Kyrgyz Republic

Data Collection Survey on Export Promotion of Agriculture Products and Strengthening of Farm Management

Final Report

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Japan International Cooperation Agency (JICA)

Hokkaido Intellect Tank (HIT)
Overseas Merchandise Inspection Co., Ltd. (OMIC)

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Abbreviation List

Abbreviation	Formal Name
ABCC	Agribusiness Competitiveness Center
ABSC	Asian Breeding service center
ALS	Stewart Assay and Environmental Laboratories LLC
C/P	Counter Part
CCI	Chamber of Commerce
COD	Chemical Oxygen Demand
DDT	Dichloro Diphenyl Trichloro Ethane
FAO	Food and Agriculture Organization
FAO	Food and Agriculture Organization of the United Nations
FTTC	Food Training Technology Center
GC	Gas Chromatograph
GC/MS	Gas Chromatograph/ Mass Spectrometer
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOST	State Standard of the Soviet Union
GOST-R	State Standard of the Russian
HACCP	Hazard Analysis Critical Control Point
HCH	Hexachloro Cyclo Hexane
HPLC	High Performance Liquid Chromatograph
ICP	Inductively coupled plasma
ICP-AES	ICP - Atomic Emission Spectrometry
ICP-MS	ICP - Mass Spectrometry
ILAC	the International Laboratory Accreditation Cooperation
ISO	International Organization for Standardization
KCA	Kyrgyz Center of Accreditation
KSTU	Kyrgyz State Technical University
KTR	Kyrgyz Technical Regulation
LC/MS	Liquid Chromatograph / Mass Spectrometer
MFS	Management of Food Safety
MFS	Management of Food Safety
PCR	Polymerase Chain Reaction
RAS	Rural Advisory Services
SanPiN	Sanitary and Epidemiological Norms
SESS	Department of the State Sanitary Epidemiological Surveillance
SI	the State Inspectorate of Veterinary and Phytosanitary
SMC	Standardization and Metrology Center
SSES	State Sanitary Epidemiological Surveillance
SWOT	Strengths, Weaknesses, Opportunities and Treats Analysis
TCC	Testing and Certification Centre
TLC	Trade Logistic Centers
TOD	Total Oxygen Demand
TR	Technical Regulation
UCAID	University Corporation for Advanced Internet Development
WB	World Bank
WHO	World Health Organization

1 At the Beginning

1 At the beginning

1-1 Background and purpose of this operation

(1) Background of this operation

1) Issue recognition by the government of Kyrgyz Republic

The parliament of Kyrgyz approved "Kyrgyz Republic Government Program" on September 5, 2012. This program indicates the future basic guideline of the government of Kyrgyz and the detailed program that is to be jelled between September 2012 and March 2013.

Seven urgent issues for Kyrgyz are mentioned in the program. The promotion of export, the theme of this operation, is an indispensable theme for the Kyrgyz government to realize the economic stability, and at the same time, the government is aiming the compact administration of the nation and the strengthening of private organizations including organization reinforcement in agricultural fields.

- Breakaway from economic crisis
- Enhancement of export capability, realization of strategic reform and stable economic growth
- Creation of favorable investment and business climate that makes domestic and international capital intake possible
- Implementation of social duty by the government such as social services
- Elimination of corruption
- Compact administration of the nation and formulation of efficient system

Also, energy, agriculture and food processing, light industry, tourism, mining, transportation and communication, trade and the development of border regions are chosen as the priority fields for the economic reconstruction. The government aims to break away from the adverse trade balance developing domestic production sector with a focus on these fields.

In this program, the agriculture and food processing field is recognized as indispensable for many nationals to have a fulfilling life. However, it is pointed that along with the development of financing, machine and equipment, epidemic prevention measures for agricultural crops, farm animal and domestic fowl, soil amelioration, breeding and raising seedling and irrigation, securement of selling tools is an important agenda, and the lack of its capability has resulted in financial difficulties and lowering of motivation for farmers. The fact that it is difficult to achieve intensive agriculture because of the small agricultural management scale, and the product is limited to low-value-added product because in the processing field technological development capability is lacking is also regarded as a problem.

Under such a situation, the government is planning urgent measures as blow for the development of agriculture and food processing industry, and aiming to nurture efficient and competitive agriculture and food processing industry by coalition and unionization of farmers, and to stabilize the economy of the region and nation.

- Foundation of the cooperative of processors and farm machine and tractor producers following the principles of PPP and expansion of support for export
- Increase of the use of the government finance and farm equipment by improving funds, credit infrastructure, lease
- distribution of the resources(land, funds etc.) necessary for specific business enterprises, high-quality commodity supply for adequate price, service delivery in the fields of breeding business and quality animal husbandry and expansion of the use of advanced technology
- Building and rebuilding of aquatic irrigation facilities, soil remediation, advice for effective land use and supply support of mineral fertilizer

- Along with advancing into foreign market, reinforcement support for economic partnership between agricultural producers, processors and wholesale and retail traders
- Development of environmental-friendly and safe products

In this program, specifying that foreign trade is implemented following the principles and standard of WTO, and a bilateral or multilateral trade agreement with the Commonwealth of Independent States and the European Association of Urology, Kyrgyz's challenges in regard to Russia, Kazakhstan and Belarus Customs Union which started in 2010 are clearly pointed out. By formation of this union, the barrier for the Kyrgyz's main export markets has become high, and declination of trade area has been apprehended. Specially, the fact that the upgrading of capability to guarantee the safety and quality of products is late, is regarded as an important issue.

On the other hand, with the assumption that Kyrgyz will participate in the customs union in the future, the country has a plan to prepare for struggle for conditions. Specially, it is pointed out that the government should formulate the national strategy for export promotion and tackle with the infrastructure building such as study and testing emergently.

－Formulation of export development strategy

－Foundation of full-power organization regarding export promotion

－Reduction of submission duty of identification papers that are not demanded by import countries

－Simplification of approval and license papers regarding export and import trade

－Unification of authorities engaging in international trade

In 2013, the Kyrgyz announced "The Government's Program and Plan on Transition of the Kyrgyz Republic to Sustainable Development (2013-2017)" and "National Sustainable Development Strategy for the Kyrgyz Republic for the period of "2013-2017)." Both of them present the directionality of policy and action plan of the Kyrgyz government for the next five years. The former was announced under the name of the Kyrgyz republic, and the latter National Council for Sustainable Development of the Kyrgyz Republic. Recognition of challenges and directionality are shared and the government has clarified the concrete road map and promotion system based on the strategy of National Council.

"The Government's Program (2013-2017)" presents improvement of education and research system and health care, efficiency development of social security and pension, promotion of independent activities by youth and re-acknowledgement of the role of family and women as social challenges. And it has been planned to re-examine the legal system and legal compliance, citizen participation in elections and development of a local administration system for the achieving transition and promoting projects.

At the same time, sustainable industrial policy is mentioned. The directionality of promotion in the fields of agriculture, energy, mining, transport and communications are presented based on the government policy on finance, economy and trade. As premises, it has been decided to eradicate informal trade and promote an economic assistance system for small and medium-sized business.

In the agricultural field, development of conditions for progress in fields of agriculture and industry, quality improvement of agricultural products and securement of food safety guarantees of the nation are set as goals, and contents for them are shown divided in four fields as below. Also, the concrete project for them is as in Table 1-2.

Table 1-1:"The Government Program 2013-2017" Project contents in the agricultural field

Field	Content
Foundation of efficient agricultural management, cultivation of agricultural engineers and development of conditions necessary for concentration in agricultural production	・Reformation of the Ministry of Agriculture, re-education of the staff ・Diffusion of techniques to farmers ・Fair transaction of farm land and its promotion
Increase of agricultural production and expansion of support to agricultural export	・Implement of organizing of small farms, promotion of large-scale management and preferential material allocation ・Support for farmers through chain cluster of value-adding to agricultural products by PPP method ・Establishing inspection standard and founding inspection facility for improvement of food safety ・Support for agricultural processing industry ・ Consensus building with overseas market (Russia and Kazakhstan) ・Promotion of organic agriculture
Supply of service and market infrastructure needed for agricultural production	・Promotion of privatization of livestock registration system and veterinary service ・ Introduction of inspection system of agricultural products matching the standard of Customs Union ・Promotion of cultivation of livestock and plants matching the weather condition of Kyrgyz. ・Establishment of loans for agricultural management and purchase of machines by PPP method and foundation of MTS ・Establishment of wholesale system of agricultural products and wholesale market
Promotion of efficient use of irrigation and farm land	・Improvement of irrigation system and increase of irrigated land by new construction ・Introduction of new techniques such as water-saving irrigation and water management by WUA ・Clarification of the border between public land and agricultural land ・Prohibition of diversion of agricultural land for multipurpose

Table 1-2: Agricultural Sector Investment Projects (2013-2017)

