pedigree animal reproduction; (b) production and conservation of new breeds, crosses and lines of highly productive animals and poultry, and genetic

	fund thereof; and (c) registration, marking and identification of pedigree animals. Only certified pedigree farmers shall be authorized to carry out pedigree stockbreeding.
Law No. 91 “On identification of animals”, 2013	This law regulates relations regarding identification of animals and reliable registration thereof, and keeping state record of movement of animals; it determines the organizational, legal and financial basis for identification and traceability of animals and establishes basic principles for organization and performance of the aforesaid activities in the national territory. It also lays down the grounds for marking of animals. The scope of this law shall be: (a) introduction of a common identification system for animals; (b) availability of timely and reliable information on animals, improvement of productive quality indices thereof, and management of livestock markets; (c) planning and performance of anti-epizootic measures and veterinary and sanitary arrangements based on reliable information related to livestock; and (d) ensuring biological safety and granting access to consumers on origin, quality and safety of animal products.
Ministerial Decree No. 35 validating the Regulation on Veterinary border inspection, 2014	This ministerial decree establishes the constitution of the veterinary border inspection, the authorized state institution in the sphere of veterinary carrying out the following tasks: (a) protection of the national territory against introduction of pests and animal diseases from foreign states; (b) inspection of cargo in import and transit on the national territory subject to compulsory veterinary inspection; and (c) veterinary supervision and control of livestock transiting on the national territory. Veterinary border inspection shall also issue accompanying veterinary certificates for import, export, re-export and transit of cargo and commodities subject to veterinary inspection.
Law No. 175 "On veterinary practice", 2015	This law establishes the legal, social, organizational, financial and economic basis in the sphere of veterinary practice and is aimed at protection of the population against diseases common to human beings and animals, ensuring epizootic well-being, animal welfare and veterinary and sanitary safety of the national territory. Veterinary practice shall be performed in accordance with the following principles: (a) prevention of damages to human and animal life and health, environment and property of natural and legal persons; (b) prophylaxis of animal diseases by means of veterinary arrangements; (c) scientific substantiation and economic efficiency of veterinary arrangements; (d) reliability, transparency and accessibility of information on epizootic situation; (e) accessibility of veterinary services; (f) protection of animal health; and (g) fee-based veterinary services performed by private veterinary practitioners.
Governmental Decree No. 377 validating Priority veterinary and	This governmental decree sets forth immediate veterinary and sanitary requirements with a view towards ensuring the protection of animal health for the purpose of prevention of infection by pathogens and disease and germ carriers. The scope of veterinary and sanitary requirements shall be to maintain the proper veterinary and sanitary state of the national

sanitary requirements for prevention of animal diseases, 2015	territory. Planning for the construction and operation of livestock breeding farms, poultry farms, peasant farms and subsistence farms destined for animal production shall be done with a view towards the most favourable conditions for keeping and reproduction of animals, such as qualitative and balanced feeding, keeping and care, air quality, temperature, lighting, cleanliness and potable water quality.
Governmental Decree No. 186 validating the Regulation on private veterinary practice, 2016	This governmental decree establishes that persons meeting the following requirements shall be authorized to exercise private veterinary practice: (a) university degree in veterinary science; (b) practical experience in the field of no less than one year; and (c) registration in the register of private veterinary practitioners.

ANNEX 2 – Proposal for the Vitalization of the Ak-Suu Starch Factory

This annex consists of a very brief information on the general application of starch, lists of major potato starch exporters and importers worldwide, and proposals for vitalization of the starch factory in Kyrgyzstan.

Figure 21. Ak-Suu Starch Factory

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Application of potato starch

Starch is used both in the manufacture of food and non-food products. Its application is wide. The food-processing application of starch includes production of starch hydrolysates, puddings, jellies, desserts, caramel and other food products. Applications of starch in non-food sectors include the production

of dextrin and adhesives, drilling fluids, biodegradable plastics, gypsum binders, fillers, emulsion stabilizers, consistency modifiers, etc. Other important fields of starch application are textiles, cosmetics, pharmaceuticals and paints.

Waste products potential utilization:

- Potato juice separated from the potato pulp after rasping may be used as fertiliser because of its high mineral content.
- Potato protein extracted from juice by coagulation with heat may be used as a protein feed.
- Potato pulp, a side product of washing the starch from the mash, is 30-percent starch and may be used as animal feed.

Export markets overview

According to uncomtrade.org data (2018), Kyrgyzstan does not export starch; instead, the country imports starch from abroad. In the past five years, on average, Kyrgyzstan imported 53 tonnes of starch, with an average trade value of USD 55 000. The year 2013 was the exception; then, Kyrgyzstan imported about 250 tonnes of starch, worth around USD 225 000. The biggest partners of Kyrgyzstan were Poland, China, the Russian Federation, Kazakhstan, Germany and France. Assuming that a medium-size starch factory may produce up to 40 000 tonnes of starch per year, consuming about 320 000 tonnes of raw potatoes, the internal demand in starch will be fully met and the country will be able to reach international markets.

