

The Fruit Cluster Development Strategy Plan of the Kyrgyz Republic

2023. 11.

Integrated Rural Development Project in the Kyrgyz Republic(KOICA-GNI)
Strategic-type Civil Society Partnership Program

Korea International Cooperation Agency
Good Neighbors International
Korea Rural Economic Institute



KOICA



Good Neighbors



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Korea International Cooperation Agency(KOICA)

KOICA is a government agency under the Ministry of Foreign Affairs to maximize the effectiveness of the Republic of Korea's grant aid programs for developing countries by implementing the government's grant aid and technical cooperation programs.

Good Neighbors International(GNI)

GNI is an international humanitarian development NGO granted Global Children's Rights from the United Nation Economic and Social Council(UN ECOSOC) to make the world a place without hunger focused on community development projects to protect children's rights and encourage the self-reliance of communities.

Korea Rural Economic Institute(KREI)

KREI is a Korean government funded research institution under the office of the Prime Minister to play a important role in developing sound agricultural and forestry policies aimed at the balanced development of urban and rural areas.

Ministry of Agriculture of the Kyrgyz Republic(MoA)

MoA is an authorized state executive body implementing state policy in the field of the agro-industrial complex of the Kyrgyz Republic. MoA, as a key government agency, is responsible for various aspects of project implementation and coordination. MoA is responsible for developing policies and regulations that support rural development and sustainable agriculture.

This work is a product of Korea Rural Economic Institute(KREI) with external contributions from Korea International Cooperation Agency(KOICA), and Good Neighbors International(GNI). The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of KREI, KOICA, and GNI.

EAEU	Eurasian Economic Union
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GNI	Good Neighbors International
GSP+	Generalised Scheme of Preferences Plus
ITA	International Trade Administration of US
ITC	International Trade Centre
KOICA	Korea International Cooperation Agency
KREI	Korea Rural Economic Institute
MoA	Ministry of Agriculture of the Kyrgyz Republic
NSC	National Statistical Committee of the Kyrgyz Republic
R&D	Research and Development
SDGs	Sustainable Development Goals
SPS	Sanitary and Phytosanitary Standards
TLC	Trades Labor Corporation

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1

Introduction

1. Project Overview

1.1. Project Title

- Integrated Rural Development Project in the Kyrgyz Republic(KOICA-GNI) Strategic-type Civil Society Partnership Program

2. Project Background and Purpose

2.1. Project Background

- The Kyrgyz Republic presents three strategies for economic development in the agricultural sector, in their 'National Development Strategy of the Kyrgyz Republic for 2018-2040':

- ① Forming a national support system for economic development in the agricultural sector
- ② Securing competitive power in the domestic food market by increasing domestic production and quality
- ③ Developing capacity and increasing productivity by providing agricultural producers with knowledge related to agricultural activities

- In addition, 'Measures for the Development of Agricultural Industrial Complex' was adopted in February 2021 to present an implementation plan for the agricultural development framework.

○ The government of the Kyrgyz Republic has renamed its "Ministry of Agriculture, Forestry and Water Resources of the Kyrgyz Republic" to "Ministry of Agriculture (MoA)", strengthening its stance on promoting agriculture-based rural development projects.

○ Accordingly, the 'Integrated Rural Development Project in the Kyrgyz Republic' has been underway from September 2021(until December 2025) through a cooperative project between the Korea International Cooperation Agency(KOICA) and Good Neighbors International(GNI).

- As part of the project, an 'agricultural development strategy' for 16 major strategic clusters(Milk, Meat, Sugar, Egg, Vegetable, Fruit, Potato, Vegetable oil, Crops, Fish, Cotton, Wool and leather, Honey, Legumes, Nuts, and Organic products) was derived in 2023 through consultation between the MoA and GNI.

- To derive these development strategies, education to strengthen the policy implementation capacity of the Kyrgyz Republic government officials and agricultural development policy research is included.

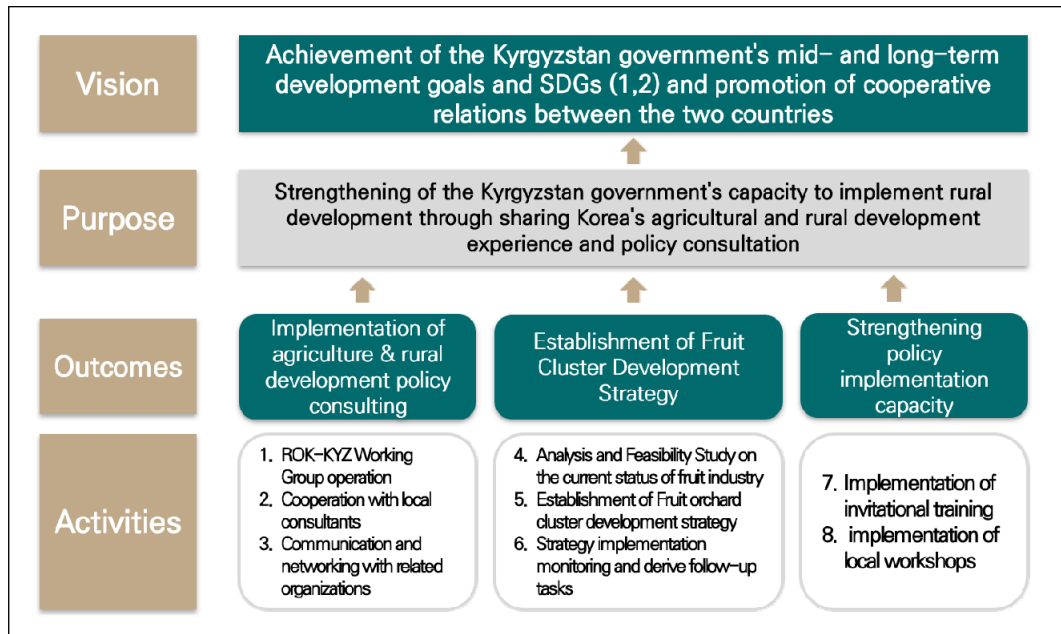
2.2. Project Purpose

- This project aims to strengthen the Kyrgyz government's capability to implement rural and agricultural development policies, through detailed projects such as consulting on rural development policies and drawing strategies for developing a fruit horticulture cluster.

2.3. Expected Outcomes

- This project expects to contribute to the Kyrgyz government's establishment of agricultural and rural policies and strengthen its implementation capabilities, by sharing Korea's agricultural and rural development as well as policy implementation experience.
 - It will also contribute to strengthening the capabilities of policy officials, researchers in related fields, and public institution workers.
- The fruit horticulture cluster development is expected to contribute to improving agricultural income and revitalizing the economy in rural areas, as well as have a positive impact on the Kyrgyz government's mid to long term national development goals.
 - It is expected to contribute to the achievement of Sustainable Development Goal(SDGs) 1 and 2 presented by the United Nations.
 - It is expected that close cooperation between Kyrgyzstan and Korea will be further strengthened by enhancing agricultural cooperation between the two governments, revitalizing exchange in research and technology development, and expanding business cooperation to private companies.

〈Figure 1-1〉 Project purpose and expected outcomes



2

Current Situation Analysis of the Fruit Industry in the Kyrgyz Republic

1. General Overview of Agriculture

1.1. Farmland and Irrigation

In the Kyrgyz Republic, 80% of the land is made up of mountainous areas, with an average elevation of 2,750m.

As of 2021, farmland area was 10,366 thousand ha, accounting for 53% of the total land. After independence from the Soviet Union in 1991, the Kyrgyz government privatized most state-owned collective farms, Dehkan farm, and implemented land reforms including the distribution of 75% of the farmland to individuals. Through this, GDP has risen significantly compared to when operating state-owned farms, and it is evaluated as one of the most successful cases of land reform.

〈Table 2-1〉 Agricultural area status(2015–2021)

Land use	2015	2016	2017	2018	2019	2020	2021
Agricultural land(sq. km)	10,556	10,541	10,540	10,541	10,371	10,368	10,366
Agricultural land (% of land area)	55	55	55	54.1	54.1	54.1	54
Arable land(ha)	1,281	1,288	1,288	1,288	1,287	1,287	1,287
Agricultural irrigated land (% of total agricultural land)	9.5	9.5	9.5	9.7	9.7	9.7	9.7

Source: FAOSTAT(<https://www.fao.org/faostat/en/>, date: 2023.11.16.).

The Kyrgyz Republic is rich in water resources including the world's second-largest lake, Issyk-Kul, and has an irrigation potential of 2.3 million hectares. However, due to the lack of national capacity, irrigation infrastructure and system management have not been properly implemented and utilized(FAO, 2011). From 2015 to 2021, only 9.5~9.7% of agricultural land is equipped for irrigation.

In addition, uneven distribution of water resources in rural and urban areas, water pollution in rural areas due to the outflow of industrial water, heavy metals, livestock waste, the aging population and insufficient irrigation facilities are pointed out as factors hindering effective agricultural production.

1.2. Rural Population

As of 2021, the total population of the Kyrgyz Republic is 6,691,800 and the proportion of rural population among this total is still high, with more than half of them living in rural areas at about 63%, but the proportion of rural residents is gradually decreasing as the urban population increases. The average annual growth rate of the rural population is low compared to the urban population. From 2016 to 2021, the rural population growth rate decreased from 1.8 to 1.2%.

〈Table 2-2〉 Rural population and growth rate(2016–2021)

Types	2016	2017	2018	2019	2020	2021
Population, total	6,079,500	6,198,200	6,322,800	6,456,900	6,579,900	6,691,800
Population, rural	3,894,285	3,958,480	4,024,399	4,098,812	4,154,812	4,206,064
Rural population (% of total population)	64.1	63.9	63.7	63.4	63.1	62.9
Rural population growth(%)	1.8	1.7	1.7	1.7	1.5	1.2

Source: World Bank Data(<https://data.worldbank.org/>, date: 2023.01.20.).

The number of agricultural workers was about 383,750 in 2019, accounting for about 19% of the total labor population of 2,565,016. The agricultural population fell sharply in the mid-2010s, and the ratio of agricultural workers to the total working population has decreased by about 10% compared to 2016, as of 2019 (Wonkyu Cha. et al, 2021). Most rural residents are engaged in agriculture, but agricultural productivity and farm household income is low due to the lack of agricultural technology, limited market access, and limited agricultural services. In addition, rural communities are recently in a more vulnerable situation due to drought, landslides, and floods caused by the climate crisis.

1.3. Agricultural Industry and Trade

On average, agriculture and its related industries constituted for 27.6% of the country's GDP from 1988 to 2019. Its contribution was 11.7% of the GDP in 2018, which was at its lowest, and 46.3% in 1996, at its highest. As of 2022, the share of agriculture in GDP was 12.1%, which was decreased by 1.6% compared to the previous year (World Bank data, 2023).

Like most of landlocked countries depend on neighbor countries to be their largest trading partner, major trading partner countries of the Kyrgyz Republic are Russian Federation and Kazakhstan. However, China is ranked the top in terms of import in 2022(〈Table 2-3〉).

〈Table 2-3〉 The Kyrgyz Republic's top 10 trading partners in 2022

Unit: 1 million USD

No	Destination of Exports		Origin of Import	
	Country	Value	Country	Value
1	Russian Federation	1,079	China	4,073
2	Kazakhstan	411	Russian Federation	2,406
3	Uzbekistan	237	Kazakhstan	768
4	Turkey	139	Turkey	487
5	United Arab Emirates	101	Uzbekistan	363
6	China	61	USA	239
7	Belarus	24	Germany	165
8	Afghanistan	22	Republic of Korea	157
9	Germany	16	India	107
10	Hong Kong	16	Japan	92

Sources: UN Comtrade Analytics(<https://comtrade.un.org/>, date: 2023.11.16.).

As shown in 〈Table 2-4〉, the Kyrgyz Republic imports four times more than it exports in all industry. Annual growth rate of export between 2018 and 2022 was 3%, on the other hand, that of import during same periods was 16%.

However, export value of vegetables have increased from 62 thousand USD in 2018 to 119 thousand USD in 2022, and its annual growth rate of export was 15%. Export value of fruits shows a similar trends of increase during same periods. This indicates that vegetables and fruits are the main agricultural items having potential power of export in the Kyrgyz Republic.

Also the share of export of agricultural products(vegetables and fruits) in all products was 8.59% in 2022, and it has increased from 2018.

