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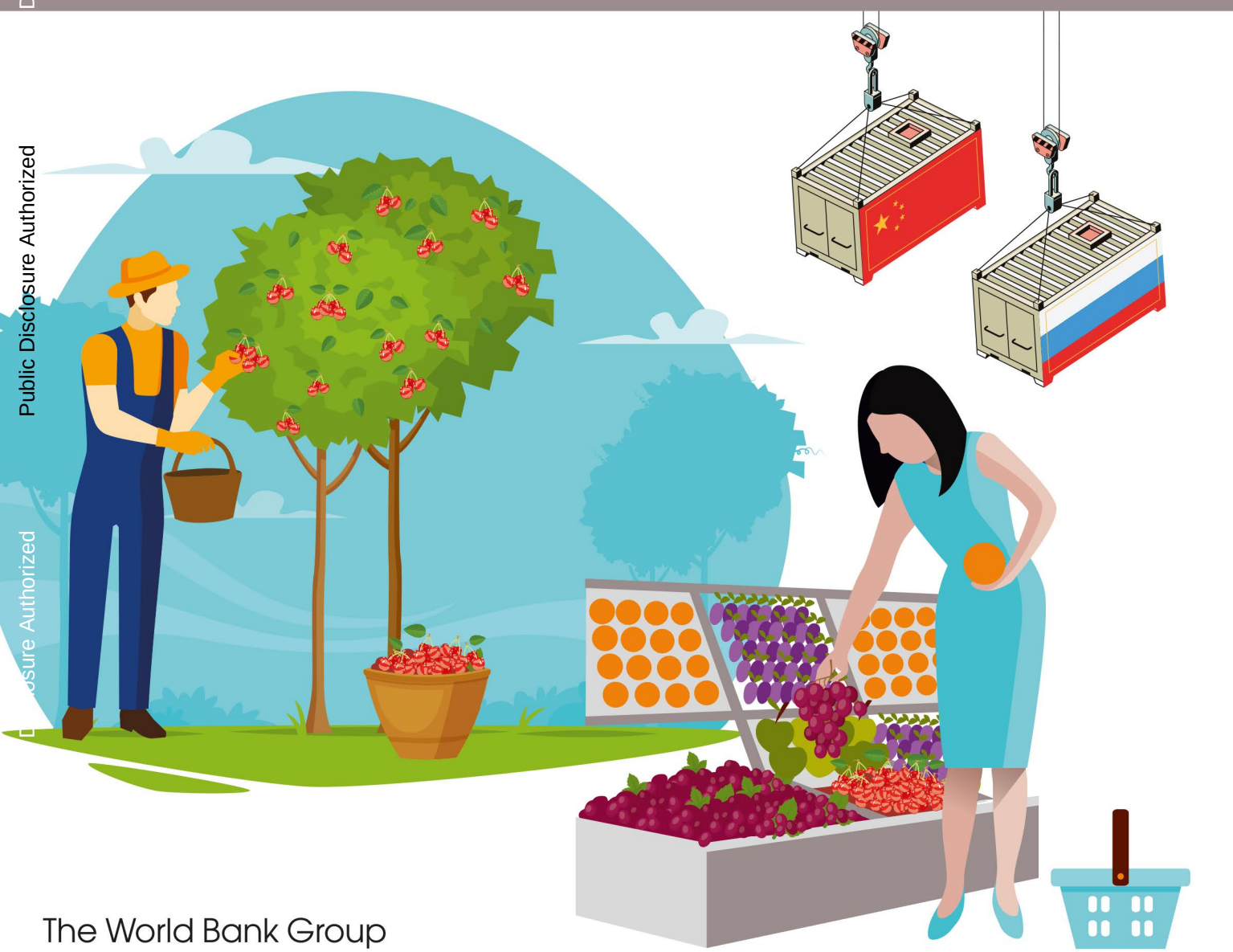
Central Asia's Horticulture Sector

Capitalizing on New Export Opportunities in Chinese and Russian Markets



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Acronyms

ACC	Agricultural Credit Cooperative
AQSIQ	General Administration of Quality Supervision, Inspection and Quarantine
ASOEX	Fruit Exporters Association of Chile
B2B	Business-to-Business
CCI	Chamber of Commerce and Industry
DRC	Domestic Resource Cost
EAC	Eurasian Conformity
EEU	Eurasian Economic Union
EU	European Union
FAO	United Nations Food and Agricultural Organization
FTA	Free Trade Agreements
FTZ	Free Trade Zones
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GSSE	General Services' Support Expenditures
HACCP	Hazard Analysis and Critical Control Points
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IPCC	International Plant Protection Convention
IRA	Import Risk Analysis
ITC	International Trade Center
JICA	Japan International Cooperation Agency
KGS	Kyrgyzstani Som
MFN	Most Favored Nation
MPS	Market Price Support
MRL	Maximum Residue Level
O2O	Online-To-Offline
OECD	Organization for Economic Co-operation and Development
PSE	Producer Support Estimator
R&D	Research and Development
RCA	Revealed Comparative Advantage
RUR	Russian Rubles
SAMR	State Administration for Market Regulation
SAR	Special Administrative Region of China
SME	Small And Medium-Sized Enterprise
SPS	Sanitary And Phytosanitary

TJS	Tajikistani Somoni
TL	Turkish Lira
TR	Technical Regulations
U.S.	United States of America
UN	United Nations
USAID	United States Agency for International Development
USD	United States Dollars
USDA	United States Department of Agriculture
UZS	Uzbekistani So‘m
VAT	Value-Added Tax
WTO	World Trade Organization

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Key Findings

- ✓ With a $5.8 billion fruit import market, China creates an enormous opportunity for Central Asian fruit exporters to diversify geography and increase the value of their agri-food exports. Between 2015 and 2017, China imported $1.5 billion worth of fresh cherries, grapes, plums and apricots—fruits in which Central Asian countries hold a comparative advantage. By 2030, Chinese import demand for these fruits is projected to increase to $1.8 billion, while the overall import potential is estimated at $2.7 billion.

- ✓ Central Asian countries are well placed to be more competitive in satisfying fruit import demand in the growing Chinese markets. The region's geographic location, natural resources, untapped yield potential, and the possibility of greater private sector investment through policy reform create the necessary preconditions for the Central Asian countries to increase their agricultural exports to China.

- ✓ Based on the results of the export competitiveness analysis and interviews with stakeholders, the products with the most export potential from Kyrgyz Republic to China include cherries, walnuts, fresh apricots, and plums (fresh and dried). The products with the most export potential from Tajikistan to China are apricots (dry and fresh), plums (fresh) and grapes (fresh); and from Uzbekistan to China, cherries, apricots (dry and fresh), plums (fresh), grapes (fresh) and walnuts. Currently, this potential is largely underutilized.

- ✓ Fruit export growth has the potential to significantly boost economic growth in the Central Asian countries, generate employment and income in rural areas, and create opportunities for smallholder inclusion into the value chains. In addition to the clear macroeconomic benefits from higher value-added exports, such as horticulture, research shows that horticulture requires at least twice as much labor as cereal crops.

- ✓ However, entering is not easy into the formidable Chinese fresh fruit markets. First, the Chinese markets require consistency in the quality and volume of the fresh fruit supplied by exporting countries. Second, entering China necessitates the existence of sophisticated quality systems and logistics systems to ensure that products are grown and preserved in their best possible condition to meet China's stringent food safety standards. Third, the Chinese fruit markets' highly fragmented and competitive structure necessitates a close relationship with a Chinese counterpart on the ground. Fourth, Chinese consumers value attractive packaging and products with recognizable brands.

- ✓ The majority of Central Asian fruit producers are small farmers who have limited access to financial and knowledge resources, which results in limited production volumes and inconsistent supply quality. While small farmers across the region have adjusted to trading fruits domestically through a network of local traditional traders, entering international markets requires a different level of bureaucracy and procedural conformity for which Central Asian small-scale producers currently lack capacity. At the government level, the quality and capacity of food and safety systems, customs

control and inspection bodies do not meet the requirements of Chinese markets, putting Central Asian exporters at a disadvantage vis-à-vis major suppliers to China, such as Chile or the United States. In addition, limited export promotion capacity results in most regional exporters being unaware of the existing opportunities in the Chinese markets and being unable to understand the requirements to enter them.

- ✓ As a result, China still accounts for only a small share of total Central Asian (Kyrgyz Republic, Tajikistan and Uzbekistan) agri-food exports in general, and fruit exports in particular. Russia and other countries of the former Soviet Union remain key destinations for Central Asian fruits. However, despite Central Asian fruit exporters' traditionally large presence in the Russian stone fruit markets, they have been slow to adjust to the growing role of the modern grocery store chains that have been growing in Russia at an accelerated pace, largely at the expense of traditional retail markets.

- ✓ Central Asian fruit suppliers lose out to their competitors in their ability to provide the quality, assortment, and packaging of produce in accordance with Russian retailers' needs and volumes. As a result, they receive lower (up to 30 percent) import prices. A range of factors contribute to this, including high fragmentation of production, informality and non-transparency of Central Asian fruit supply chains, and lack of knowledge and compliance among producers and exporters of retail requirements.

- ✓ To be competitive in the Chinese and higher-end Russian retail markets, Central Asian fresh fruit exports need to increase the quantity, quality, sophistication and sustainability of their exports. National governments have a role to play in creating an enabling environment for increased production and exports of horticulture products by tackling most binding constraints that exist in the sector. These include integration of Central Asian smallholder fruit producers into the value chains, improving their access to production inputs and the latest knowledge on fruit production and handling, promoting an increase in private investments in cold chain storage and post-harvest processing capacity, investing in public goods, such as food safety and quality control systems and R&D, strengthening export promotion to facilitate Central Asian penetration in new export markets, and creating opportunities for their exporters to take advantage of the new trends that emerge in the global horticulture markets, such as the rapid growth of e-commerce.

- ✓ Chilean success in the Chinese horticulture markets can serve as a lesson for Central Asian countries. While some of the initial success of Chilean fruit exporters in China can be attributed to external global macroeconomic trends and the counter-seasonality of Chilean fruit production, it is also important to note that consistent, liberal trade and agricultural policy reforms enabled the environment for agri-food sector development and prepared the country for success in the Chinese market.

Introduction

In China, changing demographics, rising incomes and shifting consumer preferences have resulted in an ever-growing demand for food that is more varied, healthier and of higher quality and this demand is set to persist well into the future. According to the International Monetary Fund projections (2019), by 2024, Chinese per capita gross domestic product (GDP, in current prices) will increase to $28,450, from $13,130 in 2019, and the population will increase to 1.5 billion people (United Nations, 2019). The projected urbanization rate will reach 67 percent by 2030, compared to 56 percent in 2015 (Goh et al., 2014). The growing number of consumers in China that are increasingly more affluent and educated will continue shifting their dietary preferences to include more protein, fruits, and vegetables.

Growing Chinese demand for fresh fruit imports creates an enormous opportunity for the Central Asian[1] fruit exporters to diversify geography and increase the value of their exports. Between 2015 and 2017, China imported $1.5-billion worth of fresh cherries, grapes, plums, and apricots—fruits in which Central Asian countries hold a comparative advantage. According to the IFPRI IMPACT model projections, Chinese import demand for these fruits will increase to $1.8 billion by 2030 (Table i.1). Enabling Central Asian countries to convert their natural/endowment advantages into competitive advantage in specific export markets requires complementary investments in processing, logistics, and trade/export infrastructure, both hard and soft. The long-term forecast of strong demand provides a helpful scenario to plan and justify investments by Central Asian governments for the export-oriented development of their agricultural sectors.

Central Asian countries are well placed to be more competitive in satisfying fruit import demand in the growing Chinese markets and will reap economic and social development benefits along the way. For centuries, Central Asia has occupied a position of strategic importance in trade between the East and the West. The region's geographic location, natural resources, untapped yield potential, and the possibility of greater private sector investment through policy reform create the necessary preconditions for the

Table i.1. Projections of Chinese Fruit Imports

Horticultural products	Current Chinese horticultural net imports, 2015–2017 average, USD	Projected Chinese net imports, 2030, 2005 USD[2]
Cherries, fresh	903,424,257	1,075,074,866
Grapes, fresh	532,000,000	633,080,000
Plums and sloes, fresh	99,008,118	117,819,660
Apricots, fresh	496,490	590,823

Source: UN COMTRADE (2018), World Bank calculations based on IFPRI IMPACT (2015)—SSP2 pathway, no climate change assumption; Model version IMPACT 3.2.1.
Note: IFPRI IMPACT 3 is a global, partial equilibrium, multi-market model focused on the agriculture sector.

[1] The geographic focus of this report is on Kyrgyz Republic, Tajikistan and Uzbekistan.

[2] The IFPRI IMPACT model offers projections for fruit and vegetable aggregates only. It does not allow for differentiation among the specific horticulture products' import growth. The selected fruits are those that are projected to exhibit strong import growth until 2050 based on the latest relevant trade data for China and Central Asia. Based on this analysis, horticulture products for which China is a strong net importer were compared to the horticulture products for which Central Asian countries are net exporters.

Central Asian countries to increase their agricultural exports to China. As China places an important role on meeting its growing food needs on dynamic agricultural trade and investment cooperation with the Central Asian countries, this results in significant opportunities for the region to increase its presence in the Chinese fruit markets brought by improved infrastructure and higher cross-border investment. For example, according to a recent World Bank report (World Bank, 2019), Belt and Road Initiative transport projects are estimated to increase trade by up to 9.7 percent. Countries that have a comparative advantage in time-sensitive sectors, such as fresh fruits and vegetables, are expected to be the biggest winners.

Fruit export growth has the potential to significantly boost economic growth in the Central Asian countries, generate employment and income in rural areas, and create opportunities for smallholder inclusion into the value chain. In addition to the clear macroeconomic benefits from higher value-added exports, such as horticulture, the increasing production of fruits also has a strong positive impact on employment when compared to other agricultural sub-sectors. Research shows that horticulture requires at least twice as much labor as cereal crops. For example, for every job in horticulture, three jobs are generated elsewhere (not including employment generation among farmers). Further, a World Bank study of the Uzbek horticulture sector (Khidirov et al., 2015) estimated that the number of person-months per hectare of farm labor for selected fruits and vegetables ranges from 12-22, compared to 5 and 2 in cotton and wheat, respectively. Similarly, research conducted in South Africa shows (World Bank, 2018a) that commercial vegetable and fruit cultivation generates about 1.3 jobs per hectare compared with 0.01 jobs per hectare of maize. Evidence from around the world shows that increases in horticultural exports bring significant economic benefits to the smallholder farmers who often produce most of these products, including in the Central Asian countries. Smallholders benefit from both higher incomes and the access to credit and extension services which exporter companies often provide. Generating employment in agriculture as well as upstream and downstream agribusinesses for Central Asian migrants returning from Russia following the economic downturn and for large numbers of rural youth joining the labor market annually is an important social objective that increased horticultural production can help meet.

The horticulture sector also provides an important year-round source of income in rural areas for women that creates opportunities for them to improve their standard of living. Women play a significant role in many aspects of agricultural production. For example, according to the Statistical Agency under the President of the Republic of Tajikistan (2013), up to 85.5 percent of women are active in agricultural production. Increased horticulture production in the region is expected to result in higher incomes for female laborers by providing employment opportunities through processing, seed production, and nursery preparation, to name just a few. A beneficiary survey of World Bank-financed horticulture investments in Uzbekistan showed that increased investment in horticulture led to greater female labor force participation. Enterprises participating in the program showed a 67 percent increase in the number of female employees.

However, much remains for the Central Asian countries to be able to enter and increase their presence in the formidable Chinese fresh fruit markets. The Chinese markets require consistency in quality and volume of fresh fruit supply from the

exporting countries, as well as the existence of sophisticated quality and logistics systems to ensure that products are grown and preserved in the best possible condition to meet China's stringent food safety standards. The majority of Central Asian fruit producers are small farmers who have limited access to financial and knowledge resources, which results in limited production volumes and inconsistent quality of supply. While small farmers across the region have adjusted to trading fruits domestically through a network of local traditional traders, entering international markets requires a different level of bureaucracy and procedural conformity, for which Central Asian small-scale producers lack capacity. Currently, exports of fresh stone fruits are often sporadic, and vary from year to year depending on yields and demand from Russia and Kazakhstan. At the government level, the quality and capacity of customs control and inspection bodies do not meet the requirements that modern horticulture markets pose, putting Central Asian exporters at a disadvantage vis-à-vis their global competitors.

As a result, despite the existing opportunities, China still accounts for only a small share of total Central Asian (Kyrgyz Republic, Tajikistan and Uzbekistan) agri-food exports, particularly fruit exports. In 2018, agri-food exports to China totaled $415.5 million, up by $72 million from 2017 figures. Uzbekistan captured 96 percent of this value, while the Kyrgyz Republic and Tajikistan remained marginal players. However, Uzbek exports to China (82 percent) consist mainly of cotton and cotton products. The dominant export category from the Kyrgyz Republic is tobacco, which accounts for 58 percent of total agri-food exports.

The extent to which Central Asian agri-food exporters are ready to increase their presence in higher-end markets such as China, will be tested by how successfully they are able to penetrate formal retail chains in Russia, a country that has served as their traditional market. Currently, Russia and other countries of the former Soviet Union remain key destinations for Central Asian fruits. For example, 88 percent of cherries, and 99 percent of fresh apricots and plums are exported from the Kyrgyz Republic to Russia and Kazakhstan. Similar export dynamics are observed for Uzbek and Tajik fruits. Despite Central Asian fruit exporters' traditionally large presence in the Russian stone fruit markets, they have been slow to adjust to the growing role of modern grocery store chains, and most Central Asian fruits are largely sold in open-air markets. Yet, modern grocery store chains in Russia have been growing at an accelerated pace, largely at the expense of traditional retail markets, following the trajectory observed in many developed countries. They are also playing an increasingly important role in fruit imports, imposing stringent requirements for product health safety, intrinsic product qualities (such as shape, color, and taste), packaging and labeling.

The objective of this study is to improve the Central Asian governments' understanding of the opportunities for their agri-food exports in Chinese and higher-end Russian markets, with a specific focus on fresh fruit markets, and provide policy recommendations on how to take advantage of these opportunities. The study was carried out in three phases. During Phases I and II of the study (World Bank, 2018b), an export competitiveness assessment was conducted for a wide range of Central Asian agricultural commodities to estimate their potential competitiveness in Chinese markets. The findings of the stakeholder consultations and comparative advantage analysis (see annex 3 for more details) show that Kyrgyz Republic, Tajikistan and Uzbekistan

have strong export potential in several horticulture products, including grapes, apricots (fresh and dry), plums (fresh and dry), walnuts, and cherries. Building on the findings of Phases I and II of the study, Phase III focused on examining key developments and requirements in the Chinese and Russian fruit markets and providing a more in-depth analysis of the Central Asian fruit value chains to determine key constraints to the region's export potential in the target markets.

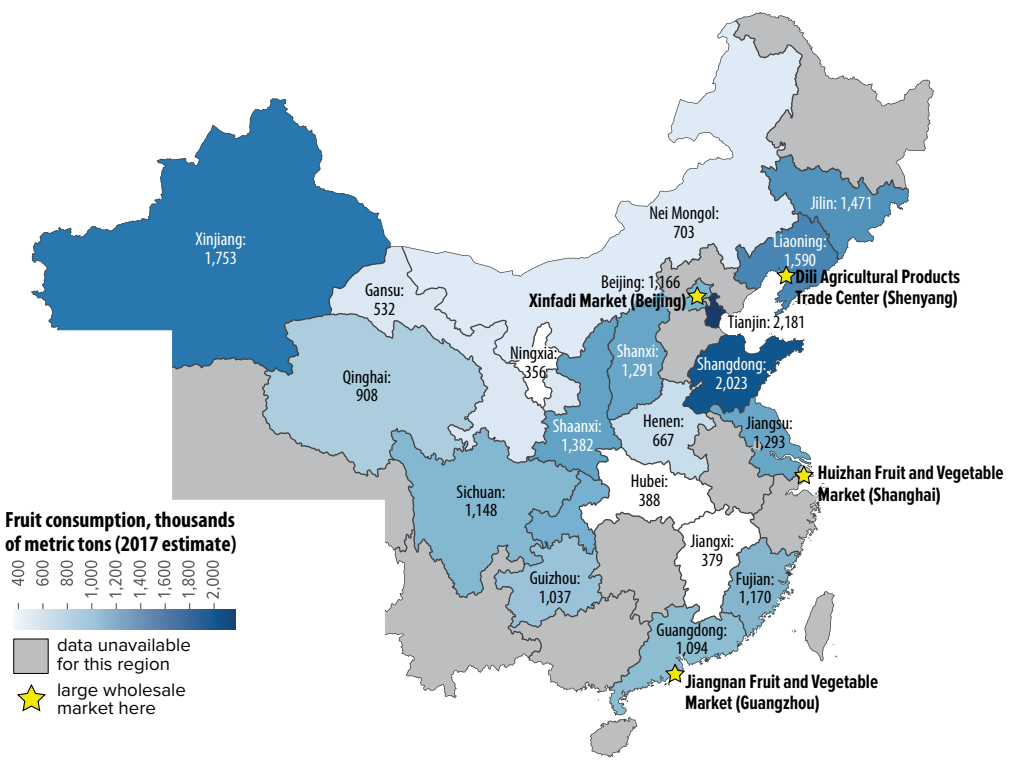
The report is structured as follows: Section One presents an overview of the Chinese fresh fruit import market, including market access requirements for the selected horticulture products, highlighting the key differences between entering China's market compared to that of Russia. Section Two focuses on the emerging opportunities and challenges for Central Asian fresh fruit suppliers to maintain and increase their exports to Russia (and potentially other countries of the Commonwealth of Independent States), focusing on key barriers to entry to the Russian supermarket chains and highlighting successful replicable entry strategies employed by Turkey, their major competitor in the Russian market. Section Three presents an analysis of the export competitiveness of the selected fruits as well as constraints along the Central Asian countries' value chains that limit their potential to increase agricultural exports. Section Four includes a case study on the key drivers of the competitiveness of Chilean horticulture exports to China. Section Five presents policy recommendations for the Central Asian governments.

1. China 2030: Developments in the Fresh Fruit Import Market

1.1. Market Overview

Consumption of fresh fruit and fruit products has been steadily increasing in China, thanks to higher incomes, increased attention to healthy diets, and more diverse food choices for consumers. According to provincial statistics, in 2017, the per capita consumption of dried and fresh melons and fruits in urban households surpassed 70 kilograms in provinces including Shandong, Tianjin, Liaoning and Xinjiang (Figure 1.1). China's annual per capita fruit consumption is estimated to grow by 10 percent by 2022, according to the Organization for Economic Co-operation and Development (OECD)-Food and Agricultural Organization (FAO) Agricultural Outlook. Despite a steady increase in consumption in both urban and rural areas, the gap between the two is still evident—on average between 2015 and 2017, rural Chinese residents consumed 33 percent less fresh fruit than urban residents.[3] In terms of preferences, Chinese consumers

Figure 1.1. Fruit Consumption in China[4]



Source: National Bureau of Statistics of China (2017).

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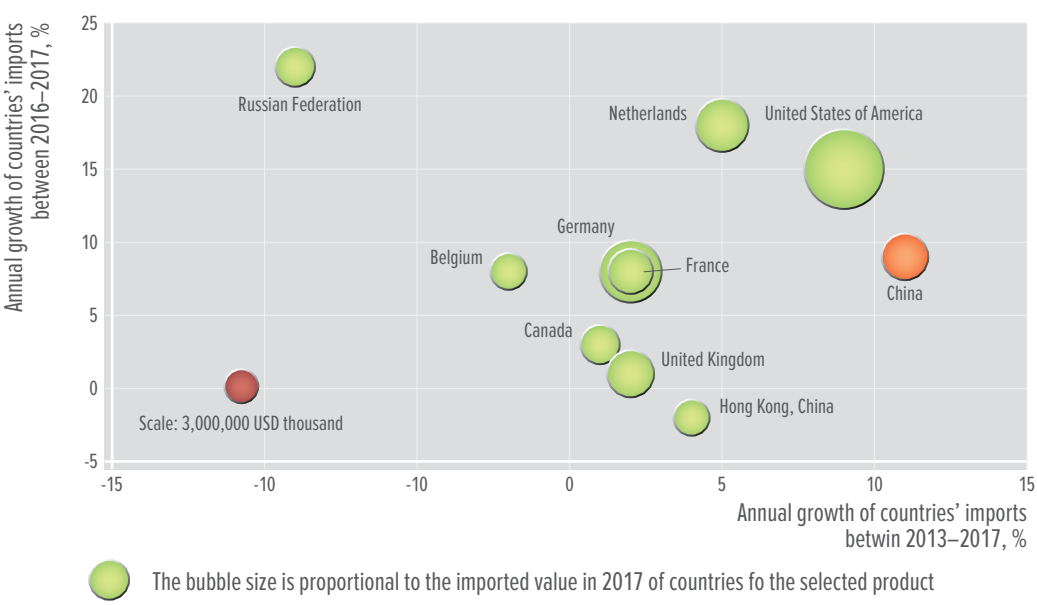
[3] Averages are calculated based on the provincial statistics for Guangdong, Tianjin, Shangdong, Shaanxi, Sichuan, and Xinjiang.

[4] The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgement on the legal status of any territory, or any endorsement or acceptance of such boundaries.

value nutrition, freshness, safety and quality, as well as "specialty" fruits. These preferences are reflected in the growing popularity of imported and/or branded fruit. Chinese consumers are sensitive to attractive packaging and products with recognizable brands (USDA FAS, 2016). In addition, demand for organic fresh fruits is growing, driven by affluent Chinese consumers.

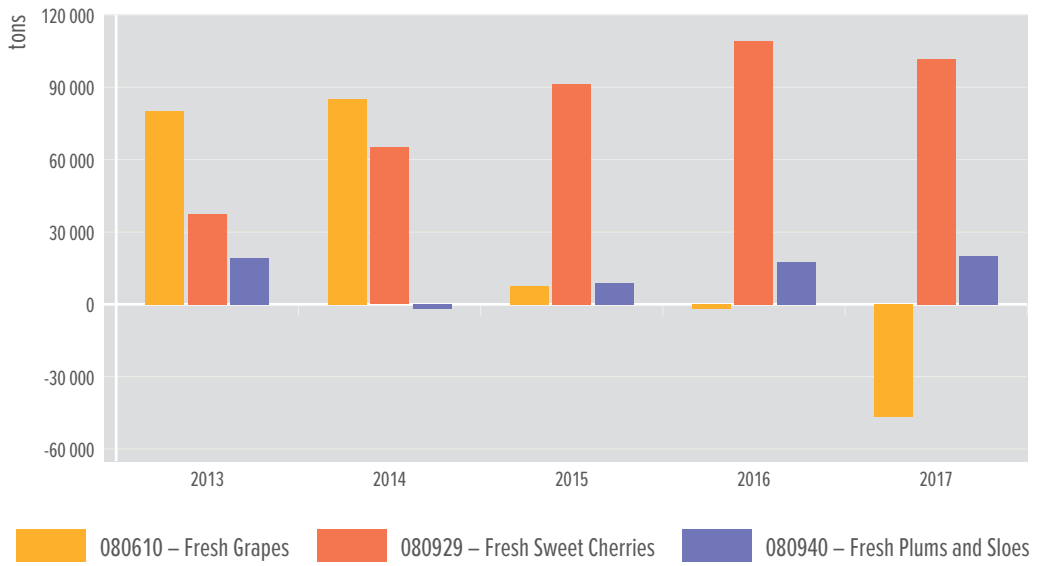
China is one of the world's top ten importers of fruits with imports totaling $5.8 billion in 2016 (Figure 1.2). China is a net importer of many fruits, both fresh and dried, that can be sourced from Central Asia. In 2017, China imported 101,885 tons of sweet cherries (valued at $771.3 million) and 40,619 tons of plums (valued at $103.5 million), making it the world's largest importer of both fruits. Taking into account exports, China remains a net importer of sweet cherries and plums with steadily increasing trade volumes, both in quantity and value, from 2013 to 2017 (Figure 1.3). China is also the world's fifth-largest importer of fresh grapes in 2017 (233,912 tons, valued at $590.1 million). However, China also exports grapes and as these exports have grown, China has become a net exporter of grapes since 2016. Imported grapes fill the gap during certain months of the year, including high-demand time periods such as the lunar new year and the Labor Day holiday. For example, grapes from the United States are sold from August to December. Grapes from Peru are available from November to January of the following year. They are followed by grapes from Chile from February to June. Apricot consumption in China has been relatively low in recent years as Chinese consumers are not in the habit of consuming fresh apricots and prefer peaches instead (Euromonitor International, 2017). Nevertheless, net imports of fresh apricots increased from $1.5 million to $4.2 million between 2015 and 2017. Imported fruits typically fall

Figure 1.2. Chinese Fruit Imports' Growth



Source: International Trade Center (2018).

Figure 1.3. China's Net Imports of Fresh Sweet Cherries and Plums



Source: UN United Nations Statistical Division (2018).

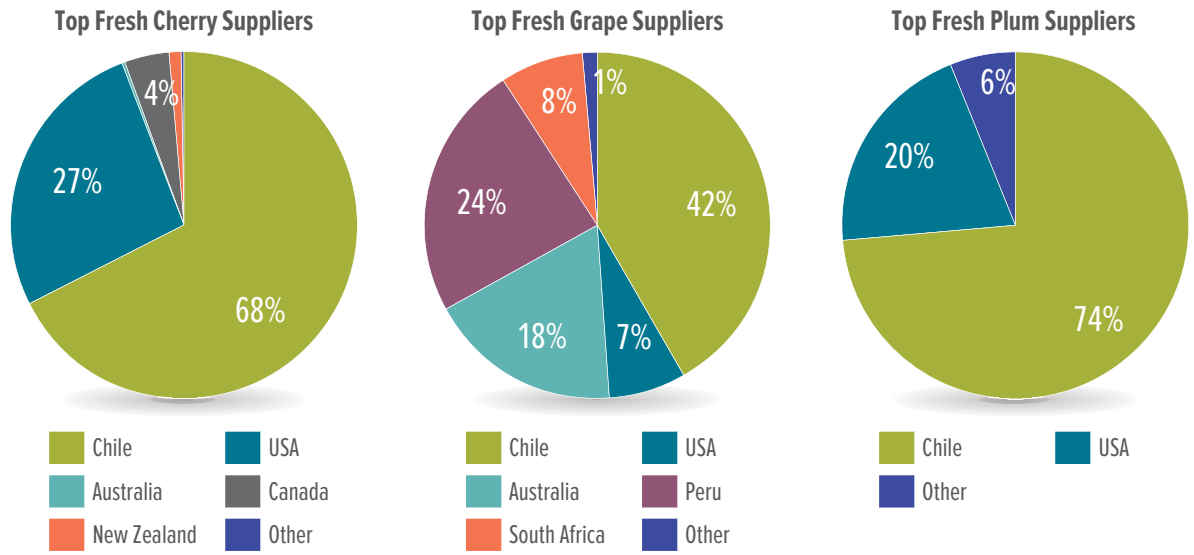
into premium price segments and are mainly sold in the first-tier cities, such as Beijing, Guangzhou, Shanghai, and Shenzhen. However, this trend is now also spreading to second-tier cities, such as Chengdu, Hangzhou, and Wuhan, largely driven by increases in e-commerce sales.

Chile and the United States dominate China's fresh fruit import market, particularly for sweet cherries and plums (Figure 1.4). In 2017, Chile supplied 68,951 tons of cherries, accounting for more than 60 percent of total Chinese cherry imports. The United States follows with almost all the rest of the imports. Similar trends exist for fresh plums. In 2017, Chile and the United States exported to China 29,911 and 8,272 tons of plums, respectively. The top contenders for the fresh grape import market are more diversified. In addition to these two countries, Australia, Peru, and South Africa have also reported strong export flows to China in recent years.

Fresh fruit exports get to China via two main channels—direct exports to mainland China or re-exports via Hong Kong (Figure 1.5). Direct exports to Chinese mainland ports (such as Guangzhou and Shanghai) as well as via Free Trade Zones—such as the ones established in Shanghai (2013), Tiajin, Guangdong, and Fujian (2015)—are the most preferred ways for fruit exporters to supply fruit to the Chinese market. Exporters opting to re-export via Hong Kong SAR, China do not pay any tariffs, taxes or duties. Upon re-export to China, distribution happens via 'grey'/ semi-legal channels (Producer Marketing Association, 2016), where imported fruits fully or partially avoid taxes or legal requirements associated with imports. In recent years, however, semi-legal re-exports via Hong Kong SAR, China have fallen as Chinese authorities have strengthened customs enforcement.

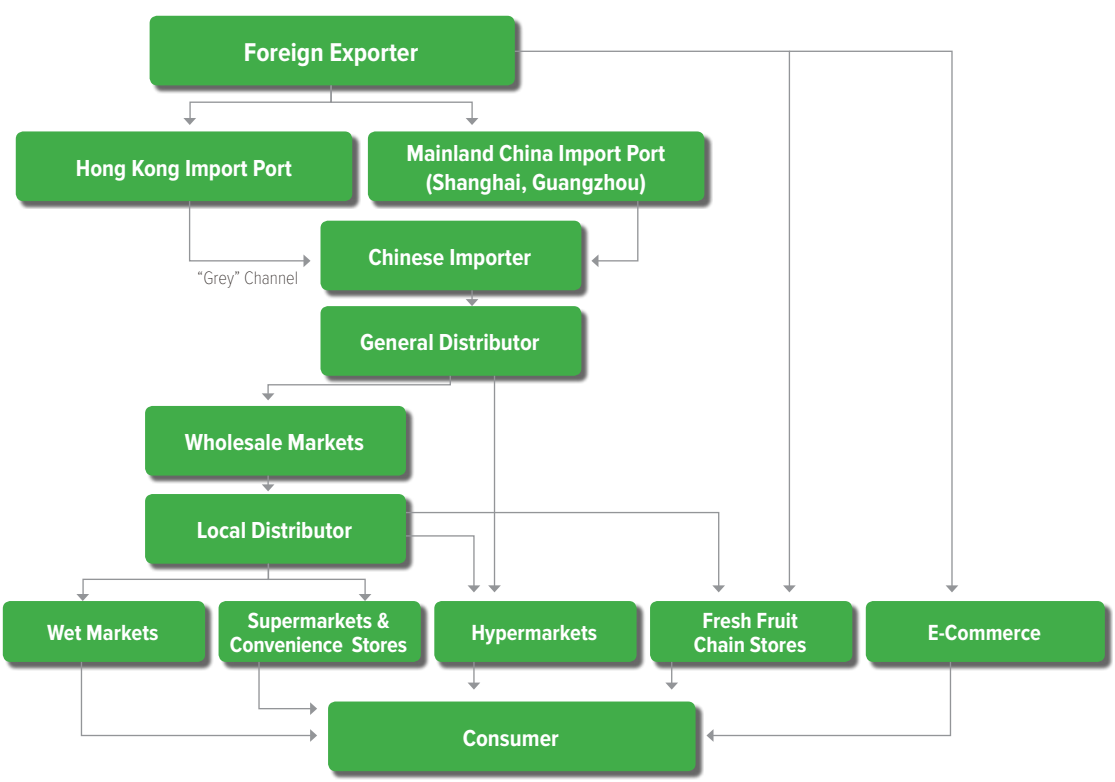
China's import fruit market is highly fragmented and competitive. At the start of the supply chain, there are numerous geographically scattered

Figure 1.4. Geography of Chinese Fresh Fruit Imports, by Country, 2017



Source: UN COMTRADE (2017).

Figure 1.5. Movement of Imported Fresh Produce in China



Source: Producer Marketing Association, 2016.

importers. The market share of the leading players, often within a region, is limited. For example, neither Dole Food Company Inc, a big importer in East China, nor Joy Wing Mau Group, a large import company in South China, have market shares of greater than one percent. Under such conditions, when exporting to China, a close relationship with a Chinese counterpart becomes important.

Further down the chain, primary distributors and wholesalers are the dominant buyers, purchasing more than 90 percent of imported fresh fruits. Approximately 35 percent of it goes directly to retailers such as premium supermarkets, hypermarkets, or online fresh fruit sales channels. Over 60 percent, however, is bought by secondary distributors who then sell to retailers such as independent and fresh fruit chain stores. Currently, none of the imported fresh fruits are sold for food processing and less than five percent goes to the food service channel.

There are four major wholesale markets for imported fruit in China, including (Figure 1.1):

1) Jiangnan Fruit and Vegetable Market in Guangzhou
2) Huizhan Fruit and Vegetable Market in Shanghai
3) Xinfadi Market in Beijing
4) Dili Agricultural Products Trade Center in Shenyang

Guangzhou serves as a distribution hub for the entire country, while Beijing, Shenyang, and Shanghai directly supply the end consumer markets, covering the Beijing-Tianjin-Hebei region, Northeast China, and Yangtze River Delta, respectively. Specifically, Guangzhou's Jiangnan wholesale market accounts for about 70 percent of all imported fruits and vegetables in China. From these major wholesale markets, imported fruit is then transported to Tier II and Tier III cities. Cold chain infrastructure is severely lacking in these cities, which is as a major constraint for fruit exports, but has been improving in recent years (Producer Marketing Association, 2016).