№	Project name	Total estimated cost	Units of measurement	Implementation time frames
1	Construction of a mineral fertilizer plan	2.0	USD mio	2014-2015
2	Establishment of 14 seed farms	7.4	USD mio	2013
3	Creating a network of breeding farms, one in each Oblast of the country to fully meet the demand of selected agricultural cooperatives.	8.5	USD mio	2013
4	Creation of a complex of modern laboratories that meet international standards of quality certification	1.6	USD mio	2013-2016
5	Reform of the State-owned Enterprise "Kyrgyzpochtasy" [Kyrgyz Post] and establishment on its basis of a postal and savings system that provides a full range of banking services in rural areas, with presence in each Village District	5.55	USD mio	2013-2017
6	Procurement of equipment for points of bovine artificial insemination (300 sets)	0.50	USD mio	2013
7	Funding for financial leasing of agricultural equipment - 225 units of equipment	5.00	USD mio	2013
8	Funding for financial leasing of agricultural equipment	20.00	USD mio	2013-2014
9	Procurement of construction equipment Department of Water Resources and Land Reclamation of the Ministry of Agriculture	10.00	USD mio	2013
10	Completion of the irrigation facility (Burgandy range, array Kadamjay Raion, Batken Oblast) and acquisition of of 3498 hectares of new irrigated land	8.3	USD mio	2013-2015
11	Construction of the Kara Bulun Channel in the Jety Oguz Raion	4.2	USD mio	2013-2014
12	Irrigation of lands using wastewater in the Cholpon Ata City.	1.7	USD mio	2013-2014
13	Rehabilitation of the principal water intake facility on the Ak Sai River, Ak Tala Raion (commissioning of 500 ha)	1.7	USD mio	2013
14	Construction of the Karakyshtak-Boz Channel in the Kadamjay Raion (yield of 270 ha)	8.1	USD mio	2013-2015
15	Reconstruction of the Sarymsak Channel in the Kara Buura Raion of the Talas Oblast (yield of 1000 ha)	9.4	USD mio	2013-2015
16	Construction of a daily run-off pond on the Shamshy River of the Chui Raion of the Chui Oblast	4.2	USD mio	2013-2014
17	Rehabilitation of the tail section of the Besh Batman channel to increase water availability in the Renjit Valley of the Aksy Raion	8.0	USD mio	2013-2014
18	Construction of the “P-4хв” channel and expansion of the existing “P-4” channel in the Batken Raion.	5.2	USD mio	2013-2014
19	Reconstruction of the Ak Olen Channel in the Ton Raion	8.4	USD mio	2013-2016
20	Construction of the Bakthy-Nogoi Channel in the Kara Bura Raion	2.5	USD mio	2013-2014
21	Reconstruction of the Kara Tuma daily run-off pond and construction of internal network in the Panfilov Raion	5.2	USD mio	2013-2014
22	Irrigation of lands, Bashkugandy, Jumgal Raion	0.7	USD mio	2013
23	Design of irrigation development plans	2.2	USD mio	2013-2017
24	Melioration improvement of irrigated land	11.0	USD mio	2013-2017
	Total	141.35	USD mio	

Moreover, "Agricultural Development Plan until 2020" is under discussion in Kyrgyz, and the minister in charge reported that the goal of this plan is to fill the demand of the nationals, secure economic performance of agriculture and the food safety, improve the production and its quality and make the efficient farm management possible. Additionally, he stated the quality of the food safety will be improved, production will be raised, the competitiveness to export production to foreign countries will rise, and the producers' income will be raised by accomplishing this goal. However, it is indicated at the parliament that the plan is short on specifics and the management system is lacking. The goal of the plan is as below.

Table 1-3: Outline of Strategy

Document title	Agricultural and Industrial Development Strategy until 2020
Agency in charge	The Ministry of Agriculture and Land reclamation of Kyrgyz (The Ministry of Agriculture)
Enforcer in concert	Technical support－Food and Agriculture Organization（FAO）
Goals of strategy	Improvement of productivity Improvement of quality and agricultural productivity Thoroughness of safety of domestic food products Foundation of efficient agricultural management system Expansion of effective and efficient state regulations
Agendas of strategy	Improvement of production output and productivity of crop production and cattle rearing Improvement of water resource management for agriculture Development of land market Development of processing industry Cooperation and development Development of regional economic system Introduction of advanced technology (innovation) and development of trade
Strategic numerical targets	Labor productivity Capital-labor ratio Production index of various agricultural products Production index of dairy and livestock management（average annual milk yield, average annual wool production volume, average annual egg production capability） Number of livestock Anastylosis and modernization rate of irrigation and water discharge infrastructure（owned by the government and WUAs/WUA Federations：Water User Associations） Improvement of water supply in irrigation areas Equalization of agricultural land area in each farm (lot sharing） Index concerning agricultural processing Number of products and service cooperatives in the field of agriculture
Phase and period	Period of strategy implementation：2013-2020 Implementing plan in two stages：2013-2014 and 2015-2020
Accumulated fund and amount of fund procurement necessary for strategic investment plan	23,662.9 million som（$503.5 million） △14,325million som（$304.8 million） ＊$1= 47.00 som
Expected results by strategy implementation	Quality improvement in food safety Development of production capacity, competitiveness and export of agricultural products Income increase for rural farmers

2) Support by the Japanese government

Kyrgyz is the second poorest country following Tajikistan and has been receiving support in the fields of traffic infrastructure building, agriculture development, regional support, market-oriented economic reform and social safety net building. In terms of agriculture which 60% of the nationals of Kyrgyz engage in and is the priority industry of the country, based on the recognition that its development is crucial for stable development, regional improvement and eradication of poverty, the comprehensive program for rural development has been implemented.

The Japanese government aspires the regional development of Central Asia in "Central Asia ＋ Japan" Action Plan, and advocates engagement in the realization of environmental conservation, disaster prevention, ending poverty, energy/water and promotion of trade investment. About Kyrgyz, "Millennium Development Goals" for ending poverty was set in 2009, and the global cooperative relationship with the goal to end poverty fundamentally has been formed. At the same time, in the foreign ministerial conference between two countries in November 2012, it was expressed that the cooperation at the governmental level would be further promoted and they expect the expansion of exchange at the private level.

The Japanese government stipulated "promotion of agriculture and business" and "improvement of transport infrastructure" as priority support fields for the realization of promotion of economic development by trade expansion that the Kyrgyz government aspires.

As a countermeasure to this, JICA implemented a cultivation program of human resources to invest in the market economy, as well as a support to One Village, One Product campaign and support for marshaling farmers. As to the marshaling of farmers, "strengthening of marshaling farmers" course intended for the whole of Central Asia was implemented and the technology has been transferred in the areas of the agricultural policy in Japan, introduction to agriculture in Hokkaido, agricultural management, agrarian reform, introduction to agricultural cooperative, agricultural mutual aid system, agricultural finance, women's role in farm family management, agricultural development and extension operation, distribution system of farming products in Hokkaido. In the course, what were pointed out as important issues for Fermer association as a farmers' organization were efficient procurement of agricultural materials, expansion of sales network and formulation of a technical guidance system. Training for the staff of Chamber of Commerce in Kyrgyz on the market-oriented economic reform was undertaken at the same time, in which the Japanese efficient management was set as a theme.

Hence, the Japanese government is planning to develop the system that enables to increase the production of highly-demanded products and export them, and cultivate human resources who contribute to the promotion of agriculture-related small and medium sized companies with the goal of business promotion and investment promotion.

As for the improvement of transport infrastructure, the Japanese government plans to develop transportation routes connecting to the Kyrgyz cities and international markets, and support technology transfer for the maintenance from the viewpoint of export promotion and overall development.

(2) Purpose of this operation and work contents

Kyrgyz lost a big market and agricultural production dramatically declined after the disintegration of the Soviet Union. In order to realize the stable procurement and domestic and international distribution of agricultural products, the production of competitive agricultural products and processed food products, income improvement in the rural areas and promotion of export are set as ultimate goals as part of the development of industry that has export competitiveness.

The framework to realize the goals is as the chart below. Among these, the contents of this operation are ①clarification of issues in whole value chain, ②concrete contents of "strengthening of marshaling farmers" and "improvement of distribution environment from both "hard" and "soft" aspects", ③extraction of obstructive factors for realizing countermeasures, ④development of collaborative policy and proposal of a road map for realization of the ultimate goals.