Table 2-4 Trade value of agricultural products in the Kyrgyz Republic(2018–2022)

Unit: 1,000 USD, %

Items		2018	2019	2020	2021	2022	Annual growth (%, 2018–2022)
Exports	Total	1,764,613 (100%)	1,965,502 (100%)	1,964,466 (100%)	1,658,949 (100%)	2,186,721 (100%)	3
	Edible vegetables and certain roots and tubers	62,440 (3.54%)	86,323 (4.39%)	78,501 (4.00%)	93,000 (5.61%)	119,873 (5.48%)	15
	Edible fruit and nuts; peel of citrus fruit or melons	29,131 (1.65%)	41,780 (2.13%)	38,802 (1.98%)	72,289 (4.36%)	68,020 (3.11%)	25
	Animal, vegetable or microbial fats and oils and their cleavage products	431 (0.02%)	819 (0.04%)	301 (0.02%)	416 (0.03%)	738 (0.03%)	4
Imports	Total	4,907,400 (100%)	4,903,813 (100%)	3,684,109 (100%)	5,570,126 (100%)	9,629,078 (100%)	16
	Edible vegetables and certain roots and tubers	14,565 (0.30%)	25,010 (0.51%)	37,988 (1.03%)	76,899 (1.38%)	85,041 (0.88%)	59
	Edible fruit and nuts; peel of citrus fruit or melons	69,867 (1.42%)	82,967 (1.69%)	53,203 (1.44%)	93,424 (1.68%)	91,895 (0.95%)	7
	Animal, vegetable or microbial fats and oils and their cleavage products	49,595 (1.01%)	53,581 (1.09%)	48,168 (1.31%)	69,062 (1.24%)	93,374 (0.97%)	16

Sources: ITC Trade Map(<https://www.trademap.org/>, date: 2023.11.16.).

1.4. Agricultural Production

As of 2021, the main crops of the Kyrgyz Republic are potatoes, maize, sugar beet, wheat, barley, etc. Forage crops and wheat, its main food crops are ranked high in its top agricultural products. As livestock remain a dominant economic sub-sector, it uses a large proportion of the land for pastures which are an essential part of rearing livestock.

Production of major agricultural products is generally declining, with sugar beet,

wheat and barley showing a particularly sharp decline (Table 2-5). Among the top 10 items, apples are the only fruit item, maintaining an average production of about 137,000 tons from 2017 to 2021.

Table 2-5 Production quantity of major agricultural crops in the Kyrgyz Republic (2018-2020)

Unit: 1,000 ton

Crops	2017	2018	2019	2020	2021
Potatoes	1,416	1,446	1,374	1,327	1,289
Maize(corn)	653	693	712	714	691
Sugar beet	712	773	741	449	366
Wheat	601	616	601	629	363
Barley	424	429	466	510	274
Tomatoes	229	225	241	237	231
Onions and shallots	205	202	210	201	213
Watermelons	231	218	220	233	194
Carrots and turnips	184	176	182	179	169
Apples	138	135	138	137	137

Source: FAOSTAT(<https://www.fao.org/faostat/en/>, date: 2023.01.20.).

In terms of harvested area, grains such as wheat, barley and corn occupied the largest area. Of the three crops, only barley has grown steadily over the past five years without a decline, increasing from about 190,000ha in 2017 to about 220,000ha in 2021. There are some crops decreasing in cultivated area including potatoes and seed cotton. Especially, the harvested area for seed cotton has been decreasing from 20,558ha in 2017 to 19,224ha in 2021, which can be seen as a result of the Kyrgyz Republic government's policy to reduce cotton cultivation area. Other crops, including apples, showed little change over the past five years.

〈Table 2-6〉 Area harvested of major agricultural crops in the Kyrgyz Republic(2017–2021)

Unit: ha

No	Crops	2017	2018	2019	2020	2021
1	Wheat	249,860	253,804	239,594	247,028	249,607
2	Barley	192,702	191,854	205,071	217,538	219,882
3	Maize(corn)	101,370	105,063	106,243	105,028	105,994
4	Potatoes	83,033	84,428	79,207	76,315	74,904
5	Beans	51,294	52,639	52,061	51,998	52,233
6	Apples	26,389	27,038	27,400	27,658	27,365
7	Seed cotton	20,558	23,045	24,421	21,765	19,224
8	Rice	10,704	11,346	11,304	11,927	12,404
9	Tomatoes	11,496	11,580	11,914	11,587	11,655
10	Sugar beet	17,304	16,261	14,397	8,405	10,204

Source: FAOSTAT(<https://www.fao.org/faostat/en/>, date: 2023.01.20.).

Among major agricultural crops in the Kyrgyz Republic, sugar beet is the highest yield per unit area followed by citrus fruits and vegetables such as onions and shallots, cabbage, carrots, watermelons and tomatoes, etc. The top 10 crops with high yields per unit area have not changed much over the past five years and some of crops are even showing a trend of falling, which indicates that overall agricultural productivity needs to be improved in the Kyrgyz Republic's agriculture.

〈Table 2-7〉 Yield of major agricultural crops in the Kyrgyz Republic(2017–2021)

Unit: ton/ha

No	Crops	2017	2018	2019	2020	2021
1	Sugar beet	412	475	515	534	358
2	Other citrus fruits, n.e.c.	251	285	310	249	248
3	Cabbages	221	222	237	227	230
4	Onions and shallots	222	230	228	231	222
5	Carrots and turnips	232	228	229	228	213
6	Watermelons	218	220	223	226	208
7	Tomatoes	199	194	202	205	198
8	Cucumbers and gherkins	198	201	203	207	197
9	Other vegetables	211	200	202	197	197
10	Potatoes	171	171	173	174	172

Source: FAOSTAT(<https://www.fao.org/faostat/en/>, date: 2023.01.20.).

2. Current Situation of the Fruit Horticulture Industry

2.1. Fruit and Berry Growing Environment

The Kyrgyz Republic has significant potential to increase its production of fruits, berries and grapes in almost every region. Conditions are especially favorable for the development of horticulture and viticulture in the southern regions of the country. Fruits and berries are more prevalent in Oblasts (provinces) such as Issyk-Kul, Chui, Osh, Jalal-Abad and Batken, and provides substantial household income, food security and nutrition in some Rayons (districts)¹⁾.

The bulk of fruit and berry processing companies operate in Chui oblast, while in other oblasts, there is a small number of Small and Medium-sized Enterprises (SMEs) with low processing volume. In fresh fruit and berry sales, the informal sector dominates, while processed fruit and berry products are mostly sold through retail chains and exported.

The fruit and berry industry has a very high potential for growth due to favorable climate, definite organic features of these products, sustainable demand from neighboring countries such as Kazakhstan and Russia as well as new potential markets such as China, Arabic countries and European Union.

The introduction of small and medium fruit and berry processors in the country, especially in the southern part of the Kyrgyz Republic may expand sales of processed fruit and berry products not only domestically but also for export to other countries. However, the fruit and berry industry faces some challenges such as low yield compared to other horticulture crops, lack of knowledge, technologies and finances to invest in new technologies such as drip irrigation, low quality of seedlings, and poor level of processing.

¹⁾ Oblast and Rayon mean an administrative division corresponding to an autonomous province in Russia and post-Soviet Union States. Oblast is commonly translated as “province”, and Rayon, as “district” in English.

2.2. Fruit and Berry Production

In 2021, the value of gross production of fruit and berry was 13,778 million som²⁾ and its share of total agricultural production was 4.4%(NSC, 2022). Fruit and berries are mostly produced in Osh, Jalal-Abad, Issyk-Kul, Batken and Chui oblast, but large and medium fruit processing plants are concentrated in Chui oblast.

〈Table 2-8〉 Kyrgyz Republic's major fruits production (2017-2021)

No	Crops	Category	2017	2018	2019	2020	2021
1	Apples	Area harvested(ha)	26,389	27,038	27,400	27,658	27,365
		Yield(t/ha)	5.22	5.00	5.03	4.95	4.99
		Production Quantity(t)	137,725	135,300	137,734	136,920	136,651
2	Apricots	Area harvested(ha)	8,473	8,247	8,329	8,350	8,308
		Yield(t/ha)	3.02	3.13	3.16	3.19	3.26
		Production Quantity(t)	25,584	25,838	26,279	26,677	27,074
3	Cherries	Area harvested(ha)	1,129	1,141	1,168	1,146	1,152
		Yield(t/ha)	4.20	3.97	3.80	3.99	3.92
		Production Quantity(t)	4,743	4,536	4,438	4,572	4,515
4	Grapes	Area harvested(ha)	4,915	4,844	4,839	4,870	4,494
		Yield(t/ha)	1.75	1.81	1.83	1.90	1.65
		Production Quantity(t)	8,607	8,774	8,857	9,268	7,401
5	Pears	Area harvested(ha)	4,197	5,000	5,000	866	1,799
		Yield(t/ha)	1.45	0.85	0.46	0.38	0.38
		Production Quantity(t)	6,082	4,241	2,281	332.77	684
6	Plums and sloes	Area harvested(ha)	1,965	1,950	1,908	1,905	1,900
		Yield(t/ha)	6.31	6.25	6.51	6.47	6.48
		Production Quantity(t)	12,389	12,185	12,414	12,329	12,309
7	Raspberries	Area harvested(ha)	609	614	631	618	621
		Yield(t/ha)	4.21	4.10	4.06	4.13	4.10
		Production Quantity(t)	2,567	2,522	2,563	2,551	2,545
8	Strawberries	Area harvested(ha)	411	404	405	406	405
		Yield(t/ha)	5.34	5.17	5.23	5.25	5.22
		Production Quantity(t)	2194.1	2088.18	2117.57	2133.28	2113.01

Source: FAOSTAT(<https://www.fao.org/faostat/en/>, date: 2023.11.16.).

²⁾ 'Som' is the currency unit(KGS) of the Kyrgyz Republic.

Most of the fruit producers in the Kyrgyz Republic are small scale. The production of fruit and berries, especially apricots, plums and cherries are dominated by smallholder farmers, who have limited access to stable financial resources. For example, there are more than 400,000 small farms engaged in apricot production, with an average cultivation area of less than two hectares per farmer. Small-scale production translates into high levels of informality and low commercialization, as producers have limited ability to reach output volumes of consistent quality that export markets demand.

Another distinct quality of fruit and berry production in the Kyrgyz Republic is in its organic features. Their products are tasty and delicious due to natural pastures, the use of pure water and quality of prepared natural feed, as well as farmers historically not used to applying harsh chemicals as they often cannot afford to purchase such products.

However, such a clean growing approach in many cases is not supported by organic or ecological certificates, and in many cases this cannot be officially claimed on the product label. Nevertheless, ecological and natural fruit development has been recognized as a major trend in the Kyrgyz Republic and is gradually developing, paying attention to chemical composition as well as from a wider production criteria.

〈Table 2-9〉 Value of gross production of fruits and berries in the Kyrgyz Republic (2017–2021)

Unit: million som(KGS)					
Product type	2017	2018	2019	2020	2021
Total agricultural products	203,235	199,534	214,845	242,095	315,036
Fruit and berry	9,110	9,669	9,193	12,991	13,778
Rate(%)	4.48%	4.85%	4.28%	5.37%	4.37%

Source: National Statistical Committee of the Kyrgyz Republic(NSC)(<http://www.stat.kg/en/>), 2022.

Note: 1Million som(KGS) = 11,193.7USD(2023. 11. 16).

〈Table 2-10〉 Value of gross production of fruits and berries by region(2017–2021)

Unit: million som (KGS)

Region	2017	2018	2019	2020	2021
Total	9,110.0	9,669.2	9,193.4	12,991.0	13,778.0
Batken oblast	2,448.5	3,191.5	2,613.7	3,153.5	2,923.9
Jalal-Abad oblast	1,385.8	1,342.8	1,339.3	1,284.0	1,963.3
Issyk-Kul oblast	1,902.8	1,921.0	2,109.3	4,508.1	4,020.8
Naryn oblast	13.4	18.4	17.3	23.3	27.1
Osh oblast	1,560.3	1,952.2	1,647.4	2,354.0	2,815.1
Talas oblast	748.8	394.9	802.3	801.0	829.1
Chui area	995.6	793.7	617.6	825.1	1,151.1
Bishkek(Capital)	5.5	3.1	2.8	0.0	3.0
Osh city	49.3	51.6	43.7	42.0	44.7

Source: National Statistical Committee of the Kyrgyz Republic(NSC)(<http://www.stat.kg/en/>), 2022.

Note: one million som(KGS) = 11,192.3USD (2023. 10. 25).

2.3. Fruit and Berry Market Status

2.3.1. Domestic Market

The Kyrgyz Republic's domestic fruit market is small, and fruits and berries, mostly grown on small scale farms, are either consumed within the farm or traded in the domestic market. According to FAO statistics, the supply quantity of apples in 2020 was 33.7g/capita/day, lower than that in 2016, 47g/capita/day.