Major competitors

The world's largest exporters of potato starch are listed in the Table 15.

Table 15. Largest exporters of potato starch, 2016, sorted by trade value

	Net Weight (kg)	**Trade Value (USD)**
Germany	266 758 492	187 696 825
Poland	102 955 706	61 878 464
Netherlands	28 053 905	20 177 535
Belgium	25 828 127	15 603 818
United States of America	17 780 542	10 392 440
Belarus	16 947 156	9 009 400
Canada	20 603 499	7 948 176
Finland	10 498 054	7 037 856

	Net Weight (kg)	Trade Value (USD)
Czechia	11 576 470	6 995 452
China, Hong Kong SAR	4 697 714	4 821 473
Philippines	2 618 198	4 012 857
Latvia	4 222 223	3 342 545
Sweden	3 858 621	2 226 765
New Zealand	2 522 032	1 787 438
Japan	1 071 203	1 470 896
Mexico	2 264 452	1 356 950
United Kingdom	1 287 984	1 283 451
Spain	1 239 473	1 237 936
Russian Federation	1 092 715	797 354
Malaysia	564 725	790 399

Source: UN COMTRADE (2018)

Potential markets for starch

The list of the main world importers of potato starch is shown in Table 16.

We have selected four potential markets for exporting the potato starch: China, Kazakhstan, the Republic of Korea, the Russian Federation and, based on the amount of imports, established or potential trade routes, and access to markets.

In 2016, the Republic of Korea was the largest importer of potato starch in the world. The largest suppliers of the Republic of Korea were Germany, Poland, Denmark, France and the Netherlands (UN Comtrade, 2018).

China was the fourth biggest importer. China's biggest suppliers of potato starch were the Netherlands, Germany, the United States of America, Belarus, Denmark, the Democratic People's Republic of Korea and Poland.

The Russian Federation in 2016 imported mainly from Belarus, Denmark, France and Germany (UN Comtrade, 2018)..

Kazakhstan imported a major share of potato starch from Poland, Belarus and the Russian Federation (UN Comtrade, 2018).. Despite that Kazakhstan is not in the list of the world's largest importers, it should be considered a potential partner because of its proximity and traditionally established trade relationships.

Table 16. Largest importers of potato starch in Europe and Asia, 2016

	Net Weight (kg)	Trade Value (USD)
Republic of Korea	74 210 174	74 210 174
Netherlands	66 374 744	66 374 744
United Kingdom	67 431 449	67 431 449
China	42 080 665	42 080 665
Belgium	49 568 569	49 568 569
Germany	50 393 628	50 393 628
Italy	40 137 470	40 137 470
Spain	33 463 710	33 463 710
China, Hong Kong SAR	24 420 359	24 420 359
France	25 474 252	25 474 252
Philippines	15 341 555	15 341 555
Sweden	16 869 561	16 869 561
Russian Federation	16 326 597	16 326 597

Source: UN COMTRADE (2018)

The most obvious potential partner is the Republic of Korea, the original investor of this factory. The major share of the Republic of Korea's imports come from the European countries. The relevant proximity of Kyrgyzstan and the availability of trade routes through China allows Kyrgyzstan to compete with European suppliers in the future.

Vitalization options proposal

Option 1. Contract farming

- Factory and local farmers conclude the contract with support of the Government of Kyrgyzstan and FAO.
- Factory provides farmers with seeds of potato varieties suitable for producing starch and relevant fertilizers and guarantees support with harvesting.
- Farmers agree to grow and provide specific quantities of potatoes.
- FAO provides facilitation of contract farming and capacity-building to farmers to ensure the delivery of qualitative harvest (Technical Cooperation Programme Facility).

Advantages of this option: Land in Issyk-Kul is available, and farmers are able to expand their cultivated areas and are interested in cooperation with the starch factory.

Challenges: Contract farming is not widespread in Kyrgyzstan, farmers and starch factory owners should be consulted and supported, and an exit strategy should be developed and embedded in the contract.

Option 2. Farm schools with demonstration fields

This option can be initiated by FAO. The Ministry of Agriculture and the country's seed agencies should be contacted to check the varieties list registered in Kyrgyzstan. Varieties suitable for starch production will be selected and procured in collaboration with the Government of Kyrgyzstan. Field farm schools with demonstration fields should be started in the starch factory area. The results of the school and harvest will be presented to the management of the starch factory.

Advantages: Experience and knowledge gained in the farm school may be easily delivered to a larger community of farmers.

Challenges: The starch factory's management may be reluctant and growing demonstration potatoes will take time, postponing the start of the real production by minimum one year.

It should be noted that in both cases the full economic circle should be analysed in advance, and exit strategies should be considered.

Regional Initiative on Improving Agrifood Trade and Market Integration

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