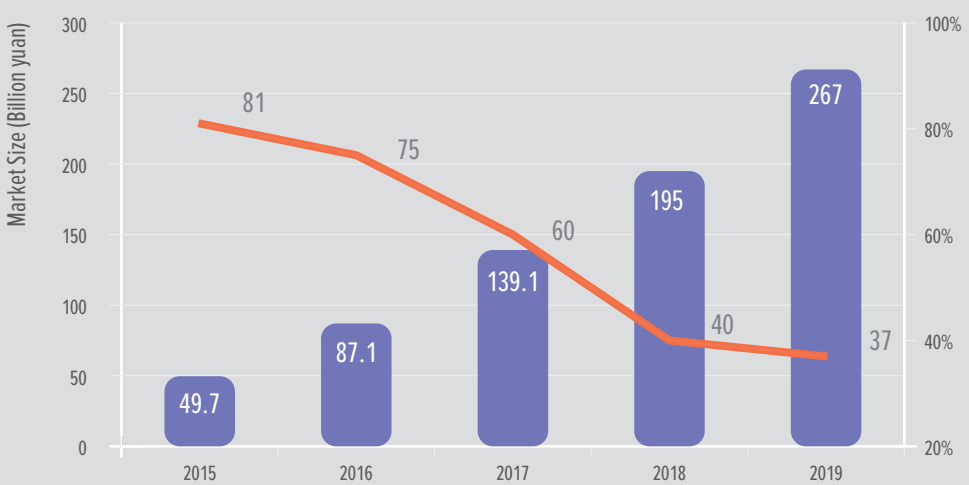
Two new trends are emerging for the retail market of imported fruits: online and offline retail channels via e-commerce, and a shift from large store to smaller store formats. Modern retail chains account for 67.4 percent of total grocery sales in China (Producer Marketing Association, 2016), and many foreign retailers, such as Carrefour and Metro Cash and Carry, continue to enjoy a strong reputation among Chinese consumers as sources of high-quality fresh produce. However, the overall growth rate of supermarkets and hypermarkets has slowed in recent years in response to online competition. Internet penetration and the spread of mobile technology has allowed consumers to easily buy imported fruits on e-commerce platforms or via social media such as Wechat or Weibo. Interestingly, large platform companies, such as Alibaba and JD, have been investing in omni-channel marketing by also opening "new retail" chains such as "HEMA" (brick and mortar retail outlets associated with Alibaba Group) and "7Fresh" (the offline retail chain for JD.com). In addition, to meet consumers' growing preferences for convenience and quality, especially in higher-tiered cities, many retailers are switching the focus from hyper- and supermarkets to smaller-scale convenience stores or boutique supermarkets. Carrefour and Yonghui, for instance, launched Easy Carrefour and Yonghui Membership Stores, which provide consumers with premium products including high-quality imported products.

Box 1.1. Fresh Fruit E-Commerce in China

The rapid growth of fresh fruit e-commerce in China reflects efforts from both the private sector and the public sector to meet consumer demands for convenience, diversity, quality, and affordability. Through the government's regulatory support and the industry's innovation, consumers have developed trust in fresh fruit e-commerce. Prior to e-commerce, many Chinese consumers relied on unregulated wet markets to supply their fresh produce. With fresh fruit e-commerce, China leapfrogged the supermarket system used in developed countries and arrived at a solution that provides consumers with greater convenience and quality assurance.

Fresh food e-commerce has gained unprecedented popularity in China, especially among young, educated urban consumers. In the past three years, China's fresh food e-commerce market has grown almost 400 percent, reaching 195 billion yuan ($29.5 billion[5]) in 2018 (Yunge Data, 2019). Fresh food e-commerce accounted for 19 percent of all household fresh food purchases in 2016 (BCG and AliResearch, 2016). In 2018, 285 million tons with a total value of 11 billion yuan ($1.66 billion) were sold online. Cherries, kiwis, and oranges rank among the most popular fruits in e-commerce. The majority of consumers that shop for fresh produce online are young, well-educated, and urban. The average age of fresh food online shoppers is 31, and 64.6 percent were born between 1982–1993 (Producer Marketing Association, 2018 and BCG and AliResearch, 2016). More than 80 percent of fresh food online shoppers have at least a university education, and most of them are very familiar with online shopping. About 82 percent of online fresh food shoppers live in first and second tier cities. Beijing, Shanghai, Guangzhou, and Shenzhen have the largest number of fresh food online shoppers (iResearch, 2018).

Chinese Fresh Food e-Commerce Market Size and Annual Growth Rates



Source: Yunge Data (2019), Chinese Internet Industry Review Report (2018).

Alibaba-backed Yiguo and JD-backed FruitDay are the key players in China's fresh fruit e-commerce industry. Yiguo was founded in Shanghai in 2005 with the goal of connecting domestic consumers to high quality and reasonably priced imported fruits. As Chinese consumer demand for imported fruits grew, Yiguo developed close relationships with suppliers and farms in 39 countries and six continents to directly import fruits to China and distribute products to 310 cities. Founded in Shanghai in 2009, FruitDay brands itself as a provider

(Box continued next page)

[5] USD value calculated using average 2018 exchange rate, $1 = 6.61 yuan.

(Box 1.1. continued)

of high-quality fruits. According to Fruitday co-founder Loren Zhao, imported fruits account for 90 percent of its online sales.[6] Both Yiguo and FruitDay started as vertical B2C (business-to-consumer) companies, specializing in the sale of fresh food and retaining full control over their entire supply and distribution chains. In 2014 and 2015, Yiguo and FruitDay began to receive generous investments from Alibaba Group and JD, two of the largest integrated B2C e-commerce companies in China with 61.5 percent and 24.2 percent market share, respectively (Producer Marketing Association, 2015). Instead of specializing in one type of consumer goods, Alibaba and JD provide platforms for the online retail sale of all types of consumer goods, including electronics, books, clothing, household items, and food and beverages. Alibaba and JD's investments in Yiguo and FruitDay created mutually beneficial partnerships. Yiguo and FruitDay gained access to Alibaba and JD's large customer bases, supplier connections, and supply chain management systems. In turn, Alibaba and JD benefited from Yiguo and FruitDay's cold chain capacities and experience in fresh produce management.

The Chinese government's long-standing support for digitization and private innovation created the digital infrastructure that has enabled the rise of fresh fruit e-commerce. In 2018, China's internet penetration rate reached 59.6 percent, almost three times that of 2008 (China Internet Network Information Center, 2019). Of those internet users, 98.6 percent, which is more than twice the global average, accessed the web using mobile phones (China Internet Network Information Center, 2019). Moreover, China's mobile payment penetration rate is more than 3.8 times the global average, accounting for 77 percent of all transactions in China (Deloitte, 2018). In 2018, 584.4 million users conducted 60.5 billion mobile payment transactions with a total value of 277.4 trillion yuan ($40 trillion).[7] The rapid development of this digital infrastructure reflects the government's long-standing support for digitization. From investing more than 4.3 trillion yuan ($621 billion) in physical internet infrastructure to implementing the "internet +" initiative and promoting agriculture-related e-commerce, the government has prioritized digitization in China's development strategy since 1993. The No. 1 State Document in 2018 reaffirmed the government's commitment to digital infrastructure development, supporting the growth of e-commerce.

In addition to developing digital infrastructure, the Chinese government also adopted policies that encourage, legitimize, and regulate e-commerce activities. To encourage e-commerce activities, the government reduced entry barriers by simplifying capital registration procedures and created financial incentives by reducing tax for e-commerce small and medium-sized enterprises (SMEs) and guiding investment funds to support e-commerce startups. In order to overcome the lack of trust in e-commerce, the government worked to legitimize it by standardizing the e-commerce credit information management system and requiring e-commerce vendors to register using their real names, addresses, and contact information (Hongfei Yue, 2017). In 2018, the National People's Congress passed its first ever comprehensive Electronic Commerce Law. This new law addresses e-commerce activities broadly and creates a cohesive regulatory framework that allows for better coordination among various government departments. Under this law, e-commerce operators are responsible for protecting consumers' personal data and preventing the circulation of fraudulent products. The law also stipulates that e-commerce operators must deliver goods or services to consumers in accordance with previous agreements and take responsibility for all risks involved in the transportation and delivery stages.

As consumer preferences have shifted towards imported fruits on e-commerce platforms, the Chinese government has adopted increasingly open trade policies to streamline the import process and reduce transaction costs. Since 2013, the Chinese government has established 11 Free Trade Zones (FTZ), maintained 14 Free

(Box continued next page)

[6] https://www.eurofresh-distribution.com/news/look-inside-china%E2%80%99s-premium-fruit-e-tailer-fruitday

[7] http://www.chinadaily.com.cn/a/201903/21/WS5c932294a3104842260b1cc9.html

(Box 1.1. continued)

Trade Agreements (FTA), and reduced tariff and value-added tax (VAT) rates for many cross-border e-commerce products (JD Research, 2018; Deloitte, 2018). These trade policy measures enable fresh fruit e-commerce companies to source imported fruits at lower prices and deliver from farm-to-table in as little as 72 hours.[8] Since brand recognition is important to Chinese consumers, fresh fruit e-commerce companies often partner with well-known brands such as the Zespri brand of kiwis from New Zealand, Capespan from South Africa, Driscoll berries from the United States, FruitMasters from the Netherlands, and Prize from Chile.[9] Furthermore, Chinese companies are increasingly visiting farms and plantations abroad and signing multi-year import agreements with countries that produce high quality fruits. For example, Alibaba signed a three-year agreement with Thailand pledging to import 3 billion yuan ($454 million) worth of monthong durians.[10] In 2015, FruitDay became the first fresh fruit e-commerce company to establish operations in the Shanghai Yangshan FTZ. Inside the FTZ, shipping containers can be opened for quality checks immediately, and products can be released in 6–7 hours. Previously, customs inspection took 3 days as imported shipments were unloaded and transported to a quality check center outside the port and then transported back for final clearance before being released. This change has not only allowed FruitDay to cut costs by 20 percent but has also dramatically improved the quality of imported fruit by shortening the supply chain.[11]

Private sector efforts to improve cold chain capacity, logistics, and consumer convenience have also fueled the growth of fresh fruit e-commerce in China. Fruits are highly perishable and therefore require temperature-controlled storage and transportation systems. Despite the government's investment in cold chain R&D and policy commitment to build "a green, safe, modern cold chain," China's cold chain capability remains underdeveloped (The State Council, 2017; Zhao et.al. 2018). The high transaction cost of long-distance transportation and delivery coupled with the low profit margin of fruits initially resulted in poor business performance (Jin, Li and Li, 2017). Of the 4,000 fresh food e-commerce companies started in the past decade, only 1 percent was profitable by 2016. In that year alone, 14 fresh food e-commerce companies, including Amazon-backed Yummy 77, went bankrupt.[12] The companies that survived partnered with integrated e-commerce companies to increase their sales volumes and lower the unit delivery cost of their products. By partnering with Alibaba, Yiguo not only received investments to enhance its own cold chain system, ExFresh, it also gained access to Alibaba's big-data backed logistics management system, Cainiao Network. Improvements in cold chain and logistics capabilities enable fresh fruit e-commerce companies to deliver consumer orders within 3 days. To further reduce the cost of cold chain logistics, companies have shifted their mode of operation from online-only retail to O2O (online-to-offline) retail, creating distribution hubs near urban consumers and limiting the distance of last-mile deliveries. Hema, the brick-and-mortar store for Alibaba, has opened more than 100 branches in 21 cities around China.[13] Meanwhile, 7Fresh, the offline store for JD, attracted more than 10,000 customers each day during its trial period (MarketingToChina, 2019). The O2O business model allows e-commerce companies to deliver orders to consumers located within a certain distance of their offline stores in less than 30 minutes.[14] These delivery services save time for consumers and offer them convenience without sacrificing trust or quality.

(Box continued next page)

[8] http://sh.eastday.com/m/20150919/u1a9036500.html

[9] https://www.freshplaza.com/article/9021017/china-jd-com-wants-to-ship-fruit-from-all-over-the-world-to-china-in-48-hours/

[10] http://www.sohu.com/a/228824995_117373

[11] http://www.ebrun.com/20150720/141367.shtml; http://sh.eastday.com/m/20150919/u1a9036500.html

[12] https://news.newseed.cn/p/1334215

[13] https://www.freshhema.com/

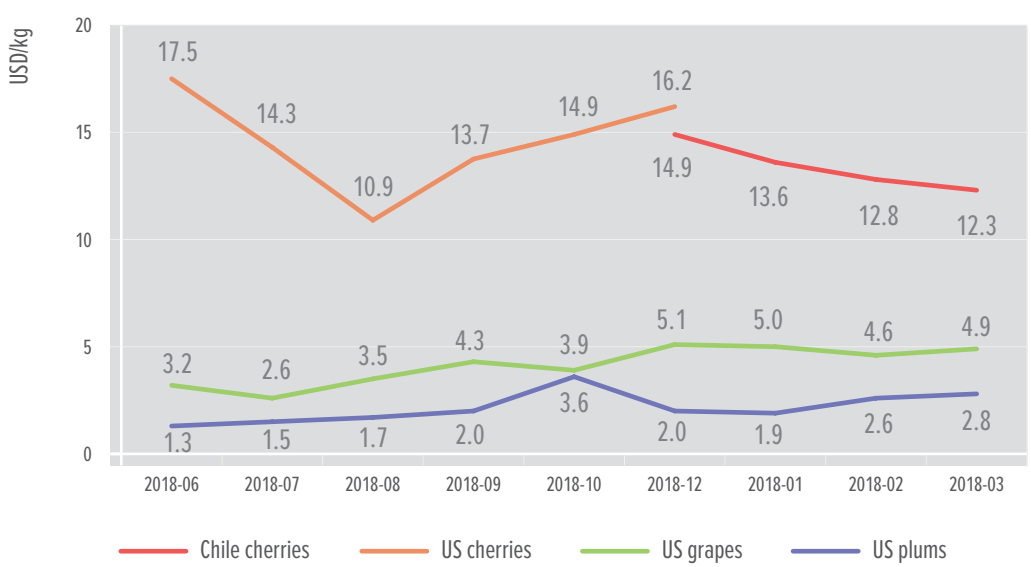
[14] https://new.qq.com/omn/20171214/20171214G0T2NH.html

(Box 1.1. continued)

Fresh fruit e-commerce companies gained consumers' trust and increased consumers' willingness to shop for fruits online by offering excellent customer service and enhancing product traceability. Many consumers may also be wary of purchasing fresh fruit online because of quality concerns. To build Chinese consumer trust in online purchasing, fresh fruit e-commerce companies such as Yiguo and FruitDay instituted freshness and money-back guarantees. Under these policies, consumers unsatisfied with fruit quality can easily request a refund or exchange via their mobile app, and delivery personnel will pick up the returned order at their door. The satisfaction guarantee policies successfully reduced the uncertainty of fruit quality in online retail and improved consumer trust. Moreover, fresh fruit e-commerce companies leveraged digital technologies to improve fruit traceability. Under Alibaba's Mantianxing initiative, e-commerce consumers can scan a QR code on their product and review information such as fruit origin, growth and transport conditions, and nutritional value. The improved traceability further enhances consumer trust by providing information that assures the safety and quality of the products. As a result, fresh fruit e-commerce achieved a consumer satisfaction rate 3 percent higher than that of offline retail (BCG and AliResearch, 2016).

Cherries offer the highest value in the Chinese markets but are also associated with higher price volatility compared to imported grapes and plums (Figure 1.6). For example, in 2018 at Guangzhou Jiangnan Market, early season cherries from the United States reached $18 per kilogram in June. After dropping almost 30 percent to a low point in August, the price of U.S. cherries continued rising through the end of the year. Then cherries from Chile priced at $13-15 per kilogram arrived in the market, and the price slowly decreased after the new year. For imported grapes, the wholesale price was stable from March to July, and steadily increased later in the year. The wholesale price of

Figure 1.6. Wholesale Prices of Imported Cherries, Grapes and Plums in Guangzhou Jiangnan Market



Source: http://www.jnmarket.net/

imported plums, however, was relatively consistent during the year despite a spike in October. There is no obvious price difference between Guangzhou and Beijing markets. Longer term wholesale prices of cherries, grapes and plums imported from the United States showcase similar trends. Cherry prices varied a lot throughout the year, ranging between 60 and 120 yuan per kilogram. In general, the price first peaked when the early-season cherries hit the market around May-June and reached a high point again around November-January in response to strong demand during the holiday season. Grape prices also experienced a small increase towards the end of the year. Plum prices, on the other hand, have been relatively stable over recent years.

1.2. Opportunities and Constraints for Central Asian Fruit Exporters in the Chinese Markets

Central Asian countries have the potential to take advantage of rising Chinese fruit imports. The region's geographic location, natural resources, untapped fruit yield potential and the possibility of greater private sector investment through policy reform create the necessary preconditions for the Central Asian countries to increase their horticulture exports to China. In addition, analyses in this study show that Uzbekistan, Tajikistan, and the Kyrgyz Republic have a comparative advantage in the production and export of horticultural products due to favorable climatic conditions and low production costs and, hence, can be competitive in the Chinese markets.

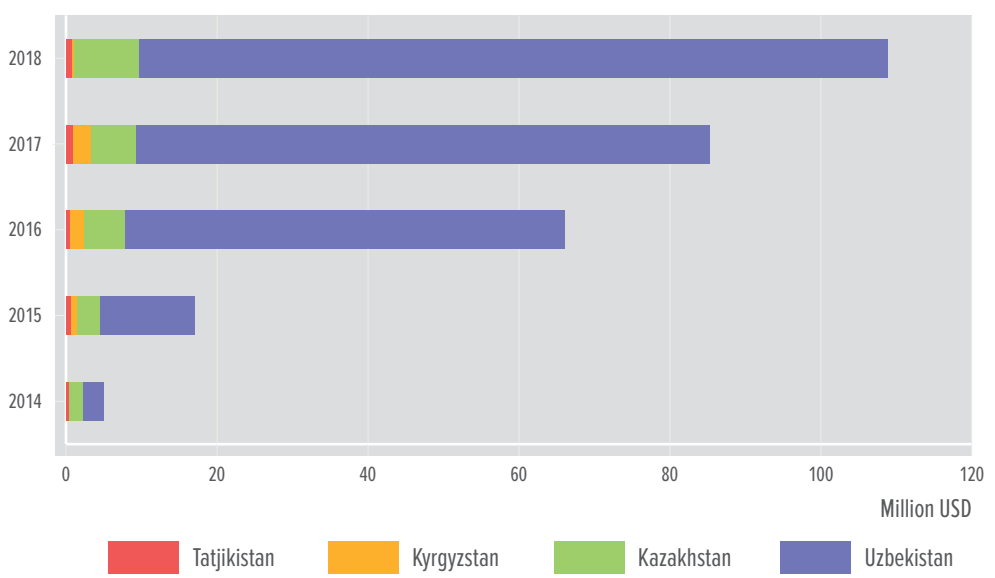
However, taking advantage of the opportunity Chinese fruit markets present is not easy and a lot needs to be done by the Central Asian countries to do so. First, Chinese markets require consistency in the quality and volume of the fresh fruit supplied by exporting countries (see annex 4 for more details). Second, entering China necessitates the existence of sophisticated quality control systems and logistics systems to ensure that products are grown and preserved in their best possible condition to meet China's stringent quality and food safety standards. Third, the Chinese fruit markets' highly fragmented and competitive structure necessitates a close relationship with a Chinese counterpart on the ground. Fourth, Chinese consumers value attractive packaging and products with recognizable brands. As this study shows, the majority of Central Asian fruit producers are small farmers who have limited access to financial and knowledge resources, which results in limited production volumes and inconsistent supply quality. While small farmers across the region have adjusted to trading fruits domestically through a network of local traditional traders, entering international markets requires a different level of bureaucracy and procedural conformity for which Central Asian small-scale producers currently lack capacity. At the government level, the quality and capacity of food and safety systems, customs control and inspection bodies do not meet the requirements of Chinese markets, putting Central Asian exporters at a disadvantage vis-à-vis major suppliers to China, such as Chile or the United States. In addition, limited export promotion capacity results in most regional exporters being unaware of the existing opportunities in the Chinese markets and being unable to understand the requirements to enter them.

2. Russia 2030: New Trends in the Central Asian Traditional Market

Historically, Russia has been a traditional market for Central Asian fresh fruit.[15] According to official trade statistics, Central Asia exported $108.8 million worth of fresh fruit to Russia in 2018 (Figure 2.1), accounting for 25 percent of Central Asia's total fresh fruit exports. If dried fruits and nuts are considered, this share rises to 43 percent. These estimates are likely to be on the low side, as they do not include unrecorded re-exports via Kazakhstan to Russia. Between 2014 and 2018, the region's fruit exports to Russia grew by a factor of 21, primarily from surging Uzbek exports that increased from $2.8 million in 2014 to $99 million in 2018. Exports from the Kyrgyz Republic and Tajikistan have shown healthy growth over the same period as well—from $34,453 to $375,550 and from $364,791 to $691,774, respectively.

Despite Central Asian fruit exporters' traditionally large presence in the Russian stone fruit markets, they have been slow to adjust to the growing role of modern grocery retail chains. Modern grocery retail chains in Russia have been growing at an accelerated pace, largely at the expense of traditional retail markets, following the trajectory observed in many developed countries. According to Beragua (2014), the compound annual growth rate for modern food retail between 2007 and 2014 was 25.5 percent, compared to a total food retail growth rate of 13.3 percent. The trend is projected to continue. In the same period, traditional food retail's share in total

Figure 2.1. Central Asian Fresh Fruit Exports to Russia



Source: International Trade Center (2018).

[15] Fresh fruit refers to HS codes 080610 (grapes, fresh), 0807 (melons and papaws, fresh), 0808 (apples, pears and quinces,fresh), 0809 (apricots, cherries, peaches, plums and sloes, fresh), and 0810 (strawberries, fresh)

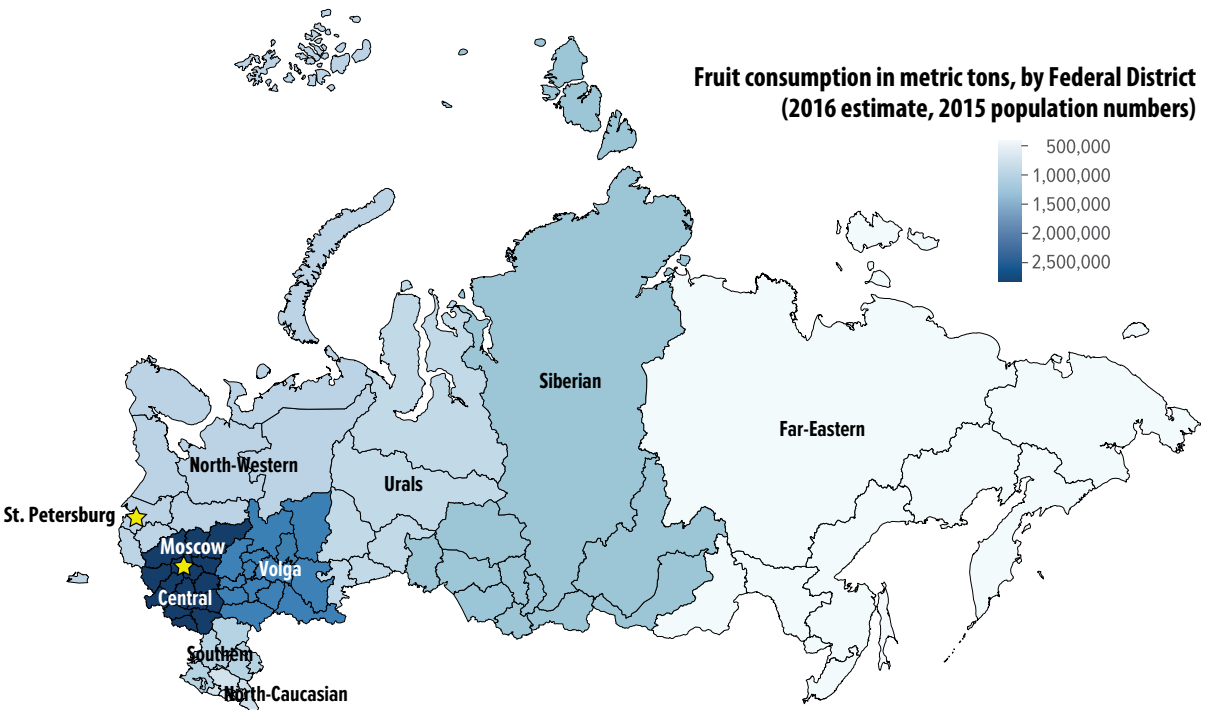
food retail decreased from 74 percent to 41 percent. However, Central Asian suppliers remain largely detached from modern retail chains in Russia. Most Central Asian fruits are sold in Russia's open-air markets during the summer season. For example, in 2018, grapes imported by modern retail arrived mainly from Turkey and India, while grapes directly supplied by Central Asian countries to modern retail were limited to 3 percent of the total export volume.

The growing size and market power of Russian modern retail chains create both challenges and opportunities for fruit exporters. Similar to a trend observed in the developed world, Russian modern retail chains are becoming more concentrated and play an increasingly larger role in food imports, including those of fresh fruit. As a result, modern retailer requirements for cost, quality, safety, and product variety are determining what types of exporters can gain access to the fresh fruit retail chain. Russian modern retail chain requirements act as an effective barrier to participation in the chain for exporters who are unable to meet these requirements. However, the reward can be considerable for those exporters that can participate. According to Russian customs statistics, the average import price per kilo of table grapes paid by retailers was up to 30 percent above the average import price.

Modern retail transformation in Russia is driven by young and higher-income consumers, who are also the main consumers of fresh stone fruit in the country. While food products as a whole are income-inelastic, fresh fruits are purchased disproportionately by higher-income consumers. In Russia, this is particularly true for the stone fruits that occupy a smaller niche in the market as they tend to be more expensive. In 2016, Russians consumed 11.8 million tons of fruit or an average of 73.7 kg/person (Figure 2.2). Moscow and St. Petersburg, Russia's wealthiest cities, drive the country's fruit consumption trends. In 2016, these two cities accounted for 11.4 percent (or 1.4 million tons) of the country's total fruit consumption. They have the highest per capita consumption of fruit—81.9 kg/person in St. Petersburg and 76.5 kg/person in Moscow—which is attributed to their higher income levels. Educated and wealthier consumers in these megapolises increasingly tend to demand fruits of higher quality and safety standards, and that are conveniently available at the nearest retail store. According to the FDF Group study (2015), the most popular fruits among Russian consumers were apples (80 percent of Muscovites purchase apples on a regular basis), followed by citrus fruits (40 percent), bananas and grapes (30 percent), and pears (25 percent). Stone fruits are less in demand. For example, cherry imports accounted for just two percent of total imports in a 2018 estimate.

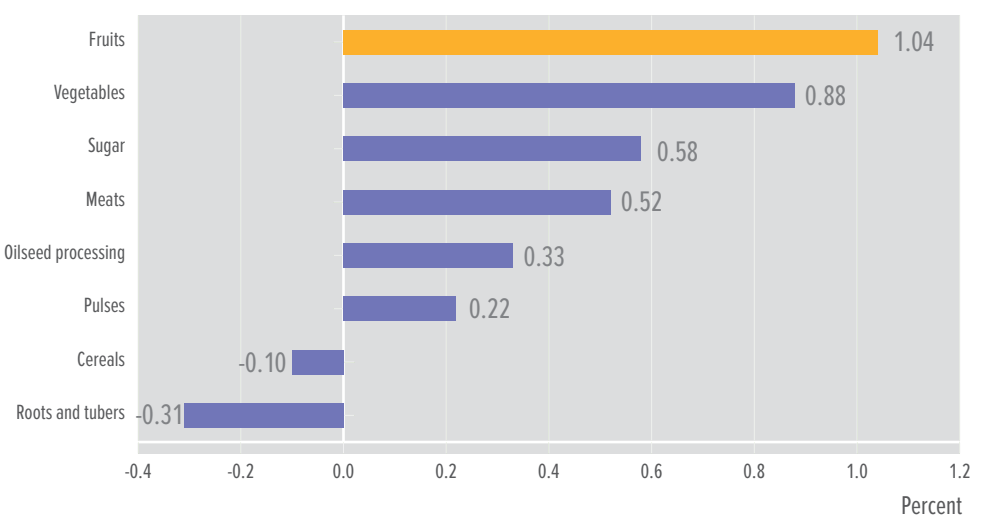
Rising incomes and changes in dietary habits will accelerate the demand for fresh fruit in Russia, creating opportunities for those exporters that can adjust to the country's food retail trends. According to 2015 IFPRI IMPACT projections, demand in Russia for fruit will be the fastest-growing category of food demand (Figure 2.3) by 2030, reaching $11.4 billion, with an average growth rate of 1.04 percent annually. Temperate fruits are expected to account for 62 percent of that demand. This growing demand presents an opportunity for Central Asian fruit exporters to increase their presence in Russian markets, provided they can meet the volume, quality standards, and fruit supply consistency requirements in the changing food retail environment. The ability of Central Asian fruit exporters to penetrate Russian modern retail chains would serve as preliminary proof of their readiness to comply with the requirements posed by higher-end export global markets.

Figure 2.2. Fresh Fruit Consumption Across Russian Regions[16]



Source: Federal Service for State Statistics, 2019.

Figure 2.3. Projected Average Annual Growth in Russian Food Demand, 2017–2030



Source: IFPRI IMPACT model projections (2015); SSP2 pathway, no climate change assumption; Model version IMPACT 3.2.1.

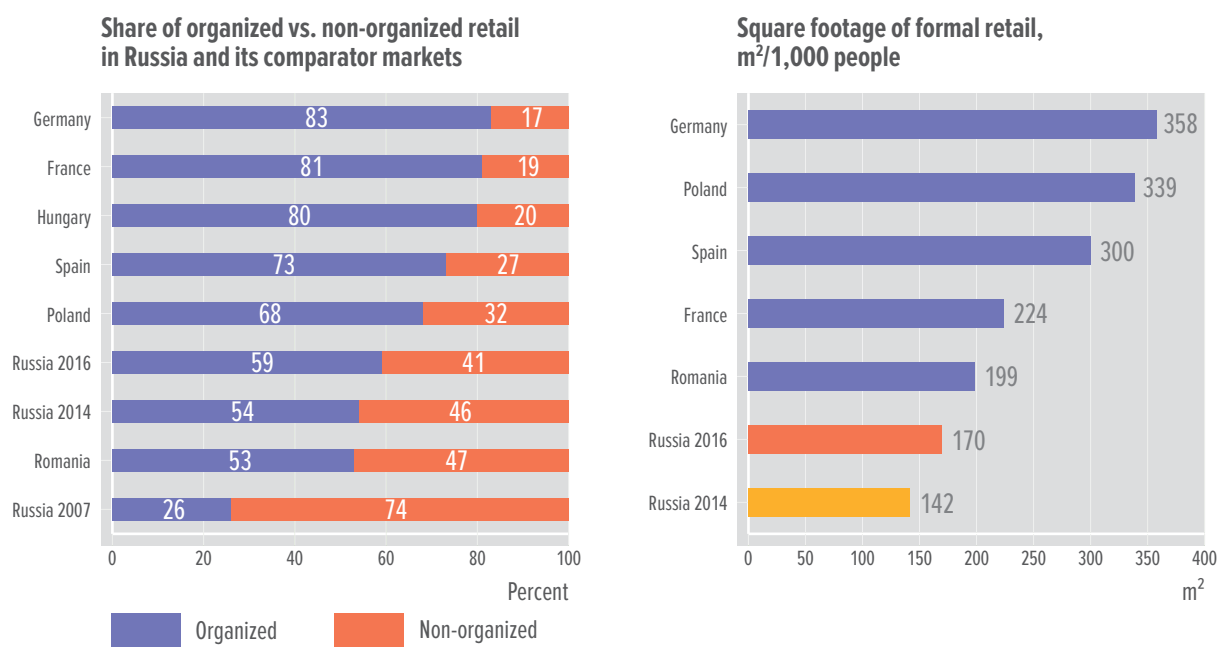
[16] The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgement on the legal status of any territory, or any endorsement or acceptance of such boundaries.

2.1. Evolution of Russian Food Retail

In a trend that will most likely continue, food sales through modern retail channels have been steadily increasing in Russia while sales through traditional stores and open markets have been decreasing. In 2018, modern retail channels accounted for about 38.5 percent of the Russian grocery market but differed significantly across regions, depending on population density and income levels. For example, the Central Federal District (which includes Moscow) is the smallest but most populous region of Russia and remains the largest retail market in the country, accounting for 35 percent of total modern retail sales. The Siberian region, which is nine times larger than the central region in terms of area, accounts for only 12 percent of modern retail markets, while the Russian Far East region has the largest land area but accounts for only five percent of the country's modern retail turnover, due to its low population density. Growth in Russian modern retail chains is expected to mirror trends observed in developed countries. In 2016, Russia had 170 square meters of grocery retail space per 1,000 inhabitants, less than the benchmark country average of 284 square meters per 1,000 inhabitants (Figure 2.4).

The share of fresh produce sold in modern retail stores also has been growing, particularly in large cities. According to a June 2016 Nielsen survey of 1,000 respondents residing in 30 megacities across Russia, more consumers preferred modern retail stores as the point of sale for fresh fruits as compared to street markets. For instance, 45 percent of surveyed consumers preferred hypermarkets as the point of sale for fresh fruits and vegetables; 50 percent preferred discount stores; 23 percent preferred supermarkets; and 43 percent of the respondents

Figure 2.4. Evolution of Modern Food Retail in Russia



Source: Nielsen company, 2016.

preferred open markets and fairs.[17] Modern retail saturation is higher in larger cities, which also have the highest per capita fruit consumption. According to the FDF Group, supermarkets were named the main distribution channel in Moscow for fresh produce in July 2015, with 92 percent of respondents citing this channel as their point of purchase over the past three months. Traditional markets comprised just 33 percent.

In 2018, the largest player in the Russian grocery market, both in terms of sales value and number of stores, was a Russia-based chain—X5 Retail Group (Table 2.1). It was followed by Tander, another domestic player, and Auchan, a French retail chain. Most of these retail companies operate stores in varying retail formats, such as supermarkets, hypermarkets, discount operations, and convenience stores, that allow them to keep customers irrespective of changing shopping habits.

Online grocery shopping has become the fastest-growing sales channel in Russia and an important part of the modern retail business model. According to INFOLine, the market volume of online food sales in Russia grew by almost 50 percent in 2018 from 2017 and generated $353.8 million. Online sales of the X5 Retail Group grew by 600 percent. Other retailers have online stores as well, including Auchan, Lenta, O'KEY, and Azbuka Vkusa. Turnover of the leading third-party delivery service—iGooods—increased from $6.1 million to $18.5 million. Specialized produce delivery services exist as well, including fruitonline.ru, edoque.ru, multi-frutti.ru, fruitymarket.ru, and others. Along with daily orders, consumers may order fruit gift and surprise boxes. Overall, online food shopping remains limited but is among the fastest-growing segments in retail.

One of the driving forces behind the growth of formal retail is the increase in government control over VAT and excise duty collection in all sectors of the economy over the last ten years. This has led to the gradual centralization of retail in favor of modern vis-à-vis street retail. As an example, in 2007 and 2008, street kiosks and common food sales outlets,

Table 2.1. Russia: Top 5 Grocery Retailers by Sales Turnover

N°	Retailer	Chains	Country of origin	Direct produce import	Sales revenues (USD bln) 2017	Growth y-o-y, %	# of stores Dec 2018
1	X5 Retail Group	Pyaterochka, Perekrestok, Karusel	Russia	yes	21.25	25.5	14,431
2	Tander	Magnit, Magnit Semeynij, Magnit Cosmetik	Russia	yes	18.78	5.8	17,442
3	Auchan	Auchan, Auchan City, Nasha Raduga, Atack	France	na	6.41	-6.2	314
4	Lenta	Lenta	Russia	yes	6.02	19.2	380
5	Dixi	Dixi, Victoria, Megamart	Russia	yes	4.65	-9.4	2,707

Source: Retailer data.

[17] Respondents could pick more than one point of sale for fresh fruits.

were actively pulled down; such demolitions were repeated in 2011–2016. According to media reports, in 2016 over 2,000 Moscow kiosks (out of 16,000) were demolished, as were 250 Ekaterinburg kiosks (out of 4,000) and many kiosks in other cities. Fresh markets have been closing down or changing their profiles. For instance, in Moscow several markets were turned into gastro-hubs, with food courts occupying most of the space. Strict fiscal policy also influenced traditional wholesale markets such as Cherkizovsky (Moscow), Pokrovskaya, (Moscow), Sofiyskaya (St. Petersburg), 4th warehouse (Ekaterinburg), and the Khilokskiy market (Novosibirsk). Several zones within these markets were closed; others are under frequent supervision from fiscal and law enforcement agencies.

Young, educated, and wealthier consumers are another driving force behind modern retail growth acceleration. Millennials, the first generation born after the collapse of the Soviet Union, wield most of the country's economic power. Roughly 21 percent of the population, or 30 million people, belong to this stratum. Millennials are active users of the internet and are savvy shoppers that check on a product's quality and real competitive price. Millennials expect speed, simplicity, and comfort when they shop. Online shopping is the category with the most rapid turnover growth in recent years. Packaged convenient food, including produce, is another trend. Brand recognition among consumers has been increasing as well. This trend is reflected in the robust development of branding in the produce sector. Local producers are following global leaders of the fruit industry and developing their own trademarks. Country of origin and traceability is becoming important, as consumers look for stories behind products and an emotional component in their shopping experiences. Consumers are also more environmentally cautious than ever and are increasingly interested in ecologically sound and healthy produce. Cost-effective products that meet these expectations are in demand.

Educated and wealthier consumers in Moscow and St. Petersburg demand fruits of higher quality and safety, conveniently available at the nearest retail store. According to interviews conducted with leading Russian retailers, Russian consumers are looking for safe and high-quality fresh produce with a consistent flavor that is available at their convenience and at a competitive price. This has translated into the following requirements for fruit that Russian retail chains impose on their suppliers:

- ✓ ***Produce quality and safety:*** Products must be visually appealing with a shape, texture, and flavor that is attractive to customers.[18] If the number of defective products exceeds the limit specified in the instructions during the retail chain distribution center's receiving of goods, the products will not be accepted. Modern retailers make food safety and phytosanitary standards their priorities to address public health risks and protect their reputations. Some premium retailers place their own phytosanitary controls on incoming produce. For producers and exporters, this requires sophisticated food quality and safety systems and logistics to ensure that products are grown and then preserved in the best possible state.

- ✓ ***Supply reliability:*** Formal markets require a long-run period of supply in consistent

[18] Please see Annex 8 for details on leading retailer quality requirements for selected stone fruits.

volumes. This places emphasis on logistics and extended supply seasons.

- ✓ ***Competitive pricing:*** Russian consumers remain extremely frugal, with consumer purchasing power having declined over the past couple of years due to an economic crisis. Price promotions have become the main purchasing impulse and sometimes are the only reason for the purchase. The share of sales through promotions has increased: in 2016, it was 53 percent; in 2017, 58 percent; and in 2018, it was 64 percent. In food categories, the average discount in 2018 increased from 20 percent to 23 percent in order to stimulate sales. Suppliers must be able to keep prices down while maintaining high quality and consistent supply. To offset price reductions, supermarkets are trying to reduce their own transaction costs by dealing with fewer, larger suppliers and avoiding middlemen—one of the reasons more and more retail chains are involved in direct imports of fruit.