There are no statistics on domestic fruit consumption, demand, and trade volume, so accurate information cannot be found. The overall fruit and berry sales in the country is dominated by the informal sector. The fruit is usually distributed via the following channels:

- Direct sales from farmer to consumer via markets;
- Green bazaars, where farmers sell fruit and berry products from their own farms;
- Kiosks of the various small farms and retailers in town, selling the full range of their products;

- Small outlets;
- Retail chains or supermarkets

2.3.2. Fruit and Berry Exports

Fruit and berries are one of the most profitable sectors in the Kyrgyz Republic's agriculture. Export of fruit and nut products in 2021 was valued at 39.6 million USD and their top trading partners were Kazakhstan and Russia. Popular export products were apple, apricot, cherry and plum. The main target markets for finished products are the Russian Federation and the Republic of Kazakhstan. One of the reasons for this direction is that consumers are already familiar with the Kyrgyz fruits. There is a huge capacity in these markets for the export of fresh apples, apricots and cherries.

Russia is only 23% self-sufficient in fruit and berries, self-producing 3.7 million tonnes, with a domestic requirement of 12.9 million tonnes. According to International Trade Center(ITC)³⁾ statistics, of fresh apples, apricots and cherries. Due to the current situation of sanctions in Russia, Kyrgyz fruit, particularly apples, could partially occupy a vacant niche in fruit exports from Poland, France, Ukraine, Italy and the US.

The Kyrgyz Republic is currently working on expanding its fresh fruit export geography and focuses on acquiring internationally recognized quality standards and production certificates. The country has been granted Generalized Scheme of Preference Plus(GSP+)⁴⁾ status in 2016. The Kyrgyz Republic implements Eurasian

³⁾ Source: ITC calculations based on Eurasian Economic Commission statistics.

⁴⁾ The EU's Generalised Scheme of Preferences Plus(GSP+) gives developing countries a special incentive to pursue sustainable development and good governance. Eligible countries have to implement 27 international conventions on human rights, labour rights, the environment, and good governance. In return, the EU cuts its import duties to zero on more than two thirds of the tariff lines of their exports.(<https://trade.ec.europa.eu/access-to-markets/en/content/generalised-scheme-preferences-plus-gsp>).

Economic Union(EAEU) certification standards, which are expected to be recognized by all member states and potentially some other countries of the world.

〈Table 2-11〉 Export quantity and value of major fruit and berry products(2017-2021)

Fruit types	Unit	2017	2018	2019	2020	2021
Apple	Quantity(ton)	6,786.9	7,163.2	11,141.3	14,106.1	14,821.5
	Value(1,000 USD)	3,555	3,720	6,904	4,626	3,408
Apricot	Quantity(ton)	2,233.0	2,653.6	6,099.4	5,899.7	4,619.7
	Value(1,000 USD)	1,785	2,018	2,912	953	1,590
Other fruits, n.e.c. dried	Quantity(ton)	5,822.6	7,343.5	6,260.5	11,478.8	10,789.5
	Value(1,000 USD)	11,255	5,566	4,974	10,018	37,818
Grapes	Quantity(ton)	3,061.6	2,623.6	4,460.6	2,654.4	7,578.2
	Value(1,000 USD)	1,606	1,199	2,143	1,206	2,395
Plums and sloes	Quantity(ton)	13,724	954.6	2,278.5	1,640.4	3,871.4
	Value(1,000 USD)	941	437	828	554	179
Peaches and nectarines	Quantity(ton)	529.1	379.7	2,182.2	334.8	5,175.0
	Value(1,000 USD)	517	353	1,063	103	1,470
Cherries	Quantity(ton)	1,156.0	1,452.5	1,913.4	3,510	895.3
	Value(1,000 USD)	1,473	1,981	2,844	1,017	1,449

Source: FAOSTAT(<https://www.fao.org/faostat/en/>, date: 2023.01.20.).

〈Table 2-12〉 The Kyrgyz Republic's primary fruit export value to Russia(2019-2021)

Unit: 1,000 USD

HS Code	Product type	2019	2020	2021
081340	Dried peaches, pears, papayas, tamarinds and other edible fruits(excluding nuts)	1,401	1,984	35,000
081310	Dried apricots	3,040	5,146	9,584
080810	Fresh apples	1,406	844	1,465
080910	Fresh apricots	2,356	1,282	1,413
080930	Fresh peaches, incl. nectarines	928	43	1,342
080929	Fresh cherries(excluding sour cherries)	1,807	255	1,284
081330	Dried apples	1,023	261	736
200799	Jams, jellies, marmalade, purees or pastes of fruit	394	325	677
080830	Fresh pears	178	245	647
081070	Fresh persimmons	210	240	245
080940	Fresh plums and sloes	745	175	153
081010	Fresh strawberries	58	59	94

Source: ITC Map(<https://www.trademap.org>, date: 2023.01.20.)

〈Table 2-13〉 The Kyrgyz Republic's primary fruit export value to Kazakhstan(2019-2021)

Unit: 1,000 USD

HS Code	Product type	2019	2020	2021
080810	Fresh apples	5,308	1,228	1,464
200860	Cherries, prepared or preserved, whether or not containing added sugar	0	0	407
080520	Fresh or dried mandarins and citrus fruits	0	5	237
081020	Fresh raspberries, blackberries, mulberries and loganberries	75	65	224
080910	Fresh apricots	551	212	206
080830	Fresh pears	61	120	204
081010	Fresh strawberries	223	85	188
080930	Fresh peaches, incl. nectarines	130	38	165
080929	Fresh cherries(excluding sour cherries)	226	208	142
080940	Fresh plums and sloes	83	23	72

Source: ITC Map(<https://www.trademap.org>, date: 2023.01.20.)

2.3.3. Fruit and Berry Import

Import of fruit and berry products is valued at 54 million USD or higher than exports. Top trading partners for import are Uzbekistan, Russia and Kazakhstan.

The most imported fruit is grape, with total imports reaching to about 105,958 tons over the past five years, followed by 85,346 tons of bananas and 69,390 tons of melons. Imports of fruits, which are also produced and exported a lot in the Kyrgyz Republic, were also high, including apples, peaches and cherries.

The fruit imported with the highest value is bananas, with a total import of 4.3 million USD over the past five years. It was followed by grapes of 3.6 million USD Tangerines, mandarins, clementines 3.4 million USD and cantaloupes and other melons 3.3 million USD. Overall, fruit import value is higher than exports, for example, cherry exports over five years were 8.7 million USD while imports were 30 million USD about three times higher than exports. It means that the domestic fruit competitiveness is poor due to the problem of fruit value chain in the Kyrgyz Republic.

〈Table 2-14〉 Import quantity and value of major fruit and berry products(2017–2021)

Fruit types	Unit	2017	2018	2019	2020	2021
Grapes	Quantity(ton)	17,496	26,288	21,683	11,903	28,588
	Value(1,000 USD)	9,189	10,124	8,661	4,736	12,150
Bananas	Quantity(ton)	5,194	10,539	21,142	19,036	29,436
	Value(1,000 USD)	2,752	5,222	9,993	8,742	16,335
Cantaloupes and other melons	Quantity(ton)	18,099	7,326	7,225	19,381	17,358
	Value(1,000 USD)	7,645	3,438	2,657	4,903	15,138
Apples	Quantity(ton)	6,081	6,419	11,963	16,485	11,572
	Value(1,000 USD)	2,331	2,927	3,322	6,333	4,823
Peaches and nectarines	Quantity(ton)	8,418	10,933	9,598	5,210	5,557
	Value(1,000 USD)	4,147	6,297	4,415	2,624	2,632
Tangerines, mandarins, clementines	Quantity(ton)	6,381	11,240	7,709	3,148	5,993
	Value(1,000 USD)	3,972	5,831	3,497	2,010	3,813
Cherries	Quantity(ton)	2,380	4,781	4,372	3,040	5,413
	Value(1,000 USD)	5,367	10,903	4,892	3,266	6,194

Source: FAOSTAT(<https://www.fao.org/faostat/en/#home>, 2023.01.20).

〈Table 2-15〉 The Kyrgyz Republic's primary fruit import value from Russia(2019–2021)

Unit: 1,000 USD

HS Code	Product type	2019	2020	2021
080810	Fresh apples	5,308	1,228	1,464
200860	Cherries, prepared or preserved, whether or not containing added sugar	0	0	407
080520	Fresh or dried mandarins and citrus fruits	0	5	237
081020	Fresh raspberries, blackberries, mulberries and loganberries	75	65	224
080910	Fresh apricots	551	212	206
080830	Fresh pears	61	120	204
081010	Fresh strawberries	223	85	188
080930	Fresh peaches, incl. nectarines	130	38	165
080929	Fresh cherries(excluding sour cherries)	226	208	142
080940	Fresh plums and sloes	83	23	72

Source: ITC Map(<https://www.trademap.org>, 2023.01.20.).

3. Policies and Legal System related to Fruit Horticulture

Before 1991 in the agricultural sector of the Kyrgyz Republic there were around 500 state and collective farms, and agricultural product processing companies were also run by state, which were later all privatized. In 2020, among over 462,000 farms introduced to agriculture, forestry and fishery, most of them were engaged in fruit and berry production (NSC, 2022). The policies for the fruit and berry sector are formed by the Ministry of Agriculture of the Kyrgyz Republic, which enabled several important regulatory acts such as <Box 2-1>.

<Box 2-1> Laws and regulations of the fruit and berry sector in Kyrgyzstan

Constitution of the Kyrgyz Republic, as amended on May 5, 2021.
Constitutional Law of the Kyrgyz Republic «On the Cabinet of Ministers of the Kyrgyz Republic» dated October 11, 2021 No. 122.
Civil Code of the Kyrgyz Republic dated May 8, 1996 No. 15.
Land Code of the Kyrgyz Republic dated June 2, 1999 No. 45.
Law of the Kyrgyz Republic «On Enactment of the Land Code of the Kyrgyz Republic» dated June 2, 1999 No. 46.
Law of the Kyrgyz Republic «On Peasant(Farm) Economy» dated June 3, 1999 No. 47;
Law of the Kyrgyz Republic «On the management of agricultural land» dated January 11, 2001 No. 4.
Law of the Kyrgyz Republic «On the transfer(transformation) of land» dated July 15, 2013 N 145.
Law of the Kyrgyz Republic «On the introduction of a moratorium on the transfer(transformation) of irrigated arable land to other categories of land and types of land» dated July 31, 2009 N 257.
Law of the Kyrgyz Republic «On the regulation of land and legal relations» dated April 1, 2022 No. 21.
Decree of the President of the Kyrgyz Republic «On measures to develop the agro-industrial complex of the Kyrgyz Republic» dated February 8, 2021 No. 25.
Order of the Cabinet of Ministers of the Kyrgyz Republic «On approval of the action plan of the Cabinet of Ministers of the Kyrgyz Republic for 2022» dated March 24, 2022 No. 134-r;
Order of the Cabinet of Ministers of the Kyrgyz Republic «On approval of the project "Financing of agriculture – 10» dated January 12, 2022 N 3-r.;;
Order of the Cabinet of Ministers of the Kyrgyz Republic «On lending to the agro-industrial complex» dated March 16, 2022 No. 120 R.

An analysis of the national legislation of the Kyrgyz Republic in the field of horticulture and nursery development showed that the current legal framework is unsatisfactory in many respects - there is a significant gap in subordinate legal regulation. Regulatory acts are mainly of a framework nature and reflect the general

requirements for the provision of land for the cultivation of perennial plantations and lending to agro-industrial complex entities. The strengths and weaknesses in the field of horticulture and nursery in the Kyrgyz Republic can be analyzed in (Table 2-16).

(Table 2-16) Strength and weakness analysis of regulatory legal acts in the horticulture and nursery sector of the Kyrgyz Republic

Strengths	<ul style="list-style-type: none"> • normative legal acts of the Kyrgyz Republic reflect the general requirements for the provision of land for perennial plantations; • the national legislation reflects the mechanism of concessional lending to entities of the agro-industrial complex; • manifestation of strong interest of economic entities in the cultivation of fruits and vegetables; • membership of the Kyrgyz Republic in the EEU, WTO, and the presence of export markets that are interested in purchasing horticultural products; • strong interest of business entities in the development of horticulture for business; • availability of concessional loans for the development of intensive horticulture under the “agricultural financing” program; • availability of local and foreign varieties of perennial plants for development of horticulture; • interest and support of international donor organizations.
Weaknesses	<ul style="list-style-type: none"> • imperfect legislative base for the development of horticulture and fruit tree growing in the Kyrgyz Republic; • national legislation lacks terms and concepts such as “gardening”, “fruit garden”, “fruit nursery”, “orchard”, “seedling”; • normative legal acts lack norms on ownership, use and disposal of gardening facilities; • the legislation of the republic applies the terms and concepts of “garden plots” and “garden plots”, but the further development of these concepts is almost not reflected in the current regulations; • management of agricultural land by local authorities without regard for the interests of breeding institutions, variety testing plots and horticultural farms(withdrawal, refusal to extend lease agreements); • weak system of innovation and knowledge transfer in the breeding of perennial plantations(apples, apricots, cherries, prunes and other types of fruits and berries); • low scientific potential of agrarian science(material and technical base, lack of personnel, insufficient funding); • small-commodity structure of agriculture shallow commodity structure of the agriculture, preventing the achievement of a high level of competitiveness; • lack(or weak) interaction between research and development; • Poor or absent interaction between the institutes involved in the selection of perennial plants, and other organizations that ensure the functioning of the selection in the horticultural sector; • lack of a clear procedure for the importation of seedlings of perennial plantations into the territory of the republic; • weak infra-structure of nursery production of fruit and berry; • dependence on imported seeds and planting materials of perennial plants; • lack of state programs for the development of intensive horticulture in terms of determining the directions of development and lack of highly qualified scientific and production staff in the selection of perennial plants; • lack of state insurance mechanisms in agriculture.