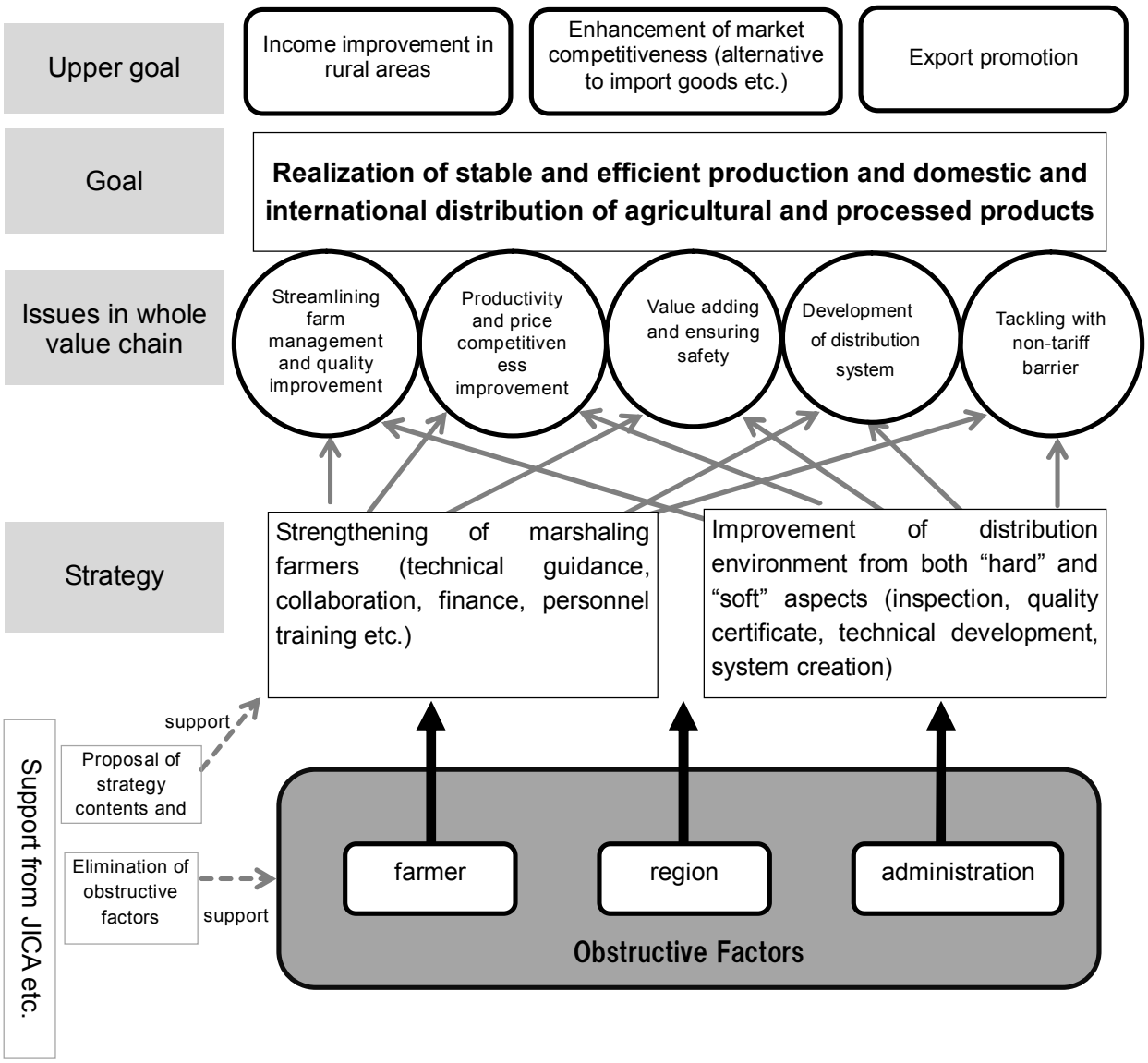


Figure 1-1: Framework for realization of market-oriented agricultural production and distribution system

1) Regions surveyed

The regions surveyed are as below in consideration of the characteristics of the agricultural field, markets and environment.

Table 1-4: Outline of Areas Surveyed

Area	Characteristics in Agricultural field	Other characteristics
Bishkek Area 130 ㎢ Population 836,000 (2009) Population Density 39.13/㎢	・Combination of Fruits and vegetables cultivation and stockbreeding around urban area ・Processing of agricultural products ・well-developed wholesale and retail	・The center of administration, distribution and finance ・Railway network with Russia and Kazakhstan
Chuy state Center Bishkek Area 2,000 ㎢ Population 790,000 (2009) Population Density 39.13/㎢	・cultivation of various vegetables and fruits such as wheat, maize, beet, potato, alfalfa ・large-scale farmers' organization predominant ・The base of agricultural product processing in the Soviet era	・Bordering area with Kazakhstan ・Road network with the former CIS countries ・The water source is Chuy River ・Comprising comparatively multiethnic populations
Issyk-Kul state Center Karakol Area 4,300 ㎢ Population 437,000 (2009) Population Density 10.1 /㎢	・Stockbreeding and various vegetables and fruits such as wheat and potato ・Cultivation at lakes	・Mountainous are ・Sightseeing spot ・Railway network with Bishkek ・Road to Kazakhstan (Almaty) now building
Talas state Center Talas Area 1,100 ㎢ Population 220,000 (2009) Population Density 19/㎢	・Wheat, bean and stockbreeding main ・Self-contained agriculture	・The market is Jambyl in southern Kazakhstan
Naryn state Area 4,500 ㎢ Population 245,000 (2009) Population Density 6/㎢	・Stockbreeding of Sheep, cow and yak ・Local specialties are Meat and wool.	・Bad accessibility in the winter with a mountain path to Bishkek ・Bordering with China, it is closer that the capital. ・The biggest area in the country and population density low ・Sightseeing spot ・Main population is Kyrgyz.

(3) Governmental organizations of Kyrgyz and economic situation

1) Governmental organizations of Kyrgyz

As of March 2013, the governmental organizations of Kyrgyz are as follows. The main contacts in this research are the Ministry of Agriculture, the Ministry of Economy and the Ministry of Health.

The Kyrgyz Government

Ministry and Committee	State Agency	State Service	Fund and State Inspection
・The Ministry of Foreign Affairs The Ministry of Defense ・The Department of Interior ・The Department of Justice ・The Ministry of Finance ・The Ministry of Economy ・The Ministry of Agriculture and Land Reclamation (The Ministry of Agriculture) ・The Ministry of Transport and Communications ・The Ministry of Emergency Situations ・The Department of Energy ・The Ministry of Education and Science ・The Ministry of Health ・The Ministry of Culture, Information and Tourism ・The Ministry of Social Development ・The Ministry of Youth, Labor and Employment ・The State Committee for National Security	・State Agency on Environment Protection and Forestry of the Government ・State Agency for Links to the government ・State Agency for Physical Culture and Sports under the Government ・State Agency For Architecture, Construction and Housing and Communal Services of the Government ・State Agency for Geology and Mineral Resources ・State Agency anti-Monopoly Regulation of the Government ・State Agency for Local Self-Government and Ethnic Relations of the Government	・State Penitentiary Service ・State Tax Service ・State Customs Service ・Public Service Regulations and Supervision of Financial Market ・State Registration Service ・State Service for Combating Economic Crimes under the Government ・State Financial Intelligence Service ・State Agency of Intellectual Property and Innovation ・State Service on Drug Control under the Government ・State Border Service	・Fund of State Material Reserves ・Mandatory Medical Insurance Fund ・Fund of State Property Management ・State Inspection of Veterinary and Phytosanitary Safety of the Government ・State Inspection on Environmental and Technical Safety

Figure1-2: The government organization of Kyrgyz

The organizations unfolded in the web site of the Ministry of Agriculture are as follows. Since the foundation, elimination and consolidation of an organization is frequent, it is necessary to confirm on implementing projects.

Table 1-5: Subordinate organizations of the Ministry of Agriculture of Kyrgyz

Agency	State Agency for Veterinary
	Agency for pasture
	Agency for fishery
	Agency for plant quarantine, protection and chemistry
	Agency for supply of machine and energy
	Agency for development of water resource and land
Regulating authority	National Center for Veterinary Diagnosis
	National Center for Breed Improvement and Transmission
	National Center for Seed Management
	National Center for Breed Analysis
	Center for Veterinary Madicine Certification
	State-owned company "KYRGYZGIPROZEM" Land Management State Laboratory
	Center for Cereal Crop Quarantine
	Agro bio Center
Research Institute	Research Institute of livestock and pasture
	Research Institute of irrigation
	Dyisheev Memorial Veterinary Laboratory

source http://www.agroprod.kg/modules.php?name=Departamenti

Table 1-6: Main Economic Index of Kyrgyz Republic (2007-2011)

	2007	2008	2009	2010	2011
population (end of year) (unit: 1,000 persons)	5,289	5,348	5,418	5,478	5,552
natural increase					
1,000 persons	85	90	100	110	114
per 1,000 population	16	17	19	20	21
increase and outflow of population by imigration					
population	−51	−38	−30	−51	−39
per 1,000 population	−10	−7	−6	−9	−7
annual average number of employees (unit: 1,000 persons)	2,153	2,184	2,216	2,244	2,278
number of unemployed persons (unit: 1,000 persons)	191	196	204	212	212
number of registrant to National Employment Bureau (unit: 1,000persons)	71	67	61	63	61
number of pensioner (end of year) (unit: 1,000persons)	529	571	565	575	594
monthly average cash income per person (KGS)	1,417	2,029	2,312	2,494	2,936
the gross domestic product (GDP)					
total nominal GDP	141,898	187,992	201,223	220,369	285,989
GDP per capita (KGS)	28,067	37,023	39,239	42,437	54,374
actual final consumption expenditure	148,410	206,902	194,607	226,369	290,651
gross output of agricultual, hunting, forestry	89,886	112,100	111,284	115,068	149,221
trade between Kyrgyz and CIS countries(one million UDS)	2,275	3,199	2,470	2,496	3,202
export	754	1,012	753	784	1,024
inport	1,521	2,187	1,717	1,712	2,178
trade between Kyrgyz and other countries besides CIS countries (one million UDS)	1,835	2,729	2,243	2,483	3,306
export	568	844	920	972	1,223
inport	1,267	1,886	1,323	1,511	2,083

Table 1-7 shows the number of farmers in Kyrgyz. They account for 30.7% of the whole population in 2011, from which the importance of agriculture sector is proved.