- ✓ ***Variety and value-added:*** Apart from extending their fresh produce ranges and increasing the number of fruit varieties, certain retailers also target consumers who look for a unique fruit assortment, for example, organic, farmer, or gourmet fruits. Guaranteed high quality and traceability of products are important. Retail formats that cater to such consumers have been growing in metropolitan areas. Further value-adding improvements designed to attract customers include the development of new product combinations, such as washed and peeled fruits ready for immediate consumption. Preference is given to suppliers that are able to meet quality packaging requirements, such as standard boxes, or euro pallets.

Box 2.1. Overview of the Retail Chain's Requirements for Imported Fruit (Example from X5 Retail Group)

1. Product requirements

Legal requirements:

- ✓ Phyto-sanitary: lack of quarantine objects, bacteria, molds or viruses
- ✓ Food safety: lack of residual pesticides or micro-organisms
- ✓ Traceability: ability to track an initial product producer and all value chain owners (using appropriate hard or soft copies of documents)
- ✓ Supporting documents:
  - Commodity invoice
  - Declaration of conformity
  - Quarantine phytosanitary documents
  - Quarantine certificate (issued when a commodity leaves a quarantine phytosanitary area)
  - A state phytosanitary control act
  - A certificate, which confirms a lack of quarantine in the particular areas
- ✓ Marking – in accordance with the technical regulations of the Customs Union called 'Marking of Food Products'.

(Box continued next page)

(Box 2.1. continued)

Additional requirements of retail networks:

- ✓ Quality standards (see Annex 8 for more details):
  - Minimum allowed requirements
  - Ripeness requirements
  - Classification
- ✓ Regulations related to calibration
- ✓ Regulations related to admittance:
  - Quality-related admittance
  - Size-related admittance
- ✓ Regulations related to appearance of products:
  - Homogeneity
  - Packaging
  - Product origin
  - Product specifications

2. Transportation requirements

There are specific requirements, which have to be fulfilled when a commodity is delivered to the Distribution Center; there are requirements for commodity packaging, transportation rules, temperature modes, etc. All such requirements are reflected in supply agreements.

- ✓ Fresh fruits and vegetables should be delivered to the Distribution Center using specially equipped transport.
- ✓ A truck carcass should be clean, without any smell or unnecessary items.
- ✓ All pallets in the back of the truck should be lined up carefully and be easily accessible for offloading. If the truck is not full, the pallets should be fixed with special ropes, belts or rods to ensure that they are stable and not damaged while being transported.

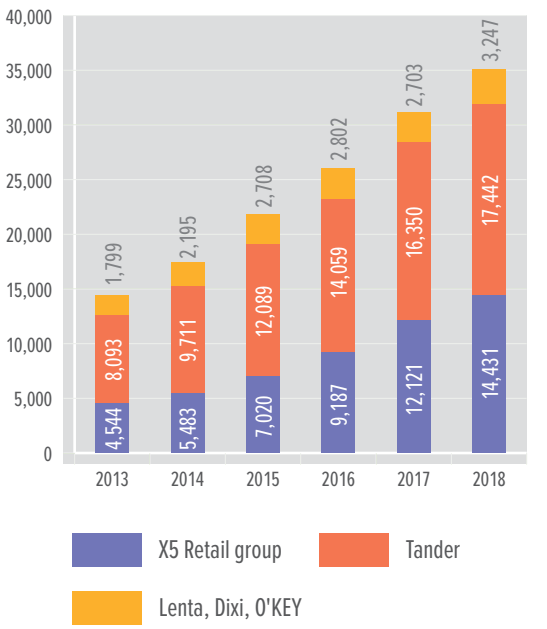
3. Requirements to pallets

- ✓ Commodities in any type of boxes should be supplied only on Euro pallets.
- ✓ Vegetables supplied in nets should be placed onto wide pallets.
- ✓ All commodities placed on a single pallet must have the same SKU number, shelf life, packaging type and approximately the same weight of a single unit.
- ✓ All boxes and nets should be clean and firm to ensure the safety of commodities throughout all transportation and sales stages.
- ✓ Commodities placed on pallets should not stick out of the edges of the pallets, ensuring smooth and uninterrupted transportation of commodities.
- ✓ Commodities in nets and boxes have to be covered with a stretch film; the lowest row on a pallet has to be affixed to the pallet firmly.
- ✓ Commodities in carton boxes have to contain additional corners and tape.

An important characteristic of Russia's modern food retail is its increasing market concentration, which has resulted in several key players dominating fruit sales in the country. Consolidation within the retail sector is expected to continue during the next few years, primarily within the top ten

retailers. The number of stores operated by leading retail groups in Russia (Tander, X5, Dixi, Lenta, Auchan) increased by more than 30 percent between 2017 and 2018 (Figure 2.5). In addition, the retail chains are becoming increasingly dominated by federal retailers, while regional players are often forced to leave the market as they face lower consumer purchasing power and often lose in price competition. Currently, market concentration in food retail is at a moderate level. However, experts predict the top ten retailers will control more than 60 percent of the food retail market in the near future, while the share of modern versus traditional retail could exceed 80 percent. As the size and market power of top retailers continues to increase, so will their influence on food standard regulations in the country.

Figure 2.5. Increasing Concentration of Modern Food Retail in Russia, Number of Stores



Source: Nielsen, 2018.

Another characteristic of Russian modern retail chains is their increasingly important role in direct fresh fruit imports. Historically, fruit distribution in the country has been managed by specialized produce import companies and intermediary wholesalers. For the last ten years, modern retail chains have been playing a growing role in the direct import of fruit. Four of the top five retailers in the country are engaged in the direct import of fresh produce (Table 2.1). X5 Retail Group and Tander, the two largest retailers in Russia, are also leading the development of fruit logistics chains. Currently, there are roughly 100 distribution centers operated by the largest retail market participants. About 40 percent of the distribution centers—that is, 42 of them—belong to the X5 Retail Group, and distribution center development continues. In 2017, X5 Retail Group launched seven distribution centers with a total storage area of 166,700 square meters. Another 37 distribution centers are operated by Tander. X5 Retail Group's share of direct imports in the produce category reached 50 percent of total produce sales,[19] working with more than 25 different countries. The smaller federal retailers, including Lenta, Dixi, O'KEY, and Spar/Semya, as well as regional retailers including the Maria-Ra retail chain in Siberia and Samberry in the Russian Far East, are also involved in the direct import business. In such conditions, close and consistent relationships between retailers and exporters become imperative for maintaining a presence in Russian retail markets.

Direct imports allowed companies to decrease the number of intermediaries in the industry, and as a result reduce consumer prices and regulate assortment during peak demand periods. Until

[19] https://ru.reuters.com/article/companyNews/idRUL5N1ND1VV

recently, regional wholesalers have played an important role in distributing fresh produce across the country. They would buy it at wholesale bases, mainly in Moscow or St. Petersburg, and make deliveries to regional retail, traditional retail, or other intermediaries across the country. Due to this, there could be up to four or five intermediaries involved in getting fruits to consumers. With the larger retailer role in direct produce imports, the chain of intermediaries has been reduced, while wholesalers are turning into packing and logistical service providers for retailers. In such an environment, preference has been given to suppliers that are able to meet retail quality requirements in terms of commercial quality (caliber, shape, mechanical defects), packaging, and predictable supply volumes.

2.2. Central Asian Fruit in Russian Retail Markets: The Case of Table Grapes

Major retailers' import shares vary across different types of fresh produce, depending on the degree of perishability. The perishability characteristics of different fruits may determine the degree of retailer involvement in their direct import. Retailer direct import logistics do not allow produce sorting upon delivery to a retailer's distribution center, so the product needs to arrive in perfect condition with minimal waste. If the number of defective items exceeds the limit specified in the instructions when the goods are received in a retail chain's distribution center, the delivery is not accepted. If products are declined by surveyors at a retailer's warehouse, it is illegal to change the consignee and sell the products through an alternative channel because import documentation is assigned to a certain consignee (the retailer). That means the entire container of a declined product is a loss. As a result, retailers import only limited volumes of fruits with high perishability characteristics, such as cherries.

Consequently, the retailer share of direct imports of table grapes, which have lower levels of perishability, has been growing. In 2018, major Russian retailers imported 19.4 percent,[20] or 52,000 tons, of total grape imports. Tander and X5 Retail Group were leading table grape importers in Russia. According to expert estimates, in 2018 they jointly imported 16 percent of total Russian grape import volumes, or roughly 43,000 tons. Tander imported 10 percent of the total Russian grape volume, or roughly 27,000 tons. X5 Retail Group imported six percent of the table grape volume, or 16,000 tons. Since grapes are also traditional Central Asian exports to Russia, this market offers an interesting case study on the benefits and challenges of entering Russia's formal retail chains.

In 2018, Russia was the fourth-largest global importer of fresh table grapes (HS080610), after the United States (585,000 tons), the Netherlands (417,000 tons), and Germany (311,000 tons). In 2018, Russia imported 295,679 tons of fresh table grapes, worth $319 million. Russian imports recovered in 2017 from the sharp downturns of 2014–2016, reaching a five-year peak of nearly 363,000 tons. Grape market volume (including wine grapes and raisins) was at a peak as well, reaching 923,000 tons, which was reflected in price levels that dropped to a record low in terms of U.S. dollars.

[20] The share represents only direct imports by the largest retailers and is not representative of the share of table grapes sold via modern retail.

Domestic production has a limited effect on import dynamics, as the country remains dependent upon imports for grapes.

Based on statistics available from the Russian Customs Committee, Central Asian countries had 19.5 percent share of the Russian table grape market in 2018—but that share is significantly underestimated due to re-exports via the Eurasian Economic Union (Table 2.2). According to Russian import statistics, Central Asian countries exported 57,755 tons of table grapes in 2018, worth $39.5 million. Uzbekistan is by far the largest supplier of table grapes to Russia; in 2018, it supplied 47,679 tons of grapes, valued at $38.2 million. However, the imports from Central Asia may be significantly underreported due to unrecorded re-exports via the Eurasian Economic Union (EEU). For example, Tajikistan in 2018 exported 5,700 tons of fresh table grapes to Kazakhstan and 10,700 tons to the Kyrgyz Republic. Based on market information, a significant share of this volume was re-exported to Russia, making Tajikistan the second-largest Central Asian exporter of table grapes to Russia. According to Kyrgyz export statistics, in 2018 the Kyrgyz Republic exported 2,351 tons of table grapes to Russia, up from 1,783 tons in 2017.

Interviews with Tajik exporters confirmed that both grapes and plums are largely exported to Russia through unofficial channels and re-exported as Kyrgyz or Kazakh products. Importers from the Kyrgyz Republic or Russia directly negotiate with farmers with the support of consolidators who help organize the harvest and packing brigade and collect the required volume. Most grapes and plums are loaded onto a refrigerated truck without pre-cooling or proper sorting and grading, which affects their shelf life and eventually the product's competitiveness, resulting in the low prices Tajik exporters receive for their product.

Unofficial exports may enjoy simplified and cost-effective conditions compared to legitimate exports but prevent Central Asian exporters that use these channels from entering formal retail chains. One key benefit of unofficial exports is that the change in the country of origin from Uzbekistan/

Table 2.2. Russian Imports of Table Grapes, Tons[21]

Exporters	2011	2012	2013	2014	2015	2016	2017	2018
World, total	399,998	379,318	358,822	328,279	252,240	193,160	362,866	295,679
Uzbekistan	64,343	46,794	446	338	13,440	24,534	38,422	47,932
Kazakhstan	-	-	1,026	1,095	19	8,137	843	9,653
Tajikistan	287	101	222	148	113	73	450	170
The Kyrgyz Republic	442	24	-	-	183	72	632	-
Central Asia total	65,072	46,919	1,248	1,581	13,755	32,816	40,347	57,755
Share of total imports, %	16.3	12.4	0.3	0.5	5.5	17.0	11.1	19.5

Source: International Trade Center (2018).

[21] Colors are used to differentiate world and regional aggregates vs. national estimates.

Tajikistan to Kazakhstan/the Kyrgyz Republic saves up to eight percent in VAT payments. The VAT rate in Kazakhstan and the Kyrgyz Republic is 12 percent, while the VAT in Russia is 20 percent. In addition, truck drivers are not subject to international safety regulations when the fruit is exported, which may shorten the transportation time by 50 percent because drivers do not have to make stops on the way. Cash payments bypassing the bank system also allow exporters to save on taxation, which increases profitability. At the same time, gray export channels often remove the country of origin on the product, which becomes a major stumbling block for traceability and reduces opportunities for branding products of higher quality, which Central Asian fruits are. In addition, existing gray channels prevent producers/consolidators from adopting clear financial planning and accounting practices, which reduces their credibility with financial organizations and prevents them from obtaining credits for capital asset investments. Overall, exporting through the gray export channels makes it impossible to enter Russia's formal retail markets, resulting in low-price premiums for the exporters.

Turkey is Central Asia's main grape export competitor, with a strong presence in the retail markets. Turkey has been Russia's main supplier of grapes, accounting for 40 percent (or 162,000 tons) of the Russian grape market in 2018. Specifically, Turkey's share of Russian retailer direct imports ranged from 35 percent to 65 percent of total grape imports per retailer. India's share was between 15 percent and 35 percent. In comparison, Central Asian direct supplies of grapes to modern retail were limited to three percent of the total export volume (or 1,490 tons). Siberian retailer Maria-Ra imported 1,100 tons of fresh table grapes from Uzbekistan in 2018, setting a record for Russian retailers in the volume of grapes imported directly from Central Asia. Tander imported an additional 450 tons of grapes from Uzbekistan. About 130 tons were imported by retailers from Tajikistan.

One of Turkey's factors of success has been its ability to provide the quality, assortment, and packaging of produce in accordance with retailer needs and volumes. Mainstream suppliers depend on a long-term, reliable supply of fresh produce. Establishing a supply chain requires a high-quality audit of the supplier's premises and other administrative procedures, resulting in expenditures on the retailer's side. Therefore, retailers prefer to deal with the exporters that can supply commercial volumes of grapes for an extended period of time. Turkish supply starts in July and is at its maximum during the August–November period, with more limited volumes available during the December–February period (Table 2.3). In contrast, close to 80 percent of the total export volume from Uzbekistan and Kazakhstan arrives in Russia between August and October.

Another advantage of Turkish suppliers is that they have maintained a competitive advantage through product differentiation, supplying both traditional and modern varieties that cater to different market segments. This is an important consideration for Central Asian grape exporters. While table grapes from Central Asia have been on the summer menus of Russian consumers for decades, changing taste preferences may be affecting this trend. Central Asian natural and climatic conditions—including the region's soil quality and sunny climate—are recognized as ideal for table grape production among the consumer audience. Most of the fruit is also produced with minimal use of chemicals, resulting in high potential for increasing exports of

Table 2.3. Russian Monthly Imports of Table Grapes from Top Exporting Countries, Tons[22]

Exporters	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Total
Turkey	8,522	27,263	37,246	44,578	30,604	12,667	1,730	102	**162,712**
Moldova	0	1,355	3,961	11,604	14,922	11,233	6,027	2,800	**51,903**
Uzbekistan	844	6,773	12,728	11,926	4,817	773	92	84	**38,038**
Kazakhstan	1,376	5,843	5,548	4,574	2,589	55	620	497	**21,102**
Others	10,382	4,639	4,408	6,959	4,907	7,723	7,345	9,346	**55,709**
Total	**21,124**	**45,873**	**63,891**	**79,642**	**57,839**	**32,451**	**15,815**	**12,830**	**329,464**
% of imports from Uzbekistan and Kazakhstan	**11**	**28**	**29**	**21**	**13**	**3**	**5**	**5**	-
% of imports from Turkey	**40**	**59**	**58**	**56**	**53**	**39**	**11**	**1**	-

Source: International Trade Center (2018).

organic produce. All told, the reputation of Central Asia's crops works in favor of sales of table grapes. The variety of table grapes grown in Central Asia is traditional for the region and includes Taifi (over 30 percent of Uzbek exports), Huseini, KishMish, Pobeda, and Damskie Palchiki. This grape assortment is indigenously Central Asian and appreciated by Russian consumers. At the same time, modern varieties, including Red Globe, Crimson Seedless, and Thompson Seedless, often achieve higher profits for exporters and are demanded by retailers year-round. These varieties are not produced in Central Asia. This trend is expected to continue, which pushes seeded grape prices downward.

Retail pays up to 30 percent above the average invoice price, benefiting Turkish suppliers. The average import price per kilo from different exporters paid by the retailers was up to 30 percent higher than the average import price. For instance, the average 2018 price for Uzbekistan grapes was 49.6 rubles/kilo, while retail paid between 67 and 71 rubles/kilo. For Tajikistan grapes, the average invoice price was 85 rubles/kilo, while retail paid from 86 to 109 rubles/kilo. Turkish grapes were sold at 62 rubles/kilo on average, while retail paid from 68 to 82 rubles/kilo. It should be noted, however, that the comparison is not fully accurate due to the ability of wholesalers to understate invoice prices in order to lower VAT payments. The comparison in Table 2.4 illustrates

Table 2.4. Average Import Prices, Overall Imports Versus Retail Imports

Origin	Average Import Price, rubles/kilo	Average Import Price, Retail, rubles/kilo
Turkey	62.3	53.1–82.0
Uzbekistan	49.6	67.7–71.1
Moldova	21.4	67.2
India	173.2	95.2–140.1
Tajikistan	85.9	109

Source: Interviews with the stakeholders.

[22] Colors are used to present the shares of monthly fruit imports from different exporters to the Russian markets to highlight their seasonality patterns. Red colors represent higher shares, while yellow—lower shares.

Box 2.2. Turkish Fruit Exports: Factors of Success

Turkish fruit exports have grown in quantity and value in recent years, becoming competitive in Russian and European Union (EU) markets (Günes et al., 2017; Larson et al., 2014). Fruits of interest, like apricots and cherries, have seen considerable export growth since 2000. Turkey's success in exporting fruits stems from a number of factors driven by both the private and public sectors.

Research and development on fruit varieties and growing techniques have improved product quality, making fruit more attractive in foreign markets. The Turkish government funds research and development for fruit cultivation. With financing from the government, the Ministry of Food, Agriculture and Livestock and research universities have carried out studies on the adaptation of new species and high-quality fruit breeding. These studies have yielded new cultivars which fetch high prices in domestic and international markets, such as the sweet cherry 0900 Ziraat cultivar. The government and research institutes spread knowledge of new fruit varieties and growing techniques through promotional studies and demonstrations (Günes et al., 2017).

Advanced growing techniques, especially greenhouse cultivation, have contributed to increased fruit production in Turkey. In the country's southern regions, apricots, plums, and bananas can grow in greenhouses. In 2015, Turkey produced 728 tons of apricots and 110 tons of plums in greenhouses. The government reimburses 50 percent of greenhouse insurance premiums, which incentivizes farmers to invest in greenhouse production (Günes et al., 2017).

The Turkish government incentivizes high-quality fruit production by subsidizing the use of government-certified saplings. The Ministry of Food, Agriculture and Livestock supports registered farmers who plant new orchards with standard dwarf fruit saplings, paying 1,500 Turkish lira (TL)/ha. To incentivize planting of high-quality fruit trees, farmers who buy government-certified dwarf saplings instead can receive 4,000 TL/ha. If farmers with existing orchards want to upgrade their orchards by grafting, they can receive 2,500 TL/ha. In total, the government allocated 28 million TL ($8 million) in 2017 for certified fruit sapling support (USDA Foreign Agricultural Service, 2017). Günes et al. recorded different levels of financial support for the 2017 season: between €72 and €103 in cash (about 460–660 TL at the 2019 exchange rate) for farmers starting new orchards using dwarf rootstocks. Regardless of the rate, subsidizing certified saplings spurs Turkey's fruit production by enabling denser orchard growth. Government support also improves export potential by reducing the transport of soil-borne diseases and fostering high-quality fruit production.

Low-interest credit from public sources, as well as increased private lending, has improved access to inputs and the adoption of new technologies. The Ministry of Food, Agriculture and Livestock administers long-term, low-interest loans directly and through Agricultural Credit Cooperatives (ACCs) (Özdemir, 2005); these loans are discounted by 25 percent to 100 percent (Kusek et al., 2017). Ziraat Bank is another traditional public lender. These institutions give low-interest credit for "greenhouse cultivation, use of certified nursery plant[s], certified plant production, organic agriculture, good agricultural practices, etc." The Rural Development Investment Support Program provides grants for establishing processing and packing facilities. Other supports include an insurance program for orchards and a 50 percent grant for companies establishing new plant nursery facilities for fruit tree saplings. Besides subsidized public sector credit, more commercial banks are providing agricultural lending. The share of private sector involvement in agricultural lending rose from 28 percent in 2010 to 37 percent in 2014.[23] Eighty-eight percent of producer loan applications went toward input purchases.

(Box continued next page)

[23] Commercial banks that have expanded their agricultural lending include Sekerbank, Denizbank, Anadolu Bank, Finansbank, Vakifbank, Halkbank, Is Bank, Garanti Bank, Akbank, Yapi Kredi, and Turkey Economy Bank.

(Box 2.2. continued)

Cold storage space and post-harvest processing capacity expanded, in part due to the Ministry of Economy's financial support. The Turkish government allocated €453 million to develop 488,628 square meters of cold storage between 2001 and 2014. Its investments contributed to an expansion of cold storage capacity in Turkey, which grew from 17 facilities in 1970 to 1,861 facilities (encompassing 7 million cubic meters of space) in 2015. On the processing side, the government supported 83 packaging houses at a cost of €47.2 million between 2001 and 2014. Gul et al. note that the existing food processing infrastructure has contributed to growth in cherry exports (Gul et al., 2016). Improved fruit storage and processing has extended product shelf life, generated higher market prices, and decreased post-harvest food waste—all of which incentivize fruit production.

the difficulty that legal importers (including retailers) face as they compete against other market players with the ability to underpay taxes and fees.

2.3. Opportunities and Constraints for Central Asian Fruit Exporters in Russian Modern Retail Markets

Several factors point to the strong potential that Central Asian fruit exporters have, to take advantage of Russia's growing demand for fruit. Central Asian countries have a comparative advantage in the production of export horticultural commodities due to favorable climatic conditions and low production costs. Central Asian republics—namely Uzbekistan, Tajikistan, and the Kyrgyz Republic—have unique soils that are ideal for orcharding. More fully realizing this production potential would allow Central Asian exporters to satisfy an anticipated growth in Russian demand for fruits as its consumers become wealthier and more nutrition-sensitive. Long-term connections with Russian buyers, including cultural and communication connections, make it easier for Central Asian exporters to operate in Russia's market. A growing interest in healthy living among final consumers and demand for organics create additional opportunities in modern retail chains for Central Asian producers. However, to be successful in the formal retail chains, Central Asian exporters need to address several existing constraints.

Central Asian suppliers are mostly detached from modern value chains in Russia, as they struggle to deliver the quality, safety, and consistent fruit supply expected by modern retail chains. Interviews conducted with Russian retailers and Central Asian exporters during the study suggested that Central Asian suppliers often lack the capacity to ensure a consistent, high-quality product that complies with the regulatory requirements of modern retail chains. Several factors contributing to this were identified, including:

- ✓ ***Informality and non-transparency of Central Asian fruit supply chains.*** Existing fruit supply chains in Central Asia are to a large extent based on personal relationships, which in many cases results in the acceptance of low-quality produce at pack houses and its further export to Russia. During the interviews several retailers pointed out quality issues in the product delivered to their distribution centers, which meant that the quality of the product prior to shipment was questionable. Such unsuccessful deliveries to retail ruin the region's reputation. In addition, the local modern retail sector in

Central Asia is in its infancy. The market is still dominated by bazaars and traditional stores. As a result, local producers lack experience in supplying Central Asian as well as Russian retail chains.

- ***Fragmented production and long value chains.*** A large portion of the produce grown in Central Asia is highly fragmented and originates in dekhan plots and smallholder farms, which results in multiple middlemen involved in domestic and export sales. Diverse sources of supply prevent shipment traceability. Growers also don't receive feedback on necessary changes in production and post-harvest practices in order to reduce future quality claims. Such claims provide practical observations on the influence of harvest and post-harvest processes on quality issues for each delivery of fruit: berry preservation capacity (firmness, skin damages, rot); physiologic quality (mineral balance, ripeness); and commercial quality (size, coloring, taste, shape).

- ***Lack of knowledge about and compliance with retail requirements.*** Modern Russian retailers make food safety and phytosanitary standards their priorities in order to address risks to public health and protect their reputation. To meet retail requirements, exporters need to be up-to-date on Russian legislation related to pesticides, residue levels, and food safety. Central Asian producers often lack knowledge of acceptable production and handling requirements, such as optimal fruit maturity measurement, harvesting within minimal Brix levels, and optimum temperature and humidity conditions for fruit storage. For example, it is not uncommon for the period between harvesting and placement in the warehouse to exceed five hours (the maximum allowed period in Chile is three hours, for example). There is also limited understanding of the importance of cold-chain and its influence on produce durability. With monitored storage temperature and relative humidity, for instance, table grapes can be stored for seven to eight months up to the spring, which allows Central Asian grape suppliers to extend supply windows with Russian retailers and promises higher margins during midseason periods.

- ***Short supply window.*** Formal markets require a long-run period of supply in consistent volumes. The current Central Asian produce supply window is shorter than that of successful competing countries, including Turkey. Small-scale production, as well as multi-variety orchards for each fruit category, create obstacles for consistent, solid supplies, which formal markets demand. For example, produce for each retail delivery needs to be of the same batch and botanical sort (pomology or ampelographic) packed in the same container type.

- ***Lack of branding.*** Central Asian fruits are often sold as commodities without any branding. Moreover, the fruit's country of origin is often lost due to the multiple middlemen involved in Central Asian fruit distribution, making it difficult to promote produce under a particular country flag. General recognition of Central Asian produce is low among final consumers.

- ***Limited human capacity.*** Based on interviews with Russian retailers, the human factor is among the issues that affect collaboration with Central Asian exporters. Education and workforce training are essential with the introduction

of modern technologies. Personnel have multigenerational experience in growing and harvesting fruits, which sometimes hinders the implementation of new regulations. In addition, administrative knowledge is lacking. A key factor in successfully supplying modern retailers—apart from fruit quality and price—is transparency and accurate export documents.

3. Competitiveness of Central Asian Horticulture Exports

This section presents the results of the analysis of Central Asian agri-food export competitiveness used to identify value chains in which Central Asian countries have the potential to translate their comparative advantage in production into a competitive advantage in increasing and diversifying exports. The section also deep dives into cherries, fresh apricots, fresh plums and table grape value chains in the Kyrgyz Republic, Tajikistan and Uzbekistan to present key constraints for realizing their horticulture export potential in the Chinese horticulture import markets and Russian higher-end markets (i.e., supermarket chains).

Revealed Comparative Advantage (RCA) calculations were performed for an extended list of agri-food products for which China will likely exhibit strong import growth until 2030. These commodities[24] included wheat, milk, beef, pork, lamb, sugar, soybean (seed, meal, and oil), sunflower (seed and oil), rapeseed (seed), and several horticulture products, including grapes, apricots (fresh and dry), plums (fresh and dry), cherries, walnuts (with shell) and watermelons.

Domestic Resource Cost (DRC) calculations were performed for a narrower list of the product value chains in which Central Asian countries have the potential to become competitive or increase their competitiveness in the Chinese markets. The choice of such value chains was validated through expert opinion, consultations with stakeholders and RCA results. DRC calculations consist of several steps: region selection, identification of farms, cost of production data collection for at least four farms, analysis of cost structure, and the selection of the best performing farms. The regions with the highest production volume were selected for the collection of production cost information for each of the products.

3.1. Country Findings: Kyrgyz Republic

Summary of Findings:

- ✓ Based on the results of the export competitiveness analysis and interviews with stakeholders, the products with the most export potential from the Kyrgyz Republic to China include cherries, walnuts, milk, fresh apricots, and plums (fresh and dried).
- ✓ According to ITC (2018), the export potential of fresh apricots, cherries and plums was estimated at $17.1 million annually, however only 21 percent of this potential had been realized as of 2018.
- ✓ Kyrgyz cherries are mainly exported to Russia (74.9 percent) and Kazakhstan (13.3 percent). However, since 2015, exports to China have been growing and accounted for 11.3 percent.
- ✓ In China, Kyrgyz cherries receive prices that are less than those offered to the other main suppliers of cherries, but these prices are still higher than those in Russia and Kazakhstan, even after taking into account transportation costs.

[24] In order of growth' strength

✓ To increase its presence in the Chinese import markets and Russian modern retail, a number of constraints along the selected horticulture value chains in the Kyrgyz Republic need to be reduced or eliminated through sustained and comprehensive policy support, including:

- *Production/post-harvest/marketing level constraints:* limited production and aggregation volumes due to the smallholder nature of fruit production; low quality and/or insufficient quantity of inputs (irrigation, improved seeds, fertilizer and finance); high number of intermediaries in the value chain, resulting in significant value loss for fruit producers; underdeveloped cold chain and storage systems, including on-farm; high levels of informality and non-transparency along the value chain; and limited knowledge among fruit producers of production and post-harvest methods, on-farm storage techniques, use of new technology, fertilizers and agro-chemicals, standards, and financial management.

- *Technical barriers/institutional constraints:* lack of adequate food safety and quality capacities at the government level; weak export promotion capacity; poor agro-logistics infrastructure; cumbersome administrative procedures associated with exports; limited investment in research and development in the horticulture sector; and low internet penetration, resulting in the inability of exporters to take advantage of rapidly growing e-commerce opportunities in global fruit markets.

Kyrgyz fresh apricots, walnuts, plums (fresh and dried), cherries and milk were identified as the products with high competitive potential to enter the Chinese markets, based on the results of the RCA and DRC calculations and expert opinion (Table 3.1; see annexes 6 and 7 for more detailed results). RCA results point to fresh apricots, walnuts and fresh plums as the products with the highest comparative advantage. The Kyrgyz Republic is already one of the largest walnut exporting countries in the world. Walnuts are exported to several countries, including China. In the interviews, national experts conveyed that the Kyrgyz Republic has the potential to increase walnuts exports, including to China, under the condition that walnut plantations are expanded, and yields are improved. Apricots

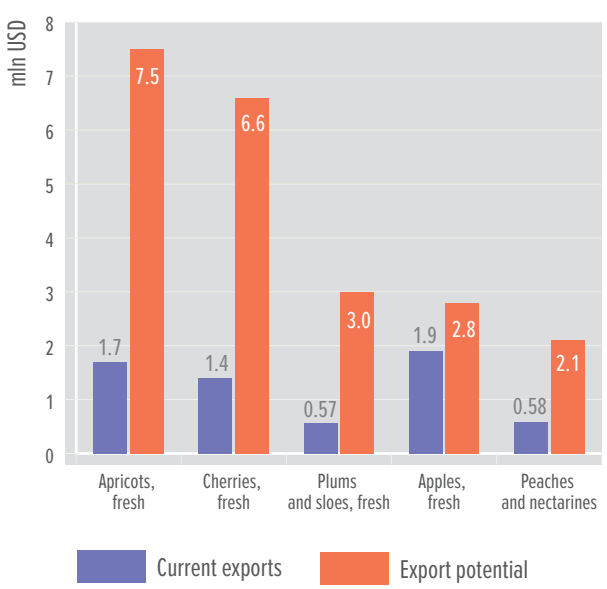
Table 3.1. Export Competitiveness Assessment, the Kyrgyz Republic

Product	Net Exports, USD (2015–2017 average)	RCA (2013–2017 average)	DRC (2018)
Apricots (fresh)	2,605,524	78.7	0.77
Walnuts (with shell)	7,331,118	29.0	0.56
Plums (fresh)	637,057	13.4	0.72
Cherries	505,818	7.5	0.17
Plums (dried)	210,043	3.2	0.29
Milk	2,930,699	1.4	0.43

Source: UN COMTRADE (2018), World Bank calculations.

are one of the most popular fruits for cultivation and consumption in the Kyrgyz Republic. According to different estimates, there are over 15,000 hectares of apricot plots/gardens in the country. Historically, the Kyrgyz Republic has been a strong net exporter of fresh apricots with Russia and Kazakhstan serving as its major importers. However, the economic crisis in Russia and Kazakhstan in 2014 had a significant negative impact on Kyrgyz apricot exports. As a result, in 2017, apricot exports accounted for 2,000 tons, down from 14,000 tons in 2013. Plums are less popular stone fruits in the Kyrgyz Republic. Nevertheless, between 2013 and 2017, the country exported an average of 4,000 tons of plums. Prunes have a competitive advantage from the production point of view, as the costs of production are low in the Kyrgyz Republic. However, RCA results indicate that currently exports of prunes from the Kyrgyz Republic are not as competitive as the other products that were analyzed. Fresh cherries possessed the highest comparative advantage in accordance with the DRC results—the DRC coefficient is well below 1.0, at 0.17. Cherry yields have been increasing in the Kyrgyz Republic since 2007, but still lag behind those of the major world exporters. This indicates a potential for further increasing cherry production, and exports, if yields are improved, particularly given competitive production costs.

Figure 3.1. Export Potential of Kyrgyz Fresh Fruits



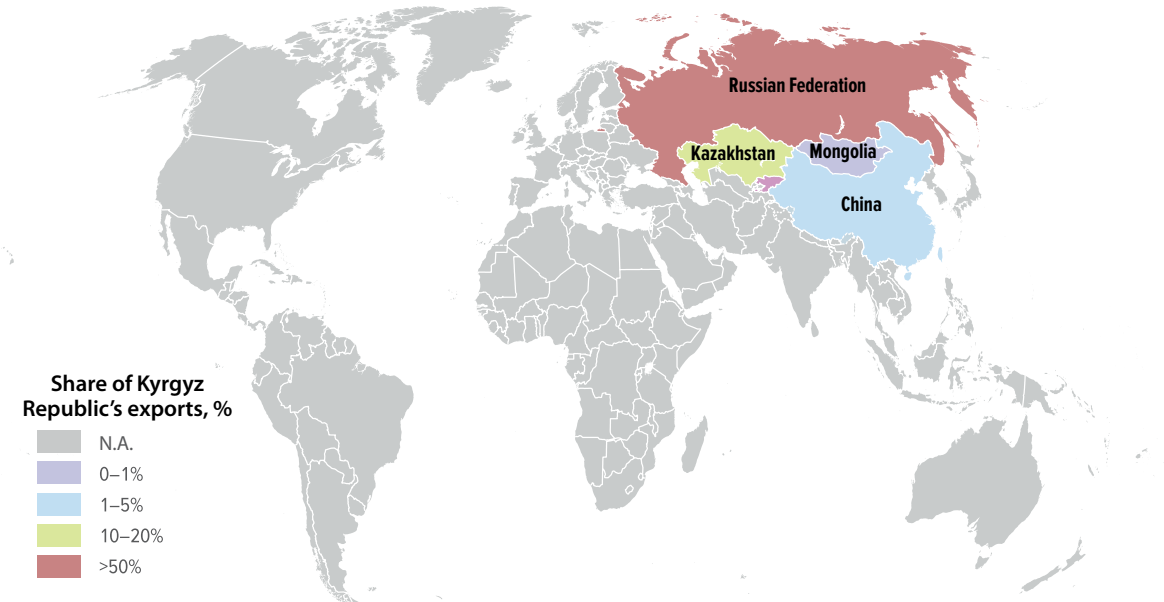
Source: International Trade Center (2018).

ITC export potential estimates[25] also identify fresh apricots, cherries and plums as fresh fruits that have the highest export potential in the Kyrgyz Republic (Figure 3.1). While the export potential of these fruits was estimated at $17.1 million annually, only 21 percent of this has been realized as of 2018. In addition, the export potential of walnuts (shelled and in shell) is estimated at $18.1 million and is also largely unrealized. While only 13.5 percent of the export potential of Kyrgyz dried apricots and plums has been met, ITC estimates that the total export potential for these fruits is relatively low—$2.6 million for dried apricots and $1.9 million for dried prunes.

Reaching this potential would require not only increasing export volumes, but also diversifying export destinations so that higher values can be obtained for Kyrgyz fresh fruits. Currently, the export geography for apricots, plums and cherries remains limited as these fruits are largely destined to Russia and Kazakhstan (Figure 3.2). On average, the Kyrgyz Republic exports 2.6 million tons of fresh apricots annually, mostly to Kazakhstan and Russia. According

[25] Export potential is estimated based on a structural model that identifies potential export values from supply capacities in the exporting country, demand conditions in the existing and new markets, and bilateral linkages between each two pairs of analyzed countries.

Figure 3.2. Kyrgyz Export Geography for Apricots, Cherries and Plums, 2018[26]



Source: International Trade Center (2018).
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to market sources, large volumes of Kyrgyz apricots are unofficially exported to Tajikistan, where they are processed into dried fruit, which are then re-exported back to the Kyrgyz Republic. Interestingly, after the Kyrgyz Republic joined the EEU the structure of its export geography within the Union changed significantly. Before entering the EEU, in 2014, many Kyrgyz entrepreneurs preferred to do customs clearance at the border with Kazakhstan, and then transfer exported products further to Russia. It was simpler for them in terms of procedures and close proximity and also provided additional savings, since VAT rates in Kazakhstan were lower than in Russia. Of the selected fruit exports, 93 percent went through Kazakhstan. Only limited exports were shipped directly to Russia in 2014. However, the situation changed after the Kyrgyz Republic was officially admitted to the EEU. According to 2018 data, the share of exports to Russia increased to 73 percent and keeps growing; the share of exports to Kazakhstan decreased to 12.5 percent and keeps going down.

Kyrgyz cherries are mainly exported to Russia (74.9 percent) and Kazakhstan (13.3 percent) however, since 2015, exports to China have been growing and accounted for 11.3 percent (2018 est.). Rising exports of Kyrgyz cherries to China are one of the outcomes of the growing trade cooperation between the two countries (Box 3.1) and offers an insightful case study on the specifics of entering Chinese markets. In May 2015, China and the Kyrgyz Republic signed an export protocol for cherry exports that aimed to ensure that Kyrgyz cherry exports

[26] The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgement on the legal status of any territory, or any endorsement or acceptance of such boundaries.

Box 3.1. Trade Cooperation Between the Kyrgyz Republic and China: Recent Developments

The Kyrgyz Republic places importance on developing economic ties with China, including agri-food trade. Several national strategic documents,[27] recently adopted in the Kyrgyz Republic, mention China mainly in the context of general socio-economic cooperation and the development of transit potential. However, the PKR Export Development Program for 2019–2022 sets goals to promote Kyrgyz dairy and processed fruits and vegetables for the Chinese market.