Source: Emil Kydykmanov(2022).

A large number of declarative and referential norms that are not supported by implementation mechanisms lead to a lack of proper law enforcement. In the regulation of horticulture and nursery issues, the current legislation of the Kyrgyz Republic does not contain a special regulatory legal act regulating relations in the field of horticulture and nursery farming.

In this regard, there is a need to develop a draft “On Amendments to the Law of the Kyrgyz Republic,” “On the Development of Agriculture in the Kyrgyz Republic”, reflecting in it the norms for the development of horticulture and nursery farming.

The analysis also revealed the need to develop a strategic document –on a Program for the Development of Intensive Horticulture in the Kyrgyz Republic for the medium term(2023-2027).

The national legislation lacks concepts such as “horticulture”, “orchard”, “fruit nurseries”, “garden”, “seedling” and, accordingly, mechanisms for regulating these concepts. There are also no legislative norms aimed at regulating the processes of processing horticultural products.

Norms and measures taken in the field of carrying out work on growing seedlings, preparing, planting, cleaning, caring for fruit and horticultural products; works on planning, organization, conservation, processing of horticultural products; organizational and technical work on the production and cultivation of horticultural products; works on the development and implementation of advanced agro-technical measures are almost not provided for in by-laws and regulations.

In 2022, the Ministry prepared a draft on the concept of cluster development, where 16 agricultural clusters were identified, which were milk, meat, sugar, eggs, vegetable, fruit, potatoes, vegetable oil, crops, fish, cotton, wool and leather, honey, legumes, nuts, and organic products.

With the entrance of the Kyrgyz Republic in the Eurasian Economic Union(EAEU), the country must comply with the bio-security and product quality standards of this union, including a number of laws governing the production and trade of fruit and berry products.

3

Analysis of the Fruit Industry Value Chain in the Kyrgyz Republic

1. Significance of the Value Chain Analysis

The value chain analysis is necessary to figure out and present agricultural development strategies by grasping the process from before production to final consumption. In particular, considering the agricultural situation in the Kyrgyz Republic, it is difficult to make sustainable development with individual support for certain sectors such as agricultural infrastructure and the supply of high-quality seedlings.

The fruit horticulture industry, which is the subject of this strategy, does not seem to be much different. The Kyrgyz Republic's fruit industry is full of various problems, including low productivity, lack of cohesion and cooperation among small farmers, poor storage facilities, and low post-harvest processing technology. These problems hinder the development of the Kyrgyz Republic's fruit industry, despite their advantageous positioning in the fruit market overseas. Therefore, to enhance agricultural product competitiveness and improve profits, a multi-faceted agricultural development strategy should be designed.

This project's research team identified the overall problems of the Kyrgyz Republic's agricultural value chain through a literature review and implemented a case study of Osh and Batken oblast to analyze the fruit industry value chain, through field research and research commissioned to local experts.

2. Constraints of the Fruit Value Chain in the Kyrgyz Republic

2.1. Lack of R&D of seedling and management capacity

Agricultural product breeding and the development of new varieties are essential to increase productivity and improve product quality. However, the Kyrgyz Republic lacks human capacity and infrastructure to conduct research for seed and seedling development. In particular, most fruit tree seedlings are imported from Uzbekistan, Serbia, Turkey, the Netherlands, Germany, the USA, and Moldova. The general law on seeds and seedlings is the Law of Kyrgyz Republic No. 38(June 19, 1997), and the import of seeds and seedlings is regulated according to the Plant Quarantine Law No. 2(January 12, 2015).

According to Article 5 in Chapter 2 of the Plant Quarantine Law, any plant intended for export or import must undergo quarantine near the border or at a government-designated location. Plants for export or import have to be examined with sampling and/or samples of regulated products for laboratory research in the field of plant quarantine to determine whether their condition complies with quarantine phytosanitary requirements.

Article 9 in Chapter 3 also describes regulations on plant import and export. Accordingly to this article, all plants crossing the Kyrgyz Republic border must undergo quarantine procedures regardless of their country of origin and can only be

reviewed with a quality certification, which include an availability of information on the occurrence of outbreaks of quarantine objects in the entire territory of a foreign state or its part.

However, according to interviews with farmers and local officials, imported seedlings often do not have quality assurance certificates or have not been verified. In particular, for small farmers, who account for most of the Kyrgyz Republic's agricultural production, the buyer does not receive a document confirming the origin or guarantee of the quality of the seedling. The buyer of seedlings has to only believe in the word of the seller, and they can receive confirmation of the veracity of these words and see with his own eyes at least 3 years later.

As a result, almost all nurseries are not certified and produce low-quality seedlings. Everywhere in the Kyrgyz Republic, new plantings of fruits and berries are planted without pollinators, which does not allow for the biological potential of varieties to be fully revealed.

2.2. Low Accessibility of Agricultural Inputs

Agricultural inputs such as pesticides and chemical fertilizers play a crucial role in maintaining and increasing agricultural productivity. Currently, the Kyrgyz Republic does not produce fertilizers and pesticides on its own, so it is entirely dependent on imports. According to World Bank Data⁵⁾, fertilizer consumption per hectare of arable land in the Kyrgyz Republic has been increased from 10.40kg/ha in 2015 to 22.65kg/ha in 2020, and has doubled. However, fertilizer use in the Kyrgyz Republic is less than half of that in Central Asia and Europe(excluding high-income countries). Fertilizer consumption in Central Asia and Europe has exceeded 45kg/ha since 2016 and has reached about 56kg/ha in 2020.

⁵⁾ The World Bank Data(<https://data.worldbank.org>).

**〈Table 3-1〉 Fertilizer consumption of the Kyrgyz Republic and Central Asia & Europe
(2015–2020)**

Unit: kg/ha

Country	2015	2016	2017	2018	2019	2020
Central Asia & Europe(excluding high income countries)	41.5	46.1	46.9	45	48.7	55.9
The Kyrgyz Republic	10.4	12.7	7.7	21.2	22.7	22.7

Source: The World Bank Data(<https://data.worldbank.org/>, date: 2023.11.16.).

The case of pesticides is not much different, as agricultural inputs such as fertilizers and pesticides are not produced in the Kyrgyz Republic and must be fully imported, which is expensive and difficult for small farmers to access. In addition, as with seedlings, quality control is difficult because imported pesticides are not well-regulated. The Department of Chemicalization, Plant Protection and Quarantine in the MoA is responsible for inspecting imported pesticides and issuance of import licensing and registration. The department has managed imported pesticides in accordance with the “Law of the Kyrgyz Republic on Chemicalization and Plant Protection, 1999.01.25. No. 12”, “Decree on the Instructions for Safe Use, Storage of Pesticides in Agriculture, 2011.07.05. No. 361”, and “Regulation on Registration Tests and State Registration of Pesticides and Agrochemicals in the Kyrgyz Republic(2013.07.01. No. 390)”.

However, MoA severely lacks organizational, human and financial capacity to implement these regulations. In particular, pesticide testing laboratories are not competent enough to evaluate and test for pesticide registration.⁶⁾ In conclusion, the Kyrgyz Republic’s agricultural products can not meet EAEU’s sanitary and phytosanitary standards(SPS) for export to target markets within the customs union.

⁶⁾ KREI 2023. “Joint Research for 2022 KAPEX with the Kyrgyz Republic: Regulation, Laboratory Testing and Monitoring of Pesticides entering in the Kyrgyz Republic”

2.3. Storage and Processing

Agricultural products are living and breathing creatures, and it is not simple to manage them fresh and safely. In addition, low-temperature storage is the basis of agricultural product management to minimize the loss of their commercial value. Production and supply is unstable depending on the season and weather conditions, and the volume of goods temporarily increases during harvest(Cho, 2003)⁷⁾. Thus, proper storing of agricultural products is essential when it comes to supply and demand control and price defense.

However, most small farmers in the Kyrgyz Republic do not have low-temperature storage facilities to store harvested agricultural products. In particular, fruits are harvested and sold directly on the farm, and the remaining fruits are stored in a warehouse, not in cold temperature facilities, which farmers try to sell as soon as possible. In some areas, there were low-temperature storage facilities operated by the local government or private sector, but in many cases, of insufficient capacity and poor accessibility to local farmers.

According to International Trade Administration(ITA)⁸⁾, most vegetable and fruit production is seasonal, and export markets are quite limited due to inefficiencies, regional barriers and packaging deficiencies that could cause damage of fresh vegetable and fruit during the transportation process. Many international donors assist the agricultural sector, but inefficient and inadequate processing, packaging, certification, and marketing limit the sector's transition from localized production and consumption to international competition.

Moreover, local companies often lack sophisticated management skills and productive equipment, and many of them operate only at 20~40 percent of their

⁷⁾ Myeongki Cho and Kyeongchul Cho. 2003. "Analysis of the cold storage facilities use in agricultural production areas". KREI.

⁸⁾ <https://www.trade.gov/country-commercial-guides/kyrgyz-republic-agriculture>.

capacity. There is a demand for various types of food-processing equipment, including production lines for juice, ketchup, dried vegetables and fruits, potato chips, pasta products, meat products, and packaging. Local firms have limited financial resources and therefore prefer to purchase semi- or non-automated equipment. Refurbished and used equipment is popular for the same reason. Potential clients are food businesses with plans to produce new products or upgrade the packaging or quality of current product lines.

3. Case Study of the Fruit Value Chain in the Kyrgyz Republic: Osh and Batken

Since there are no accurate statistics on the production of fruits and berries including production area and price information by rayon, data was collected through surveys and interviews with value chain actors, and local governments' statistics. Since data on the production of fruits by region could be obtained mainly from those produced, Osh focused on apples and Batken focused on apricots.

3.1. Production

The color, taste and juiciness of “Nookat” apples are recognizable among consumers and therefore are in great demand both in the domestic as well as in overseas markets. The most popular late varieties of apples in Osh are Simirenko, Boyko, Jonathan, Starkrimson, Golden Green, Golden Delicious and Apport. These varieties are grown in the foothills of the Nookat, Aravan, Karakulja, Uzgen, Kara-Suu and Alai rayons. An early variety of apples Ak-alma is grown in the lowlands of

the Aravan, Kara-Suu, Nookat and Uzgen rayons. Late varieties of apples are sold fresh or stored in the Trade Labor Cooperation and sold in the winter when prices rise, while early varieties are sold fresh in the summer at a high price, since at this time there are no more winter apples on the market.

According to the Ministry of Agriculture(MoA), apple production in 2021 of Osh oblast was 40,863.3 tonnes, doubled from the 2018 production of 20,548.5 tonnes. The region with the highest apple production is Nookat rayon, which accounts for half of the apple production in the Osh oblast. The second largest apple producing region is the Kara-Suu rayon. Orchards are mainly located in the foothills with winter varieties, but are already mature and require restoration.

〈Table 3-2〉 Apple production by rayon in Osh oblast(2018–2021)

	Unit: ton			
Rayon	2018	2019	2020	2021
Nookat	9,576.0	10,915.5	16,398.9	18,108.9
Uzgen	3,705.0	4,446.0	6,190.2	6,874.2
Aravan	951.9	1,100.1	1,362.3	3,072.3
Kara-Suu	5,130.0	6,840.0	7,980.0	9,690.0
Kara-Kulja	689.7	929.1	1,077.3	1,955.1
Alai	495.9	786.6	946.2	1,162.8
Total	20,548.5	25,017.3	33,954.9	40,863.3

Source: Ministry of Agriculture, Internal data, 2022.

Sweet cherry is the main fruit produced in the Osh oblast. In the Osh oblast, sweet cherry is only grown in four rayons - Aravan, Nookat, Kara-Suu, and Uzgen- out of seven rayons. Of all the rayons of the Osh oblast, the most favorable climate for early sweet cherry is in Aravan, Kara-Suu, and Uzgen rayons. Due to the early ripening of sweet cherries, local horticultural farmers have the opportunity to export sweet cherries to China at high prices. Late varieties grow in the foothills of the Nookat, Karasu, and Uzgen rayons of the Osh oblast, which are exported to Russia, and Kazakhstan and sold on the local market. There is no guidance support for fruit production from the local government or central government, but farmers have extensive experience in fruit production accumulated over the centuries.