Table 1-7: The number of workers by economic activity of yearly average

(unit:thousand persons)

	2007		2008		2009		2010		2011	
	Number of workers	constituent ratio	Number of workers	constituent ratio	Number of workers	constituent ratio	Number of workers	constituent ratio	Number of workers	constituent ratio
total number of all economic workers	2,152.7	100.0%	2,184.3	100.0%	2,216.4	100.0%	2,243.7	100.0%	2,277.7	100.0%
Agriculture, hunting, forestry	742.1	34.5%	742.9	34.0%	718.5	32.4%	699.1	31.2%	700.2	30.7%
Fishery	0.3	0.0%	0.1	0.0%	0.1	0.0%	–	–	0.1	0.0%
Mining	13.1	0.6%	13.3	0.6%	14.7	0.7%	17.5	0.8%	16.7	0.7%
Processing industry	179.8	8.4%	178.0	8.1%	172.6	7.8%	174.6	7.8%	173.1	7.6%
Production and supply of electricity, gas, water	38.3	1.8%	37.8	1.7%	38.8	1.8%	41.4	1.8%	38.7	1.7%
Construction	205.3	9.5%	221.9	10.2%	244.0	11.0%	240.1	10.7%	249.1	10.9%
Commercial: repair of cars, daily commodity, private	316.9	14.7%	319.4	14.6%	316.0	14.2%	337.5	15.0%	345.9	15.2%
Hotels and restaurants	58.4	2.7%	66.2	3.0%	82.2	3.7%	82.8	3.7%	86.5	3.8%
Transport and Communications	133.3	6.2%	133.8	6.1%	144.9	6.5%	147.5	6.6%	147.2	6.5%
Finance	9.7	0.5%	12.2	0.6%	15.8	0.7%	18.2	0.8%	17.7	0.8%
Real estate, lease service	45.8	2.1%	49.7	2.3%	55.3	2.5%	58.4	2.6%	56.0	2.5%
Government employees	106.8	5.0%	101.7	4.7%	103.6	4.7%	99.9	4.4%	102.6	4.5%
Education	156.6	7.3%	156.1	7.1%	164.3	7.4%	171.9	7.7%	177.1	7.8%
Health care, social service	86.2	4.0%	86.2	3.9%	79.4	3.6%	74.4	3.3%	78.5	3.4%
Government-managed, social and private service	43.0	2.0%	49.4	2.3%	43.9	2.0%	48.7	2.2%	56.0	2.5%
Service including household labor	16.2	0.8%	15.4	0.7%	22.1	1.0%	31.1	1.4%	31.4	1.4%
Affairs in the extraterritorial organizations	1.1	0.0%	0.3	0.0%	0.2	0.0%	0.6	0.0%	0.9	0.0%

source:National Statistical Committee

In Table 1-8, it is notable that the trade value with CIS fell below that with non-CIS countries for the first time in 2011. The main trade partners other than CIS are Switzerland and UAE, and mineral resource is traded.

Table 1-8: Major social and economic index of Kyrgyz between 2007-2011

Rank	Export counterpart	Sum (1,000 dollar)	Constituent ratio	Major export item (percentage accounting for the sum by country)
1	Switzerland	873,635.9	39.0%	Precious metal (gold) (99.3%)
2	Kazakhstan	289,705.2	12.9%	Electricity (23.8%)、vegetables (20.7%)
3	Russia	284,418.9	12.7%	Clothing (47.7%)
4	UAE	149,980.8	6.7%	Precious metal (gold) (91.5%)
5	Uzbekistan	124,437.3	5.5%	Rubber cover (7.7%)、other metal scrap (4.6%)
6	Turkey	54,491.9	2.4%	vegetable (64.6%)
7	China	42,463.2	1.9%	Crude oil, petroleum products (14.4%)、leather (9.5%)
8	Tajikistan	36,261.0	1.6%	Mineral water, non-alcoholic drink, sweet drink (14.8%)
9	Afghanistan	23,535.7	1.0%	Construction material for train and tramcar (0.13%) *
10	India	18,295.1	0.8%	Data not available
	other	344,941.4	15.4%	
	total	2,242,166.4	100.0%	

Source: Produced from "*National Statistical Committee*" *Some data missing

1-2 Composition of this report

In accordance with the purposes above, this research collects local information on the promotion of export of Kyrgyz agricultural products and farmer organizations, and at the same time, reports the result.

The contents are as below. In Chapter 1 the outline of this research in stated and from Chapter 2 to 4 the present situation of distribution of target items, challenges and overview are organized. Based on them, in Chapter 6 the research result relating to strengthening export capacity is reported and information on strengthening of farmer organization and confirmatory results are organized in Chapter 7. Then in Chapter 8 a proposal for business solutions is delivered. In addition, the result of a consciousness survey on genetically-modified products and food safety of the Kyrgyz people is attached.

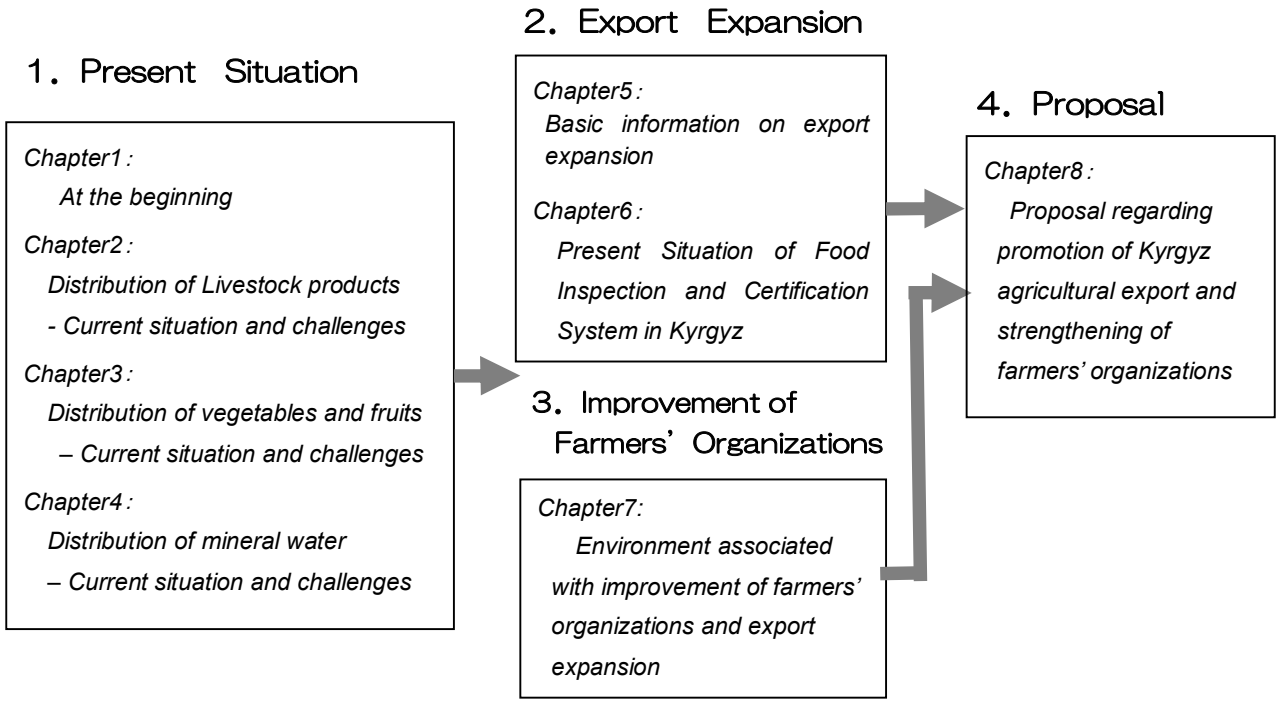


Figure 1-3: Composition of this report

2 Distribution of Livestock Products - Current Situation and Challenges

2 Distribution of Livestock products - Current situation and challenges [1]

2-1 Production

(1) Production volume by year, national and state[2]

Tables 2-1 and Figures 2-1 show the production number of livestock by year. In Kyrgyz, there were un-stable food supply terms for several years after independence in 1991. In the past five years, all kinds of livestock have been increasing, especially the number of goats[3].

Table 2-1: The number of livestock (1992-2012)

Species	Number of Animal (thousands)						
	1992	2000	2008	2009	2010	2011	2012
Cattle	1190	932.7	1167.3	1223.4	1227	1298	1337.7
Pigs	357.7	104.8	133.9	125.3	125.4	122.8	123.7
Sheep	9225	3263.8	4249.7	4501	4813.7	5036.1	5286.9
Horse	320.5	349.8	335.4	362.2	372.9	378.3	388.8
Chiken	12,161	2660	4588.6	4364.4	4535.4	4749.8	4814.8

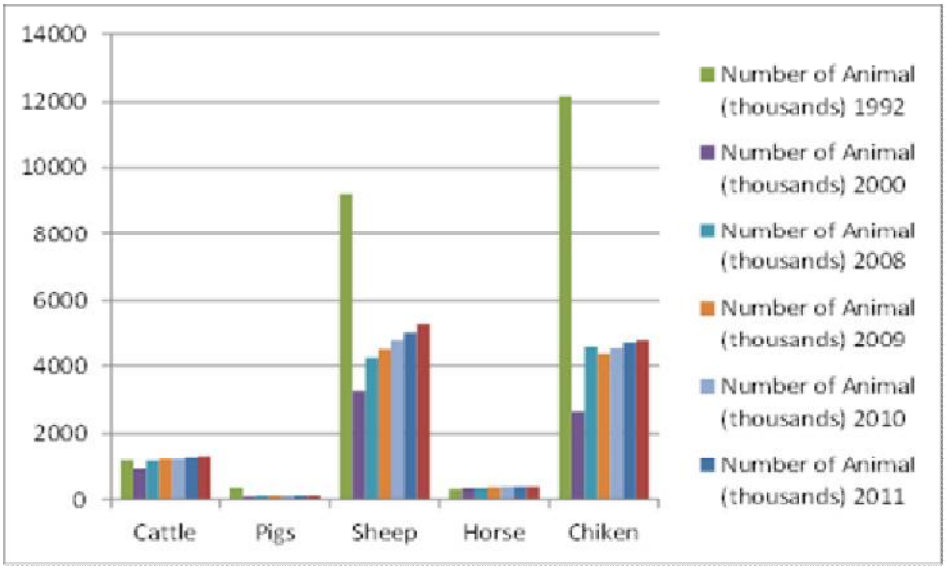


Figure 2-1: the number of livestock

[1] In the statistical data of Kyrgyz, figures even for the same period or for the same item often vary from one to another, depending on the database. Therefore, when the statistical data of Kyrgyz is cited in this report, their sources are firstly shown and the data only used for rough trend analyses.
[2] Source: FAOSTAT and Statistical data compiled by National Statistical Committee (2013)
[3] According to the interview, many domestic animals were used for feeding purposes for people in those days

Table 2-2and Table2-3show the production numbers of Cattle and Goats for the last 5 years. Those figures show two of them are being raised in almost the whole country, excluding city areas[4].