The Kyrgyz Republic is a party to the Agreement on Trade and Economic Cooperation between the EEU and China that was signed on May 17, 2018, because it is a member of the EEU. At present, the Agreement is being ratified by all signatories. The Kyrgyz Republic has ratified the Agreement (the Law of the Kyrgyz Republic No. 26 dated February 19, 2019). The Agreement is non-preferential and provides for expanded cooperation in the area of non-tariff barriers, customs administration and trade facilitation, and has elements of regulatory convergence in the transport sector, industrial cooperation and investments. The Agreement references agriculture among several other sectors, where the parties have agreed to develop cooperation, namely in infrastructure, research, technology exchange, development of transport corridors, environment and financial regulation.

In June 2018, President Sooronbay Jeenbekov signed a **Declaration of Strategic Partnership with China**, which among other things includes provisions regarding agriculture:

- ✓ Both sides agreed to strengthen cooperation in the areas of inspection, quarantine and monitoring used during the import/export of livestock and produce; livestock and horticultural health through better disease prevention and treatment methods.
- ✓ China welcomes the import of "high-quality, ecologically clean" produce from the Kyrgyz Republic and will work towards granting the Kyrgyz Republic the requisite allowances.
- ✓ Both sides will work to spur investment in the agricultural sector.
- ✓ Both sides also signed a protocol on the inspection, quarantine, and phytosanitary processes regarding the export of Kyrgyz cherries and melons into China.

would adhere to Chinese phytosanitary requirements. After a test batch of 2.7 tons was shipped to China in 2015, exports have been consistently growing. By July 2018, 14 cherry producers, most of which are located in the Batken region, had concluded deals with Chinese partners for the export of cherries into China. During 2018, the Kyrgyz Republic exported a total of 68.7 tons of cherries valued at $217,800. In addition, in the last three years, China and the Kyrgyz Republic have been strengthening their cooperation on sanitary and phytosanitary (SPS) requirements, creating further potential to increase exports of cherries and other horticulture products.

According to the interviews conducted with Kyrgyz cherry exporters, Chinese buyers find orchards in the Kyrgyz Republic themselves, check them for compliance with their quality requirements, and sign direct contracts with local farmers. The main suppliers of cherries to China are large orchards which usually sell the cherries they produce

[27] National Strategy for Development of the Kyrgyz Republic for 2018–2040; Program for Development of the Kyrgyz Republic for 2018–2020 "Unity. Trust. Creation;" Program for Export Development of the Kyrgyz Republic for 2019–2022.

Table 3.2. Cherry Price Comparison in the Chinese Markets

Exporter	Unit price (USD/kg), 2018
Canada	6.82
United States	6.04
Turkey	5.33
Kyrgyz Republic	3.17
Price received by Kyrgyz exporters in Russia	1.49
Price received by Kyrgyz exporters in Kazakhstan	0.71

Source: International Trade Center (2018).

themselves. Only cherries produced in the orchards that passed the inspection by the Chinese counterparts are allowed for exports. On the Chinese side, companies that buy cherries from the Kyrgyz Republic and import to China are usually small or medium-sized enterprises with a small local market share not exceeding one percent. According to Chinese legislation, imports can be done only by a Chinese enterprise. For this reason, local producers from the Kyrgyz Republic are not involved in customs clearance or the transportation of goods exported to China. As a rule, exported goods are procured directly from farms or storage areas or are delivered to the border. Most cherries are transported from Bishkek to China via air freight. The major destination cities include Urumqi (on China's western border) and Shanghai. Nonetheless, on June 14, 2019, the first ground shipment of cherries from Bishkek arrived in Urumqi. An increase in the use of ground transportation is a result of the One Belt One Road Initiative. Apart from the phytosanitary requirements, Chinese importers put a strong emphasis on appropriate packaging and calibration of fruits. It is crucial for exporters to ensure that there are no mistakes and all requirements are fulfilled exactly in accordance with all points of the signed contract with the Chinese counterparts. The interviewees suggested that, as a rule, Chinese importers stop working with enterprises that do not fulfill contract requirements or falsify supplied products.

Chinese markets offer greater demand for Kyrgyz fruit exporters, as well as better prices than those offered in Kyrgyz traditional markets—Kazakhstan and Russia. In China, Kyrgyz cherries receive prices that are less than those offered to other main suppliers of cherries, but these prices are still higher than those in Russia and Kazakhstan, even after taking into account transportation costs. According to ITC estimates, in 2018, the price for one kilogram of Kyrgyz cherries in the Chinese markets was $3.17. For comparison, other major suppliers in the same season, such as Canada, the United States and Turkey, received $6.82 per kg, $6.04 per kg and $5.33 per kg, respectively. Such a difference is presumably attributable to lack of consumer knowledge about Kyrgyz cherries, quality of post-harvest handling and packaging materials.

Apart from the lower value that Kyrgyz exporters receive for their fruit in Kazakhstan and Russia, excessive dependence on exports to these two countries makes Kyrgyz exports sensitive to any macroeconomic or political shocks that may affect these countries. For example, the Kyrgyz Republic is still experiencing the spillover effect of the Russian economic crisis that caused currency devaluation in both Russia and Kazakhstan in 2014. As a result, the value of fruit exports of interest decreased by 76 percent and the volume of such exports decreased by 59 percent in 2015, as compared to 2014. The level of exports was still below the 2014 level in 2018: 37 percent less in value and 62 percent less in volume. In addition, the increased frequency of import bans and more stringent border checks on Kyrgyz

produce imposed by Kazakhstan in recent years have also had negative implications for Kyrgyz fruit exports. In May 2018, Kazakhstan announced that all agricultural products (including the target fruits) coming from the Kyrgyz Republic would undergo a more thorough check at the border. This caused lengthy delays: the number of trucks checked per day decreased from 40 to 4 causing long multi-kilometer lines and large volumes of transported products that spoiled.

Interviews with country experts and a literature review point to a set of constraints that hinder the Kyrgyz Republic's ability to realize its fruit export potential to China and Russian higher-end markets. Production and marketing problems traditionally associated with small-scale horticulture production serve as a set of important constraints that prevent the Kyrgyz Republic from increasing its exports to higher value markets. These are further exacerbated by limitations in institutional capacity and existing infrastructure gaps.

The production of apricots, plums and cherries in the Kyrgyz Republic is dominated by smallholder farmers, who have limited access to stable financial resources. Most of the fruit producers in the Kyrgyz Republic are small scale, resulting in a limited capacity to increase export volumes. For example, there are more than 400,000 small farms, engaged in apricot production, with an average size of less than two hectares. Small-scale production translates into high levels of informality and low commercialization of producers, who have a limited ability to reach the output volumes of consistent quality that export markets demand. As an example, while production volumes are in general constrained by the number of trees available to smallholders, to extend shelf life, cherry farmers typically diversify the varieties they grow. As a result, it is difficult for packing houses to source large quantities of cherries with a uniform variety and quality. Lack of appropriate on-farm storage techniques and facilities to safeguard production further exacerbate the problem. A pre-cooling treatment is not normally applied to the sourced cherries, and the grading process is usually done by hand. Most of the large buyers surveyed in Russia complained that available production volumes were not sufficient, and they preferred dealing with producers from other countries. Similarly, as noted above, Chinese importers only deal with large cherry producers in the Kyrgyz Republic. Increasing levels of agricultural cooperation can help raise export volumes and improve the competitiveness of Kyrgyz fresh fruits in international markets.

Kyrgyz yields for analyzed fruits are very low if compared to other major world producers (Figure 3.3). For example, average yield for apricots is 3.1 tons/ha, if compared to 12.3 tons/ha in France. Similar situation is also observed in plums and cherries. Increasing yields could boost production by up to 70 percent for fresh apricots, 64 percent for plums and 39 percent for cherries.

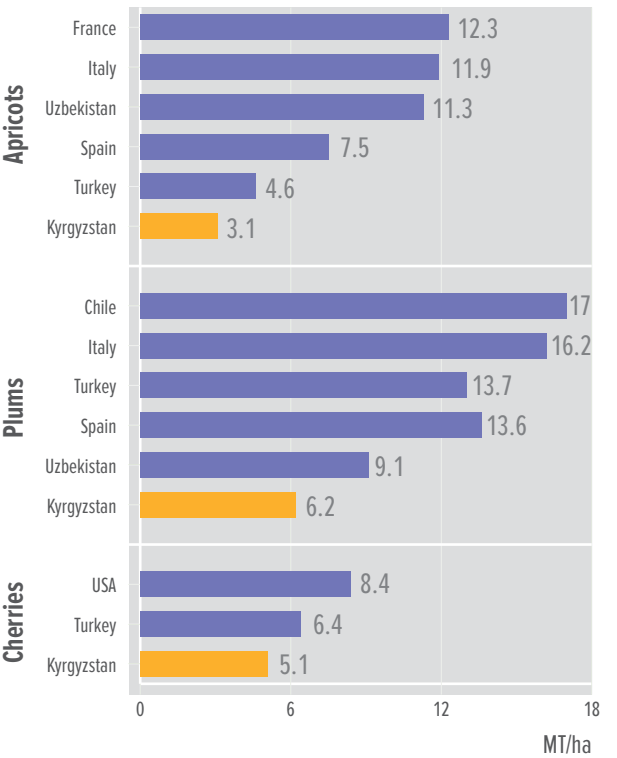
In addition, the production of apricots, cherries and plums is concentrated in one or two regions of the country. This increases the risks of production disruptions due to weather changes and/or pest invasion; both are expected to intensify with climate change. For example, 75 percent of all Kyrgyz apricots are produced in three southern regions—Batken (55 percent), Osh (12 percent) and Jalal-Abad (8 percent). Close to 90 percent of all plum production takes place in the Jalal-Abad region. The main type/variety of plum produced is called Hungarian—according to some research

reports, up to 90 percent of produced plums are of this type/variety. Overreliance on only a few fruit varieties also contributes to the high seasonality of fruit exports, and the resulting low profit margins for producers.

The fresh fruit supply chain in the Kyrgyz Republic is characterized by many intermediaries resulting in a significant value loss for producers. As 55 percent to 80 percent of fruits are produced by households in small volumes, they are sold to village-level collectors who organize further transportation and distribution. At the producer level, fruits are usually sold in bulk without proper packaging or labeling, resulting in low procurement prices (Pfeiffer et al., 2016). The distributors then sell the fruit to wholesalers at bazaars, retailers or exporters (JICA, 2013). Multiple distributors exist with different roles within the distribution flow. As a result, different fruits must pass through up to seven different market players on the way from a primary producer/farmer to the final consumer. Every market player marks up prices from 20 percent to 100 percent of the product's procurement price; the largest price increase usually occurs during the final stages of a value chain.

The limited development of infrastructure for fruit distribution in the country leads to high levels of informality along the value chain—an apparent roadblock for entering China and Russian higher-end markets that require full transparency along the value chain. The largest wholesale market for selling fruits in the Kyrgyz Republic, Dyikan Bazar, functions as a key distribution center for fruits in the country. The transactions that take place in the market are largely informal—no transaction data is recorded, quality/grade standards are not officially established, and the transactions

Figure 3.3. Comparison of Kyrgyz Stone Fruit Yields to Main Comparator Countries, Tons/Ha, 2017

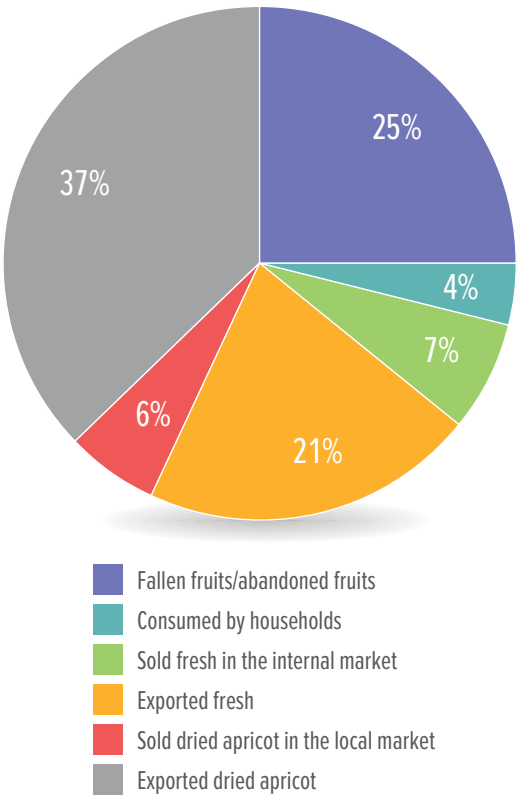


Source: United Nations Food and Agricultural Organization (2017).

largely take place based on a weight basis (JICA, 2013). On the inside, the markets are cramped and unsanitary. The development of modern distribution infrastructure with fair and transparent transactions and well-established quality and safety standards is imperative for enabling the Kyrgyz Republic to enter markets that have more stringent quality requirements.

Underdeveloped cold chain and storage systems result in high wastage of fruit and high seasonality of exports (Figure 3.4). Lack of post-harvest treatment equipment and storage capacities, especially freezers and refrigerators, result in up to 25 percent of a harvest being wasted. Often, small

Figure 3.4. A Quarter of All Apricots in the Kyrgyz Republic is Wasted



Source: M-Vector, 2014.

fruit producers look for the sales channel after the fruits are already harvested. Any delays in selling their fruits results in an increased spoilage rate—up to 40 percent (JICA, 2014). The inability to store a harvest for an extended period of time at either the producer or distributor level results in the high seasonality of Kyrgyz fruit exports.

Furthermore, poor transportation infrastructure contributes to the quality deterioration of fruit. Some 33 percent of country roads are in poor condition and need rehabilitation or reconstruction (Government of the Kyrgyz Republic, 2012). The remaining 67 percent are in sustainable condition, requiring only routine or periodic maintenance due to extreme temperatures, landslides, and mudslides. The country's railway network is split geographically into north and south sections. For historical reasons, technical standards and track gauges are based on the Russian system. These are compatible with the rail systems in Kazakhstan, Uzbekistan, and the Russian Federation but not with the railway network in neighboring China. Effective transshipment facilities are therefore needed to facilitate the growing international traffic of goods to and from China through the Kyrgyz Republic. International and regional airports are limited to major population centers and serve as hubs for air connectivity through smaller domestic companies serving secondary towns and remote areas of the country.

Low production volumes, fulfillment of packaging requirements and finding partners in China were the main difficulties associated with exporting to China as mentioned by exporters during interviews. Some exporters complained that there was a lack of appropriate high-quality packaging material for a reasonable price in the market; current available packaging options increase the cost price of supplied products (for example, the cost of one unit of corrugated packaging in the local market was $5, according to respondents).

Fruit exporters to Russia pointed to cumbersome administrative procedures associated with exports as well as difficulties with transportation and logistics as key constraints encountered during exports. Of the respondents that exported to Russia, 41.2 percent complained of difficulties with paperwork required for the export of fresh fruits from the Kyrgyz Republic to Russia; entrepreneurs from the most remote areas particularly complained of the need to go to oblast and rayon centers to receive paperwork, which usually took them 2–3 days. This

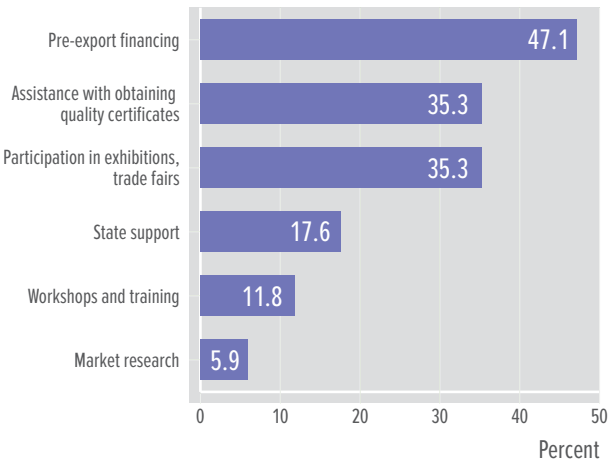
observation was also confirmed by a recent SLE study (2016) that highlighted the cumbersome process of obtaining the necessary paperwork to export plums from the Jalal-Abad region to the EEU. Some 17.6 percent of respondents mentioned difficulties with transportation and logistics, primarily related to delays and bureaucratic procedures at the border with Kazakhstan. One of the main conditions of the EEU was the creation of a single customs to simplify customs clearance and promote export growth. However, this innovation did not bring significant changes to perishable goods with a short shelf life. In order to speed up the customs process, drivers still had to pay customs brokers; the cost of services was from KGS 60,000 to KGS 100,000 per truck. The interviews highlighted that entrepreneurs that did not use a customs broker and tried to clear customs and register by themselves, usually encountered various problems and delays at the border.

Because of the large number of requirements by the Russian retail networks, and the limited capacity of local producers in the Kyrgyz Republic to adhere to them, most producers are not able to supply their products directly to retail networks. According to the findings of the interviews, specific constraints that limit Kyrgyz fruit exports directly to the retail chains include:

- ✓ Limited number of large enterprises in the Kyrgyz Republic capable of producing the necessary commodities in the volumes that are required by the retail networks;
- ✓ Limited capacity of most enterprises to fulfil all the requirements posed by the retail networks due to limited management capabilities, a shortage of financial resources, and lack of value chain transparency; remoteness and instability of fruit supply make it currently nearly impossible to provide the required volumes of the specified quality within the specified time frame;
- ✓ The length of time needed to review a commercial proposal/supply application. As a rule, a retail network reviews commercial proposals only once per year, and it signs an annual contract;
- ✓ Very strict contract requirements that incur large fines for noncompliance;
- ✓ Deferment of payments from 30 to 180 days. Since local enterprises are short on funds (working capital), they are more eager to make quick sales ensuring faster turnover of available funds.

During the interviews, exporters identified several areas where government assistance would be useful in realizing their fruit export potential (Figure 3.5). As an example, it was noted that assistance with pre-export financing would be helpful to increase the volume of products supplied to export markets. The enterprises also cited the need for access to funding for hazard analysis and critical control points (HACCP) certification, which requires building modernization and procurement of new equipment. Additional assistance would also be required to promote Kyrgyz enterprises in foreign markets: respondents mentioned that support was needed for participation in trade fairs and forums, which could help to establish relations with buyers in foreign markets. Some businessmen mentioned that they needed assistance with receiving necessary certificates and solving problems with transportation and customs delays.

Figure 3.5. Areas for Export-Related Public Support as Identified by Kyrgyz Fruit Exporters



Source: Interviews with the stakeholders (2019).

3.2. Country Findings: Tajikistan

Summary of Findings:

- ✓ Based on RCA results and interviews with stakeholders, the products with the most export potential from Tajikistan to China include apricots (dry and fresh), plums (fresh) and grapes (fresh).
- ✓ According to ITC (2018), the export potential of fresh apricots, cherries and plums was estimated at $2.3 million annually. However, this remains largely unrealized.
- ✓ Dry fruits, including apricots and plums, offer the most promising export opportunity for Tajik exporters. For example, the export potential for dry apricots is estimated at $25.1 million and for prunes at $5.2 million. As of 2018, this potential has been realized by only 29 percent, on average.
- ✓ To increase its presence in the Chinese import markets and Russian modern retail, a number of constraints along the selected horticulture value chains in Tajikistan need to be reduced or eliminated through sustained and comprehensive policy support, including:

- *Production/post-harvest/marketing level constraints:* limited production and aggregation volumes due to the smallholder nature of fruit production; low quality and/or insufficient quantity of inputs (irrigation, improved seeds, fertilizer and finance); significant gap in skills and capacity along the entire value chain; and underdeveloped cold chain and storage systems, including on-farm.

- *Technical barriers/institutional constraints:* inaccessible and costly certification and quality assurance services; poor agro-logistics; cumbersome administrative procedures associated with exports; lack of export promotion capacity; limited investment in research and development in the horticulture sector; and low internet penetration, resulting in the inability of exporters to take advantage of rapidly growing e-commerce opportunities in global fruit markets.

Tajik exports that exhibit high export competitiveness based on the RCA analysis[28] include apricots (dry and fresh), plums (fresh) and grapes (fresh)

[28] DRC analyses were not conducted for Tajikistan.

(Table 3.3; see annex 6 for more detailed results). Overall, stone fruits, such as apricots, plums and cherries, represent 92 percent of all fruit trees in the country (Fintrac Inc, 2014). Apricots are the main fruit in the country and are widespread all over Tajikistan. The average productivity is 15-20 tons/ha among small farmers. However, with improved agriculture practices and transition to intensive gardens, the potential to increase yields is very high. Plum and cherry production in Tajikistan is not as diverse, but it is significant in that orchard farmers generally cultivate apricots, cherries and plums in conjunction with apricots (Fintrac Inc, 2014). Grape production has also been increasing—between 1992 and 2017, it grew by 129 percent from 100,000 tons to 228,000 tons, primarily due to the rehabilitation projects of large vineyards in the Khatlon region and a number of technical assistance projects that targeted increased productivity.

Among fresh fruits, fresh apricots, cherries and plums have the highest export potential, according to ITC estimates (Figure 3.6). Their total export potential is estimated at $2.3 million. However, dry fruits—apricots and plums—offer the most promising export opportunity for Tajik exporters. The export potential for dry apricots is estimated at $25.1 million and for prunes at $5.2 million. As of 2018, this potential has been on average realized by only 29 percent.

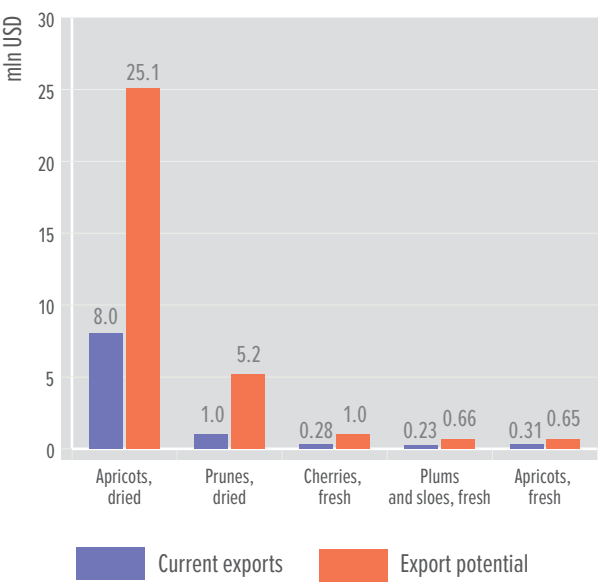
Historically, Tajikistan was one of the largest producers of fruits in the Soviet Union. However, following its dissolution and the civil war, the production of stone fruits decreased as many farmers cut down their orchards and marketing channels collapsed. After reaching its lowest in 1999, production has started to recover. The government of Tajikistan has made an effort to diversify agricultural production by encouraging farmers to produce more fruits. On August 29, 2009, the President of the Republic of Tajikistan signed Decree No. 683 "On Additional Measures for the Development of Horticulture and Viticulture in the Republic of Tajikistan for the period 2010–2014". During this period, orchards and vineyards were built on an area totaling 53,232 ha, which ensured the implementation of the area planned in the decree. Some 21,192 ha are apricot orchards and 4,376 ha are vineyards. To further develop the sector, the Government of Tajikistan extended the program

Table 3.3. Export Competitiveness Assessment, Tajikistan

Product	Net Exports, USD (2015–2017 average)	RCA (2012–2016 average)
Apricots (dry)	6,086,562	287.3
Apricots (fresh)	833,364	35.5
Plums (fresh)	889,636	19.5
Grapes	2,655,497	5.7

Source: UN COMTRADE (2018), World Bank's calculations.

Figure 3.6. Export Potential of Tajik Fresh and Dried Fruits



Source: International Trade Center (2018).

for the development of horticulture and viticulture for the 2016–2020 period. Decree No. 793 was issued with the aim of developing 46,901 ha of orchards and vineyards during the five-year period, including 16,714 ha of apricot orchards and 5,015 ha of vineyards.

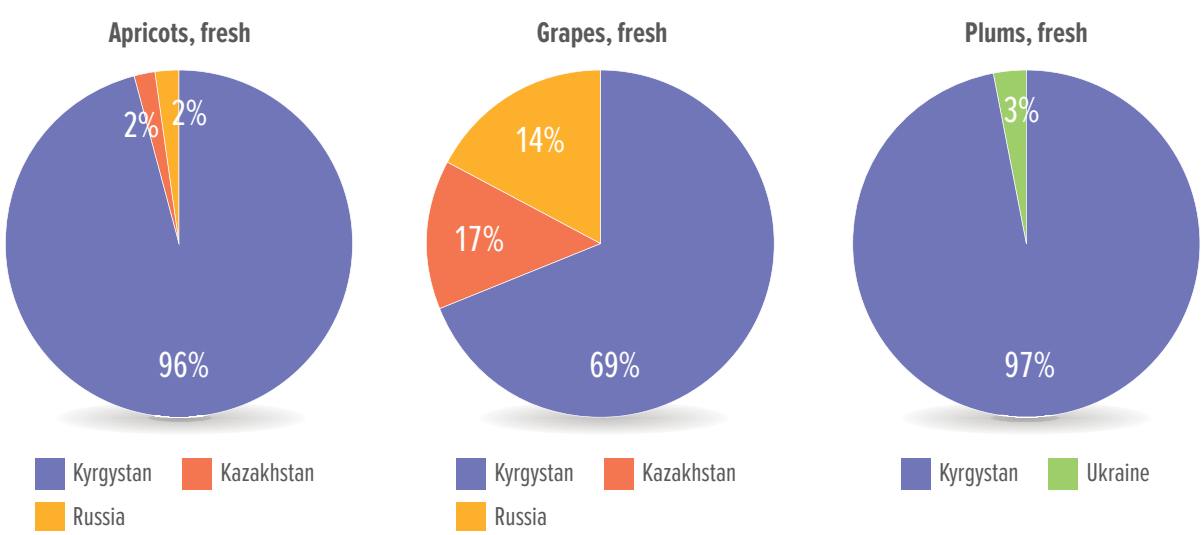
To reach its export potential, Tajikistan needs to not only increase production volumes, but also to diversify export destinations toward the ones that offer higher value for Tajik fruit. While Tajik fresh fruit exports have been growing in recent years, the export markets remain undiversified with almost all exports of apricots, plums and grapes going to Russia, Kazakhstan and the Kyrgyz Republic (Figure 3.7).

China is an attractive market for Tajik fresh and dried fruit exports—the two countries share a border and a relatively large share of the expatriate ethnic Tajik population lives in the Xinjiang region. However, Tajikistan's Pamir Mountains and China's Taklamakan Desert serve as geographic obstacles for rail and truck shipments, while the capacity of air transportation is currently limited.

Overall there are certain characteristics of Tajikistan's horticulture sector that provide an opportunity to be competitive in international markets, but certain constraints hinder competitiveness. The early season for Tajik fruits is one of the characteristics that can foster competitiveness. Relatively low labor and electricity costs is another such characteristic. In addition, favorable climatic conditions with long growing periods and numerous sunny days result in special flavor and high sugar content. However, there are a number of interrelated constraints that prevent fresh fruit exports from reaching their full potential.

Just as in case of the Kyrgyz Republic, the production of fresh fruit in Tajikistan is dominated by smallholders/households that tend to have higher yields, but lower capacity to market their fruit.

Figure 3.7. Tajik Export Geography for Selected Fruits, 2017



Source: International Trade Center (2018).

Box 3.2. Trade Cooperation Between Tajikistan and China: Recent Developments

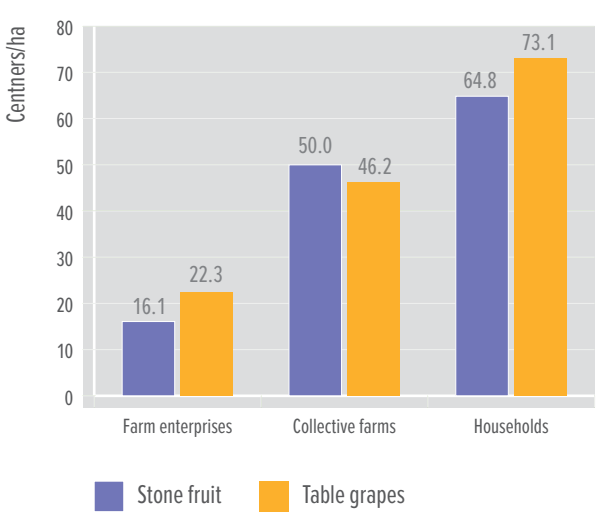
In recent years, the governments of China and Tajikistan have signed several documents to strengthen trade cooperation between the two countries, including:

- ✓ Memorandum of Understanding between the Ministry of Agriculture of Tajikistan and the General State Administration of Technical and Quarantine Quality Control of China on cooperation in the field of inspections and plant quarantine (March 2, 2013, No. 74);
- ✓ Protocol on phytosanitary requirements for exporting fresh fruits—sweet cherries from Tajikistan to China, between the Ministry of Agriculture of Tajikistan and the General State Administration of Technical and Quarantine Quality Control of China (May 16, 2013, No. 235);
- ✓ Memorandum of Understanding between the Ministry of Economic Development and Trade of Tajikistan and the State Committee for Development and Reforms of China on the joint creation of the Silk Road Economic Belt (January 30, 2015, No. 24);
- ✓ Agreement between the Ministry of Economic Development and Trade of Tajikistan and the Ministry of Commerce of China on strengthening cooperation in the field of infrastructure. The parties agreed to promote and support cooperation in the field of infrastructure (railways, highways); and promote both the import and export of goods and the circulation of funds (August 26, 2017, No. 384);
- ✓ Memorandum of Understanding between the Ministry of Agriculture of Tajikistan and the Ministry of Agriculture of China on joint construction of the Model Agricultural Cooperation Park (August 26, 2017, No. 369);
- ✓ On Exchanging Notes between the Government of Tajikistan and the Government of China to share customs inspection equipment (October 12, 2018, No. 497);
- ✓ Agreement between the Government of Tajikistan and the Government of China on cooperation and mutual assistance in customs affairs (December 25, 2018, No. 590).

Small farmers are believed to produce 80 percent of the apricot crop, followed by 15 percent produced by collective farms and five percent produced non-commercially in backyards. The production of grapes in Tajikistan is highly decentralized—only 25 percent of the grapes produced in Tajikistan are produced on collective farms, while 75 percent are produced by small growers (Microfinance Center, 2011). Smallholders tend to have significantly higher yields for stone fruit and table grapes (Figure 3.8) but face a number of capacity challenges for marketing their products and entering the formal supply chain.

In particular, the smallholder nature of fruit production in Tajikistan poses two primary challenges. First, small production volumes on each plot lead to

Figure 3.8. Stone Fruit and Table Grape Yields, 2018



Source: National statistics (2018)

a large number of intermediaries involved in volume aggregation to deliver the product to the final destination. This results in farmers not only losing profit margin share because of increased transaction costs, but also not getting enough feedback about the existing market requirements and opportunities.

Second, smallholder farmers often do not have the capacity, knowledge or sufficient financial incentive to handle their harvest in a way that would allow for the highest yields. Interviews with the relevant stakeholders highlighted that small producers in Tajikistan typically mix together produce of different sizes, maturity and quality, which shortens the shelf life of the fruit and results in significant losses for exporters when they arrive to their final destination. In addition, poor pest management, irrigation strategies, improper planting of trees too close to each other and lack of proper pruning negatively affect the quality of the fruit. Over 90 percent of fruit producers in the country do not train their fruit trees and neglect to annually prune the trees during the winter. In addition, many of the orchards were established more than 15 years ago and contain older, aging trees with poor yield rates. Tree replacement is costly, and farmers lack access to high quality planting material (Fintrac Inc, 2014). As a result, Tajik fruit yields are much lower than other comparator countries. For example, cherry yields are quite low compared to world averages (only 3-4 tons/ha in Tajikistan compared to neighboring Uzbekistan's 11.4 tons/ha).

In addition, Tajikistan lags behind the Kyrgyz Republic and Uzbekistan when it comes to drip irrigation development (Euromonitor International, 2017). Drip irrigation systems have started to develop in recent years. However, progress has been slow and has done little to boost the country's fresh fruit export potential. The drip irrigation method that is applied to high-value crops results in significant economic benefits for the producers through improved water efficiency, reduced labor requirements, increased yields and soil texture improvements, resulting in long-term productivity. All these benefits outweigh the initially high investment costs associated with drip irrigation.

It is also not uncommon for nursery operators to sometimes mix the varieties of apricot trees they plant without keeping track. This limits their capacity to guarantee the consistency of their stone fruit variety and serves as a major constraint for dealing with former retailers who require consistency in the quality and variety of supply. In addition, there is a need for more education on proper cold storage practices such as pre-cooling fruit before loading it onto refrigerated trucks. Without this initial pre-cooling, the fruit will spoil faster since the middle of the fruit doesn't cool quickly enough. As a result of these different factors, about 80 percent of fresh apricots are exported to Russia from Tajikistan through individual exporters to open markets or small shops as they do not meet the requirements of retail chains, which include reliable (a) quality, (b) certification, (c) guarantees on volume, and (d) on-time delivery. As interviews showed, among retailers, Tajik fresh fruits are associated with poor quality when it comes to food safety and packaging. In addition, one of the key constraints is small producers' inability to access financial resources to invest in new materials.

Unofficial fruit export channels prevent fresh fruit exports from Tajikistan from entering formal retail channels, resulting in lower export value. Since the inclusion of the Kyrgyz Republic and Kazakhstan in the Eurasian Customs Union, most Tajik grape exports transit through these countries without proper registration. The vast majority is exported

"unofficially", in particular through the porous border in the Sughd region. Grapes are not pre-cooled or transported in refrigerated trucks; mostly they are loaded into mini vans with a carrying capacity of 3 tons and are then re-packed and re-exported from the Kyrgyz Republic. As a result, only a few Tajik companies which officially export grapes to open markets or retail chains in Russia appear in official statistics. Without the proof of the country of origin, it is impossible for the formal retail chains to sell Tajik produce in their stores. In fact, Tajik apricots are not known in Russian markets as they are mostly sold as Kyrgyz products. In addition, Tajik apricots are generally shipped in big bags via truck. As such, they can only fit into the wholesale process since they are not individually packaged or certified.

Fresh fruit that enters the country through official export channels often lacks recognizability among Russian consumers due to the limited professional and systematic promotion of Tajik products. The main agencies that are in charge of export promotion are the Chamber of Commerce and Industry (CCI) and Tajinvest which support the participation of exporters in various trade fairs. However, both agencies have budget limitations and often rely on international projects for financial support. Through CCI and international projects, the Tajik national pavilion is presented annually at the biggest trade fairs in Moscow, such as Prodexpo and World Food. However, their presentation lags behind that of Tajikistan's key competitors, such as Turkey, Armenia and Uzbekistan. This is one of the reasons why participation in trade fairs has not resulted in sustainable business relations with retail chains.

Lack of cold storage and refrigerated trucks result in a shorter shelf life for Tajik fresh fruit and profit margins that are cut by more than half. The lack of cold chain capacity in Tajikistan increases the seasonality of fresh fruit exports, resulting in lower prices during the peak season. As an example, the farm gate price for table grapes of standard quality during the peak season is 6 TJS. For the new year holiday season, prices increase to 8–10 TJS and during the spring holiday of Navruz prices reach 15 TJS. Every summer, during harvest time, fresh fruit floods rural and urban markets around the country—as food and processing demand is not high enough to absorb the supply, a substantial portion of it goes to waste.

Limited export infrastructure and high transportation costs serve as a constraint to increase fresh fruit exports from Tajikistan. Due to the high transportation costs of transiting goods from landlocked Tajikistan to Russia (or China), high-value dried or processed goods are preferred. Dried fruit exports tend to be more stable and larger in volume than fresh counterparts. For example, due to the lack of cargo freight between Tajikistan and Urumqi in China or Tajikistan and Moscow, cherries are transported by passenger airlines which only allows for limited export volumes. The carrying capacity varies between 600 kg and 3 tons, and flights are available from Monday to Saturday. Overall, the loading capacity for such planes depends on the number of passengers they have, resulting in inconsistent transport volumes. Improved rail and/or road networks could improve access to Chinese markets in the future (Fintrac Inc, 2014). In addition, improved rail links through the Kyrgyz Republic or Afghanistan into China and through southern Tajikistan into Turkmenistan could provide access to markets in the Caucasus, the Middle East and Europe, boosting the country's export capacity.

Inaccessible and costly certification and quality assurance services. The prevalence of small-scale

producers in the fresh fruit production structure limits their ability to afford certification services. At the government level, the lack of technological capacities does not allow the corresponding bodies to perform all the required inspections and tests. Local laboratories lack the equipment to run all the tests required by importers from the developed countries.

3.3. Country Findings: Uzbekistan

Summary of Findings:

- ✓ Based on the results of the export competitiveness analysis and interviews with stakeholders, the products with the most export potential from Uzbekistan to China include cherries, apricots (dry and fresh), plums (fresh), grapes (fresh) and walnuts.
- ✓ Table grapes, cherries and peaches have the highest potential, estimated at $486 million (2018 est.). Fresh apricots and plums account for another $115 million. Currently, the potential for these target fruits (excluding peaches) is realized by only 32 percent on average.
- ✓ Currently, Uzbek exports are largely undiversified and are targeted towards the EEU members—the Kyrgyz Republic, Kazakhstan and Russia—where they receive a lower price when compared to other markets. Uzbek cherries are sold for only $1.77/kg in Kazakhstan as opposed to $3.07/kg in China and $3.6/kg in the Republic of Korea.
- ✓ The Uzbek government has set ambitious targets to increase the export potential of fruits for the period of 2015–2020. By 2020, fruit exports are expected to reach $383 million. Nevertheless, there are still many constraints along the value chain that need to be addressed to realize the existing potential, including:

- *Production/post-harvest/marketing level constraints:* limited production and aggregation volumes due to the smallholder nature of fruit production; low quality and/or insufficient quantity of inputs (irrigation, improved seeds, fertilizer and finance); significant gap in skills and capacity along the entire value chain; underdeveloped cold chain and storage systems, including on-farm; high levels of informality and non-transparency along the value chain; and underdeveloped cold chain and storage systems, including on-farm.
- *Technical barriers/institutional constraints:* limited ability to comply with international SPS requirements and maximum residue levels; limited adoption of the private standards of food safety; cumbersome and non-transparent administrative procedures associated with exports; weak export promotion capacity; limited investment in research and development in the horticulture sector; poor agro-logistics; and limited development of e-commerce.