〈Table 3-3〉 Sweet cherry production by rayon in Osh oblast(2018–2021)

Unit: ton

Rayon	2018	2019	2020	2021
Nookat	310	310	310	310
Aravan	149	170	220	270
Kara-Suu	16	19	22	–
Total	475	499	558	580

Source: Ministry of Agriculture, Internal data, 2022.

Batken oblast has long had great potential in growing apricot trees and rightfully occupies a leading position in this industry among all oblasts of the Kyrgyz Republic. Apricot in Batken oblast is a predominant crop, and is considered environmentally friendly and nutritious due to the favorable natural and climatic conditions of the region. However, the overall dynamics of apricot orchards in Batken oblast has shown a steady decline in area in recent years. Since 2019, the area of apricot orchards has been reduced by almost 1,000 hectares annually. This is primarily due to the low productivity of apricot trees over the past three years, due to the occurrence of frost during the flowering of apricot orchards. The main income of farmers in Batken was sales of fresh and dried apricots but due to the decreasing yield, they began to replace old apricot trees with early varieties of apples, raspberries and strawberries.

〈Table 3-4〉 Apricot production by rayons in Batken oblast(2018–2021)

Unit: ton

Rayon	2018	2019	2020	2021
Batken	24,698	26,014	22,169	11,535
Kadamjai	14,011	14,348	13,562	8,438
Leilek	4,416	4,367	5,010	1,590
Total	43,125	44,729	40,741	21,563

Source: Ministry of Agriculture, Internal data, 2022.

In Batken oblast, early and mid-ripe varieties of apricots are grown. Early apricot varieties such as Samarkandsky, Maysky, Shalah, and Pineapple are consumed fresh

and not recommended for drying. They ripen in May to June. In previous years, early varieties of apricot were handed over to processing enterprises for canning, due to rejection and lack of buyers. But the price of early apricots is falling rapidly, and farmers want to sell as high as possible.

The yield per hectare of apricot orchards far exceeds the yield of other crops. Not all farmers who produce early apricots can find an alternative to selling fresh. Drying is considered unprofitable for early varieties, since the finished product after drying gives a low yield. Fresh early apricot accounts for less than 20% of the gross production out of the total apricots grown. The bulk of the apricots is dried and sold by farmers at the local market throughout the year. Due to the low yield of apricots in recent years, the price of dried apricots has increased, if previously 1kg of dried apricots costed around 250-300 Kyrgyz Som(KGS), now prices vary from 800 to 1500 KGS depending on the quality and variety of apricots.

There are also apricot orchards in the Osh oblast, most of them already mature, so many farmers are changing to sweet cherries and plums. Apricots grow in the lowlands of the Kara-Suu, Nookat, Aravan, and Uzgen rayons. Most households have 1-2 apricot trees and the harvest is for personal use.

3.2. Processing and Distribution

Fruits are purchased from farmers through storage warehouse holders or middlemen and exported mainly to Russia and Kazakhstan. Exporters or middlemen directly come to the farm to purchase and export them as fresh fruits by land, and farmers' right to price is very low for middlemen. Small farmers sell to the domestic market and juice factories because it is difficult to meet the export volume. In order to increase the sales power of small farmers, it is better to move in the form of a cooperative, but the cooperative is not actively operating.

Fruits that are less commercially available are mainly sold for juice, dried fruits, and jam, but most of them are often discarded without being sold because they do not have a market. In addition, even if they are dried and sold directly at the farmhouse, the productivity of dried fruits do not seem to be great because there is a lack of channels to learn about other processing methods besides natural drying.

There are four main processing companies in Osh oblast: Mamatov, Latural Product, Alayku-Organics, and Farida and Nurlan. Rather than buying raw materials directly from the farmers, they buy them through contracts with middlemen. According to an interview with an Alayku-Organics official, 90% of the raw materials for making juice and jam are purchased through middlemen, while the remaining 10% are directly traded through the farmers.

Most of these processed products are exported to China, Russia, and Uzbekistan because demand is not high in the domestic market. However, some processing producers cannot produce the product due to a lack of supply of raw material fruits, even if the demand has been increasing.

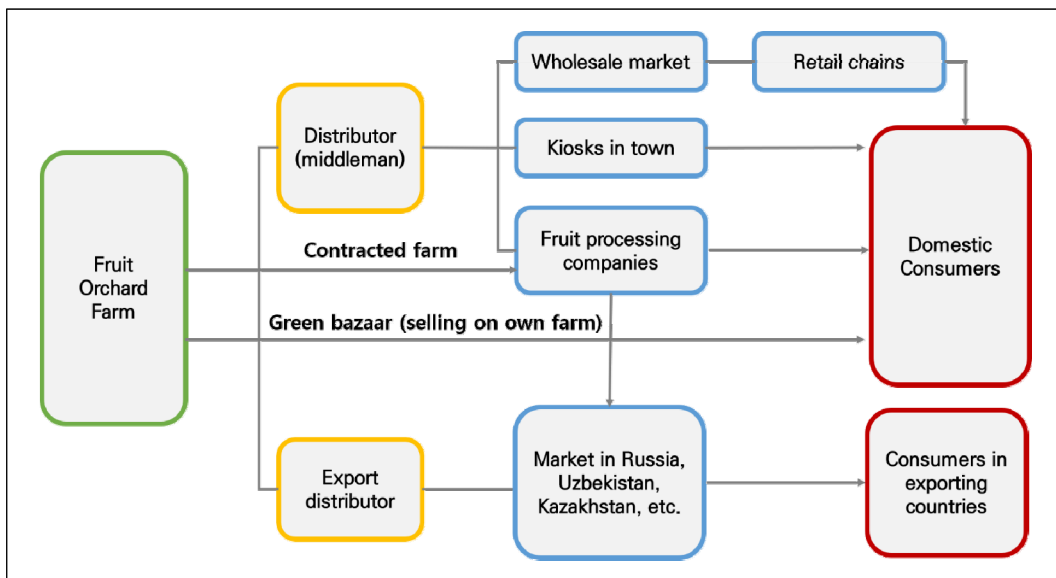
⟨Table 3–5⟩ Interview result with processing companies in Osh and Batken

Processing company	Interview result
Agri Cooperative “Agroplast”, JSC “Nan”, Workshop “Crystal”	These processing companies are located in the Batken oblast and are engaged in the production of juices and compotes from fruits, produce products with a certificate of conformity from the EAEU. 90% of products are exported to the northern cities of Russia and Kazakhstan, 10% of products are sold in local markets.
LLC “Altyn Aimak”, LLC “Altyn Bak”, Cooperative “Alysh–Dan”, and LLC “Interfruit”	These companies are located in the Batken oblast and are engaged in the processing of dried fruits – cleaning, washing, sorting, drying and packaging fruits and berries. Products are fully exported to Russia, Turkey, Ukraine, Belarus, USA.
LLC “Agroproduct Asia”	The company is located in Bishkek and engaged in the processing of apples, produces juices under the Organic brand. The annual volume of purchases of raw materials(carrion, illiquid apples) of the company is 4 thousand MT per year, 40% of which are purchased from the South. They mainly buy apples, sweet cherries and pears. In the Osh oblast, they work with 300 horticultural farmers who supply raw materials. The company plans to increase production to 10 thousand MT per year, as they began exporting products to the Uzbek market. Difficulties are experienced in the variety of apples, small volumes and high prices for raw materials and transportation from the southern regions to Bishkek.
Individual Entrepreneur «Mamatov»	The company is located in Osh, produces products under the trademark "Bal Shirin". The company has been operating on the market for more than 7 years. They purchase up to two MT of cherries per season at the market and produce compotes. 90% of the finished products are exported to Russia. 10% of the products are prepared under the order of the residents of the Osh, who do not have the opportunity to prepare conservation for the winter, and their products are also bought by cafes and restaurants in Osh. The total volume of sweet cherries for processing per season is 50 MT.
LLC “Natural Product”	The company is located in the Nookat rayon, produces apple juice with an annual volume of 350–400 MT, all products are sold on the local market. The main consumers of juices are the Horeca. Products are also sold through the Globus and Frunze supermarkets and private grocery stores, as well as Ecoproduct Asia.
LLC “Alayku–Organics”	The company is engaged in the production of fermented milk products with the addition of fruits and berries, and additionally produces drinks from dried fruits. Also, since 2021, the company has begun processing dried fruits. The company directly purchases dried fruits from more than 1,500 farmers throughout the Osh oblast. The company is currently completing the construction of a workshop where they themselves will dry berries and fruits. For this they are ready to buy fresh berries and fruits from farmers in Osh, Jalal–Abad and Batken oblasts.
LLC “Farida and Nurlan”	The company is engaged in the conservation of fruits and berries. 90% of their products are exported to the northern cities of Russia and Kazakhstan.

Source: Ecocluster(2022).

In summary, the structure of the fruit value chain in the Kyrgyz Republic could be mapped as in <Figure 3-1>.

<Figure 3-1> Map of fruit value chain in the Kyrgyz Republic



4

Implications

1. Main Problems of the Fruit Value Chain

In examining the current status of the fruit industry in the Kyrgyz Republic, we understand their significant potential to increase production of fruit, berries and grapes in almost every region due to favorable climates and sustainable demand from neighboring countries. The Kyrgyz government has also set up and implemented a series of policies for the purpose of developing the fruit industry.

In this chapter, main problems of the value chain of the Kyrgyz Republic fruit industry are summarized as <Table 4-1> in order to suggest future policies for the fruit cluster development.

At the fruit production stage, the production scale seems to be small. In addition, most farmers tend to acquire production technology and farming information from their families or neighboring farms. Moreover, few farmers have received professional and systematic production technology and farming-related education. As middlemen play a leading role in determining transaction prices, farmers have low bargaining power. Therefore, education on fruit farming techniques is necessary and the creation of organized farming such as cooperatives is essential.

Hygiene management and quality control are insufficient in the raw material purchase process and simple processing stage. Processing procedure and technology are also too simple. Therefore, education and training on hygiene management and quality control at the processing stage are required, and facilities for hygiene management and quality control (storage warehouse, separation of work space, etc.) need to be improved. In addition, it is necessary to develop various processing facilities and techniques.

In the distribution stage, facilities for distribution such as local collection warehouses, local markets, wholesale markets, etc. need to be established. Market information also needs to be collected and provided.

〈Table 4-1〉 Main problems of the fruit value chain in the Kyrgyz Republic

Value Chain	Main Problems
Production	<ol style="list-style-type: none"> 1. Small scale production 2. Low productivity 3. Lack of direct contracts with processors 4. High prices and low quality of input materials 5. Poor knowledge of farmers, lack of training and low access to knowledge and training systems 6. Poor storage facilities 7. Lack of modern technologies for industrial cultivation of fruits and berries 8. Insufficient local certification as well as lack of government support, which the majority of the farmers cannot afford on their own
Processing	<ol style="list-style-type: none"> 1. Low commercialization and processing capacity 2. Lack of qualified specialists/technologists for the primary processing of fruits and berries 3. Lack of hygiene and quality management facilities and technology
Distribution	<ol style="list-style-type: none"> 1. Poor transportation infrastructure contributes to deterioration of quality 2. Underdeveloped cold chain and storage systems 3. Lack of local markets 4. Lack of market information

2. Suggestions on Policy Direction

Based on the current state of the fruit industry and value chain problems in the Kyrgyz Republic, the policy direction for the development of the fruit industry is presented as follows.

First, in order to strengthen the competitive power of the fruit industry, it is most important to improve the value chain(production, processing and distribution stages). In addition, R&D on agricultural technology development and breed improvement must be carried out, and institutional support such as establishment of standards for quality control is required.

Second, the Kyrgyz Republic must expand its fruit exports for the development of the fruit industry.

Therefore, it is suggested that main policy targets of the fruit cluster development in the Kyrgyz Republic is to improve fruit value chain and strengthen fruit export capabilities.