Table2-2: the number of Cattle by state

Oblast	Number of Cattle(thousand heads)				
	2008	2009	2010	2011	2012
Total	1167.3	1223.4	1277	1298	1337.7
Batken	107.6	109.7	112.8	115.9	119.8
Jalal-Abad	217.3	241.9	257	259	266.6
Issyk-Kul	156.9	165.2	174.5	179.2	184.9
Naryn	121.5	125	128.9	129.8	133.5
Osh	271.5	278.8	292.9	300.3	308.5
Talas	60.8	63.4	65.4	64	65.4
Chui	221.4	229.8	235.8	239.8	248.9
Bishkek City	1.4	1	1	1.1	1.1
Osh City	8.9	8.6	8.7	8.9	9

Table2-3: the number of Sheep by state

Oblast	Number of Sheep (thousand heads)				
	2008	2009	2010	2011	2012
Total	4249.7	4501	4813.9	5036.1	5286.9
Batken	427.1	433.7	441.5	454.2	474
Jalal-Abad	757.7	858.5	938.5	997.1	1090.1
Issyk-Kul	629.8	655.4	686.6	747.5	771.5
Naryn	737.7	774.9	854.9	871.3	916
Osh	834.7	859.8	912.3	942	972.6
Talas	381.6	405	427.8	456.8	483.1
Chui	459.5	494.4	531.5	546.5	559.3
Bishkek City	6.3	4.1	5.4	5.1	4.3
Osh City	15.3	15.2	15.4	15.6	16

(2) The production of Meat/Meat product and Milk/Dairy product by state[5]

Tables 2-4 to 2-8 show the production of meat/meat product and milk/dairy products. Concerning total meat, production accounts for 84% of the total output in Issyk-Kul and Chui, indicating that these regions have big potential.

Table 2-4:
Total meat production by state (t)

Oblast	Total of Meat Production (ton)	
	2010	2011
Total	6792.5	6317.1
Batken	284.7	163
Jalal-Abad	7.6	5.7
Issyk-Kul	111.6	66
Naryn	14.7	13.8
Osh	2415.7	2891.3
Talas	292.7	294.6
Chui	3293.1	2416.3
Bishkek City	4.7	0
Osh City	367.7	466.4

Table2-5:
Ham and Sausage production by state (t)

Oblast	Ham and Sausages Production(ton)	
	2010	2011
Total	No data	No data
Batken	No data	No data
Jalal-Abad	No data	No data
Issyk-Kul	0	37.5
Naryn	No data	No data
Osh	5	0
Talas	27.1	29.6
Chui	2059.9	1818.3
Bishkek City	286	627.9
Osh City	No data	No data

Table 2-6: Milk production

Oblast	Milk Production (ton)	
	2010	2011
Total	No data	No data
Batken	No data	No data
Jalal-Abad	27.4	29.1
Issyk-Kul	83.4	107.3
Naryn	0.2	0.9
Osh	No data	No data
Talas	14.8	15.8
Chui	11964.5	8780.2
Bishkek City	14834	10560
Osh City	113.1	147.4

Table 2-7: Butter production

Oblast	Butters Production (ton)	
	2010	2011
Total	No data	No data
Batken	No data	No data
Jalal-Abad	No data	No data
Issyk-Kul	270.5	264.4
Naryn	29.7	29.8
Osh	No data	No data
Talas	412.6	477.4
Chui	3254.6	947.4
Bishkek City	243.4	305.8
Osh City	1.5	8.3

Table 2-8: Cheese production

Oblast	Cheeses Production (ton)	
	2010	2011
Total	No data	No data
Batken	No data	No data
Jalal-Abad	2.5	1.1
Issyk-Kul	1339.8	1468.8
Naryn	0.2	0.5
Osh	10.9	11.9
Talas	780.3	857.9
Chui	2129.4	1577.6
Bishkek City	942.5	1115.1
Osh City	10.9	11.9

[4] Concerning livestock, production in target area is mainly conducted with cattle and sheep, furthermore, concerning activity of processed food , this is also led by cattle and sheep as main products.

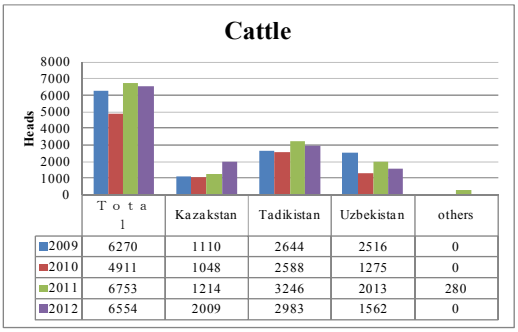
[5] Source : Statistical data compiled by National Statistical Committee (2012)

Regarding Ham and Sausages, 97% of products are provided from Chui and Bishkek City. Nearly 100% of dairy products are produced in these areas too. One of the factors is considered the large scales of production plants that exist in these areas. In addition, regarding milk, it is necessary to produce in urban areas due to limitation of consumption period.

2-2 Export-Imports[6]

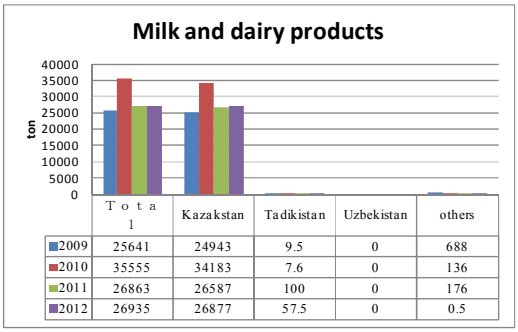
(1) Trend in Export

Figure 2-2and Figure 2-3show the current trend in Export/Import of cattle and dairy products. According to these figures, Kazakhstan, Tajikistan and Uzbekistan are main partner countries for exportation of cattle, and Kazakhstan is the main partner country for dairy product exportation.



	Total	Kazakstan	Tadikistan	Uzbekistan	others
2009	6270	1110	2644	2516	0
2010	4911	1048	2588	1275	0
2011	6753	1214	3246	2013	280
2012	6554	2009	2983	1562	0

Figure 2-2: Numbers of cattle exportation by countries (2009-2012)

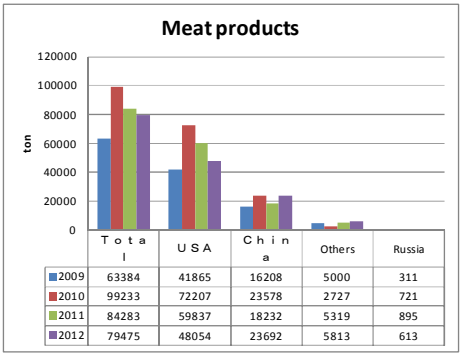


	Total	Kazakstan	Tadikistan	Uzbekistan	others
2009	25641	24943	9.5	0	688
2010	35555	34183	7.6	0	136
2011	26863	26587	100	0	176
2012	26935	26877	57.5	0	0.5

Figure 2-3: Volume of dairy product exportation by countries (2009-2012)

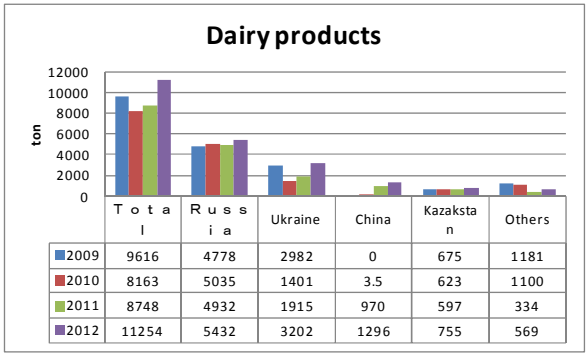
(2) Trend in import

Figure 2-4 and Figure 2-5 show the situation of the trend in import and export regarding meat products and dairy products in the last 4 years. According to data, USA and China are main partner countries for exportation of meat product. There is a characteristic tendency: the volume of importation from China increased although the importation from USA is decreased.
Although Russia and the Ukraine are the main import partner countries for milk products, the dairy products from China have had tendency to increase since 2011.



	Total	USA	China	Others	Russia
2009	63384	41865	16208	5000	311
2010	99233	72207	23578	2727	721
2011	84283	59837	18232	5319	895
2012	79475	48054	23692	5813	613

Figure 2-4: Volume of meat products by country (2009-2012)



	Total	Russia	Ukraine	China	Kazakstan	Others
2009	9616	4778	2982	0	675	1181
2010	8163	5035	1401	3.5	623	1100
2011	8748	4932	1915	970	597	334
2012	11254	5432	3202	1296	755	569

Figure 2-5: Volume of dairy product by country (2009-2012)

[6]Source : Statistical data compiled by National Statistical Committee (2012)

2-3 Distribution channels and their features

Meat/meat products and milk/dairy products through variety of channels; in order to obtain their features, Figure2-6/and 2-7 are compiled to show major distribution channels. Arrows in the figure indicate flow of goods.