In accordance with the export competitiveness analysis, products that have the potential to capture Chinese markets and grow in the Russian markets include cherries, apricots (dry and fresh), plums (fresh), grapes (fresh) and walnuts (Table 3.4; see annexes 6 and 7 for more detailed results). Table grapes are the largest fresh produce category exported from Uzbekistan. Thanks to its climatic conditions, Uzbekistan can export table

Table 3.4. Export Competitiveness Assessment for Selected Agri-Food Products

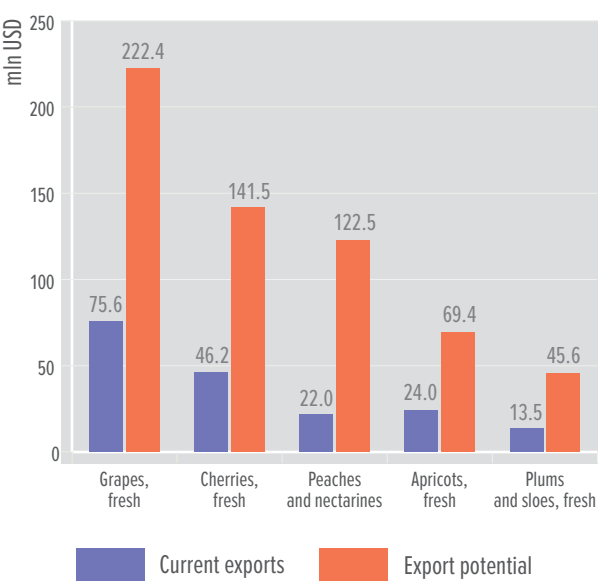
Product	Net Exports, USD (2015–2017 average)	RCA (2012–2016 average)	DRC (2017)
Cherries	44,733,333	172.0	0.20
Apricots (fresh)	20,396,311	109.1	0.17
Apricots (dry)	9,594,508	57.1	-
Walnuts	39,208,645	37.5	0.20
Plums (fresh)	10,665,391	28.5	0.41
Grapes, including table	78,195,406	22.1	0.22 (table) 0.65 (wine)
Plums (dried)	11,261,431	7.3	-

Source: UN COMTRADE (2018), World Bank's calculations.

grapes almost all year round. Production has been steadily increasing since 2008, primarily driven by improved yields. Uzbekistan has strong pre-conditions for the production of cherries due to its good climatic conditions, early crop maturing and inexpensive labor. Upgrading cherry production technologies has the potential to further boost cherry yields. For example, there are opportunities to use technology to further extend the cherry season to allow for larger harvests. Uzbekistan has a strong potential to increase both production and exports of walnuts. Walnut production has been rising since 2012 due to growing planting areas and yields. In 2017 the President of Uzbekistan signed a decree "On creation and organization of activities of the Association of producers and exporters of walnuts" that established the Association and allocated an additional $50 million and 10,000 ha for new walnut plantations. However, the effects of these changes are yet to be seen. Similar to other horticultural products, the production of plums has been increasing in Uzbekistan in recent years. Finally, the production of apricots has drastically increased since 2000, reaching over 660,000 tons in 2016 (from 68,000 tons in 2000), making Uzbekistan the third largest producer of apricots in the world behind only Turkey and Iran.

ITC (2018) export potential estimates also identify many Uzbek fresh fruits as having high, and still unrealized, export potential (Figure 3.9). Table grapes, cherries and peaches have the highest potential, estimated at $486 million annually. Fresh apricots and plums account for another $115 million. Currently this potential for the target fruits (peaches excluded) is realized by only 32 percent on average.

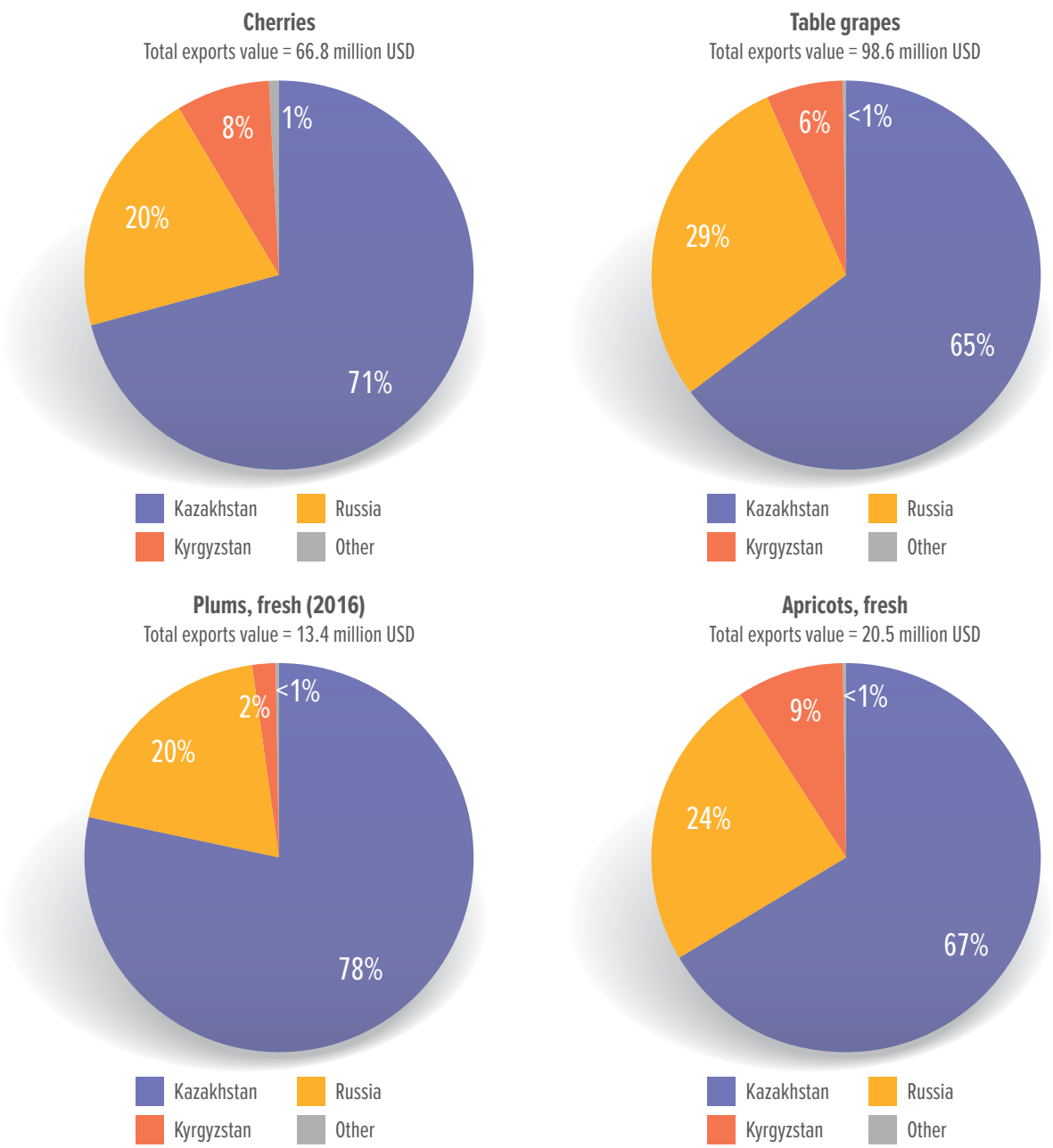
Figure 3.9. Export Potential of Uzbek Fresh Fruits



Source: International Trade Center (2018).

To realize this potential, Uzbekistan needs to increase the production of fresh fruits and diversify the geography of its export destinations. Currently, just as in the case of the Kyrgyz Republic and Tajikistan, Uzbek exports are largely undiversified and are targeted towards the EEU members—the Kyrgyz Republic, Kazakhstan and Russia (Figure 3.10). In 2017, an average of 70 percent of the exports of fresh apricots, plums, cherries and table grapes were exported to Kazakhstan, while 29.5 percent

Figure 3.10. Uzbek Export Geography for Selected Fruits, 2017



Source: UN COMTRADE (2018).

were shipped to the Kyrgyz Republic and Russia. According to the interviews with market stakeholders, official trade numbers do not reflect large volumes of fruit that are exported unofficially to the EEU countries. Lack of rules enforcement on border crossings by Uzbek authorities result in the informality of Uzbek exports, which has a detrimental effect on their competitiveness, as exporters have limited incentives to modernize. Not surprisingly, all these markets offer lower values for Uzbek products compared to other markets. For example, according to a recent IFC study, Uzbek cherries are sold for only $1.77 per kg in Kazakhstan as opposed to $3.07/kg in China and $3.6/kg in the Republic of Korea.

In terms of fruit exports to China, 2018 was a successful year for Uzbekistan. For the first time, Uzbekistan supplied sweet cherries on the Chinese market. According to Uzagroexport, in 2018, Uzbekistan exported 10,000 tons of sweet cherries, 3,000 tons of raisins and 2,000 tons of walnuts to China. In 2019, the exports of sweet cherries were expected to rise to 20,000 tons. At the same time, an increase in the range of Uzbek agricultural products to 12 products was under consideration. China is completing procedures for the permission of Uzbek melons, lemons, pomegranates, and grapes to its market. The permission was obtained to export fresh pepper and sweet cherry to China provided two methods of disinfection are used: cold processing and fumigation. China is also developing a mechanism to assist Uzbekistan in improving its laboratories. To create more convenient logistics export routes, Uzbekistan proposed exporting agricultural products, including sweet cherries to China from Uzbekistan, via Khorgos border check points (on the Chinese-Kazakh border), Irkeshtam (on the Chinese-Kyrgyz border) and Alashankou (on the Chinese-Kazakh border).

The Uzbek horticulture sector has the potential to be competitive in international markets, and the Uzbek government has been aggressively reforming the sector to make it more market oriented and to create the preconditions for increasing export potential. Excellent agroclimatic conditions in Uzbekistan are favorable for the production of high-quality fruits. The Uzbek government has set ambitious targets to increase the export potential of fruits for the period of 2015 – 2020 – by 2020 exports of fruits are expected to reach $383 million. Nevertheless, there are still many constraints along the value chain that need to be addressed to realize the existing potential. A recent analysis by the IFC (2018) identified the key constraints that exist for producers and exporters of fresh fruits, including cherries, table grapes and apricots. Key constraints highlighted in this study are presented here.

Fresh fruit production in Uzbekistan is dominated by smallholder farms that tend to have limited financial and knowledge capacity and engage in low cost traditional methods of production, albeit larger farms and agro-enterprises have been recently emerging. There is a limited number of large fruit producers in the country that use modern technologies, adopt global certification, and partner with entrepreneurs around the world. Nevertheless, inefficiencies among smallholders, and lack of value chain linkages have an impact on the export potential of larger firms. Because of the fragmented and generally low-quality production, large export-oriented firms seek to vertically integrate to mitigate the risk of unreliable supply. Interviews with firms suggest that at the moment, the sourcing is done with aggregators who buy from smaller farmers and firms. In some cases, there are no written contracts, but verbal agreements based on trust due to repeated business.

Such fragmentation also adversely impacts the potential for realizing economies of scale, cost sharing, and knowledge spillovers.

While productivity has been increasing, additional improvements can be made to reach the levels of global players through the use of wider varietal crops, and increased knowledge and use of modern production technology and methods. With regard to exports, for example, Uzbekistan needs earlier cherry varieties and seedless grape varieties. Some of these need to be localized to become suitable for specific country conditions. This requires investment in local research institutes, which while established, lack the capacity and training to employ new varieties. Uzbekistan spent less than 0.5 percent of the national budget to cover their R&D requirements, which is the equivalent of a 0.13 R&D/GDP ratio. Further, an international nursery which has recently set up business in Uzbekistan states that the regulations required to register new varieties of seeds and rootstock are expensive, time intensive and cumbersome.

While the basic infrastructure for the efficient functioning of the sector has been in place due to investments from the Soviet era, it is outdated and requires modernization, including the skill set necessary to operate it. For example, irrigation systems are old and energy-inefficient. Old irrigation pumps account for about 70 percent of agricultural production (IFC, 2018). Water use efficiency is about 30 percent less efficient than it should be, although in some regions, it is even lower. Part of the reason is that there is no incentive to use it efficiently. Water costs are not tied to use of water; rather, they are part of the overall land tax that the farmer pays. Further, water associations are not well-established, and those that are charge annual fees for their services which are insufficient to cover even maintenance. Recovery is also only about 40–50 percent. Interviews with stakeholders also highlighted the scarcity of a trained labor force that could work with the modern equipment that needs to replace the old.

A critical constraint faced by Uzbek fruit exporters is the need for improvements in cold chain capacity. According to the most recent estimates (Global Cold Chain Alliance, 2018), current cold chain storage capacity in Uzbekistan is 4.5 million cubic meters, which is significantly below the demand for storing horticultural produce. As a result, suboptimal cold chain storage conditions contributed to post harvest annual losses of 40 percent.[29] Recognizing this gap, the government of Uzbekistan has been heavily investing in the country's cold chain storage, however, additional investments are needed if Uzbekistan is to reach its fruit export potential.

Uzbekistan's inability to comply with international SPS requirements and maximum residue level (MRL) requirements poses the most serious constraint to reaching its horticulture export potential. Uzbekistan is one of only 14 countries in the world that is not a signatory to the International Plant Protection Convention, which results in distrust of the country's phytosanitary certificates. In addition, an IFC (2018) analysis of the Uzbek horticulture sector shows that the current procedure for responding to discoveries of excessive MRLs on Uzbek products in export markets is not clear, leaving Uzbek exporters vulnerable to sudden and protracted market closures in the event of MRL events. The lack

[29] IFC PPP Prospectus.

of appropriate infrastructure, regulations that are incomplete or confusing, and a general lack of awareness among the exporters about the importance of adherence to food safety standards for successful exports are the key constraints that need to be addressed for the country to improve its food safety system.

As mentioned above, an important precondition for doing business with retailers and distributors in many countries around the world has been the adoption of nongovernmental standards of food safety. Because Uzbekistan has largely exported its horticulture products to Kazakhstan and Russia, where food quality standards are lower, the country is currently not equipped to support its exporters in meeting most of these certification requirements. For example, it has yet to harmonize its standards with Global Good Agricultural Practices (GAP). Currently, there is very little infrastructure in the country (both public and private) to support roll out and compliance with these requirements.

There is a significant gap in the skills and capacity needed for the functioning of a modern horticulture subsector across the entire value chain. According to the recent analysis by IFC (2018), farmers, small farm enterprises, service providers, and even large firms, are unaware of modern production methods, the use of appropriate fertilizers and agrochemicals, or the importance of SPS requirements and food safety standards. Important public-sector agencies such as UzStandard have no trained auditors or inspectors to support implementation and enforce compliance with standards. The two large horticulture research institutions have scarce capacity and knowledge of the latest R&D needed to produce high-yielding, export-oriented local varieties. Technically qualified labor able to operate modern technology and production methods is scarce.

Lack of transparency along the value chain, including inefficient cross-border and customs clearance procedures, serve as significant barriers to realizing Uzbekistan's horticulture export potential. Interviews undertaken by IFC (2018) showed that cumbersome administrative procedures at customs can significantly delay border crossing. For example, trips to Russia which should take only 7-8 days of transit typically require 10-11 days when border and customs delays are factored in. 'Unofficial' charges for truck passage are also not uncommon on the border with Kazakhstan and Russia. Failure to pay can lead to delays of several days before crossing is allowed. Such delays at the border can be detrimental for the quality of the horticulture produce and for the establishment of a long-term relationship with retail chains in Russia.

3.4. Food E-Commerce in Central Asian Countries

Rapidly developing food e-commerce in both China and Russia create new opportunities for fruit exporters. To take advantage of these opportunities, Central Asian countries need to boost digital development of the agriculture sector. This section presents an evaluation of the state of digital development in the Central Asian countries with a specific focus on food e-commerce.

About one third of the Uzbek population has access to the internet although 90 percent of internet users are expected to be in Tashkent. Like the other Central Asian countries, the underdevelopment of online payment methods poses a large obstacle to

the development of this sector. In Uzbekistan, following the adoption of the presidential decree "On additional measures to increase the export of fruit and vegetable products", government ministries were tasked with creating an e-commerce application where horticultural producers could sell their goods to both domestic and international markets. This initiative was grafted onto the Uzbek e-commerce platform TradeUzbekistan.com — the platform that had been established in March 2016 with the mission of facilitating the export of Uzbek goods into foreign markets. The agriculture-focused addition includes information about domestic producers and exporters of horticultural goods; foreign importers of horticultural goods along with types and quantities desired; providers of plants, seeds and fertilizer; and an outline of the export process.

Foreign e-commerce platforms continue to dominate the market — aliexpress.com, eBay.com, and Amazon.com. Most online food delivery platforms service just the Tashkent area. Popular domestic sites that offer grocery delivery services include arba.uz and gomart.uz. Uzbekistan also features websites that allow bulk deliveries of food products including flagma.uz and mybazar.uz. The online platform "Flowering Gardens" (Цветущие сады) works to connect farmers' produce with domestic and international markets. Lastly, the Uzbek meal delivery market is growing but with almost all of that growth centered in the Tashkent area. Current market players include express24.uz, ranfood.uz, and bringo.uz.

In the Kyrgyz Republic, internet penetration is estimated to be only 34 percent with 20 percent of the population considered to be regular users. Severe impediments to the Kyrgyz e-commerce sector for agricultural goods include (i) consumer preference for the traditional way of grocery shopping, (ii) a perception that items purchased online are of lesser quality, (iii) the inability to negotiate prices online, and (iv) concern that recourse might be complicated in the event of a bad e-commerce purchase. Nevertheless, the Kyrgyz Republic has a host of meal and food delivery players. B2B seller, Prodsklad, provides wholesale delivery of agricultural products to businesses, hotels, restaurants, cafes, and supermarkets throughout the country. The Kyrgyz customer-facing grocery delivery industry already has several players including aMart.kz, alliance.kg, zakuponline.kg, and bishtao.kg. The meal delivery service also features multiple players including eda.kg and NambaFood.kg.

Internet penetration remains low in Tajikistan. Online trade is conducted through the national payment system — Korti Milli. Somon.tj serves as the most popular online retailer in Tajikistan. Underdeveloped e-infrastructure including the fact that many stores have limited email accounts and check them infrequently coupled with low internet literacy, insecure online payment systems, incomplete internet access (only 46 percent of Tajiks have regular access to the internet), and low levels of consumer trust in the e-commerce sector have contributed to this industry's slow growth. The low use of credit cards in Tajikistan (purportedly only 166,000 Visa, MasterCard or American Express cards are registered in the country) introduces yet another hurdle to internet purchasing.

Overall, the impediments to food e-commerce in Central Asia can be summarized as follows:

- ✓ Deliveries are generally purchased using cash since credit cards are not yet ubiquitous. In general, online payment functionality is underdeveloped.

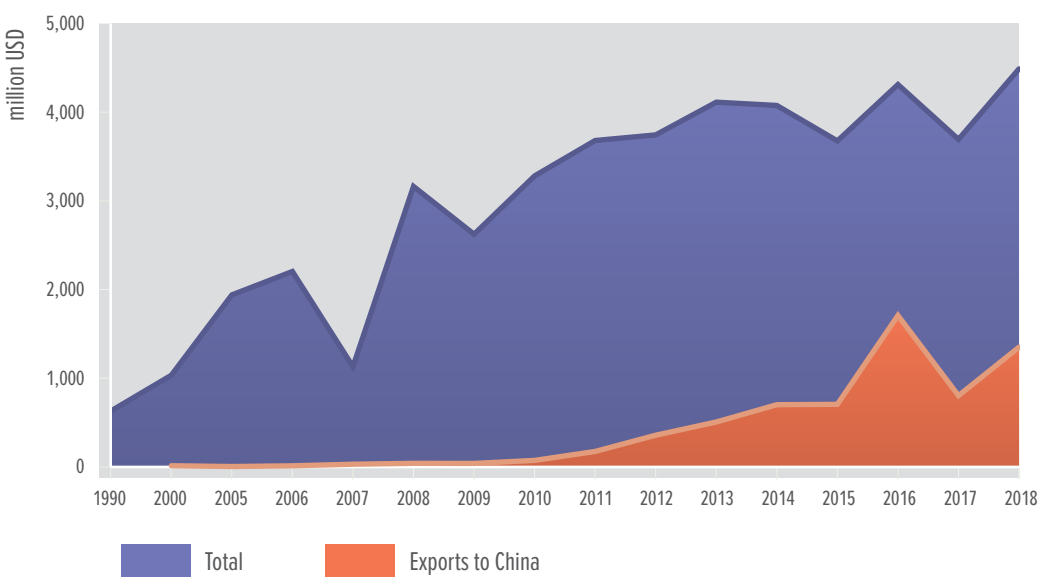
- ✓ Many stores' existing e-commerce platforms are poorly managed and lend a negative impression to the sector.
- ✓ Low internet penetration in parts of Central Asia as well as underdeveloped internet literacy obstruct customer access to online retail.
- ✓ E-commerce growth is centered around the populous cities and capitals of Central Asia.
- ✓ Slow internet speeds can make shopping online an arduous and inconvenient process.
- ✓ Cyber legislation in some areas of Central Asia (Uzbekistan, the Kyrgyz Republic and Tajikistan) is not yet robust, inhibiting consumer trust in the e-commerce system.
- ✓ Paper-based customs systems can be easily overwhelmed by shipments of small parcels and the adjudication of duties by delivery method (in which postal service couriers receive preferential treatment compared to express service providers) can be difficult. This inhibits cross-border sales of goods via e-commerce.

4. Success Story: Determinants of Chile's Competitiveness in the Chinese Horticulture Markets

Despite being a relatively small country, over the past ten years Chile has become one of the main fruit exporters to China. The significant increase in China's purchasing power and a growing penetration of food e-commerce throughout the country have drastically increased Chinese demand for fruit, resulting in the dramatic growth of fruit imports. Chile was one of the countries that took advantage of an existing opportunity, and between 2008 and 2018, its total fruit exports to China grew from $47 million to $1.41 billion (Figure 4.1). Temperate fruits account for 96 percent of total fruit exports to China. Operating mostly through Chinese wholesale distributors, Chilean exporters have increased their presence not only in large cities but also in markets located in smaller cities throughout the country and away from the coast. During this period, Chile's food exports to China have grown strongly and more rapidly than to other destinations, such as Europe and the United States, the traditional importers of Chilean fruits. In 2018, Chile accounted for 24 percent of total Chinese fruit imports, closely followed by Thailand (23.9 percent), the Philippines (10.5 percent), and Vietnam (10.4 percent), among others.

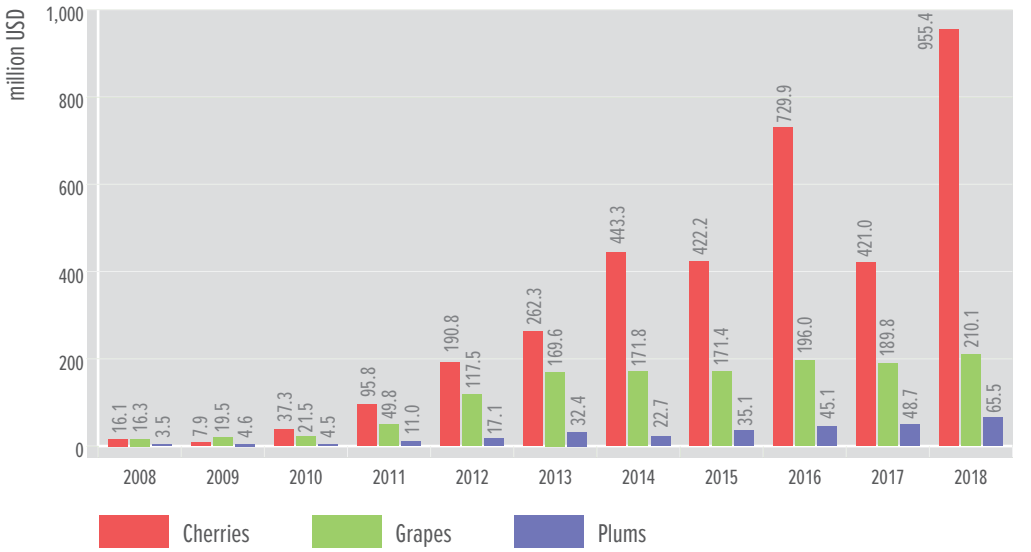
Cherries ($953.5 million), grapes ($203.8 million) and plums ($64.4 million) are among the top five fruits exported from Chile to China. The remaining two are blueberries and peaches. Between 2010 and 2018, exports of cherries grew from $7.9 million to almost $1 billion (Figure 4.2). Exports of plums and grapes to China experienced similar, but less impressive, growth. In the case of plums, exports to China have gone from around $2 million in 2000 to almost $66 million in 2018. Exports of

Figure 4.1. Chilean Temperate Fruit Exports (HS 0806, 0808, 0809, and 0810)



Source: UN COMTRADE (2018).

Figure 4.2. Chilean Exports of Cherries, Grapes and Plums to China[30]



Source: International Trade Center (2018).

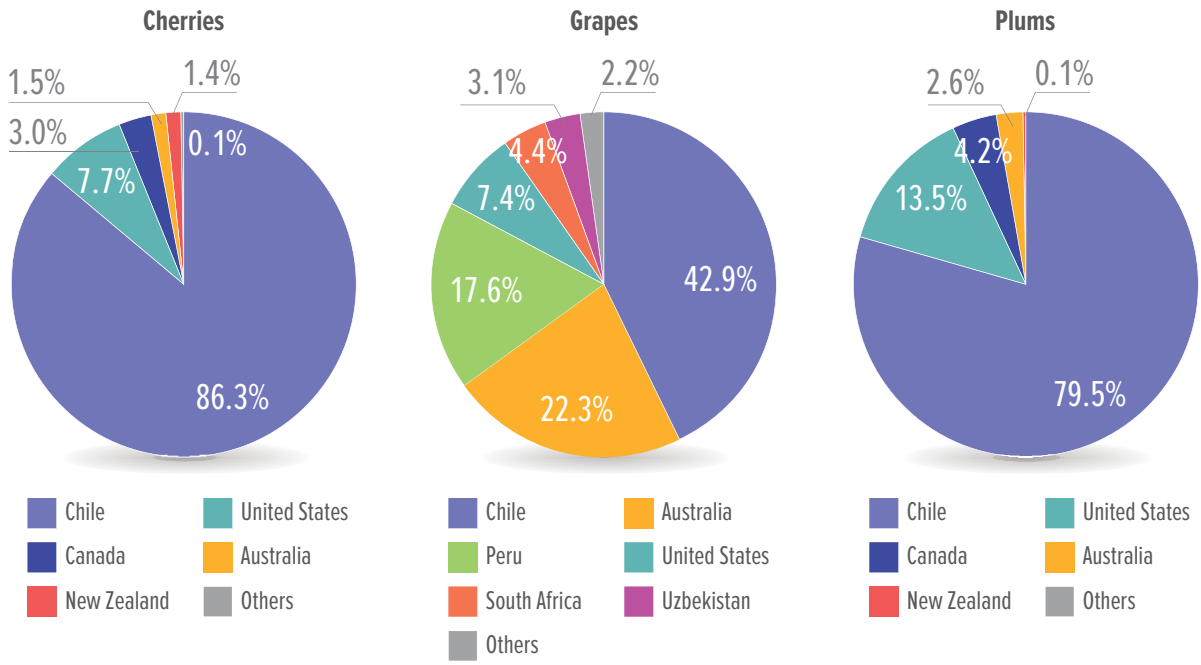
grapes increased ten-fold between 2010 and 2018, from $21.5 million to $210.1 million. Grapes have always been an important part of Chilean exports, while exports of other fruits, such as plums and cherries, are a more recent phenomenon.

In 2018, Chilean cherries, plums and grapes accounted for 86, 79 and 43 percent (or $1.1 billion, $93.5 million and $274.5 million), respectively, of the value of Chinese imports of these fruits, and remain very competitive vis-à-vis other exporters (Figure 4.3). When comparing Chile's relative performance with respect to the United States, its main competitor in the Chinese fruit market, Chilean cherry exports between 2013 and 2016 were eight times higher than those of the United States. Similarly, in the case of grapes, Chilean exports are more than five times the value of US exports of grapes in 2018, and the gap continues to grow.

In terms of its structure, the Chilean horticulture sector is represented by a relatively large number of small producers and a few exporters, although their concentration has been decreasing in recent years. In the case of cherries, for example, there are more than 12,500 plantations, 88.7 percent of which are less than 5 ha. Nonetheless, the ten largest exporters export more than 50 percent of the annual production of cherries (40 percent of the grape production), with Garces Fruit and Copefrut S.A. exporting around 14 percent and 10 percent, respectively, of the country's national production in any given year (López, 2019). Despite this, the fruit sector has become less concentrated over the years, allowing for more and more small producers to participate directly in exports. If during the 1992–1993 period, 65 percent of all fruit exports belonged to the top ten exporters, in 2017–2018 this share was less than 34 percent (Parodi, 2019).

[30] Note: includes HS codes 080610, 080620, 080920, 080921, 080929, 080940, 081210, and 200860.

Figure 4.3. Share of Chilean Fruit in Total Chinese Fruit Imports, Percent



Source: UN COMTRADE (2019).

There are several factors that have contributed to Chilean success in the Chinese horticulture markets that can serve as a lesson for other countries. While some of the initial success of Chilean fruit exporters in China can be attributed to external global macroeconomic trends and the seasonality of Chilean fruit production, it is also important to note that consistent, liberal trade and agricultural policy reforms enabled the environment for agri-food sector development and prepared the country for success in the Chinese market. The lessons learned from these reforms can be used by the Central Asian countries that would like to diversify the geography of their exports and increase their presence in the Chinese market.

The free trade agreement signed between Chile and China in 2005—the first of its kind in Latin America—was a determining factor behind the increase in Chilean agricultural exports to China in addition to slowing trade with the European Union. The FTA offered immediate duty-free access to 37 percent of the Chilean tariff list (2,805 out of 7,550 products), and 2,947 products entered the duty-free regime in the following year. By 2009, exports to China paid an average tariff of 0.1 percent. The Agreement established for both countries a tariff reduction calendar of one, five and ten years before reaching duty free status. As a result, in 2007 China was Chile's third-largest export destination, and by 2010 it had become the largest. The global financial crisis of 2007–2008 and the ensuing euro crisis generated a slowdown in demand for imported goods in the European Union, traditional markets for Chile, and created additional pre-conditions for Chilean exporters to explore new trade opportunities. Notably, while during 2003–2007 Chilean agricultural exports to the European Union were

growing at an annual rate of 23.7 percent, between 2008–2015 this growth rate had slowed to a much lower annual rate of 3.6 percent. The slow progress in the modernization of the EU-Chile FTA served as another contributing factor for Chile to explore other markets.

Overall, China's FTA was the outcome of a liberal and predictable approach to agricultural trade policy that had existed in Chile for decades. Since the early 1980s, Chile has unilaterally reduced a uniform tariff (eventually six percent MFN), without quantitative restrictions on imports or exports. Complementing that unilateral policy and making it more credible was a sequence of bilateral FTAs, which reduced effective tariffs to about one percent. This process of accumulating commitments to trading partners at the same time unilaterally reducing all import restrictions has been referred to as "additive regionalism." Trade liberalization, which eliminated almost all non-tariff barriers on imports and exports and applied a drastic reduction in the level of import tariffs, adopting a uniform-tariff approach on all imports has been considered by economists as an essential reform for trade growth, and is particularly beneficial for agriculture. Currently, any tariff changes must be approved by the Chilean Congress, resulting in highly predictable trade policy.

The commitment of the Chilean government to international integration has resulted in trade agreements with countries accounting for 80 percent of the world's population and 85 percent of global value added. Chilean FTA negotiations began regionally, with Mercosur and other Latin American partners in 1996 and gradually expanded north to agreements with Canada, the European Union and the United States, and eventually including the Republic of Korea, Japan, China and others. Interestingly, China's FTA with Chile was the first bilateral agreement for China; it was signed in 2005 and became applicable in 2006. Since then, within the Latin America and Caribbean region, China has signed FTAs with Peru (2009) and Costa Rica (2010).

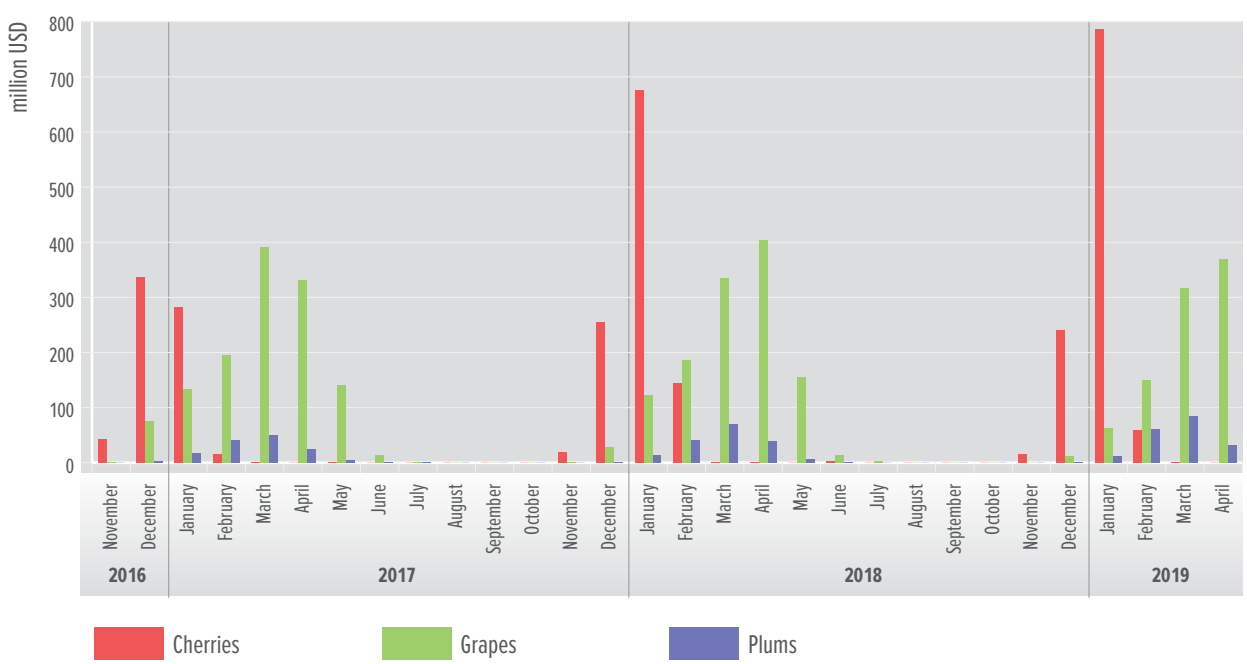
From the perspective of Chilean agriculture, the bilateral FTA commitments have been particularly important due to the country's comparative advantage in fresh and processed fruits and vegetables, wine and aquaculture. Compared to commodity products (standardized, bulk commodities) such as wheat and soybeans, the prices of which are almost independent of where the products are sold, differentiated product prices depend more on export market standards and restrictions, such as sanitary and phytosanitary controls. Negotiating market access for these types of products is less amenable to multilateral, one-size-fits-all agreements, requiring instead sometimes intense bilateral negotiations with respect to inspection regimes, traceability, and often the adoption and enforcement of importer quality controls in the home market. In addition, Chile's bilateral FTAs have improved market access to more processed goods which would have otherwise been subject to the well-known tariff escalation effect. While all protection on Chilean processed food exports has not been eliminated (e.g., the EU's slowly increasing import quotas on Chilean beef and edible oil), the bilateral FTAs have helped diversify food products down the value chain.

Rapidly growing demand for imported fruit in China and the lack of a supply in winter months were additional factors for Chilean success in the Chinese markets. Chilean counter seasonal production provides the Chinese market with fresh fruit during winter in the northern hemisphere. The time of

the year in which Chilean cherries arrive to Chinese markets coincides with the Spring Festival (Chinese New Year). During this time, it is customary to give presents, and cherries are one of most appreciated gifts by Chinese families as they symbolize love and affection. This also explains the high prices received by Chilean producers during that time of the year.

Chilean fruit export volumes in the Chinese markets are highest between November and May, depending on the type of fruit (Figure 4.4). For example, all cherry exports from Chile are concentrated in just four months: November, December, January, and February. Considering the 2017/18 and 2018/19 season, between 62 percent and 71 percent of the total value exported in a regular season occurred only in January. In January 2018, Chilean exports of cherries totaled $676 million, whereas in January 2019 this value was $787 million. Grapes, on the other hand, are exported over a more extended period (December to June) with a peak in April when more than 30 percent (around $400 million) of the total production is exported. A similar situation is observed for plums, with the annual export peak in March. From Figure 4.4 it is interesting to see how Chilean exports fall off during the months of June to November. Chilean exporters have been increasingly investing in marketing to stimulate the consumption of cherries both before and after the Spring Festival. According to exporters, this has had a positive effect as off-Spring-Festival consumption of cherries has increased by more than 20 percent. In addition, the "Enjoy your Red Moment" marketing campaign aims to expand the year-round consumption of cherries.[31]

Figure 4.4. Monthly Exports of Chilean Fruit



Source: Central Bank of Chile (2019).

[31] Latin America-China Trade and Investment Amid Global Tensions.

Agricultural sector reforms and domestic agricultural policies created an enabling environment for agricultural development and prepared Chile to take advantage of the opportunities in the Chinese markets in the early 2000s. Chile's present agricultural and rural strategy have their roots in a series of major reforms to national economic policy that began in the late 1970s. After a lengthy period of significant government intervention in the economy since the 1940s, which included a massive land reform between 1965 and 1973, Chile began a series of radical structural policy changes focused on the security of property rights on land, economic deregulation, privatization of formerly state-run enterprises, and a move toward open trade. Sector-specific policy reforms complemented these broader policy shifts, more closely linking agricultural investment and production decisions to incentives determined in domestic and international markets. Specifically, during the mid-1970s the government halted farmland expropriations, re-established secure private property rights on land, and began redistributing land away from large, de facto state-controlled operations (called *asentamientos*) to small-scale privately-owned farms.

Direct government interventions in the product, input and credit markets were gradually phased out to strengthen competition in the agricultural input markets. Early in the reform process, agencies in charge of price controls and marketing boards were eliminated, and price controls themselves were phased out, albeit slowly. For some politically sensitive farm products (e.g., wheat, milk, and oilseeds), a price stabilization program in the form of "price bands-variable import taxes" on wheat and sugar was implemented for nearly a decade. The economic reforms included the privatization and deregulation of airlines, ports, and telecommunications, which contributed to cost reduction and better services, soon to become particularly important for an export sector that emphasized fruits and vegetables.