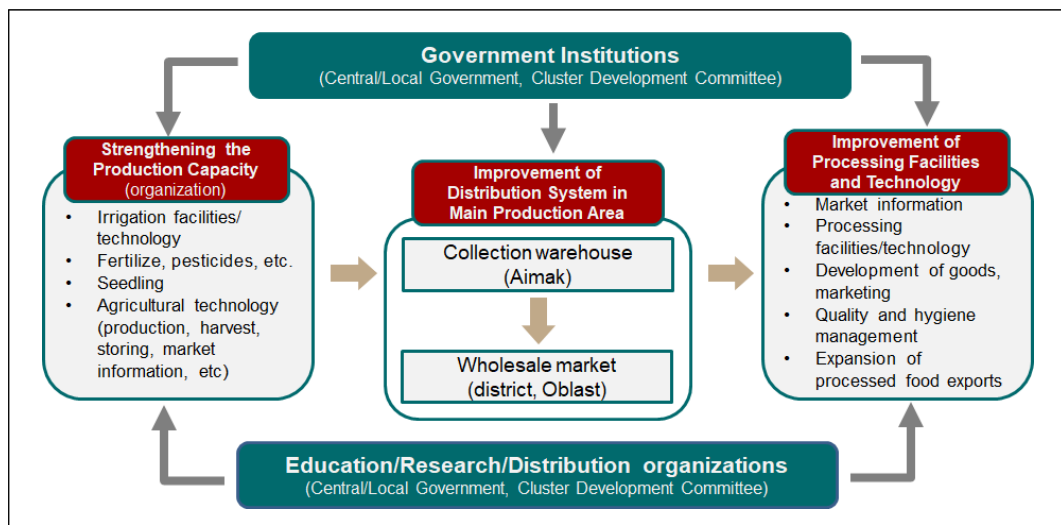
To this end, implementing policies and plans for fruit cluster development must be prepared in the short term, and the fruit cluster needs to be established through pilot projects in specific regions. In the long term, it is necessary to expand the pilot project to other areas by monitoring the advantages and problems of fruit clusters.

〈Figure 4-1〉 Policy direction for the development of the fruit industry in Kyrgyz Republic

Goal	Strengthening competitiveness in the Fruit industry of the Kyrgyz Republic
Directions	<ul style="list-style-type: none"> ① Improvement of value-chain on the Fruit Industry <ul style="list-style-type: none"> - Development of Production Stage - Development of Processing and Distribution Stage ② Strengthening Fruit Export Capability
Strategies	<ul style="list-style-type: none"> ① Short-term Strategy: <ul style="list-style-type: none"> - Establishment of policies and detailed implementing plans on the Fruit Cluster - Implementation of a Pilot Project on the Fruit Cluster ② Long-term Strategy: Expansion of pilot project
Pilot Project	Osh & Batkent Region

In this regard, basic concept of the fruit cluster development strategy in the Kyrgyz Republic is to strengthen connectivity between the main body of the fruit industry value chain (such as farmers, processing and exporting companies) and the supporting body such as research and government institutions. In other words, the fruit cluster development strategy includes a concept in which participants in the fruit production stage, processing and distribution stage are spatially linked and organically connected through an institutional system.

〈Figure 4-2〉 Basic concept of the fruit cluster development strategy



5

The Fruit Cluster Development Strategy in the Kyrgyz Republic

1. Vision and Goals of the Fruit Cluster Development

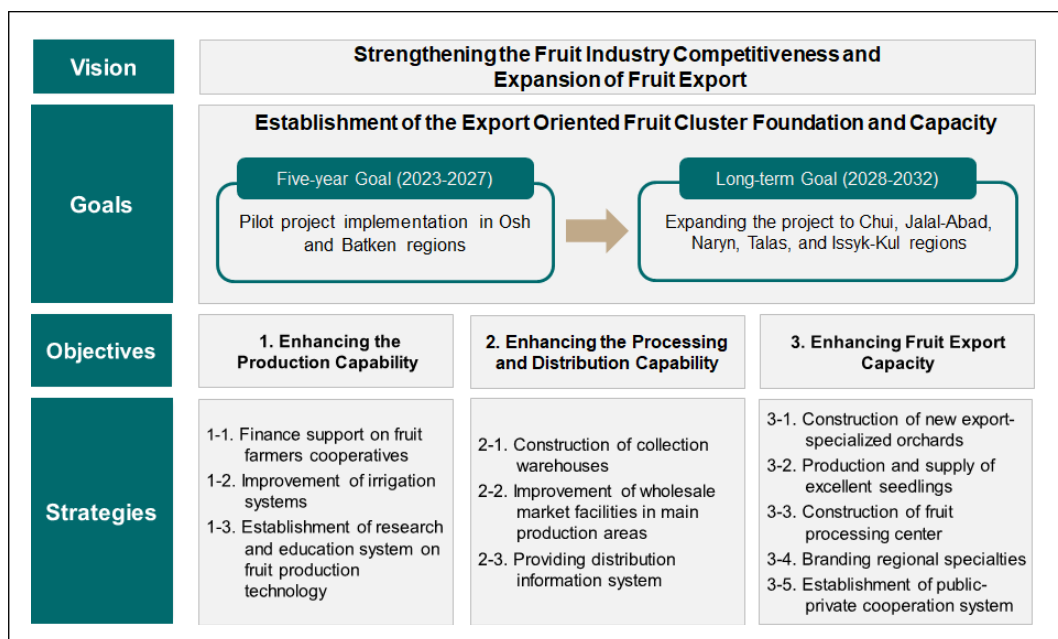
1.1. Vision

Strengthening the fruit industry's competitive power and expanding fruit exports

1.2. Goals

The goals of the fruit cluster development strategy are to establish a foundation for export oriented fruit cluster and its capacity. The first 5 year plan is to implement the pilot project in Osh and Batken oblasts. The long-term goal is to expand the pilot project to Chui, Jalal-Abad, Naryn, Talas, and Issyk-Kul oblasts.

〈Figure 5-1〉 Policy goals and development strategies of the fruit cluster



1.3. Objectives

The objectives of the fruit cluster development include;

- Enhancing production capability
- Enhancing processing and distribution capability
- Enhancing fruit export capacity

1.4. Strategies

The strategy for fruit cluster development in the Kyrgyz Republic is presented as shown in 〈Figure 5-1〉. Major policy strategies for enhancing the production capability in the production stage are:

- To strengthen the role of fruit farmers' cooperatives
- To improve irrigation systems
- To establish research and education systems on fruit production technology

Policy strategies to enhance processing and distribution capabilities are:

- To construct collection warehouses in main production areas
- To improve facilities of wholesale markets in the main production areas
- To provide information on the distribution system

Policy strategies for enhancing fruit export capacity are:

- To construct new export-specialized orchards
- To produce and supply good seedlings
- To construct fruit processing centers for promoting exports
- To brand regional fruit specialties
- To establish public-to-private cooperation system

1.5. Policy Priorities

In order to establish the export oriented fruit cluster, governments need to put policy priorities on strategies related to enhancing fruit export capacity. In this regard, strategies to construct new orchards, production of high-quality seedlings, construction of fruit processing centers, and organizing public-to-private cooperation systems need to be considered as priority policy.

2. Strategies for Fruit Cluster Development

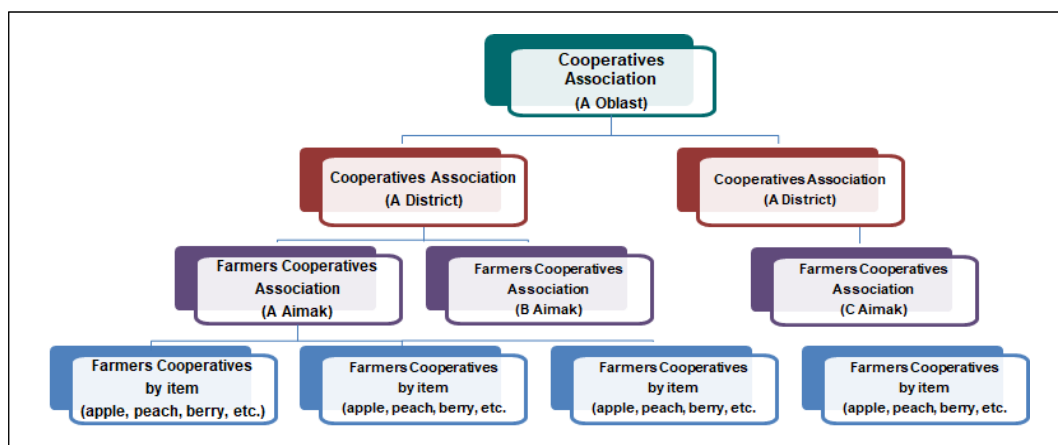
Objective 1: Enhancing production capability

Strategy 1-1: Finance support for fruit farmers cooperatives

Necessity

- Fruit farmers cooperatives could be organized vertically by regional scale and item. At the village level, producer cooperatives are organized by item such as apples, peaches, and berries. At the aimak, rayon, and oblast level, association could be formed as sub-unit cooperatives.
- Members of farmers cooperatives by item can be individual farmers who produce fruits such as apples. (“Apple Production Cooperatives”)
- Main roles of farmers cooperatives are to share information and technology related to fruit production, cultivation, sales, etc. and purchase farming materials such as fertilizers, pesticides, seedlings, packing materials, etc.

〈Figure 5-2〉 Fruit farmers cooperatives organized by items/oblasts



Main roles of cooperatives and associations are to operate storage and processing facilities and sell its products to the market or processing companies. More detailed roles of cooperatives are described in <Table 5-1>.

<Table 5-1> Main roles of fruit cooperatives

Types	Members	Main roles
Cooperatives by item	Individual farmers	<ul style="list-style-type: none"> • Sharing information and technology related to fruit production • Joint purchase of fertilizers/pesticides, packaging materials, seedlings, etc.
Aimak Cooperatives Association	Cooperatives by item	<ul style="list-style-type: none"> • Participation in the operation of storage and processing facilities(storage, simple processing and packaging, transportation, joint sales, etc) • Rental of agricultural machinery, pumps, etc. • Fruit production and shipment control • Fruit products quality control
Rayon Cooperatives Association	Aimak Cooperatives Association	<ul style="list-style-type: none"> • Joint sales of products in the local wholesale market • Gaining customers • Local fruit branding and promotion • Collection and provision of fruit production and distribution information
Oblast Cooperatives Association	Rayon Cooperatives Association	<ul style="list-style-type: none"> • Securing large-scale customers • Expansion of fruit export market • Regional cooperative management

However, for the majority of small-scale farmers and cooperatives, it is difficult to access bank credit and the cost of purchase farming materials is too high. Furthermore, they tend to have weak bargain power in the market. This is cause for lower farm income.

Therefore, finance support and training programs for fruit cooperatives are necessary to activate and strengthen their roles.

Policy intervention

Policy target group

- Fruit farmers cooperatives or cooperatives associations

○ Policy contents

- Governments and commercial banks provide bank loans to selected fruit cooperatives for initial activities such as the purchase of farming materials with lower interest rates or no interest. Financial support to fruit cooperatives could be implemented in Osh and Batken oblasts as a pilot project.
- Governments provide training programs regarding roles and management of cooperatives with advanced and successful cases.

○ Implementing Plan

- Fruit cooperatives submit applications for finance support to local governments and commercial banks with cooperatives business plans and members' agreement.
- Local governments and banks examine the application and decide on the target cooperatives and scale of financial support. Local governments and banks provide bank loans every year to 10 to 20 fruit cooperatives within the national budget coverage. In this case, local governments and banks could prioritize farmers cooperatives who produce fruits for export.
- With the assistance of donor countries or international organizations, local governments develop and provide training programs for fruit cooperatives to learn about stable operation of cooperatives and on how to make profit for their members.

○ Monitoring Plan

- Local governments and banks monitor the operation status of the target cooperatives in every year. As a result of monitoring, governments(central or local) could provide additional policy funding to best practice cooperatives.

〈Table 5-2〉 5 Year roadmap– for accomplishing strategy 1-1

Period	Strategic Target	Responsible Body
1st~2nd Year	• Financial support for initial operation and provision of training programs for 20 cooperatives(10 in Osh, 10 in Batken)	• Local governments
3rd~ 4th Year	• Financial support for initial operation of 40 cooperatives(20 in Osh, 20 in Batken)	• Local governments
5th Year	• Inspection and improvement of cooperative support projects	• Local governments and banks
Long-term	• Expansion of financial support nationwide	• Central governments

Strategy 1-2: Improvement of Irrigation System and Facilities

Necessity

- There is a shortage of water for irrigation and also lack of irrigation facilities, technology and expertise. It is necessary to install drip irrigation and hydraulic pumps to take water from canals, but farmers have limited funding opportunities.
- Existing specialists have no experience installing drip irrigation in hilly areas, and poor installation of drip irrigation systems lead to shortage of irrigation water during irrigation season.
- Therefore, improvement of irrigation systems and facilities is necessary to increase fruit production.

Policy intervention

○ Policy Target Area

- Areas with vulnerable irrigation facilities in rayon-level regions

○ Policy Contents

- Repairing or improving vulnerable irrigation facilities

- Constructing irrigation facilities(reservoirs, channels, etc.), if necessary
- Providing irrigation equipments and related technologies to fruit cooperatives(associations)

○ Implementing Plan

- Governments(central or local) conduct a base-line survey on current status of agricultural reservoirs and irrigation channels by rayon. Based on the survey, governments establish an irrigation improvement scheme by rayon in Osh and Batken which include policy target area, scale and budget, and detailed implementing plan.
- Under the irrigation improvement scheme, governments implement a pilot project on improving or constructing irrigation facilities. With assistance from donor countries or international organizations, governments could implement bigger projects to improve irrigation facilities.
- Governments provide irrigation equipment(pumping machines, electricity devices, etc.) and related technology to fruit cooperatives(or associations) in target areas.