(1) Major distribution channels of live animal, meat/meat products

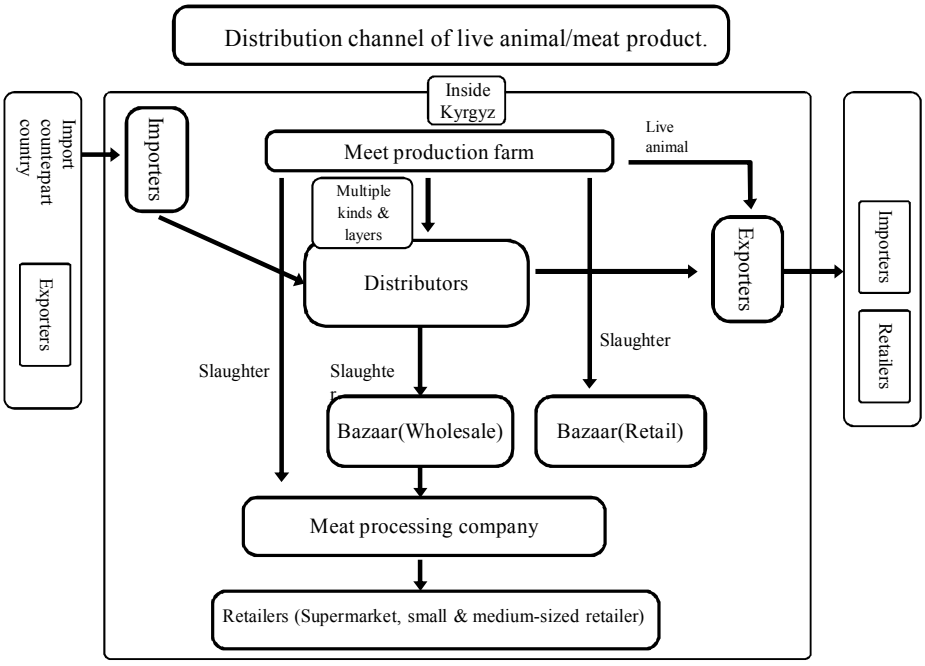


Figure 2-6: Major distribution channels of live animal, meat/meat products
Source: Compiled by the survey team based on on-site survey results

As the figure shows, the key player in the distribution of live animal, meat/meat products are the so-called distributors. In a broader sense, distributors include village-level collectors. Those distributors have transportation vehicles, purchase live animals from farmers and distribute to slaughter houses to be made into carcasses, and sell them at the bazaars (wholesale and retail selling) or to retailers. Their major domestic sales counterparts are wholesalers at bazaars. They are also deeply involved in export and import. In addition to transactions through Kyrgyz exporters and importers, they do business directly with their counterparts' exporters and importers. Usually multiple distributors exist with different roles within the distribution flow in a multi-layered manner, and are engaged in their own business depending on the area of activity, item, buying and selling counterparts, export, import, etc. Distributors do their business in cooperation with carriers and warehouses depending on the situation. Warehouses (in particular, freezers and refrigerators) are in extremely short supply compared with the large demand.

(2) Raw milk/milk/dairy products

There are cases where the producers carry their animals to slaughterhouses dressed.
After making carcass, the meat is sold at bazaars. Further more, there are cases where the producers sell their animals to the processing company directly.

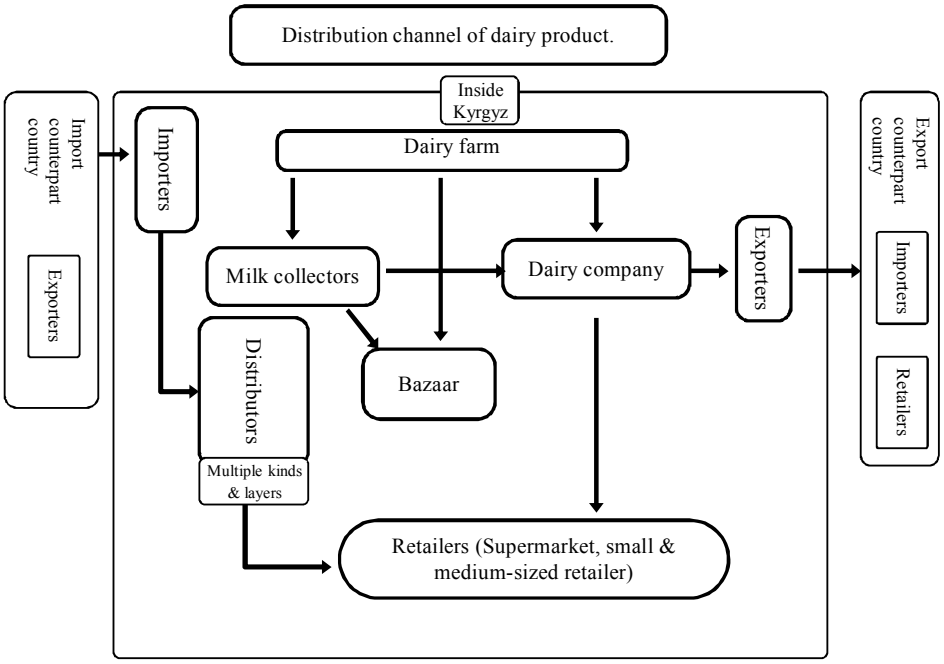


Figure 2-7: Major distribution channels of raw milk, milk / dairy products
Source: Compiled by the survey team based on on-site survey results

Since the small dairy farmers are raising several heads of cows in each of them, the sale of raw milk also varies. As the figure shows, key players in the distribution of raw milk are the so-called distributors. In a broader sense, distributors include village-level collectors. There are several small / large sized milk collectors in each village, and they buy raw milk from dairy farms. When receiving raw milk from the dairy farms, the basic inspection of the raw milk quality is conducted; if that raw milk is accepted, the raw milk is sold to a milk processing a company in the area where refrigeration equipment exists. Even if there is no intervention by the milk collector, there are several ways for the milk to be sold, such as directly sold to a dairy processing company from dairy farmers or sold directly to bazaars. However, inspection cannot necessarily respond carefully on all raw milk from small dairy farms which are carried to the bazaars. Various dairy processed foods produced in the dairy processing company are sold to retail stores, such as supermarkets.

(3) Bazaars

Bazaars are traditional markets in Kyrgyz, found everywhere throughout the country. Some of them are owned by public organizations and others by the private sector, and the latter outnumbers the former. There are several types of bazaars depending on their functions: wholesale type, retail type, and wholesale-retail combined type. Some bazaars deal with farm products only, while others deal with industrial products and everyday goods in general as well. At each market (bazaar), no transaction data is recorded. And transactions at those markets are basically conducted on weight basis. Quality/grade standards have not been established, so price is not linked to quality. When specific primal cut meat is required, it is necessary to notify about that in advance. In the case of dairy products, there are also products where fat is indicated and is differentiated.

Photo2-1: Meat sales in the Bazaar

Photo 2-2: Dairy products sales in the Bazaar

Box 2-1: Outline of middle scale dairy company
（Information obtained by interviews; at Issyk-kul March 2013）

Dairy product manufacture and sale.

Outline：

- Plant site area is about 0.09ha.The number of employees is maximum of 15 persons (It will decrease in winter because production volume also decreases), and, as for the product, cheese made from cow milk, butter, and yogurt are produced. For cheese, the product named "Chechil" is evaluated so highly that not only Issyk-kul but the consumers of Bishkek recognize it. Acquisition of milk is carried out twice a day.

- Although 5t/day of raw milk can be processed within the production scale of the factory, 3t of raw milk is processed at maximum at present. The purchase of raw milk is directly from dairy farmers using milk correction track (1.7t) of the company, and also to purchase from milk Collection Company. Raw milk is accepted after inspection of contents such as acidity, fat, and specific gravity. The fat concentration of raw milk is 3.3%. 15 milk collectors have contracted, and renewal of contract is done every month. Since the quality of raw milk is very important, low quality milk brought by collectors is never accepted. One milk collection point is arranged in each village and farmers carry milk to the point from 7:00am to 9:00am. Milk collection is carried out twice a day (in the morning and evening) in summer and in other seasons carried out once a day. The business hours are 9:00am to 18:00 from Monday to Saturday. All staff are able to manage very well, because they have a lot of experience regarding food processing activity during the soviet times.

- The inspection of the products is carried out in the testing laboratory in the company. The inspection items are taste, appearance, salt concentration, the amount of fat, soluble solid content and the amount of somatic cells, etc. The refrigeration equipment is 8t capacity, and all the products are kept there until shipping.

Cheese production
The selling price of cheese is decided by quality of raw milk. As temporary standard, when raw milk is purchased by 17 Son / kg, the selling price of cheese is set to 270 Son / kg.
Although almost all products are for the domestic markets, some of them are exported to Kazakhstan (Almaty). About export procedure, the company does not take any necessary procedures directly. The Company sells the products to the exporter in Bishikek .Therefore, the company does not do export formalities etc. The main cheese product ”Chechl” is produced 109 kg/day, and fat content is 2.8%. Another cheese, "semolina", is produced 136 kg/day. About hard cheese, "Russian and Dutch" are also manufactured. Although about 2.2t of whey which is one of the by-products from cheese is manufactured, it is sold to beef cattle farms as feed. The amount of annual manufacture is about 10t.

Butter production
Since the butter churn is old and small size (50kg scale), manufacturing capacity is not high. As for the market, Karakol city is the main one and the customers’ evaluation score received is high. There are 20 Son's profits per kg. About 14t butter was manufactured last year. The amount manufactured in one day is about 40kg.

Yogurt production
Yogurt production is very small-scale. It is not manufactured every day but manufactured depending on the supply condition of raw milk. Since manufacture apparatus was used in the old soviet union age, it cannot be said to be high quality. The selling prices are 60 Son / kg, and net cash flow is 20 Son/kg. The amount of production is about 200kg/day. Most markets are in Karakol city.