The signing of FTAs, such as those with the European Union (2003) and the United States (2004), had a further effect on the level of government interventions in the domestic agricultural markets. Specifically, price bands on politically sensitive products were eliminated as part of implementing the FTAs. Effective tariffs on goods from most trading partners now hover in the range of one or two percent, net of a uniform value-added tax (19 percent), which is non-discriminatory with respect to origin, applying to both domestic and imported products. Currently, the overall value-weighted average effective tariff rate is near one percent.

The key principles of Chilean state support in agriculture have included: i) transparent and efficient policy development for the industry; ii) large investments in food safety and quality compliance; iii) support for innovations; iv) support for small and medium enterprises; v) support for private initiatives in export promotion; and vi) liberalization of trade policies and negotiating the best possible conditions with current and potential trade partners (Khidirov et al., 2015). These principles are reflected in the budgetary outlays allocated to agriculture.

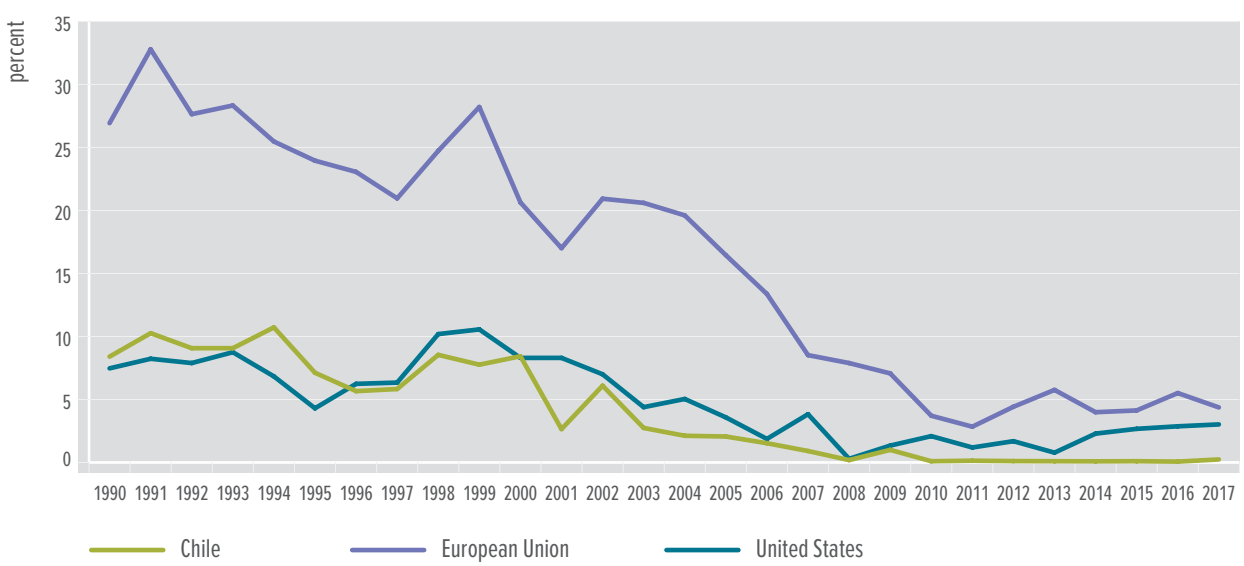
Chile has been gradually decreasing its agricultural producer support and use of market price support measures,[32] **making Chilean farmers contingent**

[32] Market Price Support (MPS) is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures creating a gap between domestic producer prices and reference prices of a specific agricultural commodity measured at the farm-gate level.

on world prices and over time more resilient to the volatility of foreign markets. Since 2003, the country's OECD agriculture producer support estimate[33] has been decreasing, and currently constitutes 0.24 percent ($38.25 million) of the aggregate value of agricultural production (Figure 4.5), which is much lower than the corresponding European Union and United States shares of 4.4 percent ($21 billion) and three percent ($10 billion), respectively. Within Producer Support Estimate (PSE), market price support measures account for three percent, while the rest of the support is primarily distributed in the form of input subsidies (credit and fertilizer) targeted at small famers, as well as support for irrigation investments (particularly drip irrigation and construction of small-scale farm-level reservoirs) and recovery of degraded soils. Overall, the share of governmental support for variable input use, fixed capital formation and on-farm services has been increasing to substitute market price support (MPS) measures. Larger farms receive little direct government support, although some subsidies are accessible to commercial farmers, including small-scale irrigation support and a limited scale fertilizer subsidy program.

The Chilean government heavily invests in public goods that support overall agricultural sector development. One distinguishing characteristic of Chile's approach to agricultural policy is that is does not have a selective trade, tax, or price policy meant to stimulate specific activities and associated value-added sectors. Trade and domestic policies have followed an approach of uniform treatment within and across various sectors, specifically with respect to border tariffs, domestic support measures, and VAT. Instead, the government allocates a large share of public funds

Figure 4.5. Agricultural Producer Support as a Share of the Aggregate Value of Agricultural Production



Source: OECD (2018a).

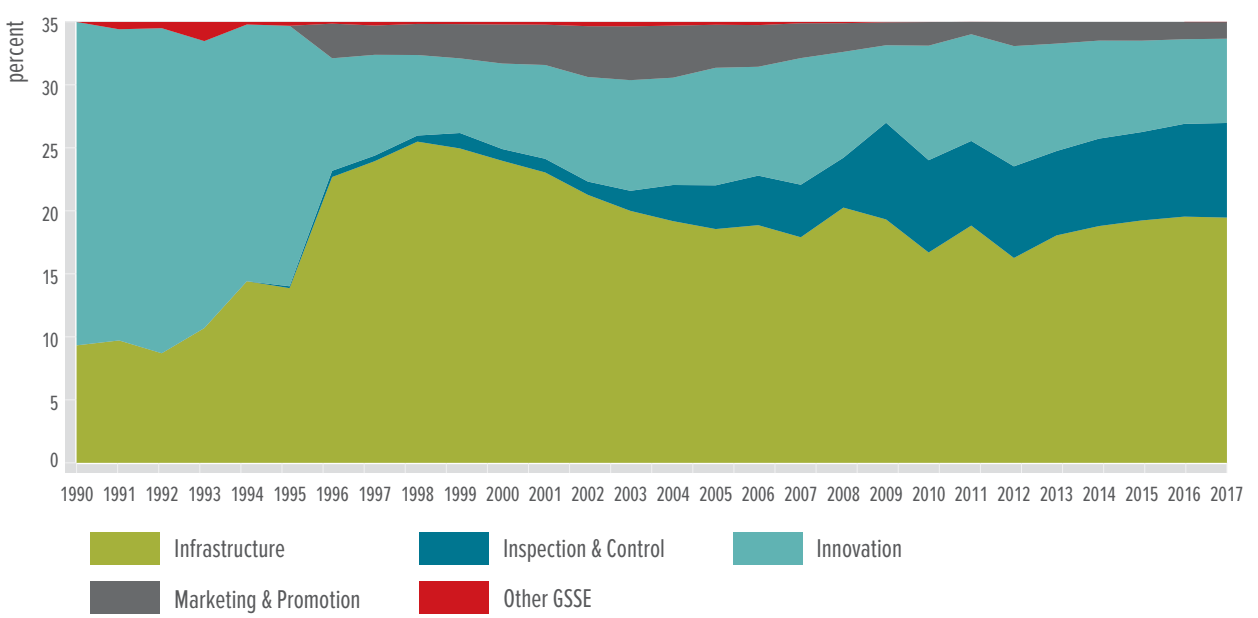
[33] PSE is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at the farm-gate level, arising from policy measures, regardless of their nature, objectives, or impacts on farm production or income.

to general services' support expenditures (GSSE), such as research and development, inspection and health services, export promotion, and large-scale infrastructure, which are mainly investments in irrigation (Figure 4.6). In 2017, the Chilean government allocated $422 million to GSSE. The largest share within GSSE was allocated to infrastructure investments (55.6 percent). Allocations to inspection and control services accounted for 21.5 percent, R&D for 19.1 percent, and marketing and promotion for 3.8 percent. Chile has in place a robust R&D program to develop and adopt new varieties and growing techniques. The private and public sectors cooperate closely in this area, although private funding has been growing much faster than public funding (Khidirov et al., 2015).

Overall, Chile's budgetary allocations, measured as a share of the aggregate value of agricultural production, are among the highest of its competitors and some benchmark countries (Figure 4.7), primarily, because of the government's increased focus on the provision of public goods. In 2017, this share accounted for 2.6 percent, and exceeded corresponding shares in Argentina, Brazil, New Zealand and the European Union. The United States is the only country in the sample with a higher GSSE value than Chile. Its GSSE share in the aggregate value of agricultural production was 2.81 percent.

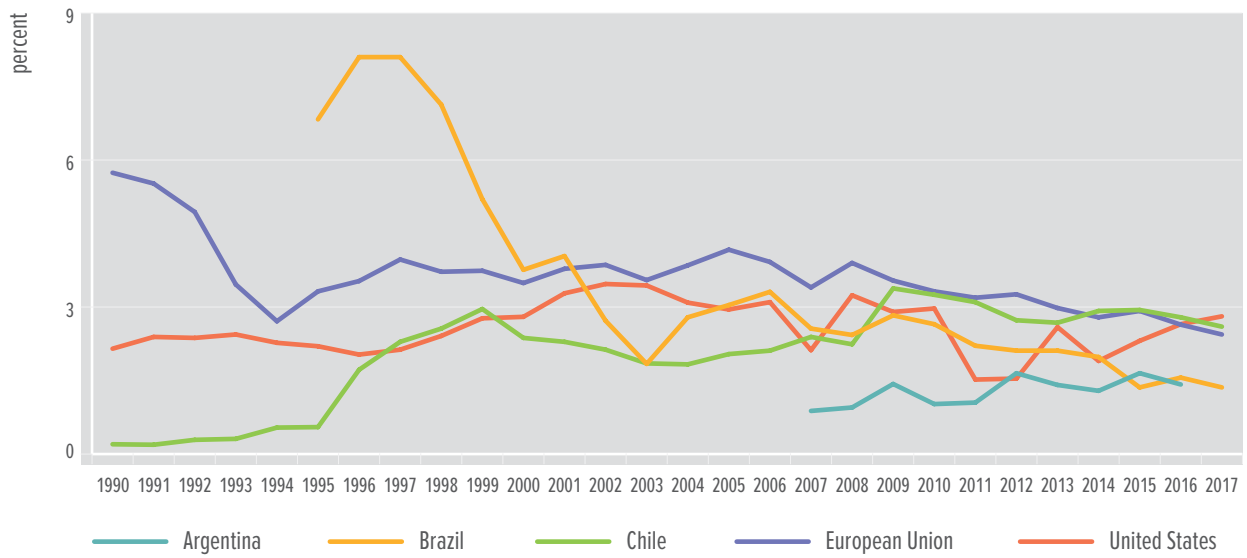
Sustained public investments in food safety and quality control systems have ensured the competitiveness of Chilean agricultural products in world markets, including in China. Between 2003 and 2017, budgetary support for inspection and quality control services grew by 1,017 percent, from $8.1 million to $90.5 million, and in 2017 accounted for 20 percent of total GSSE allocations. The largest budgetary shares are allocated to the Agricultural and Forestry Export Inspection Program (54 percent of total GSSE) and Border Control Inspections

Figure 4.6. General Services' Support Expenditures



Source: OECD (2018a).

Figure 4.7. General Services' Support to Agriculture Relative to the Aggregate Value of Agricultural Production



Source: OECD (2018a).

(29 percent). Notably, in accordance with OECD estimates, all the key fruit exporters to China, including the United States, Australia, New Zealand, South Africa and Philippines, allocate a significant share of their budgets to inspection and control services.

Driven by foreign supermarket standards in Europe, Japan, the United States and China, third-party (private) certification has also become a necessary practice for Chilean exporters. Exporters must obtain certification from different private certifications agencies such as British Retail Consortium, Global G.A.P., Global G.A.P. Risk Assessment on Social Practice (GRASP), Hazard Analysis and Critical Control Points (HACCP), Rainforest Alliance, Tesco and Walmart retailers, among others, which test their compliance with good agricultural practices, which include not only quality and safety conditions of the product, but also aspects of the production process such as labor and environmental conditions. These standards have been internalized and adopted by commercial Chilean growers and exporters. In addition, the Fruit Exporters Association of Chile AG (ASOEX) has initiated the Chile G.A.P. program to help Chilean producers and exporters of fruits and vegetables comply with the many private requirements set out by various foreign retailers.

A strategic focus on China and strong export promotion are important factors that bolster Chile's success in conquering China's fresh fruit market. China is a priority market for the Chilean government. Its two public agencies, ProChile and DirEcon, promote Chile's agri-food exports in the Chinese markets (Figure 4.8). For example, to build a lasting relationship with China, ProChile works on the basis of a long-term strategy centered on introducing a new product every year, learning from past experiences and expanding contracts (Gonzalez, 2018). Chile has four trade offices in China—in Shanghai,

Figure 4.8. Chilean Public Institutions Involved in Export Promotion

pro|CHILE	EXPORT PROMOTION ENTITY THAT SUPPORTS THE PROMOTION OF CHILEAN FRESH FRUIT AND HELPS POSITION OUR INDUSTRY AS A RELIABLE FRESH FRUIT SUPPLY PARTNER TO THE WORLD
DIRECON Dirección General de Relaciones Económicas Internacionales	CHILE'S PUBLIC ENTITY IN CHARGE OF LEVERAGING OPPORTUNITIES IN INTERNATIONAL ECONOMIC RELATIONS AND POSITION CHILE IN THE GLOBAL MARKETPLACE

Guangzhou, Beijing, and Hong Kong, SAR—as well as an agricultural counselor based in Beijing. A number of promotional and marketing activities regularly take place to increase the presence of Chilean fruits in the Chinese market. In addition, ProChile is closely aligned with private associations of exporters to improve quality, strengthen market positioning, and finance intelligence to identify trends and opportunities.

The Chilean government and the private sector both recognize the market potential of Chinese fresh fruit e-commerce and have cooperated with Chinese e-commerce companies to promote Chilean products. In 2015, Direcon signed an agreement with Alibaba to promote Chilean products from small to medium-sized enterprise exporters. In the same year, ASOEX reached a special agreement with Alibaba to facilitate direct online sales of Chilean fruits, especially blueberries and cherries, in China. Earlier in 2019, ASOEX organized a promotional campaign in Hema, the offline supermarket of Alibaba, featuring a display of cherries, blueberries, and avocados from Chile.

The Chilean fruit industry also realized early on the importance of a recognizable brand and high-quality packaging for Chinese consumers (Figure 4.9). In addition, Chilean exporters have also invested heavily in standardization and packaging of fruit in response to the sensitivity of Chinese consumers to high quality and packaging that the brand conveys. Investments in modern equipment have given Chilean fruit growers a more competitive edge in the Chinese markets as they automate and perfect the packaging process, while also separating fruit by color and size.

Establishing a strong relationship with Chinese counterparts is another reason for Chilean success in China. China establishes specific requirements for every product imported from Chile. Only certain origins (areas and specific producers) within Chile are allowed to export. The strategy followed by Chilean producers has been to create direct links with Chinese importers in order to meet their

Figure 4.9. Unified Brand of Chilean Fruit

Source: FruitsfromChile.com (2019).

specific requirements and to speed up the export process. Several Chinese exporters are now based in farming areas in Chile during harvest time, buying directly from small-scale firms who buy from farmers, organizing and processing the shipment and distributing it in China. Similar to the Chinese presence in Chile, an increasing number of Chilean exporters have established themselves in China as a way to reduce costs and improve their control over prices, negotiating directly with local buyers at the port of entry but also in an explicit effort to reach the deeper markets in the interior.

Close cooperation between Chinese and Chilean counterparts have allowed for the creation of special contracts to transport cherries in ships that move faster across the ocean. Now Chilean exporters and ships can go straight from the coasts of Chile to Hong Kong in about 22 days, in contrast to 40 days a few years ago. The purpose of this contract is to guarantee the arrival of Chilean fruit to its destination in shorter periods of time and to maintain the freshness of the produce. While more expensive than regular contracts, they tend to pay off as they can put the fresh produce in the Chinese markets earlier than before, improving quality and timing.[34] These so-called Cherry Express ships, that started their operations just recently,[35] sail directly from Valparaiso to Hong Kong without intermediate stops but charge considerably higher freight rates. The cost of shipping using this type of ship is $1.3 per kg, more than 17 times the cost of a regular shipment of fruits to Asia, but despite the higher cost it now dominates among exporters. An alternative way is to fly cherries to China during November and December and to take advantage of the higher prices during that period. Shipping cherries by air costs around $3.6 per kg, but only takes four days to get to China.[36] This method is used by only a handful of exporters who aim to take advantage of the higher prices observed in the Chinese markets in December. The bulk of the exports is still transported during January by ship.

[34] These contracts also include transport insurance to reduce the risks of food mismanagement, losses, and late deliveries.

[35] Both Hapag-Lloyd and Hamburg Sud started their 'Cherry Express' operations in the 2016/17 season in Chile.

[36] Information retrieved from: https://www.mundomaritimo.cl/noticias/china-se-convierte-en-el-mercado-mas-importante-de-la-cereza-chilena, and http://impresa.lasegunda.com/2018/11/28/A/VG3GNDCH/all.

5. Policy Recommendations

The findings of the report point to the need to increase the quantity, quality, sophistication and sustainability of Central Asian fresh fruit exports for them to be competitive in Chinese fruit markets and other evolving global fresh fruit markets. To realize their export potential, the Central Asian countries would need to overcome a number of constraints that can be grouped as follows:

The supply of large volumes of fruit of a consistent quality required by the large and sophisticated import markets, such as in China and in the formal retail sector in Russia, can only be achieved by integrating Central Asian smallholder fruit producers into the value chain. To enter both the Chinese and higher-end Russian markets, Central Asian exporters need to be able to supply large volumes of fruit of consistently high quality and in a timely manner. Such a requirement is in line with evolving global fruit markets that are becoming more concentrated at the retail level with the key players preferring to deal with fewer, larger suppliers to cut down on transaction costs. Central Asian producers will be able to supply large volumes of quality fruit by improving the cooperation of small-holder producers. The role of the government in this case could be to introduce different forms of government support to farmers that engage in cooperation and to educate producers on the benefits of cooperation and knowledge sharing.

Access to high quality inputs—irrigation, seeds, fertilizer and finance—is a prerequisite for Central Asian farmers to obtain yields comparable to world leading horticulture producers. The study showed that across the region, fruit producers, who are predominantly small scale, face difficulties in acquiring financial resources that would allow for the procurement of higher quality inputs, modernization of production methods, improved irrigation or expansion of operations. While banks have developed products for agricultural borrowers, interest rates remain high, and the requirements to obtain financing are complicated and unclear to most small-scale producers. Limited access to finance is one of the primary reasons behind the current high level of informality of Central Asian fruit exports to the Russian markets—since local producers are short on working capital, they are more eager to make quick, and less formal, sales to ensure the fast turnover of available funds.

To ensure that Central Asian fruit producers are competitive in world horticulture markets, they need to be up-to-date with the latest knowledge on fruit production and handling. Horticulture is a highly technical and knowledge-dependent industry. Stakeholders across all the surveyed countries pointed to the lack of up-to-date technical knowledge among small scale fruit producers in Central Asia. As such, to sustain growth of the fruit sector in the country, Central Asian governments need to invest in human capacity building and knowledge generation to ensure research findings, best practices and technologies are delivered to the fruit producers. Extension services need to offer educational programs for farmers on plant care, high-yield varieties of fruits, post-harvest handing of the fruit, and necessity of fruit calibration. With this they need to raise awareness and recognition among the producers about the problems created by traditional approaches to the production and handling of fresh fruit that have limited consideration for the food safety and quality requirements of international markets.

Post-harvest, an efficient cold chain is critical to ensure a steady and reliable supply of quality fruit. The lack of sufficient and efficient cold chain infrastructure is a major contributor to fruit losses in Central Asian countries, undermining the competitiveness of exporters in the export markets. In all three analyzed countries, current cold chain storage capacity is insufficient to meet the demand for storing horticultural produce. For example, in Uzbekistan, existing storage is enough to store less than 3 percent of planned fruit and vegetable output by 2020. And while Uzbekistan has been heavily investing in cold chain capacity, the Kyrgyz Republic and Tajikistan need to more actively stimulate investments in this area.

The ability of Central Asian governments to implement sophisticated, internationally recognized food safety and quality control systems would be a determining factor to reach their horticulture export potential. At the government level, the quality and capacity of customs control and inspection bodies do not meet the requirements of modern horticulture markets, putting Central Asian exporters at a disadvantage vis-à-vis their global competitors. For example, Central Asian food testing laboratories are not recognized by Chinese markets as they lack modern technology and up-to-date training of personnel (Euromonitor International, 2017). Current fruit exporters from Central Asia are 'hand-picked' by Chinese counterparts, which limits overall export volumes from the region. Moving forward this would remain the most important constraint for increasing horticulture export potential from the Central Asian countries to China or other higher-end markets. While the Central Asian governments already understand the problematic food safety and quality control areas and are developing plans to improve these, much remains to be done. Governments urgently need to invest in establishing internationally recognized laboratories equipped with modern equipment and to develop educational programs to train food quality experts. Increasingly, strict food safety and quality requirements for fruit imports are not unique to China or Russia but serve as a reflection of the ongoing changes that have been shaping the global horticulture trade, creating an urgency for the Central Asian government to adapt. Growing and increasingly more affluent middle-class consumers around the world are shifting their dietary preference to more diverse, healthier and higher quality foods, stimulating an increased public awareness with regards to food safety. In developed and middle-income countries these trends have been accompanied by a tightening of existing requirements and standards for food quality and safety. Similar trends are observed in the formal retail chains that are expanding in both developed and developing countries. As such, horticulture chains around the world are becoming increasingly more formal, transparent and concentrated, necessitating reforms in the Central Asian horticulture sectors for them to stay relevant in the global fruit trade.

Investment in R&D has proven to be critical in ensuring the competitiveness of the world leading horticulture exporters—without such investments Central Asian countries will not be able to realize their horticulture export potential. Examples from both Turkey and Chile show that investments in R&D (both public and private) have played a critical role in ensuring the success of horticulture exports from these two countries in Chinese and Russian markets. Until Central Asian governments recognize the importance of investing in R&D to increase overall fruit production and varieties grown in the region, their exporters will remain less competitive in international markets. As the report shows, the development of

early varieties of fruits can immediately give Central Asian countries a competitive boost in their destination markets. R&D spending becomes even more important in the context of climate volatility that Central Asian countries are prone to and the need to develop varieties that are more resilient to climate variability. The private and public sectors need to closely cooperate in this area. Funding for these centers should be driven largely by the commercial applicability of their research.

Strengthening the digitization of the agriculture sector can provide new ways to solve the existing constraints to the participation of Central Asian exporters in new export markets. Digital technologies, such as new digital platforms and applications, can reduce the existing transaction costs and market failures that prevail in the Central Asian horticulture sector, improving its efficiency. Specifically, digitalization of the sector can provide various stakeholders along the value chain with direct access to information about input and product markets, including international markets, reducing their reliance on traditional intermediaries, and better aligning production with demand. Digital solutions, such as digital advisory services, can also be used to improve the knowledge base of the horticulture producers by offering information on production and post-harvest methods, on-farm storage techniques, use of new technology, fertilizers and agro-chemicals, standards, and financial management. Digital technologies also have the potential to improve the delivery of public policies and services. For example, digitization can increase the efficiency and reliability of traceability systems, customs management and trade logistics (OECD, 2018b).

Expanding participation in multilateral and bilateral trade agreements will create a more level playing field for Central Asian exporters in world markets. While the Kyrgyz Republic and Tajikistan are already World Trade Organization (WTO) members and benefit from MFN treatment, Uzbekistan needs to speed up WTO accession negotiations and finalize accession. This will enable Uzbekistan to take greater advantage of the multilateral trading system. In addition, all the Central Asian countries concluding FTAs with additional trading partners, including China, would give them greater access to these markets. As the Chilean-Chinese trade relationship shows, signing an FTA was a key success factor for the increased Chilean presence in Chinese fruit markets.

Strengthening export promotion and marketing will facilitate Central Asian penetration in new export markets. The results of the study highlight the competitive advantage of Central Asian fruit exports that is grounded in their competitive cost structure. However, Central Asian countries also have a strong potential to increase their competitive advantage based on product differentiation. Such a strategy is a more secure route for capturing higher-end markets and maintaining margins. Product differentiation may involve more skill in production and processing, greater capital inputs, greater innovation capabilities, or simply an improved approach to marketing and export promotion (Labaste, 2015). The Chilean example presented in the report highlights the role that governments can play in marketing and promoting horticulture exports. Central Asian apricots, especially Tajik and Uzbek produce, are believed to have higher nutritional qualities than competitive offerings, however, international buyers and consumers, including Chinese ones, are not aware of their quality, taste and nutritional value. A similar situation is observed for Central Asian grapes. Central Asian governments can support their exporters by facilitating

and promoting their participation in international trade expositions and other trade promotional events, particularly in the priority markets. Central Asian governments also need to strengthen or create a presence for their trade representatives in the target export countries. In addition, improving producer access to market information is needed to improve transparency of the value chain. To stay competitive in international markets, fruit producers need to have easy access to up-to-date market information. Governments need to target public spending on increasing market research and data collection to better understand end markets and the costs associated with production. This will help Central Asian producers to better adjust to existing global demand and any evolving trends.

While the region faces similar general constraints along the value chain, the urgency to tackle specific bottlenecks varies across countries. Addressing some of these constraints are already part of ongoing programs/projects undertaken by governments, or by international organizations. In these cases, there is a need to ensure that these activities remain on track and/or are expedited. In other cases, governments have introduced a limited effort to address the existing constraints and doing so would require a coordinated effort in terms of implementation. In line with the report findings, based on the stakeholder interviews and literature review, areas for government involvement across all three countries in the short-, medium- and long-run are presented in Tables 5.1, 5.2, and 5.3.

Table 5.1. Policy Recommendations—Kyrgyz Republic

	1. Production & Marketing	2. Food Safety & Quality	3. Skills & Knowledge	4. Trade & Export Promotion	5. Regulatory Environment
Short-term priorities	▪ Strengthen linkages in the value chain to help integrate smallholder farmers into the horticulture value chains: • Promote producer cooperation in the country • Strengthening market linkages between producers and aggregators/fruit buyers • Explore cluster approach for fruit cultivation ▪ Improve access of the horticulture producers to finance: • Provide information about available financial instruments • Develop new financial tools, particularly those targeting smallholder producers ▪ Promote an increase in private investments in cold chain storage and post-harvest processing capacity	▪ Upgrade equipment, testing and certification methods of food safety laboratories ▪ Establish and disseminate quality and grading standards for fruits ▪ Facilitate adoption of HACCP systems by the private sector ▪ Provide technical and financial support for exporters to adopt global quality standards	▪ Provide capacity building to farmers on production and post-harvest methods, on-farm storage techniques, use of new technology, fertilizers and agro-chemicals, standards, and financial management, through advisory and extension services, including digital ones ▪ Set up market information systems on horticulture markets, domestic and international ▪ Strengthen food safety training programs ▪ Educate exporters on: • Analyzing and identifying market opportunities in global horticulture markets, including opportunities for exporting organic horticulture products • Meeting requirements for the markets/supermarket chains, including those in China and Russia • Dealing with export paperwork • Customs procedures and regulations • Establishing direct contacts with importers in new markets, including China • Financial mechanisms and risk reduction strategies to facilitate the start-up of export operations to new markets	▪ Continue developing economic and trade cooperation with China, including for horticulture trade ▪ Prepare export promotion programs and initiatives as they relate to horticulture ▪ Provide information on the import requirements in trade-partner countries, including those of the retail chains ▪ Encourage and support the participation of Kyrgyz horticulture exporters in international trade fairs	▪ Enforce higher transparency along the horticulture value chains to ensure better traceability along the fruit value chains ▪ Remove cost and time redundancies at border crossings ▪ Simplify administrative procedures associated with fruit exports

(table 5.1. continues next page)

(table 5.1. continued)

	1. Food Safety & Quality	2. Production/Marketing	3. Digital Solutions	4. Transport
Medium-term priorities	Support development of modern means for disease and pest monitoring Strengthen efficiency of the SPS inspection offices at border points Provide training and capacity building among government agencies to implement standards	Support development of service co-operatives and private procurement companies that supply farmers with inputs Improve access to fertilizer/planting material for smallholder farmers Develop modern distribution centers in the proximity of fruit production Upgrade existing wholesale markets	Equip related government agencies with ICT systems to improve service digitization Create enabling environment for private sector to introduce digital solutions in the horticulture sector Provide digital literacy training for farmers and exporters	Address high rail and air transportation costs Improve road infrastructure

	1. R&D	2. Digital Solutions	3. Regulatory Environment
Long-term priorities	Increase investment and capacity among R&D institutes for development of local varieties of horticulture crops	Continue investments in e-commerce infrastructure Develop digital agriculture innovation hubs	Continue efforts to create a more enabling regulatory environment to attract domestic and foreign investment into the horticulture sector

Table 5.2. Policy Recommendations—Tajikistan

	1. Production & Marketing	2. Skills & Knowledge	3. Regulatory Environment	4. Trade & Export Promotion	5. Food Safety & Quality
Short-term priorities	▪ Strengthen linkages in the value chain to help integrate smallholder farmers into the horticulture value chains: • Promote producer cooperation in the country • Strengthen market linkages between producers and aggregators/fruit buyers • Explore cluster approach for fruit cultivation ▪ Strengthen market linkages between producers and input suppliers ▪ Improve access of the horticulture producers to finance: • Provide information about available financial instruments • Develop new financial tools, particularly those targeting smallholder producers	▪ Provide capacity building to farmers on production and post-harvest methods, on-farm storage techniques, use of new technology, fertilizers and agro-chemicals, standards, and financial management, through advisory and extension services, including digital ones ▪ Set up market information system on horticulture markets, domestic and international ▪ Strengthen food safety training programs ▪ Educate exporters on: • Analyzing and identifying market opportunities in global horticulture markets, including opportunities for exporting organic horticulture products • Meeting requirements for markets/supermarket chains, including those in China and Russia • Customs procedures and regulations • Dealing with export paperwork • Establishing direct contacts with importers in new markets, including China • Financial mechanisms and risk reduction strategies to facilitate the start-up of export operations to new markets	▪ Enforce higher transparency along the horticulture value chains ▪ Strengthen formalization of export channels ▪ Remove cost and time redundancies at border crossings ▪ Abolish unnecessary administrative procedures for exporters	▪ Continue developing economic and trade cooperation with China, including for horticulture trade ▪ Prepare export promotion programs and initiatives as relates to horticulture ▪ Provide information on import requirements in trade-partner countries, including those of retail chains ▪ Encourage and support the participation of Tajik horticulture exporters in international trade fairs	▪ Establish and disseminate quality and grading standards for fruits compatible with international markets ▪ Establish and enforce minimum residue level standards and protocols per international norms

(table 5.2. continues next page)

(table 5.2. continued)

	1. Production/Marketing	2. Food Safety & Quality	3. Digital Solutions	4. Transport	5. Trade & Export Promotion
Medium-term priorities	▪ Accelerate investment in modern irrigation systems ▪ Reduce import barriers for quality and performance-enhancing machinery and equipment ▪ Promote an increase in private investments in cold chain storage and post-harvest processing capacity	▪ Modernize and strengthen food safety surveillance in the country ▪ Upgrade equipment, testing and certification methods of food safety laboratories ▪ Provide training and capacity building among government agencies to implement standards ▪ Facilitate adoption of the HACCP systems by the private sector	▪ Equip related government agencies with an ICT system to improve service digitization	▪ Address high rail and air transportation costs ▪ Improve road infrastructure	▪ Negotiate new trade agreements ▪ Strengthen trade diplomacy through Tajik embassies

	1. Production/Marketing	2. R&D	3. Digital Solutions	4. Regulatory Environment
Long-term priorities	▪ Assess land ownership rules to allow greater flexibility of land use and stronger land tenure security ▪ Develop modern distribution centers in the proximity of fruit production	▪ Increase investment and capacity among R&D institutes for development of local varieties of horticulture crops	▪ Invest in e-commerce infrastructure ▪ Create enabling environment for private sector to introduce digital solutions in the horticulture sector ▪ Develop digital agriculture innovation hubs	▪ Continue efforts to create a more enabling regulatory environment to attract domestic and foreign investment into the horticulture sector

Table 5.3. Policy Recommendations—Uzbekistan

	1. Food Safety & Quality	2. Trade & Export Promotion	3. Skills & Knowledge	4. Regulatory Environment	5. Production/Marketing
Short-term priorities	▪ Accelerate International Plant Protection Convention (IPCC) signatory procedure ▪ Develop a Pest Risk Analysis capability that is credible to IPPC and its members ▪ Establish minimum residue level standards and protocols per international norms ▪ Facilitate adoption of the HACCP systems by the private sector ▪ Provide technical and financial support for the exporters to adopt global quality standards	▪ Speed up WTO accession negotiations to finalize Uzbekistan's accession ▪ Continue strengthening export promotion programs and initiatives as relates to horticulture ▪ Provide information on import requirements in trade-partner countries, including those of the retail chains ▪ Encourage and support the participation of Uzbek horticulture exporters in international trade fairs ▪ Open data availability for global consumption by becoming signatories to globally recognized systems like UNCOMTRADE, ITC, and INTRACEN	▪ Provide capacity building to farmers on production and post-harvest methods, on-farm storage techniques, use of new technology, fertilizers and agro-chemicals, standards, and financial management, through advisory and extension services, including digital ones ▪ Educate exporters on: • Analyzing and identifying market opportunities in global horticulture markets, including opportunities for exporting organic horticulture products • Meeting requirements for markets/supermarket chains, including those in China and Russia • Dealing with export paperwork • Establishing direct contacts with importers in new markets, including presentation and negotiation skills • Financial mechanisms and risk reduction strategies to facilitate the start-up of export operations to new markets	▪ Remove cost and time redundancies at border crossings ▪ Enforce higher transparency along the horticulture value chains	▪ Strengthen linkages in the value chain to help integrate smallholder farmers into the horticulture value chain through cooperatives and productive partnerships ▪ Promote an increase in private investments in cold chain storage and post-harvest processing capacity

(table 5.3. continues next page)

(table 5.3. continued)

	1. Food Safety & Quality	2. Production/Marketing	3. Trade & Export Promotion	4. Transport	5. Digital Solutions
Medium-term priorities	▪ Support establishment of local branches of international certifying agencies ▪ Provide training and capacity building among government agencies to implement standards ▪ Establish a network of SPS inspection offices at border points	▪ Improve access to fertilizer/ planting material for smallholder farmers ▪ Improve access to finance for different types of producers ▪ Accelerate investment in modern irrigated systems ▪ Reduce import barriers for quality and performance-enhancing machinery and equipment ▪ Develop a modern agro-logistics network through the creation of multimodal trade-logistics centers in the proximity of fruit production	▪ Make use of the full range of WTO transparency mechanisms ▪ Negotiate new trade agreements ▪ Expand the network of Uzbek trading houses ▪ Strengthen trade diplomacy through Uzbek embassies	▪ Address high rail and air transportation costs ▪ Improve road infrastructure	▪ Provide digital literacy training for farmers and exporters ▪ Create enabling environment for private sector to introduce digital solutions in the horticulture sector ▪ Develop digital agriculture innovation hubs ▪ Equip related government agencies with an ICT system to improve service digitization

	1. Production/Marketing	2. R&D	3. Regulatory Environment	4. Digital Solutions
Long-term priorities	▪ Assess land ownership rules to allow greater flexibility of land use and stronger land tenure security	▪ Increase public investment and capacity among R&D institutes for the development of local varieties of horticulture crops	▪ Continue efforts to create a more enabling regulatory environment to attract domestic and foreign investment into the horticulture sector	▪ Continue investments in e-commerce infrastructure

References

BCG, and AliResearch. 2016. “Chinese Fresh Food Expenditure Trend Report.”

Beragua. 2014. “Russian Food Retail Market Overview.” Beragua. Available at: https://www.beragua.com/en/docs/BeraguaRussianmarketviews.pdf.

CECRC. 2016. “Chinese Online Retail Market Data Report.” China E-Commerce Research Center. Available at: http://www.100ec.cn/detail--6397682.html.

China Internet Network Information Center. 2019. “The 43rd Statistical Report on Internet Development in China.” Available at: https://cnnic.cn/hlwfzyj/hlwxzbg/hlwtjbg/201902/P020190318523029756345.pdf.

Euromonitor International. 2017. “Analysis of Priority Markets for Diversification of Export of Products from Central Asia.” Available at: https://www.giz.de/en/downloads/GIZ%20-%20Euromonitor-%20Central%20Asia%20Trade%20Facilitation_Fresh%20Fruit%20report%20-%20Eng_s.pdf.

Faz, X., and L. Naji. 2018. “China’s Super Platforms: The Impact Question.” CGAP. Available at: https://www.cgap.org/blog/chinas-super-platforms-impact-question.

FDF Group. 2015. “Marketing Research on Fresh Fruits and Vegetable Consumption.” Available at: http://fdfgroup.ru/poleznaya-informatsiya/gotovye-issledovaniya/marketingovoe-issledovanie-potrebiteley-svezhikh-ovoshchey-i-fruktov/.

Federal Service for State Statistics. 2019. Available at: https://www.gks.ru/

Fintrac Inc. 2014. “Agricultural Technology Commercialization Assessment (AgTCA) - Tajikistan.” United States Agency for International Development. Available at: https://www.agrilinks.org/library/agricultural-technology-commercialization-assessment-agtca-tajikistan.

González, A. 2018. “Latin America–China Trade and Investment Amid Global Tensions.” Atlantic Council. Available at: https://www.atlanticcouncil.org/in-depth-research-reports/report/latin-america-china-trade-and-investment-amid-global-tensions/.

González, A., T.L. Zúniga, and G. Wilson. 2013. “Advancing Horticulture: Assessment of Constraints to Horticultural Sector Growth in Central America.” Horticulture Innovation Lab United States Agency for International Development. Available at: https://www.agrilinks.org/library/advancing-horticulture-assessment-constraints-horticultural-sector-growth-central-america.

Government of the Kyrgyz Republic. 2012. “It’s unwise to pay too much, but it’s foolish to spend too little”: Sustainable road sector development through asset management in the Kyrgyz Republic. Bishkek.

Gul, M., M.C.O. Kart, S.G. Yilmaz, and K. Uzunkaya. 2016. “Opportunities and Constraints for Cherry Exporters in Turkey.” *Custos e Agronegócio Online* 12(2):156–169.