○ Monitoring Plan

- Governments and the Cluster Development Committee monitor and evaluate the irrigation improvement scheme. Based on the evaluation, the monitored organization suggest revisions to the scheme for expansion o other regions.

〈Table 5-3〉 5 Year roadmap for accomplishing strategy 1-2

Period	Strategic Target	Responsible Body
1st Year	<ul style="list-style-type: none"> • Conducting basic investigation and establishing the irrigation improvement scheme by regions 	<ul style="list-style-type: none"> • Governments • Cluster development committee
2nd ~ 4th Year	<ul style="list-style-type: none"> • Repair and expansion of irrigation facilities(10 rayons) • Irrigation equipments and technical support 	<ul style="list-style-type: none"> • Governments
5th Year	<ul style="list-style-type: none"> • Evaluating the irrigation improvement scheme and suggesting the revised scheme and expanding this scheme to other regions 	<ul style="list-style-type: none"> • Governments • Cluster development committee
Long-term	<ul style="list-style-type: none"> • Expanding scales and target areas of the irrigation improvement scheme 	<ul style="list-style-type: none"> • Governments

Strategy 1-3: Establishment of research and education systems on fruit production technology

Necessity

- Research on fruit cultivation / harvesting technology, fertilizer/pesticide spraying, agricultural machinery related technology, drying and processing technology, etc. is required.
- Education and training needs to be established for fruit producers.

Policy intervention

○ Policy target group

- Universities or national research institutes related to agricultural technology research and development in oblasts
- Governments agricultural extension service officers

○ Policy Contents

- Establishment of the Fruit Production Technology Research Center in oblasts (Osh, Batken)

- Conducting research on fruit variety improvement, production and harvesting technology
- Developing extension service programs and providing periodic education and training to members of farmers cooperatives

○ Implementing Plan

- After setting up the plan, Governments and the Cluster Development Committee establish a fruit production technology research center by newly constructing or improving buildings and facilities such as horticulture test-beds, nurseries and laboratories for fruit variety improvement, fertilizer/pesticide research, soil analysis, etc.
- Local governments operate the Fruit Production Technology Research Center with assistance of operational budget from central government and receive support of human resources from universities and national research institutes.
- Agriculture extension service programs include various fields such as fruit production/harvesting/storing technology, quality control, hygiene management, etc. As part of the national extension service program, this training program could be implemented by developing and providing various on-line materials through the web-site.

〈Table 5-4〉 5 Year roadmap for accomplishing strategy 1-3

Period	Strategic Target	Responsible Body
1st ~ 2nd Year	<ul style="list-style-type: none"> • Setting up the plan for establishment of a technology research center and securing a budget • Developing web-site and on-line material for agriculture extension service 	<ul style="list-style-type: none"> • Governments • Cluster development committee
3rd ~ 4th Year	<ul style="list-style-type: none"> • Construction and operation of the research center in oblasts (Osh, Batken) • Providing agriculture extension service 	<ul style="list-style-type: none"> • Governments
5th Year	<ul style="list-style-type: none"> • Evaluation and improvement 	<ul style="list-style-type: none"> • Governments • Cluster development committee
Long-term	<ul style="list-style-type: none"> • Improving function of the research center and expanding it to other region 	<ul style="list-style-type: none"> • Governments

Objective 2: Enhancing the processing and distribution capability

Strategy 2-1: Constructing fruit collection warehouses in main production areas

Necessity

- Quality degradation and damage tend to be occurred in the process of storing and transporting after harvesting.
- Therefore, the collection warehouse is needed where fresh fruit can be stored/packaged in the production area and distributed safely to processors and markets.

Policy intervention

○ Policy target area

- Main fruit production areas in rayon

○ Policy Contents

- Constructing the small size of collection warehouse which is in charge of collecting, sorting and packing the fruits produced in near areas
- Supporting fruit farmers cooperatives operating the collection warehouse

○ Implementing Plan

- The project of constructing collection warehouses is implemented as a pilot project at the rayon level.
- Governments(central and local) and the Cluster Development Committee select several pilot rayons in consideration of the orchard concentration area and basic infrastructures such as road accessibility, electricity supply, etc.

- Facilities of the collection warehouse include collection space, storage space and simple types of sorting and packing facilities.
- Fruit farmers cooperatives(associations) operate the collection warehouse. Cooperatives could buy fruits from its members and many other cooperatives nearby areas. After sorting and packing, operating cooperatives sell fruit products to processing companies or wholesale markets. The collection warehouse could deal with other sorts of agricultural products such as vegetables for sustainable operation of the warehouse.
- Benefits from the collection warehouse should be shared with members of operating cooperatives and could be invested for operating funds.
- Governments could provide finance support on fruit cooperatives for initial operating of the fruit collection warehouse.

○ Monitoring Plan

- Local governments set up implementing and monitoring plan for the pilot project. On the basis of this plan, local governments and the Cluster Development Committee investigate operation of the collection warehouse in every year. Responsible bodies evaluate effectiveness of the pilot project in the 5th year.
- Based on the evaluation result, local governments and the Cluster Development Committee set up revised plans and expand pilot projects to other rayon

〈Table 5-5〉 5 Year roadmap for accomplishing strategy 2-1

Period	Strategic Target	Responsible body
1st ~ 2nd Year	<ul style="list-style-type: none"> • Setting up the plan • Implementing the collection warehouse establishment project(pilot) in 5 production areas 	<ul style="list-style-type: none"> • Governments • Cluster development committee • Farmers' cooperatives
3rd ~ 4th Year	<ul style="list-style-type: none"> • Implementing a collecting warehouse establishment project(pilot) in 10 production areas 	<ul style="list-style-type: none"> • Governments • Cluster development committee • Farmers' cooperatives
5th Year	<ul style="list-style-type: none"> • Evaluation and improvement of the operation of the collection warehouse 	<ul style="list-style-type: none"> • Governments • Cluster development committee
Long-term	<ul style="list-style-type: none"> • Expanding the collection warehouse to other regions 	<ul style="list-style-type: none"> • Governments

Strategy 2-2: Improvement of wholesale market facilities in main production areas

Necessity

- Due to poor distribution and storage facilities in the production area and wholesale market facilities, fruit quality deterioration and hygiene-related problems occur during the transaction process.
- Therefore, hygienic and safe fruit distribution system needs to be established by improving wholesale market facilities.

Policy intervention

○ Policy Target area

- Wholesale market in main production area in rayons

○ Policy Contents

- Newly constructing or improving facilities of wholesale market in main production area(pilot in major rayons)

○ Implementing Plan

- Governments(central and local) and the cluster development committee select pilot project site in consideration of orchard concentration areas and basic infrastructure such as road accessibility, electricity supply, and etc.
- Governments(central and local) support funds on repairing or constructing wholesale market facilities such as transaction area with roof and screen installation, warehouse, road and parking lot, etc.
- Local governments are responsible for the facility management and operation in the wholesale market(or private companies designated by local government)
- Local governments are responsible for collecting and providing distributing information(transaction items, amount, price, etc.)

○ Monitoring Plan

- Governments(central and local) and the cluster development committee evaluate operation of wholesale market in main production areas and suggest strategic methods for expanding this project to other regions.

〈Table 5-6〉 5 Year roadmap for accomplishing strategy 2-2

Period	Strategic Target	Responsible body
1st- 2nd Year	• Improvement of wholesale market facilities in 5 rayons	• Governments • Cluster development committee
3rd- 4th Year	• Improvement of wholesale market facilities in 5 rayons	• Governments • Cluster development committee
5th Year	• Inspection and improvement of the wholesale market operation	• Governments • Cluster development committee
Long-term	• Expanding this pilot project to other regions	• Governments

Strategy 2-3: Establishment of distribution information system in main production areas

Necessity

- Fruit distribution information in farmhouses and wholesale markets is necessary to be collected and provided periodically and systemically.
- Fruit distribution information system is essential for stakeholders (such as farmers, middle-man, processing companies, distributing and export agencies, consumers, etc) to play their own roles rationally.

Policy intervention

○ Policy target

- Establishing fruit distribution information system

○ Policy Contents

- Periodic collection of distribution information in production areas and wholesale markets
- Systemic provision of distribution information through the internet web-site

○ Implementing Plan

- Farmers' cooperatives in production areas regularly record the sales volume and selling price of fruits and share this information with the oblast cooperatives associations.
- Wholesale markets in rayon regions regularly record information such as transaction volume and transaction price and share this with the oblast cooperatives associations.

- The oblast cooperatives associations establish the internet web-site and periodically provide the fruit distribution information. The oblast cooperatives collect distribution information from farmers' cooperatives and wholesale market in production areas. The internet web-site could provide much more information and on-line materials such as education programs.
- Governments(central and local) support funds for operating information system.

〈Table 5-7〉 5 Year roadmap for accomplishing strategy 2-3

Period	Strategic Target	Responsible body
1st – 2nd Year	• Establishment of data collection and provision system	• Governments • Farmers' cooperatives and associations
3rd- 4th Year	• Establishment of systemic provision of distribution information	• Governments • Farmers' cooperatives and associations
5th Year	• Advancement of distribution information system	• Governments • Farmers' cooperatives and associations
Long-term	• Improving and expanding distribution information system to nationwide	• Governments

Objective 3: Enhancing Fruit Export Capacity

Strategy 3-1: Construction of new export-specialized orchards

Necessity

○ In the Kyrgyz Republic, unproductive pastures currently occupies about 614 thousand ha. In order to transfer these unproductive pastures to agricultural land, the Kyrgyz government amended 'On the Model Regulations on the conditions and procedure for lease of lands of the state fund of agricultural lands' in January of 2023.

○ The development of unproductive pastures could contribute, in general, to an increase in land productivity, the growth of agricultural production, and achieving food security. In accordance with newly amended government's regulation, it is good opportunity to increase total size of orchards especially specialized for fruit export.

□ Policy intervention

○ Policy target

- Short to mid term: Establishing the national master plan for construction of new orchards and implementing the pilot project in Osh and Batken regions
- Long term: Transferring 10% of total unproductive pastures into new orchards specialized in fruit export

○ Policy Contents

- Conducting a feasibility study and establishing the national master plan
- Improving infra-structure(soil conditions, water resources, etc.) of newly constructed orchards

○ Implementing Plan

- Local governments conduct survey on current status of unproductive pastures and submit reports to central government. This feasibility study includes size of unproductive pastures, soil conditions, usable water resources, possible sites for constructing new orchards, etc, by local areas.
- Based on feasibility studies reported from each local government, central government set up the national master plan for construction of new orchards. The master plan includes size and site of newly constructing orchards, government's supporting plan, roles of local and central governments admin-

istrations, budget plan, etc. Due to characteristics of existed unproductive pastures, government's supporting plan needs to focus on construction of basic infra-structure of new orchards such as improving soil conditions, construction of water resources and irrigation canal, providing superior seedlings to farmers, etc.

- Before accepting applications from farmers(or cooperatives) by local state administrations, first of all, governments should improve soil conditions by applying fertilizer or proper nutrients and construct irrigation canal. This governments' support can contribute to producing more qualified fruits for export and also attracting farmers(or cooperatives) to participate in construction of new orchards.
- Governments' support plan for constructing new orchards could be implemented as a pilot project in Osh and Batken oblasts by local governments and then it could be extended to other oblasts according to the nation master plan.

○ Monitoring Plan

- Central government and the Cluster Development Committee review and examine the result of feasibility study and process of establishing the master plan.
- Central government and the Cluster Development Committee monitor and evaluate the process and the effect of government's support implemented as a pilot project. Monitoring and evaluation on farmers farming activities in newly constructed orchards could be conducted in this stage. This monitoring and evaluation need to be continued until newly planted seedlings grow and fruits are produced in new orchards.
- Based on the evaluation, central governments and the Cluster Development

Committee could amend the national master plan for constructing new orchards and expand this project to other regions.

〈Table 5-8〉 5 Year roadmap for accomplishing strategy 3-1

Period	Strategic Target	Responsible body
1st Year	• Conducting feasibility study in local areas	• Local governments
2nd Year	• Establishing the national master plan based on the feasibility study	• Central government
3rd - 5th Year	• Implementing pilot projects	• Local governments
5th Year -	• Evaluating the effect of pilot projects • Amending the national master plan based on evaluation	• Central government • Cluster development committee
Long-term	• Expanding this project to other regions until 10% of unproductive pastures transferred into new orchards specialized in fruit export	• Governments

Strategy 3-2: Production and supply of superior seedlings

Necessity

- Most farmers purchase cheap, low-quality seedlings produced in Uzbekistan(60% Uzbek, 40% Europe), and the survival rate of seedlings is low. It causes a decrease in production and farm income.
- In order to increase fruit export as well as farm income, it is necessary to produce high-quality and superior seedlings and distribute them to fruit producers.