Issues
The net earnings from last year are about 1.5%. Since sheep fattening business is performed besides dairy-products business, the income from the sheep business is covered by a capital investment fund, and is managed somehow. Although the company would like to perform milk production using the “Tetra Pak” system, equipment is expensive and cannot respond. The bank interest is no less than 30%, and borrowing is not realistic. Concerning supporting system by a donor, it is more advisable to establish the system performed by private sectors instead of government institutions.

Photo 2-3: Although the machine is old, maintenance is well done.

Photo 2-4: Products packaging

Box 2-2: Outline of agriculture extensions organization
（Information obtained by interviews; at Bishkek March 2013）

Rural Advisory Services (RAS)

Outline：
RAS is an NGO established 1995 with support from Switzerland and the World Bank. RAS is the only extension service organization with branch offices all over the country in Kyrgyz, and the service is carried out in 400 villages. There are 2-4 consultants in each prefecture. 260 consultants are working in the whole country. The main activities of RAS are extension, investigation, and consulting when ordered from international donors or dairy domestic product companies. The commission expense to RAS is computed by the set to group formation, performance in the field, consulting, and feedback. Consultant expenses are 2,800-3,000 Son / person for 8-hour service. The scope of service is crossed broadly, and it is performed in cultivation, livestock industry, soil, water management, fruit growing, and manufacture of the processed food of various agriculture products. There was a request from one of the dairy companies in Talas to the RAS, since quality of raw milk from dairy farm was very unsatisfactory, so, the company asked the RAS to take some improvement activity. In response to the order, RAS performed technical improvement instruction activity for three months. The object was dairy farms in 12 villages. As contents of instruction, dairy cattle raising management (feeding), milking hygiene, raw milk inspection, machine installation and the installation of refrigeration equipment to the milk point, etc. This refrigeration equipment was supplied by the donor. While carrying out milking instruction to the dairy farm, the broker was excluded from distribution channel. Since the refrigeration equipment was supplied by the donor, raw milk purchase system would change into the method of bringing raw milk directly to the refrigeration point by dairy farm, and the dairy company would collect the raw milk by their milk tanker lorry. Although raw milk was collected in the afternoon, since it was kept in the refrigeration facilities at night, quality maintenance was maintained till the morning. Until RAS started instruction, the raw milk from dairy farm was sold to the broker at 15 Son / kg, and the broker sold to the dairy company at 20 Son. After instruction, dairy farms are selling directly to the dairy companies and can be sold by 20 Son. Therefore, the milk hygiene consciousness is improved, then abandonment of raw milk by the dairy farm decreased. The quantity of the raw milk which the dairy processing company takes over increased by 35%. Furthermore, the improvement in the quality of raw milk has been recognized at 80% of dairy farms[7].

[7] According to the acquisition report of activity, exclusion of middlemen of raw milk was able to give profit to dairy farms to improve their income. However, this technique is not able to be adopted for all the cases. In actual economy, since the circulation of raw milk distribution is spread smoothly by existence of middlemen, handling middlemen is necessary to be considered.

Box2-3: Outline of artificial insemination activity
（Information obtained by interviews; at Bishkek March 2013）

Asian Breeding service center（ABSC）

Outline：

It was established in 1996. The president is a woman and is a veterinarian. 20 employees, all the members are veterinarians or skilled in animal husbandry. The "Kyrgyz Switzerland agricultural development project" was carried out for three years from 1999, and the company had financial support from Switzerland then. The pamphlet of the sire list was distributed to the persons concerned free of charge. The production expenses were offered by UCAID.

The operating contract between the company and 25 veterinaries was signed in Chui state, and supports their business. The main business is sales of frozen semen to be used for artificial insemination services (A.I), veterinary drugs and the veterinary apparatus. The empty tanks of frozen semen are sent from distant areas, for example the Osh area, to the company. Liquid nitrogen with the semen straws in the tank are resent to the person who made the order from the company. (In Osh, acquisition of liquid nitrogen is difficult) Furthermore, since (A.I) in Osh was a late-coming area, veterinaries from the company went there twice last year, and offered technical know-how etc to the technicians there. It is scheduled to be continued.

(A.I) of this country has just started. Among veterinaries, although knowledge is obtained, many of them are in-experienced. Therefore, technical training for them is also carried out. The instruction course is for about one week. The lecturers are veterinaries or artificial insemination technicians from the company. The technicians from Switzerland come and technical information are offered twice a year.

All the veterinary drugs currently used by the company are made in Europe. The drugs from Netherlands, Spain, and Germany are used. Frozen semen (0.25cc) is from Switzerland. The sires are six kinds. Cross bred between Holstein and Shimmenthal, Brownswiss, Limoujin, Shimmental, Angus, and Holstein.

The clients are veterinaries and artificial insemination technicians. Five big farms are included. The selling prices of semen straws are 170 to 200 Sons / piece. The price of inseminators is 50 dollars/piece. It is manufactured by a mini tube company in Germany. Insemination pipettes are 50 Son / piece. The customers, veterinary and technicians can do mostly satisfactorily work now. There is much reliance from dairy farms. The insemination fee is 600 Son first time, when it does not fertilized, 400 Son the 2nd time and afterwards. The selection of sires is carried out on the basis of recommendation by veterinaries.

Management is good. As a result of veterinary efforts, the body size of the calves by artificial insemination is far larger than the calves produced by natural breeding among native cattle, and the amount of milk among the dairy farmers is also recognized. Farmers can recognize this by themselves, and it is the most important positive proof. The issue is that the government imposes the presentation of many documents on the process of import of associated equipment and drugs; as a result, shipment to the customer tends to be late. Moreover, it is frequent to require unfair commission due to that issue. Technical guidance concerning livestock raising had been received from GIZ in the past. 17 livestock farms were selected from Chui state, 25 veterinaries were invited from the whole country, and technical guidance about dairy cattle raising management was carried out. Two persons (an engineer, a coordinator) came from Germany.

Japan is also an advanced nation regarding dairy farming. Since the size and the weather of the country also resemble Kyrgyz, we would like to ask technical assistance from Japan. Although Kyrgyz has many raw materials such as Lucerne and wheat, regrettably, the feed calculation method of dairy farming is not scientific at all. Therefore, dairy technique of Japan must surely be helpful in such areas as group management of cattle.

Photo2-5: Conducting training of artificial insemination techniques by experienced veterinary.

Photo2-6: Calves produced by artificial insemination.

Box2-4: Outline of the dairy company association
（Information obtained by interviews; at Chui, Bishkek April 2013）

Milk Union

Outline

- Registration of the milk union was carried out as a formal dairy product company organization in the country on May 14, 2008. Starting seven member companies increased to 14 companies as of 2013.
- The registered companies are JSC "Ursus"Ltd "Kantsut"、Ltd "Eletsut"、IP Tuganbaev B.、JSC "Sut- Bulak"、Ltd "At- Bashy -sut"、JSC "Talas- sut"、Ltd "Emilia"、Ltd "Ice Queen"、Ltd "Ezhigey"、JSC "Arashan"、JSC "Bishkeksut"、Ltd"Shin-Line"、JSC "Ak-Zhalga " Most companies are Chui and Issyk-Kul

The background of establishment was that there was a common view that correspondence in an organization was more appropriate from correspondence by an individual company in order to correspond to various technical considerations effectively. The association performs collaboration operating activities aiming at profits with an equivalent member company being obtained. As concrete activity, they are the following:

The matter, which becomes an obstacle to effective development in dairy production industry is investigated. A friendly relationship between the companies concerning the dairy industry is provided.

Increase of the overall property in the dairy industry is provided.

The rights and profits of the member companies are protected and the public position of the member companies is expressed.

To the member companies, various effective information and data are offered and systematic support and advice are provided.

Concerning maintenance regarding equipment of dairy products and management of each company, top quality technology in and outside the country is provided.

Activity of the association is positively exhibited through media and it tries to heighten each capability through seminars, and workshops, etc.

Initiation fees are 150 U.S. dollars and annual fees are 200 U.S. dollars. The door is always open and admission for a company which can consent to the main points is always welcome. The matter which all the member companies regard as issues is that the level of contamination of the raw milk from each dairy farm is high.

Then, a technical improvement seminar about milking hygiene will be scheduled to be held for the subsidiary dairy farms in May, 2013. The engineer of the processing company will act as the lecturer. However, even if it carries out such improvement instruction, the effectiveness is limited. This is because the amount of raw milk in the companies which have joined the milk union among all the dairy farms in Chui and Issyk-Kul that both states treat, is about only 2%. Consequently, not much quality improvement for the other raw milk cannot be expected. Furthermore, even if a dairy company which joins the milk union refuses acquisition of low quality raw milk, there are many processing companies which purchase such low quality milk at low prices. This vicious circle is likely to be unsolvable in a short period of time.

Furthermore, another issue also exists. Each company which joins the milk union has published appropriately the kind of evidence about dealing with raw milk. However, some dairy companies and dairy farms refuse to issue any documentary evidence about dealing with raw milk as part of the measures against tax payment. It is also one of the hindrances to development of proper business.

The investigating commission from the customs union visited Kyrgyz in December, 2012, and dairy product manufacturing capacity of the dairy company which has received high evaluation was inspected. Although the company affiliated with the milk union also underwent the inspection, there were only two companies which passed (Bishkek sut, Kanto sut). Only two companies could get permission to export daily products that are limited to Kazakhstan.

There is no relationship with any donors. In the future, we will be pleased if certain technical cooperation activity comes to be carried out by JICA. Before, there was a request from the government, concerning assistance in disease control activity in each company's raw milk acquisition area where the infection of dairy cows occurred. However, in almost all areas, more than a plurality of dairy companies was buying raw milk from the same area. Therefore, it was difficult to specify the responsibility among the companies. After all, suitable activity was not completed.