Güneş, N.T., O. Horzum, and E. Güneş. 2017. “Economic and Technical Evaluation of Fruit Sector in Turkey.” *Balkan Near Eastern Journal of Social Sciences* 3(2):37–49.

Hongfei, Y. 2017. “National Report on E-commerce Development in China.” *UNIDO Inclusive and Sustainable Industrial Development Working Paper Series* 17/2017. Available at: https://www.unido.org/sites/default/files/files/2018-01/WP17.pdf.

IFC. 2018. “The Uzbekistan Horticulture Sector: CPSD Deep Dive: Background Paper for the Uzbekistan CPSD.”

International Monetary Fund. 2019. *World Economic Outlook, April 2019: Growth Slowdown, Precarious Recovery*. Washington, D.C.: International Monetary Fund. Available at: https://www.elibrary.imf.org/view/IMF081/25771-9781484397480/25771-9781484397480/25771-9781484397480.xml.

International Trade Centre. 2019. "International Trade Statistics 2001-2019." *International trade statistics 2001-2019*. Available at: http://www.intracen.org/itc/market-info-tools/trade-statistics/.

iResearch. 2018. "China's Fresh Food E-commerce Consumption Report." Available at: http://www.iresearchchina.com/content/details8_41001.html.

Japan International Cooperation Agency, Hokkaido Intellect Tank, and Overseas Merchandise Inspection Co., Ltd. 2013. "Data Collection Survey on Export Promotion of Agriculture Products and Strengthening of Farm Management of Kyrgyz Republic - Final Report." Available at: http://open_jicareport.jica.go.jp/pdf/12122461_01.pdf.

JD Research. 2018. "A Guide to China's Imports."

Jin, S., H. Li, and Y. Li. 2017. "Preferences of Chinese Consumers for the Attributes of Fresh Produce Portfolios in an E-commerce Environment." *British Food Journal* 119(4):817–829.

Khidirov, D., D.F. Larson, and I. Schuman. 2015. "Uzbekistan - Strengthening the Horticulture Value Chain." Uzbekistan Vision 2030 Background Paper Series No. 94281, The World Bank. Available at: http://documents.worldbank.org/curated/en/396111468301526337/Uzbekistan-Strengthening-the-horticulture-value-chain.

Kusek, G., M. Turker, S. Akdemir, and S. Hayran. 2017. "Structural Characteristics of the Agricultural Sector in Terms of Access to Agricultural Credit in Turkey." *Revue méditerranéenne d'economie, agriculture et environment* 16(4):66–72.

Labaste, P. ed. 2005. "The European Horticulture Market." *World Bank Working Papers* 63. Available at: https://elibrary.worldbank.org/doi/abs/10.1596/978-0-8213-6350-8.

Larson, D.F., W. Martin, S. Sahin, and M. Tsigas. 2014. "Agricultural Policies and Trade Paths in Turkey." *Policy Research Working Papers* 7059. Available at: https://doi.org/10.1596/1813-9450-7059.

Liu, G. 2018. "Playing by the Rules: Understanding Fresh Produce Markets in China." *Produce Marketing Association*. Available at: https://www.pma.com/content/articles/2018/09/china-markets.

López. "Evaluación de Factibilidad Estratégica, Técnica y Económica para la Creación de una Empresa de Productos y Servicios Tecnológicos para el Sector Frutícola Cerecero. Tesis para optar al grado de magíster en gestión y dirección de empresas, Universidad de Chile."

MarketingToChina. 2019. "What You Should Know About the Fresh Food Market in China." *Marketing To China*. Available at: https://www.marketingtochina.com/what-you-should-know-about-the-fresh-food-market-in-china/.

Microfinance Centre. 2011. "Research on Agricultural Value Chains in Tajikistan." Available at: http://mfc.org.pl/wp-content/uploads/2016/04/Value-Chains-research-report-Tajikistan-final.pdf.

M-Vector. 2014. "Analysis of Five Selected Value Chains in Kyrgzystan."

National Bureau of Statistics of China. 2017. Available at: http://www.stats.gov.cn/english/

Nielsen Company. 2016. Available at: https://www.nielsen.com/ru/ru/

Global Cold Chain Alliance. 2018. Available at: https://www.gcca.org/.

OECD. 2018a. Producer and Consumer Support Estimates Database. Paris: OECD. Available at: https://www.oecd.org/unitedstates/producerandconsumersupportestimatesdatabase.htm.

OECD. 2018b. Digital opportunities for trade in agriculture and food sectors. Paris: OECD.

OECD, and FAO. 2013. *OECD-FAO Agricultural Outlook 2013-2022* 19th ed., 2013 edition. Paris: OECD. Available at: https://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2013_agr_outlook-2013-en.

Özdemir, G. 2005. "Cooperative–Shareholder Relations in Agricultural Cooperatives in Turkey." *Journal of Asian Economics* 16(2):315–325.

Parodi, P. 2019. "Productividad Frutícola en Chile. Evolución y Factores Relevantes." CIEPLAN. Available at: http://www.cieplan.org/productividad-fruticola-en-chile-evolucion-y-factores-relevantes/.

Produce Marketing Association. 2015. "Exporting Fresh Fruit and Vegetables to China."

Produce Marketing Association. 2016. "Exporting Fresh Fruit and Vegetables to China: A Market Overview and Guide for Foreign Suppliers." Available at: http://www.trungtamwto.vn/download/18914/Exporting%20Fresh%20Fruit%20and%20Vegetables%20to%20China.pdf.

Statistical Agency under the President of the Republic of Tajikistan. 2013. Available at: https://www.stat.tj/en.

The State Council. 2017. "State Council Advice on Accelerating the Development of Cold Chain to Ensure Food Safety and Promote the Upgrading of Consumption (in Chinese)."

Pfeiffer, T., D. Baumer, E. Dolch, A. Kichigin, and E. Kochkunova. 2016. "Quality Falls from Kyrgyz trees! Do Consumers know? Research on Supporting Food Safety Compliance to Facilitate Market Access for Kyrgyz SMEs and Economic Opportunities for Jalal-Abad / Kyrgyzstan." *SLE Publication Series* S268. Available at: https://edoc.hu-berlin.de/bitstream/handle/18452/3867/268.pdf?sequence=1.

United Nations. 2019. "2019 World Population Prospects." Available at: https://population.un.org/wpp/.

United Nations Comtrade. 2018. "International Trade Statistics Database." Available at: https://comtrade.un.org/.

USDA FAS. 2016. "2016 Exporter Guide to China." *GAIN Report* SH0001. Available at: https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=Exporter%20Guide_Beijing%20ATO_China%20-%20Peoples%20Republic%20of_12-30-2016.pdf.

USDA FAS. 2018. "China Stone Fruit Annual Report 2018." *GAIN Report* CH 18037. Available at: https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=Stone%20Fruit%20Annual_Beijing_China%20-%20Peoples%20Republic%20of_6-29-2018.pdf.

USDA FAS. 2017. "Turkey Stone Fruit Annual Report 2017." *GAIN Report* TR7032. Available at: https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Stone%20Fruit%20Annual_Ankara_Turkey_8-15-2017.

World Bank. 2019. *Belt and Road Economics: Opportunities and Risks of Transport Corridors*. Washington, D.C.: The World Bank. Available at: http://elibrary.worldbank.org/doi/book/10.1596/978-1-4648-1392-4.

World Bank. 2018a. "Unlocking the Potential of Lesotho's Private Sector: A Focus on Apparel, Horticulture, and ICT." The World Bank. Available at: http://documents.worldbank.org/curated/en/832751537465818570/128075-WP-REVISED-P164862-PUBLIC.pdf.

World Bank. 2018b. "China (and Russia) 2030: Implications for Agriculture in Central Asia (English)." The World Bank. Available at: http://documents.worldbank.org/curated/en/563161535404143460/China-and-Russia-2030-Implications-for-Agriculture-in-Central-Asia.

World Bank, and Development Research Center of the State Council, the People's Republic of China. 2014. *Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization*. The World Bank. Available at: http://elibrary.worldbank.org/doi/book/10.1596/978-1-4648-0206-5.

Yunge Data. 2019. "2018 Chinese Internet Industry Review Report (in Chinese)."

Zhao, H., S. Liu, C. Tian, G. Yan, and D. Wang. 2018. "An Overview of Current Status of Cold Chain in China." *International Journal of Refrigeration* 88:483–495.

Annex 1. Agri-Food Trade Between Central Asia and China

The Kyrgyz Republic: Export, Import, and Balance of Trade with China (2016–2018), Million USD[37]

Code	Name	2016			2017			2018		
		Export	Import	Net	Export	Import	Net	Export	Import	Net
01	Live Animals	0.16	0.02	0.14	1.26	0.00	1.26	2.36	0.00	2.36
02	Meat	0.02	8.67	-8.65	0.00	0.12	-0.12	0.00	0.00	0.00
03	Fish	0.00	0.11	-0.11	0.00	0.07	-0.07	0.00	0.27	-0.27
04	Dairy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05	Animal products	0.02	0.01	0.01	0.62	0.12	0.50	0.02	0.01	0.01
06	Live plants	0.00	0.09	-0.09	0.00	0.04	-0.04	0.00	0.05	-0.05
07	Vegetables	0.02	8.12	-8.10	0.00	3.11	-3.11	0.00	0.99	-0.99
08	Fruits and nuts	0.56	15.12	-14.56	1.10	8.05	-6.95	1.32	13.65	-12.33
080929	Other Cherries	0.03	0.00	0.03	0.15	0.00	0.15	0.22	0.00	0.22
080610	Fresh Grapes	0.00	0.82	-0.82	0.00	0.02	-0.02	0.00	0.02	-0.02
080620	Dried Grapes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080231	Walnuts, in shell	0.00	0.00	0.00	0.00	0.41	-0.41	0.00	3.18	-3.18
080232	Walnuts, shelled	0.34	0.00	0.34	0.13	0.35	-0.21	0.00	0.98	-0.98
080940	Plums and sloes	0.00	0.05	-0.05	0.00	0.02	-0.02	0.00	0.00	0.00
081320	Prunes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080910	Fresh Apricots	0.00	0.07	-0.07	0.00	0.00	0.00	0.00	0.00	0.00
081310	Dried Apricots	0.16	0.77	-0.61	0.76	0.04	0.73	0.95	0.00	0.95
09	Coffee, tea, spices	0.00	1.17	-1.17	0.00	0.93	-0.93	0.00	0.97	-0.97
10	Cereals	0.00	0.03	-0.03	0.00	0.07	-0.07	0.00	0.04	-0.04
11	Flour and cereal products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Oilseeds and fruits	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	Lac, gums, resins	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Other plant materials	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Fats and oils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Prepared meats and fish	0.14	0.11	0.03	0.05	0.28	-0.23	0.02	0.19	-0.18
17	Sugars and sugar confectionery	0.00	0.80	-0.80	0.04	0.29	-0.26	0.00	1.10	-1.09
18	Cocoa and cocoa preparations	0.00	0.04	-0.04	0.04	0.13	-0.09	0.03	0.10	-0.06
19	Flour preparations	0.16	0.13	0.03	0.22	0.05	0.17	0.30	0.06	0.25
20	Vegetable, fruit, nut preparations	0.00	1.11	-1.11	0.01	1.34	-1.33	0.01	1.20	-1.19
21	Miscellaneous edible preparations	0.01	3.17	-3.16	0.00	3.78	-3.78	0.00	4.31	-4.31
22	Beverages, spirits and vinegar	0.63	0.11	0.52	0.39	0.46	-0.07	0.18	0.13	0.05
23	Food waste and animal fodder	0.00	0.14	-0.14	0.08	0.14	-0.06	0.01	0.14	-0.13
24	Tobacco and substitutes	10.07	1.16	8.91	21.92	0.72	21.20	10.30	0.01	10.30
Total: Product groups 1-24		**11.79**	**40.11**	**-28.32**	**25.73**	**19.70**	**6.03**	**14.56**	**23.21**	**-8.65**
5201	Cotton, not carded or combed	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.40
5202	Cotton waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5203	Cotton, carded, combed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**11.79**	**40.11**	**-28.32**	**25.73**	**19.70**	**6.03**	**14.56**	**23.21**	**-8.65**

[37] UN COMTRADE.

Tajikistan: Export, Import, and Balance of Trade with China (2016–2018), Million USD[38]

Code	Name	2015			2016			2017		
		Export	Import	Net	Export	Import	Net	Export	Import	Net
01	Live Animals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02	Meat	0.00	2.35	-2.35	0.00	1.01	-1.01	0.00	5.36	-5.36
03	Fish	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
04	Dairy	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.20	-0.20
05	Animal products	0.05	0.07	-0.02	0.09	0.10	-0.01	0.10	0.09	0.01
06	Live plants	0.00	0.00	0.00	0.00	0.01	-0.01	0.00	0.01	-0.01
07	Vegetables	0.00	0.23	-0.23	0.00	0.22	-0.22	0.00	0.03	-0.03
08	Fruits and nuts	0.20	2.16	-1.95	0.15	0.54	-0.39	0.12	0.18	-0.06
080929	Other Cherries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080610	Fresh Grapes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080620	Dried Grapes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080231	Walnuts, in shell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080232	Walnuts, shelled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080940	Plums and sloes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
081320	Prunes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080910	Fresh Apricots	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
081310	Dried Apricots	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09	Coffee, tea, spices	0.00	2.24	-2.24	0.00	3.32	-3.32	0.00	2.64	-2.64
10	Cereals	0.00	0.47	-0.47	0.00	0.28	-0.28	0.00	0.39	-0.39
11	Flour and cereal products	0.00	0.05	-0.05	0.00	0.04	-0.04	0.00	0.21	-0.21
12	Oilseeds and fruits	0.03	0.32	-0.29	0.03	0.43	-0.39	0.00	0.76	-0.76
13	Lac, gums, resins	0.02	0.03	-0.01	0.00	0.01	-0.01	0.00	0.02	-0.02
14	Other plant materials	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Fats and oils	0.00	0.43	-0.43	0.00	0.00	0.00	0.00	0.02	-0.02
16	Prepared meats and fish	0.00	0.02	-0.02	0.00	0.01	-0.01	0.00	0.00	0.00
17	Sugars and sugar confectionery	0.00	0.03	-0.03	0.00	0.20	-0.20	0.00	0.18	-0.18
18	Cocoa and cocoa preparations	0.02	0.00	0.02	0.03	0.02	0.01	0.00	0.03	-0.03
19	Flour preparations	0.00	0.25	-0.25	0.01	0.08	-0.07	0.00	0.07	-0.07
20	Vegetable, fruit, nut preparations	0.00	0.41	-0.41	0.00	0.72	-0.72	0.00	0.63	-0.63
21	Miscellaneous edible preparations	0.04	1.43	-1.39	0.00	0.95	-0.95	0.00	1.64	-1.64
22	Beverages, spirits and vinegar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Food waste and animal fodder	0.00	0.02	-0.02	0.00	0.02	-0.02	0.00	0.02	-0.02
24	Tobacco and substitutes	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00
Total: Product groups 1-24		**0.42**	**10.52**	**-10.09**	**0.39**	**7.96**	**-7.55**	**0.22**	**12.48**	**-12.26**
5201	Cotton, not carded or combed	1.48	0.00	1.48	1.52	0.00	1.52	0.50	0.00	0.50
5202	Cotton waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5203	Cotton, carded, combed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**1.90**	**10.52**	**-8.61**	**1.91**	**7.96**	**-6.03**	**0.72**	**12.48**	**-11.76**

[38] National statistics.

Uzbekistan: Export, Import, and Balance of Trade with China (2016–2018), Million USD[39]

Code	Name	2016			2017			2018		
		Export	Import	Net	Export	Import	Net	Export	Import	Net
01	Live Animals	0.00	0.00	0.00	0.01	0.00	-0.01	0.00	0.00	0.00
02	Meat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03	Fish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04	Dairy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05	Animal products	2.33	3.57	-1.24	1.52	3.96	-2.44	1.70	5.56	-3.86
06	Live plants	0.00	0.00	0.00	0.00	0.10	-0.10	0.00	7.95	-7.95
07	Vegetables	0.00	0.46	-0.46	0.00	0.25	-0.25	24.45	0.52	23.93
08	Fruits and nuts	28.15	8.94	19.21	17.37	3.18	14.18	21.75	4.66	17.09
080929	Other Cherries	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.60
080610	Fresh Grapes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080620	Dried Grapes	27.71	0.00	27.71	16.36	0.00	0.00	20.50	0.00	20.50
080231	Walnuts, in shell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080232	Walnuts, shelled	0.18	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
080940	Plums and sloes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
081320	Prunes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080910	Fresh Apricots	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
081310	Dried Apricots	0.00	0.00	0.00	0.01	0.00	0.01	0.13	0.00	0.13
09	Coffee, tea, spices	0.00	51.53	-51.53	0.00	35.47	-35.47	0.00	36.02	-36.02
10	Cereals	0.00	0.00	0.00	0.00	0.01	-0.01	0.00	0.06	-0.06
11	Flour and cereal products	0.00	0.47	-0.47	0.00	0.26	-0.26	0.00	0.59	-0.59
12	Oilseeds and fruits	4.40	1.72	2.68	2.55	2.29	0.26	2.16	2.03	0.13
13	Lac, gums, resins	18.71	0.70	18.01	20.35	1.18	19.17	18.56	1.13	17.43
14	Other plant materials	11.20	0.01	11.19	1.32	0.01	1.31	0.00	0.01	-0.01
15	Fats and oils	0.00	0.53	-0.53	0.00	0.40	-0.40	0.00	0.20	-0.20
16	Prepared meats and fish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	-0.03
17	Sugars and sugar confectionery	0.03	0.82	-0.79	0.05	0.95	-0.90	0.04	1.13	-1.08
18	Cocoa and cocoa preparations	0.04	0.31	-0.28	0.03	0.25	-0.22	0.08	0.20	-0.12
19	Flour preparations	0.06	0.03	0.03	0.11	0.06	0.05	0.04	0.00	0.04
20	Vegetable, fruit, nut preparations	0.06	0.41	-0.35	0.22	1.32	-1.10	0.05	0.29	-0.24
21	Miscellaneous edible preparations	0.00	2.97	-2.97	0.00	2.89	-2.89	0.00	0.92	-0.92
22	Beverages, spirits and vinegar	0.54	0.00	0.54	0.20	0.00	0.20	0.22	0.00	0.22
23	Food waste and animal fodder	2.01	0.14	1.87	2.20	0.21	1.99	2.01	0.27	1.73
24	Tobacco and substitutes	0.00	2.49	-2.49	0.00	1.77	-1.77	0.00	0.28	-0.28
Total: Product groups 1-24		**67.53**	**75.10**	**-7.57**	**45.93**	**54.56**	**-8.63**	**71.06**	**61.85**	**9.21**
5201	Cotton, not carded or combed	61.36	0.00	61.36	109.62	0.00	109.62	71.00	0.00	71.00
5202	Cotton waste	1.89	0.00	1.89	1.48	0.00	1.48	0.14	0.00	0.14
5203	Cotton, carded, combed	11.00	0.00	11.00	159.12	0.00	159.12	258.06	0.00	258.06
Total		**141.78**	**75.10**	**66.68**	**316.15**	**54.57**	**261.58**	**400.26**	**61.89**	**338.37**

[39] National Statistics Agency of the Republic of Uzbekistan.

Annex 2. Agri-Food Trade Between Central Asia and Russia

The Kyrgyz Republic: Export, Import, and Balance of Trade with Russia (2016–2018), Million USD[40]

Code	Name	2016			2017			2018		
		Export	Import	Net	Export	Import	Net	Export	Import	Net
01	Live Animals	0.00	0.10	-0.10	0.00	0.33	-0.33	0.08	0.05	0.03
02	Meat	0.00	10.87	-10.87	0.00	19.99	-19.99	0.00	18.00	-18.00
03	Fish	0.00	2.02	-2.02	0.11	2.19	-2.08	0.38	2.66	-2.28
04	Dairy	11.66	5.52	6.14	13.59	8.04	5.55	15.66	8.53	7.13
05	Animal products	0.00	0.02	-0.02	0.00	0.11	-0.11	0.00	0.10	-0.10
06	Live plants	0.00	0.03	-0.03	4.79	0.03	4.77	0.20	0.04	0.16
07	Vegetables	10.83	0.08	10.75	19.96	0.23	19.73	7.29	0.19	7.10
08	Fruits and nuts	9.34	0.05	9.29	18.17	2.93	15.24	14.69	3.01	11.68
080929	Other Cherries	0.00	0.00	0.00	0.17	0.00	0.17	1.45	0.00	1.45
080610	Fresh Grapes	0.23	0.00	0.23	1.08	0.00	1.08	1.03	0.00	1.03
080620	Dried Grapes	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00
080231	Walnuts, in shell	0.07	0.00	0.07	0.24	0.00	0.24	0.22	0.00	0.22
080232	Walnuts, shelled	0.00	0.00	0.00	0.08	0.00	0.08	0.55	0.00	0.55
080940	Plums and sloes	0.56	0.00	0.56	0.49	0.00	0.49	0.25	0.00	0.25
081320	Prunes	0.01	0.00	0.01	0.57	0.00	0.57	2.36	0.00	2.36
080910	Fresh Apricots	0.39	0,00	0.39	1.25	0.00	1.25	1.77	0.00	1.77
081310	Dried Apricots	0.00	0.00	0.00	1.60	0.00	1.60	1.43	0.00	1.43
09	Coffee, tea, spices	0.00	3.17	-3.17	0.15	6.64	-6.49	0.49	7.05	-6.56
10	Cereals	0.11	1.34	-1.23	0.06	0.78	-0.72	0.09	3.80	-3.70
11	Flour and cereal products	0.00	4.49	-4.49	0.00	7.10	-7.10	0.00	7.65	-7.65
12	Oilseeds and fruits	0.06	0.03	0.03	0.27	0.08	0.19	0.31	0.22	0.09
13	Lac, gums, resins	0.00	0.01	-0.01	0.00	0.06	-0.06	0.00	0.12	-0.12
14	Other plant materials	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Fats and oils	0.00	36.04	-36.04	0.01	39.75	-39.74	0.02	37.30	-37.28
16	Prepared meats and fish	0.00	1.93	-1.93	0.00	4.89	-4.89	0.00	2.78	-2.78
17	Sugars and sugar confectionery	0.03	9.04	-9.01	0.45	21.31	-20.86	0.07	17.45	-17.38
18	Cocoa and cocoa preparations	0.00	29.49	-29.49	0.14	35.56	-35.42	0.02	33.12	-33.10
19	Flour preparations	0.01	27.15	-27.14	0.44	31.76	-31.33	0.14	33.70	-33.56
20	Vegetable, fruit, nut preparations	0.26	10.15	-9.89	0.46	13.43	-12.97	0.85	15.28	-14.43
21	Miscellaneous edible preparations	0.93	7.33	-6.40	13.08	1.73	11.36	1.74	15.01	-13.27
22	Beverages, spirits and vinegar	0.06	11.31	-11.25	15.07	0.35	14.72	0.11	17.35	-17.24
23	Food waste and animal fodder	0.00	1.40	-1.40	1.41	0.00	1.41	0.00	2.30	-2.30
24	Tobacco and substitutes	1.11	19.15	-18.04	13.74	0.22	13.52	0.22	13.00	-12.78
Total: Product groups 1-24		**34.39**	**180.73**	**-146.34**	**101.91**	**197.50**	**-95.59**	**42.37**	**238.71**	**-196.34**
5201	Cotton, not carded or combed	5.71	0.00	5.71	0.00	0.00	0.00	14.48	0.00	14.48
5202	Cotton waste	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
5203	Cotton, carded, combed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**40.19**	**180.73**	**-140.54**	**101.91**	**197.50**	**-95.59**	**56.85**	**238.71**	**-181.86**

[40] UN COMTRADE.

Tajikistan: Export, Import, and Balance of Trade with Russia (2016–2018), Million USD[41]

Code	Name	2015			2016			2017		
		Export	Import	Net	Export	Import	Net	Export	Import	Net
01	Live Animals	0.00	0.26	-0.26	0.00	0.34	-0.34	0.00	0.53	-0.53
02	Meat	0.00	2.97	-2.97	0.00	2.31	-2.31	0.00	4.35	-4.35
03	Fish	0.00	0.66	-0.66	0.00	1.45	-1.45	0.00	3.24	-3.24
04	Dairy	0.00	6.69	-6.69	0.00	8.09	-8.09	0.00	5.86	-5.86
05	Animal products	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.01	-0.01
06	Live plants	0.00	0.34	-0.34	0.00	0.08	-0.08	0.00	0.13	-0.13
07	Vegetables	0.07	1.25	-1.17	0.04	2.25	-2.21	0.11	0.88	-0.77
08	Fruits and nuts	1.33	0.22	1.11	1.79	0.14	1.64	2.37	0.05	2.32
080929	Other Cherries	0.09	0.00	0.09	0.19	0.00	0.19	0.17	0.00	0.17
080610	Fresh Grapes	0.08	0.00	0.08	0.66	0.00	0.66	0.30	0.00	0.30
080620	Dried Grapes	0.10	0.00	0.10	0.00	0.00	0.00	0.01	0.00	0.01
080231	Walnuts, in shell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
080232	Walnuts, shelled	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
080940	Plums and sloes	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
081320	Prunes	0.12	0.00	0.12	0.07	0.00	0.07	0.11	0.00	0.11
080910	Fresh Apricots	0.23	0.00	0.23	0.02	0.00	0.02	0.22	0.00	0.22
081310	Dried Apricots	0.51	0.00	0.51	0.66	0.00	0.66	0.91	0.00	0.91
09	Coffee, tea, spices	0.00	0.52	-0.52	0.02	0.91	-0.89	0.00	1.46	-1.46
10	Cereals	0.00	0.44	-0.44	0.00	0.08	-0.08	0.00	0.63	-0.63
11	Flour and cereal products	0.00	6.28	-6.28	0.00	5.68	-5.68	0.00	5.39	-5.39
12	Oilseeds and fruits	0.00	0.11	-0.11	0.02	0.28	-0.26	0.08	0.52	-0.44
13	Lac, gums, resins	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
14	Other plant materials	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Fats and oils	0.00	43.19	-43.19	0.00	63.68	-63.68	0.00	47.70	-47.70
16	Prepared meats and fish	0.00	0.79	-0.79	0.00	1.02	-1.02	0.00	1.24	-1.24
17	Sugars and sugar confectionery	0.00	19.36	-19.36	0.00	18.65	-18.65	0.00	6.00	-6.00
18	Cocoa and cocoa preparations	0.00	18.73	-18.73	0.00	18.21	-18.21	0.00	16.77	-16.77
19	Flour preparations	0.00	23.56	-23.56	0.00	23.36	-23.36	0.00	20.98	-20.98
20	Vegetable, fruit, nut preparations	0.15	2.97	-2.82	0.11	3.50	-3.39	0.27	5.32	-5.05
21	Miscellaneous edible preparations	0.00	6.25	-6.25	0.00	8.96	-8.96	0.00	11.13	-11.13
22	Beverages, spirits and vinegar	0.00	8.02	-8.02	0.03	8.55	-8.52	0.00	11.27	-11.27
23	Food waste and animal fodder	0.00	3.63	-3.63	0.00	3.30	-3.30	0.00	3.04	-3.04
24	Tobacco and substitutes	0.06	4.82	-4.77	0.00	4.82	-4.82	0.00	4.74	-4.74
Total: Product groups 1-24		**1.64**	**151.09**	**-149.45**	**2.01**	**175.67**	**-173.66**	**2.83**	**151.25**	**-148.43**
5201	Cotton, not carded or combed	20.50	0.00	20.50	16.31	0.00	16.31	24.82	0.00	24.82
5202	Cotton waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5203	Cotton, carded, combed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**22.14**	**151.09**	**-128.95**	**18.32**	**175.67**	**-157.35**	**27.64**	**151.25**	**-123.61**

[41] UN COMTRADE, mirror statistics.

Uzbekistan: Export, Import, and Balance of Trade with Russia (2016–2018), Million USD[42]

Code	Name	2016			2017			2018		
		Export	Import	Net	Export	Import	Net	Export	Import	Net
01	Live Animals	0.80	0.22	0.58	1.57	0.85	0.71	0.77	1.16	-0.39
02	Meat	0.00	0.08	-0.08	0.00	1.04	-1.04	0.00	0.97	-0.97
03	Fish	0.00	0.29	-0.29	0.00	0.34	-0.34	0.00	0.90	-0.90
04	Dairy	0.03	1.86	-1.83	0.00	4.15	-4.15	0.00	4.21	-4.21
05	Animal products	0.03	0.25	-0.22	0.08	0.04	0.04	0.58	0.31	0.27
06	Live plants	0.43	0.11	0.32	0.57	0.05	0.52	0.38	0.04	0.34
07	Vegetables	27.41	1.35	26.07	34.95	3.26	31.69	56.71	4.34	52.37
08	Fruits and nuts	60.87	0.26	60.61	84.00	0.08	83.92	114.00	0.09	113.91
080929	Other Cherries	9.55	0.00	9.55	13.62	0.00	13.62	11.50	0.00	11.50
080610	Fresh Grapes	17.27	0.00	17.27	28.31	0.01	28.30	38.17	0.00	38.17
080620	Dried Grapes	1.11	0.00	1.11	2.27	0.00	2.27	5.38	0.00	5.38
080231	Walnuts, in shell	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01
080232	Walnuts, shelled	0.01	0.00	0.01	0.66	0.00	0.66	2.02	0.00	2.02
080940	Plums and sloes	2.63	0.00	2.63	3.59	0.00	3.59	4.65	0.00	4.65
081320	Prunes	0.19	0.00	0.19	0.73	0.00	0.73	2.39	0.00	2.39
080910	Fresh Apricots	10.48	0.00	10.48	5.02	0.00	5.02	12.00	0.00	12.00
081310	Dried Apricots	0.34	0.00	0.34	0.71	0.00	0.71	1.21	0.00	1.21
09	Coffee, tea, spices	2.08	0.26	1.83	2.07	0.69	1.38	2.91	1.51	1.40
10	Cereals	0.00	9.49	-9.49	0.00	1.47	-1.47	0.00	8.80	-8.80
11	Flour and cereal products	0.00	9.72	-9.72	0.01	10.20	-10.20	0.00	13.09	-13.09
12	Oilseeds and fruits	0.66	1.37	-0.71	0.55	1.92	-1.37	2.57	2.00	0.57
13	Lac, gums, resins	0.00	0.12	-0.12	0.00	0.11	-0.11	0.00	0.47	-0.47
14	Other plant materials	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Fats and oils	0.00	160.07	-160.07	0.01	134.70	-134.69	0.06	137.95	-137.89
16	Prepared meats and fish	0.00	0.18	-0.18	0.00	0.32	-0.32	0.00	0.63	-0.63
17	Sugars and sugar confectionery	0.08	1.67	-1.59	0.20	51.65	-51.45	0.14	54.59	-54.45
18	Cocoa and cocoa preparations	0.88	17.36	-16.48	2.02	22.49	-20.47	1.95	25.04	-23.09
19	Flour preparations	0.25	21.01	-20.75	0.37	24.82	-24.45	0.32	26.57	-26.25
20	Vegetable, fruit, nut preparations	9.70	3.14	6.56	14.42	3.90	10.52	10.29	7.93	2.36
21	Miscellaneous edible preparations	0.00	16.00	-16.00	0.13	21.71	-21.58	0.21	35.93	-35.72
22	Beverages, spirits and vinegar	8.24	8.64	-0.40	12.57	5.30	7.27	9.57	1.24	8.34
23	Food waste and animal fodder	0.00	29.71	-29.71	0.00	14.93	-14.93	0.00	24.77	-24.77
24	Tobacco and substitutes	2.77	1.26	1.51	2.97	0.75	2.22	0.56	1.23	-0.67
Total: Product groups 1-24		**114.25**	**284.41**	**-170.16**	**156.49**	**304.77**	**-148.29**	**201.03**	**353.77**	**-152.74**
5201	Cotton, not carded or combed	14.87	0.00	14.87	5.15	0.00	5.15	3.45	0.00	3.45
5202	Cotton waste	3.23	0.00	3.23	10.00	0.00	100.00	7.74	0.00	7.74
5203	Cotton, carded, combed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**132.34**	**284.41**	**-152.07**	**171.63**	**304.77**	**-133.14**	**212.22**	**353.77**	**-141.56**

[42] UN COMTRADE, mirror statistics.

Annex 3. Export Competitiveness Analysis—Description of Methods

Revealed comparative advantage

The revealed comparative advantage index is defined as the relative weight of exports of a commodity in a nation's total exports, relative to the share of that commodity in total world exports (Balassa, 1965)

$$RCA = \frac{x_{ij} \Big/ \sum_i x_{ij}}{\sum_j x_{ij} \Big/ \sum_{i,j} x_{ij}},$$

where X_{ij} stands for net exports of product j from country i.

The RCA denotes relative efficiency indirectly, based on trading patterns that emerge from actual trade transactions. It indicates the extent to which an exporting country captures world market share for a particular product relative to the degree with which it captures the export market share for all traded goods. When RCA > 1, the country has a comparative advantage in that commodity (and the higher the RCA, the stronger the advantage), or a comparative disadvantage when RCA < 1. A negative value for the RCA indicates that the country is a net importer of the product, which would not be considered a positive indicator of competitiveness.

There are several limitations associated with the RCA methodology. Specifically, RCA is based on actual patterns of trade, which may be strongly affected by a number of factors related to present or past policies that may distort markets. For example, if production of a good is heavily subsidized by public funding, it may have high exports and RCA, but greater production would make society as a whole worse off. In addition, RCA is "static"—it does not demonstrate whether or not the current level of specialization is above or below the long run equilibrium optimal level. If the current trade patterns represent an equilibrium, then the fact that a country has a high RCA in a product does not imply that further specialization in that product would improve its welfare. Rather, the inference from a high RCA that the country should expand its production of that commodity (relative to the expansion of production in the world at large), requires the assumption that the current trade patterns are not already at some equilibrium state. In the case of countries that are still in a state of transition from a previous highly distorted trade environment, such as those in Central Asia, this is probably a reasonable assumption. Nor do the traditional RCA calculations take sufficiently into account the key role of transport availability and cost. As long as these imperfections and limitations are recognized, RCAs can be helpful as an analysis tool, as trade data is usually easily available, and the results of the analysis can provide a good indication of comparative advantage.

Domestic resource cost coefficient

Domestic resource cost coefficient compares the cost of domestic production with world prices:

$$DRC_{ij} = \frac{c_{ij}^{d}}{p_{ij} - c_{ij}^{f}},$$

where c_{ij}^{d} and c_{ij}^{f} represent, respectively, domestic and foreign input costs for country i's production of

good j. The denominator of this fraction is the price of a unit of the output (its undistorted border price, measured in foreign exchange) minus the cost of imported inputs needed to produce it—the net foreign exchange generated (if the good is an export) or saved (if it is an import substitute) by producing one unit of product j domestically.

DRCij < 1 is an indication that country i has a "comparative advantage" in producing good j, that is, it costs less to produce a unit of the commodity than it is worth. The smaller the DRCij is, the greater the advantage would be. In DRC methodology all values are "economic" values, that is, the value to society as a whole. Tradable goods prices are adjusted for taxes/tariffs/effects of quantitative trade restrictions/subsidies. Non-tradable goods are adjusted to "shadow prices." Financial profitability is based on market prices, so will result in a "false" indication.

There are several empirical difficulties associated with estimating DRC. DRC is highly dependent on selected costs and other assumptions that, when changed, can affect outcomes. Data required to calculate DRCs are also often not readily available for many commodities. It is also difficult to estimate shadow prices for non-tradables, such as labor, capital, and land, given the absence of some of the required data and other issues. There are also complications in making empirical adjustments for tradable products. Border prices must be adjusted by transport costs to make them comparable to farmgate prices. In addition, for products that are not traded in the same form in which they are produced on the farm, calculating a border price equivalent to compare to the farmgate price requires an adjustment for processing costs. Finally, policies induce shifts in production decisions that affect the coefficients of input use that are used in the empirical calculation of the DRCs. For example, if fertilizer prices are artificially subsidized, farmers adopt more fertilizer intensive production technologies. So, these distortions affect DRC calculations in a way that cannot be fully corrected by simply adjusting prices. In recognition of the shortcomings of the objective indicators of comparative advantage and competitiveness, the assessment of export competitiveness was guided by expert opinion from interviews with actual market participants.

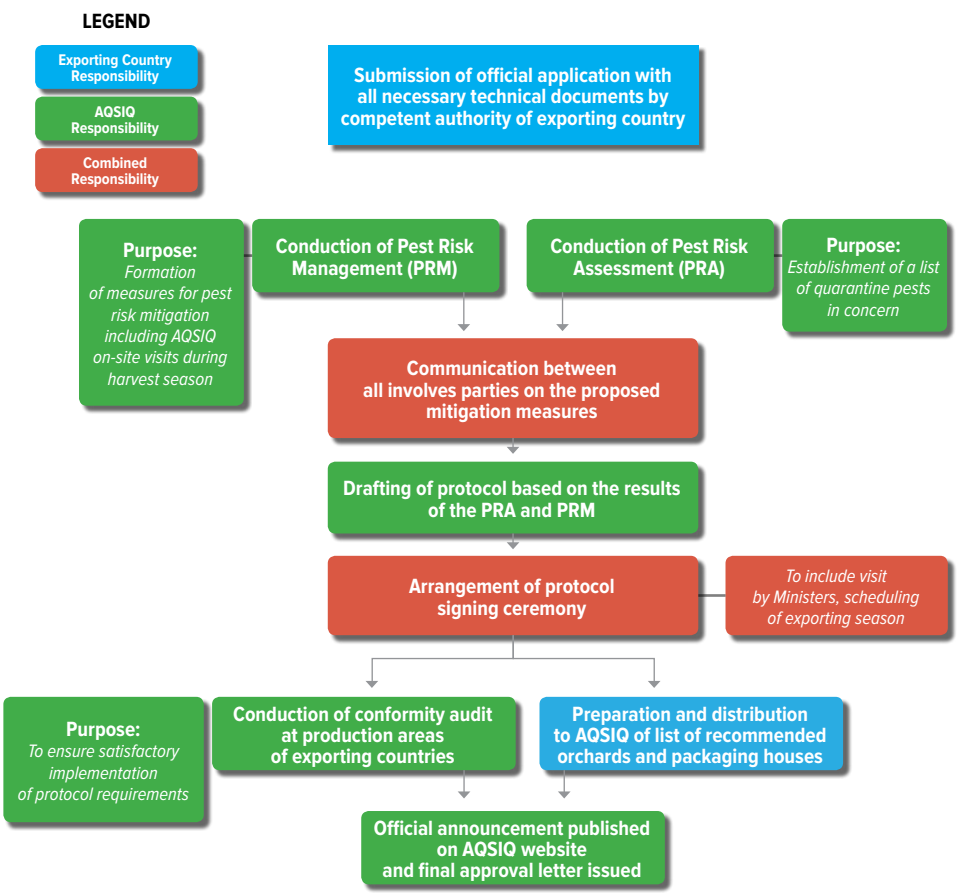
Annex 4. Chinese Fresh Fruit Import Requirements

First time market access requirements

A set of procedures is required before any type of agricultural produce can be exported to China for the first time.[43] The State Administration for Market Regulation (SAMR) maintains a list of permissible fruits that can be imported into China and from which countries. The procedures involved in this process are detailed below (Figure A4.1):

a) The competent quarantine authority of the exporting country shall, according to the trade interest, submit an official application in written form to the General Administration of Quality

Figure A4.1. AQSIQ Fresh Fruit Market Access Procedure



Source: Produce Marketing Association (2016).