Policy intervention

○ Policy target group

- Fruit seedling producers or companies in rayon

○ Policy Contents

- Supporting facilities and technologies for producing superior seedlings

○ Implementing Plan

- Local governments select major export specialized fruit items by rayons considering environmental conditions, amount of production, export markets, quality such as sugar content level and taste, etc. Selection of major export specialized fruit items by rayons should be in accordance with the branding local specialties policy and fruit export-oriented policy.
- With assistance of universities or national research institutes, Governments (central and local) support facilities and technologies for producing disease/disaster-resistant seedlings to existed nurseries in rayons. If necessary, governments could support on construction of new nurseries by attracting donor funds.
- Governments also provide education and training on seedling management technologies to fruit seedling producers and fruit farmers cooperatives.
- Fruit seedling producers or companies distribute superior seedlings to fruit farmers cooperatives with cheaper price than the market price.

○ Monitoring Plan

- Governments and the Cluster Development Committee monitor and evaluate the effect of support on superior seedlings in the last year of this project.
- Based on the evaluation, central governments and the Cluster Development Committee expand this project to other regions.

〈Table 5-9〉 5 Year roadmap for accomplishing strategy 3-2

Period	Strategic Target	Responsible body
1st Year	• Selection of the local export specialized fruit items	• Governments • National research Institutes
2nd – 4th Year	• Supporting facilities and technologies for producing superior seedlings of specialized items in 10 districts	• Governments • National research Institutes
5th Year	• Evaluating the effect of support on superior seedlings	• Governments • Cluster development committee
Long-term	• Expanding scale and target area of this project	• Governments

Strategy 3-3: Establishment of the fruit processing center to promote export

Necessity

- The environment of agricultural export market is getting better due to the customs union with 5 Central-Asian countries, and its export market is expanded to the European(EU) market.
- However, there is a limit to expansion of fruit export because most exports are in the form of fresh fruits. Therefore, it is necessary to expand exports through the development of processed fruit products with high value added.

Policy intervention

○ Policy Target group

- Fruit processing and export companies
- Fruit export cooperatives

○ Policy Contents

- Construction of processing facilities for high value-added fresh fruit and processed products for export(pilot in Osh and Batken oblasts)
- Development of fruit processed products(juice, jam, sauce, snack, etc) which meet international quality and hygiene standards
- Promotion of fruit processed products export

○ Implementing Plan

- Governments(central and provincial) and the Cluster Development Committee set up the plan for construction of the fruit processing facilities(cold storage

warehouse, sorting and packing facilities, etc.) based on private companies' investment. The fruit processing center could deal with other agricultural products such as vegetables and nuts.

- The fruit processing center purchases fresh and high quality fruits from fruit farmers' cooperatives contracted with the center. Fruit export cooperatives could operate the center and shares net benefits with members of fruit export cooperatives.
- Governments(central and provincial) provide national policy funds for export promotion to fruit processing companies invested in this project and farmers' cooperatives.
- Universities and research institutes provide fruit processing technologies and international standards on quality control and hygiene.

○ Monitoring Plan

- Governments(central and local) examine the quality and hygiene of processed fruit products before export.
- Governments(central and local) and the Cluster Development Committee monitor and evaluate operation of the fruit processing center. Based on the evaluation, responsible bodies set up the improved fruit export plan.

〈Table 5-10〉 5 Year roadmap for accomplishing strategy 3-3

Period	Strategic Target	Responsible body
1st- 2nd Year	• Establishment of plan for the fruit processing center and securing a budget	• Governments • Cluster development committee
3rd - 4th Year	• Operation of the center	• Fruit processing and export companies • Farmers' cooperatives
5th Year	• Inspection and improvement of the fruit processing center	• Governments • Cluster development committee

Strategy 3-4: Branding regional specialties

Necessity

- There is a need to increase consumers' awareness and reliability of fruit products by grading regional specialties and branding them.
- Successful branding regional specialties will be helpful for promoting exports and domestic consumptions.

Policy intervention

○ Policy Target

- Grading and branding regional fruit specialties

○ Policy Contents

- Grading regional specialties
- Branding regional specialties

○ Implementing Plan

- Local governments and the Fruit Production Technology Research Center select regional fruit specialties in consideration of growth environment, production amount, export market, quality(sugar content level, taste), etc. Selection of regional fruit specialties is closely related with the policy strategy on the superior seedlings production and export promotion.
- Local governments and the fruit production technology research Center establish the national standards on hygiene and quality control.
- Local governments and Farmers' cooperatives(associations) develop regional brand for fruit specialties and promote marketing especially for export.

- Governments(central and local) could support advertisement of regional brand for fruit specialties.

〈Table 5-11〉 5 Year-roadmap for accomplishing strategy 3-4

Period	Strategic Target	Responsible body
1st- 2nd Year	<ul style="list-style-type: none"> • Selection of regional fruit specialties • Preparation of national standard on hygiene and quality control 	<ul style="list-style-type: none"> • Governments • Fruit Production Technology Research Center
3rd- 4th Year	<ul style="list-style-type: none"> • Brand development and marketing reinforcement 	<ul style="list-style-type: none"> • Governments • Farmers' cooperatives
5th Year	<ul style="list-style-type: none"> • Expansion of branding regional specialties 	<ul style="list-style-type: none"> • Governments • Farmers' cooperatives

Strategy 3-5: Establishment of public-private Cooperation system

□ Roles of Governments and public sectors

- For successful accomplishment of fruit cluster development strategies, government organizations(such as central government, local governments and the fruit cluster development committee) should play important roles. Therefore, each government organizations' roles are identified as below.

○ Role of the Central government

- The main role of the Ministry of Agriculture is to establish the fruit cluster development policies including government budget plan. The Minister of agriculture promote and monitor the fruit cluster development project.

Participating Institution	Implementing roles
The Ministry of Agriculture	<ul style="list-style-type: none"> • Establishment of fruit cluster development strategy and policies • Secure government budget and execution • Promotion and monitoring of fruit cluster development project • International cooperation for inducing ODA project

○ Local government

- Department of Agriculture in the oblast and rayon governments plays important roles of establishment of detailed regional projects such as selection of project site, regional fruit specialties, etc.

Participating Institution	Implementing roles
Department of Agriculture in the oblast and rayon government	<ul style="list-style-type: none"> • Establishment of detailed promotion plans for regional projects (establishment of production sites, wholesale markets, agricultural technology education, regional branding, etc) • promotion and monitoring of local project • Advertising local project

○ The fruit cluster development committee

- The fruit cluster development committee consists of officers from governments (central and local), experts from universities and research institutes, representatives from fruit cooperatives and processing companies, and other relevant private experts
- Main roles of the fruit cluster development committee are to provide consultation on the fruit cluster development strategies and policy intervention. Also, the committee participate in the selection process of project site and investigation process of each projects.

Participating Institution	Implementing Roles
The fruit cluster development committee	<ul style="list-style-type: none"> • Consultation on the fruit cluster development strategy and policy development • Consultation on the selection of project target sites and specialized items in each region • Consultation on project promotion and budget execution • Project promotion monitoring and improvement suggestions • Other consultation on the Fruit Cluster Development

○ Universities/national research institutes

- Universities and national research institutes provide policy consultation and technical assistance for the fruit cluster development strategies. And also these

academical organizations conduct research on developing national standard of quality control and hygiene, farming technology, production of superior seedlings, etc.

Participating Institution	Implementing roles
Universities/ research institutes	<ul style="list-style-type: none"> • Consultation on the Development Strategy and Policy Development of Fruit Clusters • Development and dissemination of agricultural technology • Preparation of packaging standardization and quality grading standards

□ Roles of private sectors

○ Cooperatives by items and oblast

- Fruit farmers' cooperatives and its associations are core implementing bodies of the fruit cluster development strategies. Fruit farmers' cooperatives and its associations produce and sale fruit products to the markets and processors. Also cooperatives operate the collection warehouse in production areas, participate in branding of local specialties and provide production and distribution information.

Participating Institutions	Implementing roles
<ul style="list-style-type: none"> • Cooperatives by items and regions • Cooperatives' associations 	<ul style="list-style-type: none"> • Cooperative organization and operation(joint purchase of equipment, etc.) • Operation of warehouse in the production area(collecting, selection, and sale, etc.) • Co-branding of local specialties • Collection and provision of local production/shipment information • Establishment and management of local distribution information system

○ Processing/distribution companies

- Processing and distribution companies participate in operation of the fruit processing center in association with farmers' cooperatives in order to promote export of fresh fruit and processed products.

Participating Institutions	Implementing roles
Processing/ distribution companies	<ul style="list-style-type: none"> • Collection and distribution of market information • Modernization of drying/processing/storage facilities and sanitation management • Processed product development and marketing

□ Public-private partnership for promoting fruit export

Formulating business partnership among governments, fruit farmers, processing companies, and export enterprises are essential to promote fruit export.

○ Organizing Fruit export cooperatives

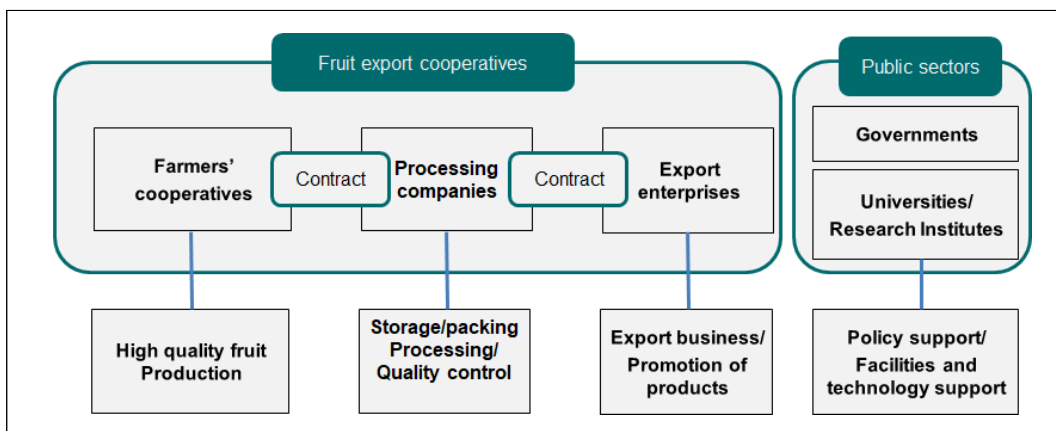
- Because operation ability of farmers' cooperatives in the Kyrgyz Republic is weak and its size is small, farmers cooperatives have limitation to operate export business. Therefore, fruit export cooperatives need to be organized with fruit farmers cooperatives by items, processing companies, and export enterprises. Export enterprises can lead fruit export cooperatives and conduct business contract with each members.
- Fruit export cooperatives can conduct every activities from high quality fruit production and processing to export business. Advantage of fruit export cooperatives are to reduce cost and also keep good quality and quantity available for fruit export.
- Each members can share the benefit of export business according to the contract conditions. This business model will contribute to promote these cooperatives activities and also attract participation of other similar cooperatives in fruit export business.

○ Public sectors' Support

- Public sectors such as governments and research institutes need to support fruit export cooperatives as follows.

- Financial support for initial operation of cooperatives
- Facilities and technical support on production of superior seedlings, processing, and quality control
- Policy consultation on fruit export business

〈Figure 5-3〉 Public-private Partnership for promoting fruit export



6

Conclusion

Since the fruit industry of the Kyrgyz Republic has poor infrastructure for all value chains, the fruit cluster development requires a step-by-step strategy for each value chain. This fruit cluster development strategy is a national strategy that evaluates and improves the strategy through short-term pilot projects and then expands it nationwide in the long-term. The fruit cluster development strategy in the Kyrgyz Republic aims at establishing the export oriented fruit cluster foundation and its capacity. The strategy covers fruit value chain enhancement from production stage to processing and distribution stage. It also covers fruit export promotion including production of good seedlings, construction of fruit processing centers, and organizing fruit export cooperatives.

This policy strategy recognizes the role of fruit farmers' cooperatives to be essential to increase farmers income. Furthermore, collection warehouses and wholesale markets are important to maintain quality of fresh fruits and hygiene.

First of all, this strategy put policy priority on enhancing fruit export. In this regards, the fruit cluster development strategy include policies for transformation of unproductive pastures into new orchards specialized in fruit export, production of

good seedlings, construction of fruit processing center, and branding regional fruit specialties.

As this policy actions are implemented, competitiveness of fruit industry will be enhanced and this policy will make a significant contribution to development of agricultural economy by expanding fruit export in the Kyrgyz Republic.

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