[43] Legal basis:

1. Administrative Measures on Import and Export Food Safety Management 2011 (http://www.aqsiq.gov.cn/xxgk_13386/jlgg_12538/zjl/2011/201210/t20121015_235120.htm)

2. Quarantine Access Procedures for Agricultural Products to be Imported to China for the First Time (http://www.aqsiq.gov.cn/xxgk_13386/ywxx/dzwjy/201406/t20140626_416136.htm)

Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ), part of SAMR, for exporting agricultural products to China with the name, variety, use and information of importers and exporters.

b) AQSIQ will, according to the application, deliver a questionnaire concerning the Import Risk Analysis (IRA) to the exporting country for reply.
c) After receiving the reply to the questionnaire, AQSIQ will organize the relevant specialist to initiate the IRA process.
    i. If necessary, AQSIQ will ask the exporting country for more information during the evaluation period.
    ii. Based on the assessment of the above information, AQSIQ will decide whether it is necessary to send a specialist group to the exporting country to have on-site inspections.
d) After finishing the IRA, AQSIQ will take account of whether or not to submit a draft of the quarantine protocol or sanitary requirements for the product to be imported from the country to China, which will be discussed by both sides.
e) After having reached agreement on the protocol or sanitary requirement, the trade of this product will commence, according to the requirements specified in the protocol.

Exports, agents and importers need to register with AQSIQ. According to Art. 9 of Administrative Measures on Import and Export Food Safety Management 2011: The General Administration of Quality Supervision, Inspection and Quarantine implements a registration system for overseas food production enterprises that export food to China, including fresh fruit orchards, cold treatment facilities and packaging companies. The registration is carried out in accordance with relevant AQSIQ regulations. In addition, according to Art. 19 of the Administrative Measures on Import and Export Food Safety Management 2011, the inspection and quarantine institutions also implement the record management of the importers of imported food.

Additional registration requirements could be requested based on bilateral agreements with the countries. For example, according to the phytosanitary quarantine requirements on cherries from Uzbekistan and Tajikistan, the cherry orchards, packaging plants and cold treatment facilities that export to China must be registered with the Ministry of Agriculture and Water Resources of Uzbekistan/ Ministry of Agriculture of Tajikistan and jointly approved by both China and Uzbekistan/Tajikistan. Registration information must include name, address, origin and identification code. Before the export season in the first year, the Ministry of Agriculture of Uzbekistan/Tajikistan and AQSIQ jointly reviewed the registered orchards, packaging plants and cold treatment facilities. Thereafter, each year before the export season, the Ministry of Agriculture of Uzbekistan/Tajikistan will provide information on registered orchards, packaging plants and cold treatment facilities to AQSIQ. AQSIQ publishes the registration list on an official website.

Per-shipment quarantine and customs clearance requirements

Once preliminary permission for the import of quarantined agricultural products is obtained, importers need to comply with inspection and

quarantine procedures at the point of entry. Specifically, importers are responsible for the customs clearance of all processed fruits and vegetables imported to China; as a rule, they delegate all customs clearance procedures to customs brokers. Additional costs, such as document submission fees, inspection, quarantine, and the cost of services and agent fees, are the responsibility of importers.

The following documents should be provided for customs clearance:

- ✓ A certificate on plant quarantine (phytosanitary certificate) issued by an exporting country;
- ✓ A quarantine permission or a special permission quarantine form;
- ✓ A trade contract;
- ✓ A certificate of origin;
- ✓ An invoice; and
- ✓ A packing list.

Product quality requirements

The following standards exist to guide the maximum allowed level of pesticides and other contaminants in food (Table A4.1):

Table A4.1. China's State Standards on Pesticides and Other Contaminants in Food

Effective Date	Standard #	Title
06.18.2017	GB 2763-2016	Standard for Maximum Residue Level of Pesticides
10.20.2011	GB 2761-2011	Standard of Maximum Levels of Mycotoxins in Foods
06.01.2014	GB 2762-2012	Standard of Maximum Levels of Contaminants in Foods
06.01.2014	GB 29921-2013	Standard of Pathogen Limits for Food

Packaging and labeling requirements

Labeling requirements. Importers have to certify all labels in advance, before the first shipment is made. Suppliers can register labels themselves or apply to customs brokers providing them with all necessary documents translated into Chinese. Suppliers have to provide original labels and their translation into Chinese. After supplied products are registered in a customs storage facility, the Chinese labels should be attached to each product unit for a certain fee.

All goods in China, must be labeled in Chinese with the following content:

- ✓ Name, specification, net content and date of production;
- ✓ Table of composition with ingredients and their amounts;
- ✓ Producer name, address and contact information;
- ✓ Shelf life;
- ✓ Code of product standard(s);
- ✓ Storage requirements;
- ✓ Generic name of the food additives as used in the national standard;
- ✓ Production license number.

The importer must register the label of goods and obtain the appropriate certificate: Label Verification Certificate for Imported Food. This should be done in advance and can be done independently or through a customs broker that can help with document translation. To get the certificate, the importer should submit the necessary documents according to the standards on the labels shown in Table A4.2.

According to the interview of a representative of agriculture organizations in Bishkek, the biggest

problem related to the certification is that there is no organization issuing the compliance certificates in the Kyrgyz Republic. The local organizations must send product samples to Kazakhstan or the European Union and pay a high fee to get the appropriate certificates.

Table A4.2. China's State Standards on Product Labeling

Effective Date	Standard #	Title
20.04.2012	GB 7718-2011	Standard on the labels of packaged food products
01.01.2013	GB 28050-2012	Standard for labeling the nutritional value of packaged food products
06.01.2015	GB 29924-2013	Common standards on the labeling of food additives

Packaging requirements. According to the Law of China "On Food Safety," foods should be packaged in the following non-toxic, clean and small packaging materials and containers: articles of paper, bamboo, wood, metal, porcelain, plastic, rubber, natural fiber, chemical fiber or glass. Containers for storage, transportation and loading/unloading of food products should be safe, harmless preserving products in pure form to prevent food contamination (Table A4.3).

Table A4.3. China's State Standards on Food Packaging

Effective Date	Standard #	Title
25.10.2012	GB 14930.2-2012	Disinfection Standard
09.21.2015	GB 31603-2015	Standard "The general situation of hygiene materials and products in contact with food"
09.22.2016	GB 31604.1-2015	General rules for conducting tests on materials and their migration products that come into contact with food
19.10.2017	GB 4806.1-2016	General safety requirements of materials and parts in contact with food
19.10.2017	GB 9685-2016	Standards for the use of additives in food containers and packaging materials
04.19.2017	GB 4806.7-2016	Plastic materials and parts in contact with food
04.19.2017	GB 4806.8-2016	Paper and cardboard materials and parts in contact with food
04.19.2017	GB 4806.10-2016	Coatings and coating layers were in contact with food

Annex 5. Russian Fresh Fruit Import Requirements

First time market access requirements: None for fresh fruits.

Per-shipment quarantine and customs clearance requirements: Importers are responsible for the customs clearance of all processed fruits and vegetables imported to Russia. The following documents should be provided for customs clearance:

- ✓ *Declaration of Conformity:*[44] This document must be drawn up by the Russian importer and certified with the Ministry of Economic Development. To receive certification, documentation must include a record of product testing, any additional documents required for the product, and certificates confirming the system of quality assuring the products' conformity with existing requirements. This documentation must be obtained for product packaging, as well, and should comply with packaging standards set out in the Customs Union Technical Regulation "On Safety of Packaging."

- ✓ *Phytosanitary Certificate:*[45] All fruits in question fall under the category of "high phytosanitary risk" and require a Phytosanitary Certificate in order to enter the Russian Federation. These certificates are obtained by the exporter from the relevant authority in the exporting country.

- ✓ *A certificate of origin:*[46] This certificate must be presented to Russian Customs so they can levy the necessary import tariffs or adjudicate eligibility for import tariff preferences. It is issued by the relevant authority from the exporting country, usually a Chamber of Commerce.

Customs authorities must inspect the relevant documents and approve the shipment of goods for entry into the Russian Federation. Relevant documents include: (1) Sales contract/agreement with annexes and product specifications; (2) Invoice; (3) Packing list; (4) CMR (Cargo Movement Request)/AirWayBill/Railroad invoice/Consignment; (5) Contract details (a unique number assigned to the contract by a bank, usually assigned to contracts exceeding RUR 6,000,000); and (6) Customs import declaration. In addition, all horticultural goods imported into Russia need to undergo quarantine and phytosanitary inspection at regional Rosselkhoznadzor inspection points.

Product quality requirements: Products imported into the Russian Federation must comply with the individual product requirement specified in the GOST (State Standards) Standards as determined by Rosstandart. The following GOSTs are in place for the fruits of interest for this study:

Cherries	GOST 33801-2016
Plums for Retail	GOST 32286-2013
Plums for Processing	GOST 21920-2015
Table Grapes	GOST 32786-2014
Fresh Apricots	GOST 32787-2014
Dried Apricots (Dried Fruits)	GOST 32896-2014

[44] Russian Federal Law No. 184-FZ, 2002; Russian Government Resolution No. 982, 2009; Customs Union Commission Decision No. 319, 2010; Customs Union Technical Regulation TS 005/2011, 2011.

[45] Customs Union Commission Decision No. 318 – "Regulation on the Procedure of Phytosanitary Quarantine Control at the Customs Border of the Customs Union".

[46] Law of the Russian Federation No. 809 on the Federal Customs Service, 2013.

With the creation of the EEU, its members are overseeing the alignment of product standards and the creation of new Technical Regulations (TR). As of August 2019, there is only one TR related to fruit products—TR TS-023-2011 "For juice products from fruits and vegetables".

In addition, exporters are required to present documentation specifying the type of pesticide used during growth or storage, date of last treatment and residue levels in these products to Rosselkhoznadzor. Rospotrebnadzor sets tolerance levels for pesticides, veterinary drugs and other contaminants in food. The Ministry of Agriculture maintains a database of registered pesticides and agrochemicals. Any foodstuffs containing the residue of any agrochemical not included on the list are not permitted to enter the country.

Packaging and labeling requirements

Packing of food items should comply with sanitary-hygienic requirements.[47] This includes metal, polymer, carton, wood, glass, and composite packing. Packing materials and transport containers must have completed sanitary and epidemiological inspections and have a certificate of conformity.

Packaged food must contain the following information in Russian on its labels:[48] product name, manufacturer information, weight or volume, composition of ingredients, information about genetically engineered components, nutritional value, recommended storage conditions, expiration date, date of production/packaging, recommendations or imitations of usage, and the "Eurasian Conformity" mark (EAC).[49]

[47] CU Technical Regulation TR TS 005/2011 "On Safety of Packaging" (as amended through November 15, 2016).

[48] Technical Regulation of the Customs Union "Food Products Labeling" (TR TS 022/2011).

[49] Decision of the CU Commission No. 711 of July 15, 2011.

Annex 6. RCA Results

Kyrgyz Republic

	2017	2016	2015	2014	2013	Average, 2013-2017
Apricots (fresh)	-31.8	-10.3	38.1	182.9	215.0	**78.7**
Walnuts (with shell)	11.1	7.6	27.4	51.4	47.2	**29.0**
Plums (fresh)	-15.7	-0.2	4.2	39.8	38.9	**13.4**
Cherries	-11.8	0	2.4	47.1	0	**7.5**
Plums (dried)	11.8	0.3	2.5	0.1	1.3	**3.2**
Milk	-3.9	1.8	3.1	3.3	2.8	**1.4**
Strawberries	-0.5	0.8	1.1	1.8	3.2	**1.3**
Watermelons	-1.5	0.4	0	2.5	3.2	**0.9**
Sunflower seed	-2.3	1.2	0.7	-0.1	1.6	**0.2**
Rapeseed seed	0	0	0	0	0	**0**
Soybean seed	0	0	0	0	0	**0**
Soybean oil	0	0	-0.2	0	-0.6	**-0.1**
Apricots (dry)	47.8	-22.6	-34.2	3.3	2.8	**-0.5**
Soybean meal	-0.4	-0.3	-1.8	-0.6	-0.9	**-0.8**
Lamb	0.7	0.5	0	-7.4	0	**-1.2**
Beef	0	0	0	-10.5	-0.1	**-2.1**
Grapes	-7.6	-4.0	-2.7	-1.3	-0.7	**-3.3**
Pork	-0.6	-0.4	-1.8	-25.1	-1.9	**-5.9**
Peaches	-12.5	-26.8	-6.0	-5.3	9.0	**-8.3**
Wheat	-7.0	-9.5	-17.7	-30.8	0	**-13.0**
Sugar	-6.9	-16.1	-19.4	-25.5	-22.3	**-18.0**
Sunflower oil	-20.9	-42.1	-54.9	-69.3	-63.9	**-50.2**

Uzbekistan

	2017	2016	2015	Average, 2015-2017
Cherries	248.0	203.0	64.8	**171.9**
Apricots (fresh)	106.2	154.0	67.1	**109.1**
Apricots (dry)	46.0	54.6	70.6	**57.1**
Walnuts, with shell	40.0	33.0	39.4	**37.5**
Plums (fresh)	36.5	35.7	13.4	**28.5**
Grapes	25.6	18.8	21.8	**22.1**
Peaches	21.7	27.6	14.7	**21.3**
Plums (dried)	9.3	6.1	6.5	**7.3**
Watermelons	0.1	0	0	**0**
Lamb	0	0	0	**0**
Rapeseed seed	0	0	0	**0**
Soybean seed	-0.1	0	-0.1	**-0.1**
Pork	0	0	-0.5	**-0.2**
Milk	0	0	-0.6	**-0.2**
Beef	0	-0.5	-1.2	**-0.5**
Sugar	-5.8	-0.9	-0.2	**-2.3**
Soybean oil	-3.1	-3.4	-4.9	**-3.8**
Soybean meal	-1.4	-3.4	-24.3	**-9.7**
Wheat	-9.3	-11.9	-13.4	**-11.5**
Sunflower seed	-26.4	-19.1	-21.7	**-22.4**
Sunflower oil	-18.0	-23.9	-30.2	**-24.0**

Tajikistan

	2017	2016	2015	Average, 2015-2017
Apricots (dry)	159.1	337.5	365.0	**287.2**
Apricots (fresh)	60.5	43.7	2.4	**35.5**
Plums	22.5	11.8	24.3	**19.5**
Grapes	7.9	4.1	5.2	**5.7**
Peaches	0.3	0.2	0.1	**0.2**
Pork	0	0	0	**0**
Soybean seed	0	0	-0.3	**-0.1**
Lamb	0	0	-1.0	**-0.3**
Rapeseed seed	-0.3	-0.7	-1.3	**-0.8**
Beef	-1.4	-1.4	-5.0	**-2.6**
Milk	-1.0	-4.1	-3.1	**-2.8**
Soybean oil	-0.5	-5.6	-8.9	**-5.0**
Soybean meal	-2.5	-4.0	-10.0	**-5.5**
Sunflower seed	-13.1	-7.4	-6.0	**-8.9**
Sugar	-16.3	-24.7	-4.7	**-15.3**
Sunflower oil	-65.6	-51.2	-49.8	**-55.6**
Wheat	-60.2	-86.0	-82.9	**-76.4**

Annex 7. DRC Results

KYRGYZ REPUBLIC

Product: Apricots					
Year: 2017			**Exchange rate:** 69.23 KGS/USD		
Farm location: Batken Oblast			Rate as of 01/01/2017		
Yield: 3.1 t/ha					
Item	**Unit**	**Financial costs**	**Inputs VAT**	**Tariff and excise**	**Economic costs**
Non-tradable					
Land	KGS/ha	10,000.0			10,000.0
Labor	KGS/ha	43,750.0			43,750.0
Irrigation	KGS/ha	1,250.0			1,250.0
Organic fertilizer	KGS/ha	12,500.0			12,500.0
Taxes	KGS/ha	2,750.0			
Services	KGS/ha	12,500.0			12,500.0
Other costs	KGS/ha	0.0			0.0
Tradable inputs					
Mineral fertilizers	KGS/ha	10,000.0	1,071.4	580.4	8,348.2
Saplings	KGS/ha	37,500.0	4,017.9	1,674.1	31,808.0
Crop protection	KGS/ha	3,700.0	396.4	165.2	3,138.4
Packaging	KGS/ha	2,500.0	267.9	200.9	2,031.3
Fuel	KGS/ha	500.0	53.6	26.3	420.1
Non-tradable total	KGS/ha	82,750.0			80,000.0
Tradable total	KGS/ha	54,200.0			45,746.0
Total costs	**KGS/ha**	**136,950.0**			**125,746.0**
Revenue	KGS/ha	150,000.0			150,000.0
DRC					0.77

KYRGYZ REPUBLIC

Product: Cherries					
Year: 2017			**Exchange rate:** 69.23 KGS/USD		
Farm location: Jalal-Abad Oblast			**Rate as of** 01/01/2017		
Yield: 3.63 t/ha					
Item	**Unit**	**Financial costs**	**Inputs VAT**	**Tariff and excise**	**Economic costs**
Non-tradable					
Investments	KGS/ha	**30,000**	**1,607**	**-**	**28,393**
Land preparation	KGS/ha	15,000	1,607	-	13,393
Planting saplings	KGS/ha	10,000	-	-	10,000
Mounting wire	KGS/ha	5,000	-	-	5,000
Operational	KGS/ha	**87,250**	**777**	**-**	**86,473**
Land	KGS/ha	10,000	-	-	10,000
Labor	KGS/ha	45,000	-	-	45,000
Irrigation	KGS/ha	1,000	107	-	893
Organic fertilizer	KGS/ha	25,000	-	-	25,000
Services	KGS/ha	6,250	670	-	5,580
Tradable inputs					
Investments	**KGS/ha**	**32,500**	**3,482**	**1,116**	**27,902**
Saplings	KGS/ha	25,000	2,679	1,116	21,205
Wire	KGS/ha	7,500	804	-	6,696
Operational	**KGS/ha**	**29,500**	**3,161**	**1,511**	**24,828**
Mineral fertilizers	KGS/ha	10,000	1,071	580	8,348
Crop protection	KGS/ha	12,000	1,286	536	10,179
Packaging	KGS/ha	-	-	-	-
Fuel	KGS/ha	7,500	804	395	6,302
Non-tradable total	KGS/ha	**90,250**	**938**	**-**	**89,313**
Tradable total	KGS/ha	**32,750**	**3,509**	**1,623**	**27,619**
Total costs	**KGS/ha**	**123,000**	**4,446**	**1,623**	**116,931**
Revenue	KGS/ha	555,713	59,541	-	**496,172**
DRC					**0.19**

KYRGYZ REPUBLIC

Product: Milk					
Year: 2017			**Exchange rate:** 69.23 KGS/USD		
Farm location: Chui Oblast			**Rate as of** 01/01/2017		
Yield: 6,000 liters/cow/year					
Item	**Units**	**Financial costs**	**Inputs VAT**	**Tariff and excise**	**Economic costs**
Non-tradable					
Land	KGS/cow	14,571	-	-	14,570.80
Labor hired	KGS/cow	10,501	-	-	10,501.47
Labor family	KGS/cow	7,876	-	-	7,876.11
Veterinary services	KGS/cow	2,188	234	-	1,953.40
Electricity	KGS/cow	1,531	164	-	1,367.38
Transportation	KGS/cow	1,094	117	-	976.70
Water	KGS/cow	0	-	-	-
Depreciation	KGS/cow	6,563	-	-	6,563.42
Calculated depreciation	KGS/cow	656	-	-	656.34
Tradable inputs					
Feed purchased	KGS/cow	3,282	352	146.50	2,783.59
Feed produced	KGS/cow	26,254	2,813	1,172.04	22,268.75
Drugs/vaccines	KGS/cow	4,376	469	117.20	3,789.59
Fuel	KGS/cow	2,243	240	118.05	1,884.18
Packaging	KGS/cow	547	59	43.95	444.40
Non-tradable total	KGS/cow	**44,981**	**516**	**-**	**44,466**
Tradable total	KGS/cow	**36,700**	**3,932**	**1,598**	**31,171**
Total costs	KGS/cow	**81,682**	**4,448**	**1,598**	**75,636**
Revenue	KGS/cow	133,500	-	-	**133,500**
DRC					**0.43**

KYRGYZ REPUBLIC

Product: Plums					
Year: 2017			**Exchange rate:** 69.23 KGS/USD		
Farm location: Jalal-Abad Oblast			**Rate as of** 01/01/2017		
Yield: 6.0 t/ha					
Item	**Unit**	**Financial costs**	**Inputs VAT**	**Tariff and excise**	**Economic costs**
Non-tradable					
Land	KGS/ha	10,000.0			10,000.0
Labor	KGS/ha	70,000.0			70,000.0
Irrigation	KGS/ha	750.0			750.0
Organic fertilizer	KGS/ha	12,500.0			12,500.0
Taxes	KGS/ha	1,250.0			
Services	KGS/ha	5,000.0			5,000.0
Other costs	KGS/ha	1,666.7			1,666.7
Tradable inputs					
Wire	KGS/ha	461.5	49.5	20.6	391.5
Saplings	KGS/ha	576.9	61.8	25.8	489.4
Crop protection	KGS/ha	12,500.0	1,339.3	558.0	10,602.7
Fuel	KGS/ha	500.0	53.6	26.3	420.1
Non-tradable total	KGS/ha	101,166.7			99,916.7
Tradable total	KGS/ha	14,038.5			11,903.6
Total costs	**KGS/ha**	**115,205.1**			**111,820.3**
Revenue	KGS/ha	150,000.0			150,000.0
DRC					**0.72**

KYRGYZ REPUBLIC

Product: Walnuts					
Year: 2017			**Exchange rate:** 69.23 KGS/USD		
Farm location: Jalal-Abad Oblast			**Rate as of** 01/01/2017		
Yield: 0.3 t/ha					
Item	**Unit**	**Financial costs**	**Inputs VAT**	**Tariff**	**Economic costs**
Non-tradable					
Land	KGS/ha	1,200.0			1,200.0
Labor	KGS/ha	8,400.0			8,400.0
Tradable inputs					
Packaging	KGS/ha	240.0	25.7	21.4	192.9
Fuel	KGS/ha	4,335.0	464.5	193.5	3,677.0
Non-tradable total	KGS/ha	9,600.0			9,600.0
Tradable total	KGS/ha	4,575.0			3,869.9
Total costs	**KGS/ha**	**14,175.0**			**13,469.9**
Revenue	KGS/ha	21,000.0			21,000.0
DRC					**0.56**

UZBEKISTAN

Product: Apricot							
Farm location: Namangan region, Turakurgan district				**Exchange rate:** 8,099.41 UZS/USD			
Year: 2018				**Rate as of** 01/01/2018			
Yield, tons/ha: 15							
Item	**Units**	**Financial costs**	**Excise tax**	**Inputs VAT**	**Distributor profit margin**	**Tariff**	**Economic costs**
Non-tradable							
Land	UZS/ha	**900,000**					**900,000**
Labor	UZS/ha	**5,430,000**					**5,430,000**
Services	UZS/ha	**600,000**					**600,000**
Taxes	UZS/ha	**500,000**					**500,000**
Irrigation	UZS/ha	**150,000**					**150,000**
Organic fertilizer	UZS/ha	**750,000**					**750,000**
Other costs	UZS/ha	**2,360,938**					**2,360,938**
Tradable Inputs							
Mineral fertilizers	UZS/ha	**2,020,000**	0.0	336,666.7	420,833.3	0.0	**1,262,500**
Saplings	UZS/ha	**3,200,000**	0.0	533,333.3	0.0	0.0	**2,666,667**
Crop protection	UZS/ha	**1,525,000**	0.0	254,166.7	317,708.3	0.0	**953,125**
Packaging	UZS/ha	**100,000**	0.0	16,666.7	0.0	0.0	**833,333**
Non-tradable total	UZS/ha	**10,690,938**					**10,690,938**
Tradable total	UZS/ha	**6,845,000**					**4,965,625**
Total costs	UZS/ha	**17,535,938**					**15,656,563**
Revenue	UZS/ha	**67,500,000**					**67,500,000**
DRC		**0.18**					**0.17**

UZBEKISTAN

Product: Grapes (table variety)							
Farm location: Ferghana region, Altiarik district				**Exchange rate:** 8,099.41 UZS/USD			
Year: 2018				**Rate as of** 01/01/2018			
Yield, tons/ha: 20							
Item	**Units**	**Financial costs**	**Excise tax**	**Inputs VAT**	**Distributor profit margin**	**Tariff**	**Economic costs**
Non-tradable							
Land	UZS/ha	**700,000**					**700,000**
Labor	UZS/ha	**6,410,000**					**6,410,000**
Irrigation	UZS/ha	**100,000**					**100,000**
Organic fertilizer	UZS/ha	**2,250,000**					**2,250,000**
Taxes	UZS/ha	**600,000**					**600,000**
Services	UZS/ha	**0**					**0**
Other costs	UZS/ha	**5,589,922**					**5,589,922**
Tradable Inputs							
Mineral fertilizers	UZS/ha	**6,320,000**	0.0	1,053,333.3	1,316,666.7	0.0	**3,950,000**
Saplings	UZS/ha	**2,812,500**	0.0	468,750	0.0	0.0	**2,343,750**
Crop protection	UZS/ha	**1,900,000**	0.0	316,666.7	395,833.3	0.0	**1,187,500**
Packaging	UZS/ha	**0.0**	0.0	0.0	0.0	0.0	**0.0**
Non-tradable total	UZS/ha	**15,649,922**					**15,649,922**
Tradable total	UZS/ha	**11,032,500**					**7,481,250**
Total costs	UZS/ha	**26,682,422**					**23,131,172**
Revenue	UZS/ha	**80,000,000**					**80,000,000**
DRC		**0.23**					**0.22**

UZBEKISTAN

Product: Peaches							
Farm location: Samarkand region, Samarkand district				**Exchange rate:** 8,099.41 UZS/USD			
Year: 2018				**Rate as of** 01/01/2018			
Yield, tons/ha: 10							
Item	**Units**	**Financial costs**	**Excise tax**	**Inputs VAT**	**Distributor profit margin**	**Tariff**	**Economic costs**
Non-tradable							
Land	UZS/ha	**1,300,000**					**1,300,000**
Labor	UZS/ha	**3,420,000**					**3,420,000**
Irrigation	UZS/ha	**105,000**					**105,000**
Organic fertilizer	UZS/ha	**950,000**					**950,000**
Taxes	UZS/ha	**350,000**					**350,000**
Services	UZS/ha	**250,000**					**250,000**
Other costs	UZS/ha	**2,313,125**					**2,313,125**
Tradable Inputs							
Mineral fertilizers	UZS/ha	**4,105,000**	0.0	684,166.7	855,208.3	0.0	**2,565,625**
Saplings	UZS/ha	**3,500,000**	0.0	583,333.3	0.0	0.0	**2,916,667**
Crop protection	UZS/ha	**3,300,000**	0.0	550,000	687,500	0.0	**2,062,500**
Packaging	UZS/ha	**0.0**	0.0	0.0	0.0	0.0	**0.0**
Non-tradable total	UZS/ha	**8,688,125**					**8,688,125**
Tradable total	UZS/ha	**10,905,000**					**7,544,792**
Total costs	UZS/ha	**19,593,125**					**16,232,917**
Revenue	UZS/ha	**30,000,000**					**30,000,000**
DRC		**0.46**					**0.39**

UZBEKISTAN

Product: Plums							
Farm location: Tashkent region, Yangiyul district				**Exchange rate:** 8,099.41 UZS/USD			
Year: 2018				**Rate as of** 01/01/2018			
Yield, tons/ha: 20							
Item	**Units**	**Financial costs**	**Excise tax**	**Inputs VAT**	**Distributor profit margin**	**Tariff**	**Economic costs**
Non-tradable							
Land	UZS/ha	**1,050,000**					**1,050,000**
Labor	UZS/ha	**7,560,000**					**7,560,000**
Irrigation	UZS/ha	**30,000**					**30,000**
Organic fertilizer	UZS/ha	**640,000**					**640,000**
Taxes	UZS/ha	**550,000**					**550,000**
Services	UZS/ha	**0**					**0**
Other costs	UZS/ha	**2,827,188**					**2,827,188**
Tradable Inputs							
Mineral fertilizers	UZS/ha	**3,400,000**	0.0	566,666.7	708,333.3	0.0	**2,125,000**
Saplings	UZS/ha	**6,600,000**	0.0	1,100,000	0.0	0.0	**5,500,000**
Crop protection	UZS/ha	**2,750,000**	0.0	458,333.3	572,916.7	0.0	**1,718,750**
Packaging	UZS/ha	**0.0**	0.0	0.0	0.0	0.0	**0.0**
Non-tradable total	UZS/ha	**12,657,188**					**12,657,188**
Tradable total	UZS/ha	**12,750,000**					**9,343,750**
Total costs	UZS/ha	**25,407,188**					**22,000,938**
Revenue	UZS/ha	**40,000,000**					**40,000,000**
DRC		**0.46**					**0.41**

UZBEKISTAN

Product: Walnut							
Farm location: Samarkand region, Jomboy				**Exchange rate:** 8,099.41 UZS/USD			
Year: 2018				**Rate as of** 01/01/2018			
Yield, tons/ha: 12.8							
Item	**Units**	**Financial costs**	**Excise tax**	**Inputs VAT**	**Distributor profit margin**	**Tariff**	**Economic costs**
Non-tradable							
Land	UZS/ha	**1,500,000**					**1,500,000**
Labor	UZS/ha	**4,280,000**					**4,280,000**
Services	UZS/ha	**400,000**					**400,000**
Taxes	UZS/ha	**300,000**					**300,000**
Irrigation	UZS/ha	**100,000**					**100,000**
Organic fertilizer	UZS/ha	**500,000**					**500,000**
Electricity	UZS/ha	**240,000**					**240,000**
Other costs	UZS/ha	**3,396,875**					**3,396,875**
Tradable Inputs							
Mineral fertilizers	UZS/ha	**3,120,000**	0.0	520,000	650,000	0.0	**1,950,000**
Saplings	UZS/ha	**14,400,000**	0.0	2,400,000	0.0	0.0	**12,000,000**
Crop protection	UZS/ha	**1,350,000**	0.0	225,000	281,250	0.0	**843,750**
Packaging	UZS/ha	**640,000**	0.0	106,667	0.0	0.0	**533,333**
Non-tradable total	UZS/ha	**10,716,875**					**10,716,875**
Tradable total	UZS/ha	**19,510,000**					**15,327,083**
Total costs	UZS/ha	**30,226,875**					**26,043,958**
Revenue	UZS/ha	**70,000,000**					**70,000,000**
DRC		**0.21**					**0.20**

Annex 8. Retail Chain Product Requirements for Imported Fresh Fruit (Example of X5 Retail Group, Russia)

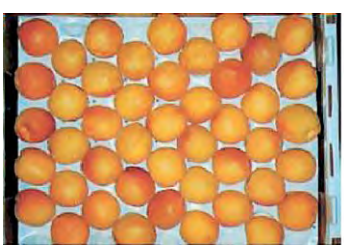
Minimum requirements include:

- ✓ For quality evaluation, fruits and vegetables shall be of the same batch and botanical sort (pomology or ampelographic) and packed in the same type of container.
- ✓ Good quality (product that is not rotten or deteriorated in any way that makes it unsuitable for consumption);
- ✓ Clean, almost without any visible foreign substances (except for root crops);
- ✓ No insect pests or insect injuries of pulp;
- ✓ No foreign odor and/or taste;
- ✓ Sufficient degree of growth (ripeness according to the product category).

Additional standards and regulations may be developed for specific product categories.

If the number of defective products exceeds the limit specified in the instructions during the receipt of goods in the distribution center of the retail chain, the products shall not be accepted.

1. Apricots



Extra quality

First grade

Second grade is not allowed

Allowed

minor defects in shape or development, color defects, scuffs, light sun scorch, minor skin defects (not more than 1 cm^2 for elongated skin defects, and not more than 0.5 cm^2 from the total area for other defects), minor cracks, 1-2 hailstone spots.

Not allowed

mechanic damages (punctures, bruises from the packaging)

hailstone spots more than 1-2, pest damage

fruit diseases

pest damage

rot, fungus

damage from high / low temperatures

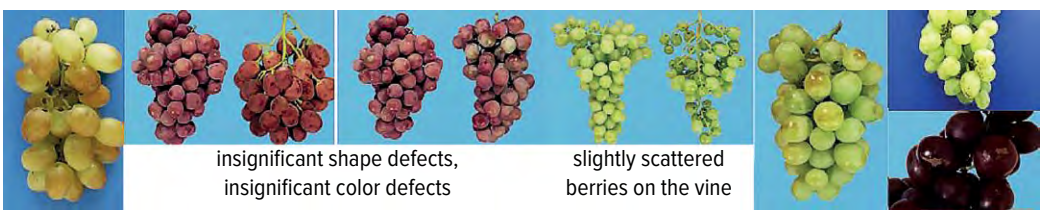
overripe

underripe

2. Grapes

Extra quality | First grade | Second grade is not allowed

Allowed



sun-caused pigmentation | insignificant shape defects, insignificant color defects | slightly scattered berries on the vine | insignificant brown spots | insignificant skin defects

Not allowed

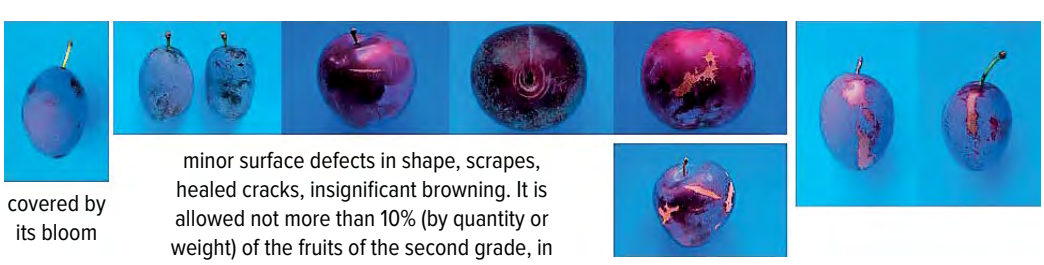
shriveled | signs of sulphur dioxide treatment | anthracnose | oidium | black rot

withered, split grapes | gray mold | pollution by mealy bug secretion

3. Plums

Extra quality | First grade | Second grade is not allowed

Allowed



covered by its bloom

minor surface defects in shape, scrapes, healed cracks, insignificant browning. It is allowed not more than 10% (by quantity or weight) of the fruits of the second grade, in the batch of the first grade fruit

Not allowed

mechanical damage of the berry (extracted stem, cracks, bruises, pressure marks)

hailstone spots

damage caused by low temperature

rot

dry and mealy fruit flesh

inner damage

signs of chemical treatment

4. Sweet Cherries

For the first grade, there may be berries with slight deviations in shape and color, with light, but firm pressure marks which do not affect the saleable condition of the fruit

Allowed

dry scuffs, light healed cracks and medium sized cracks which do not affect the saleable condition and shelf life, small larvae holes (as part of a special limit), in total no more than 10% of the account and 4% (as a special limit for cracked berries and berries with small larvae holes)

Not allowed

damaged by pests, overripe, crushed, mechanical damage of the berry flesh, cracked, but not healed, rotten, moldy, wormy, with chemical residues, with significant hailstone spots, punctures, soft berries with sun scorch, effecting the retail display

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Central Asia's Horticulture Sector

Capitalizing on New Export Opportunities in Chinese and Russian Markets

With a $5.8 billion fruit import market, China creates an enormous opportunity for Central Asian fruit exporters to diversify geography and increase the value of their agri-food exports. Between 2015 and 2017, China imported $1.5 billion worth of fresh cherries, grapes, plums and apricots—fruits in which Central Asian countries hold a comparative advantage. By 2030, Chinese import demand for these fruits is projected to increase to $1.8 billion. Central Asian countries are well placed to be more competitive in satisfying fruit import demand in the growing Chinese markets. The region's geographic location, natural resources, untapped yield potential, and the possibility of greater private sector investment through policy reform create the necessary preconditions for the Central Asian countries to increase their agricultural exports to China.

However, entering is not easy into the formidable Chinese fresh fruit markets. First, the Chinese markets require consistency in the quality and volume of the fresh fruit supplied by exporting countries. Second, entering China necessitates the existence of sophisticated quality systems and logistics systems to ensure that products are grown and preserved in their best possible condition to meet China's stringent food safety standards. Third, the Chinese fruit markets' highly fragmented and competitive structure necessitates a close relationship with a Chinese counterpart on the ground. Fourth, Chinese consumers value attractive packaging and products with recognizable brands. On many of these requirements Central Asian exporters and governments still need to make a significant progress.

The extent to which Central Asian agri-food exporters are ready to increase their presence in higher-end markets such as China, will be tested by how successfully they are able to penetrate formal retail chains in Russia, a country that has served as their traditional market. Currently, Russia and other countries of the former Soviet Union remain key destinations for Central Asian fruits. However, despite Central Asian fruit exporters' traditionally large presence in the Russian stone fruit markets, they have been slow to adjust to the growing role of modern grocery store chains, and most Central Asian fruits are largely sold in open-air markets.

The objective of this study is to improve the Central Asian governments' understanding of the opportunities for their agri-food exports in Chinese and higher-end Russian markets, with a specific focus on fresh fruit markets, and provide policy recommendations on how to take advantage of these opportunities.