A system which specifies raw milk provisioning origin like traceability is needed, and it would be effective especially at the time of export, etc. However, since small amount of raw milk from many small-scale dairy farmers is collected and mixed, it is impossible. Disease prevention of livestock and suitable medical treatment have been the majority of issues in Kyrgyz. The raising methods and the measures for disease prevention of livestock differ from each other greatly by each dairy farmer. ISO (22000) and HACCP were acquired by us.

2-4 Value chain analysis of food processing industry

By value chain analysis of meat/meat products and raw milk/dairy products, it is necessary to clarify the value activities from raw material production to finished products, the activities undertaken and where the sources of value and bottle necks in the product stage are. With that information, the SWOT analysis should be conducted to integrate both the external factor analysis and internal factor analysis, and to analyze four items such as Strength, Weakness, Opportunity and Threat. Then, to consider the long-term, middle-term, and short-term strategy

(1) Key issues in the value chain for meat products.

The following diagram identifies key issues at each stage of the value chain for meat/meat products.

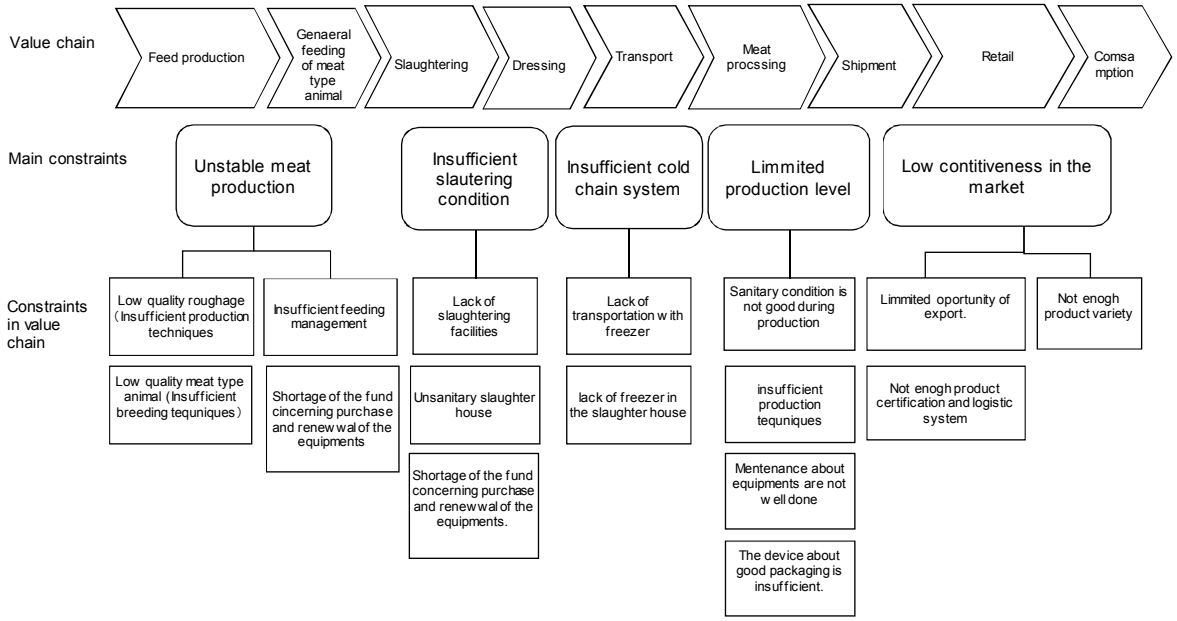


Figure 2-8: Key issue analysis in meat product value chain

Source: Prepared by JICA Study Team

(The main issues concerning meat / meat products production)

The main issues in the value chain of meat / meat products can be summarized as five: "unstable meat production", "Insufficient meat processing facilities", "Insufficient cold chain system", " limited production scale", and "low competitiveness in market."

The majority of livestock fattening farms are small scale, raising several heads of animal such as cattle, sheep, chicken, and horses on their farm. There are not so many producers which raise tens of animals or hundreds of animals.

One of the issues concerning meat production in Kyrgyz is the existence of large gaps in livestock fattening techniques between small scale farms and large scale farms. There are many people who began livestock raising as effective use of the farmland distributed after the collapse of the Soviet Union among many of small scale farmers, and there are many cases where they are continuing farm management under a lack of basic technology. It is difficult for such farmers to produce raw materials of fixed quality and quantity stably. Meat production of Kyrgyz is mainly from beef. Meat evaluation of the beef cattle here is concerned with weight, and it does not involve the quality. Therefore, usually, the bulls are castrated at the age of less than one year old and turned into candidates of the fattening program, but in the case of Kyrgyz, in order to make a large amount of muscle, cattle are fattened un-castrated and slaughtered.

However, such meat is not fit for dishes like “beef steak”[8]. Although slaughtering of livestock is performed at night, there are no freezing facilities in any slaughter houses. Since the carcass meats are taken out in the market without passing through the maturing period of the meat by frozen storage, the muscular fiber becomes hard too. On the other hand, with pig production, the quantity of production is not so large, but the quality is good by feeding cereal such as barley and oats as is common in Central Asia. Castration is performed adequately; therefore the meat quality is good.

Photo 2-7: Most slaughterhouses are unsanitary

Photo 2-8: one of the excellent forage grasses, Alfalfa is cultivated widely.

(2) Raw milk/dairy products

The following diagram identifies key issues at each stage of the value chain for raw milk/dairy products[9].

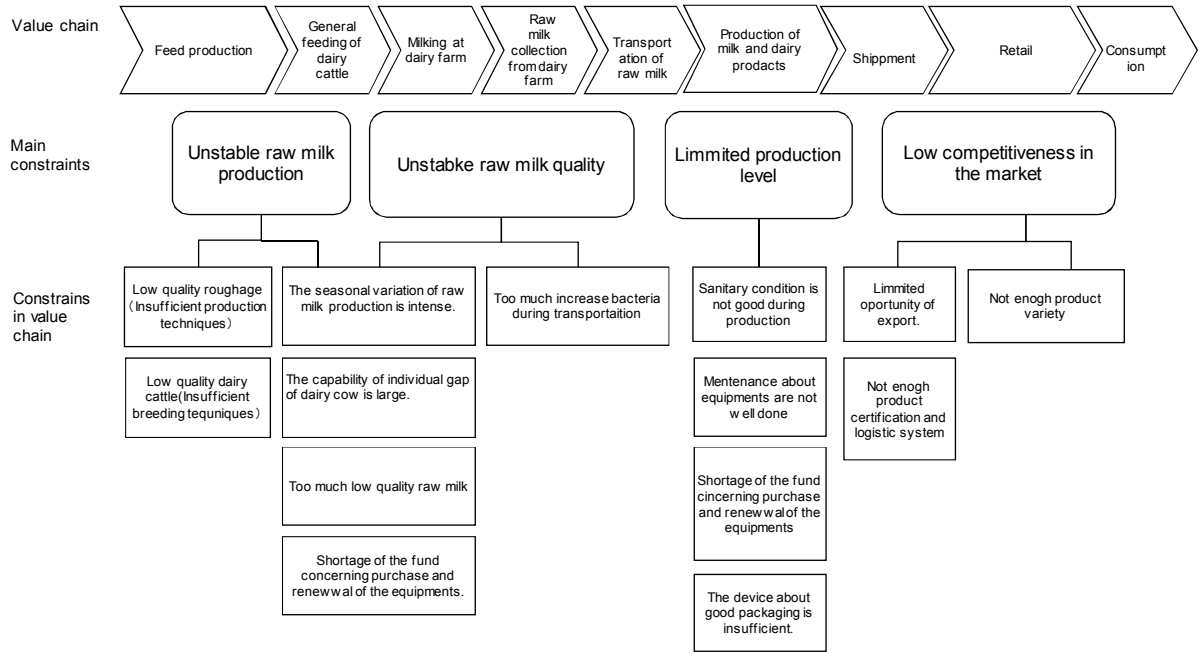


Figure 2-9: Key issue analysis in dairy product value chain
Source: Prepared by JICA Study Team

[8] According to Mr. A from England, who has been performing meat production and sales business in Bishkek for 15 years, obtaining quality castrated beef cattle meat is very difficult

[9] The distribution channel of livestock and meat is not a simple method, as shown in this figure
Like previously in Japan, there is a comparison of a "livestock dealer" to a “swindler” that also exists in this country. The activity of the livestock dealer in connection with circulation of livestock and meat or its kind o f organization has had a big influence on the persons concerned with shadow economy existence.

(The main issues concerning raw milk / dairy products)

The main issues in the value chain of raw milk / dairy products can be summarized as four: "unstable raw milk production", "unstable raw milk quality", "limited production scale", and " low competitiveness in market"

The issues concerning dairy products is almost the same as meat production. The majority of dairy farms are small scale, raising several heads of cattle on their farms.

The existence of a large gap in feeding techniques between the small scale farms and the large scale farms are the same in dairy farming, too. There are many people who began livestock raising at first as an effective use of the farmland distributed to them after the collapse of the Soviet Union among many small scale farmers. There are many cases which are continue farm management under a lack of basic technology. It is difficult for such farmers to produce raw materials of fixed quality and quantity stably.

The knowledge about milking procedures for the small scale farm is very limited [10]. Although pre-milking is one of the important procedures at the time of milking, it is not practiced at most farms. Moreover, milking is performed in unsanitary milking sheds. Many issues are seen; for example, the milking machine being neglected on the floor, or cattle manure having adhered to the milk bucket. Unacceptable raw milk from such producers is produced containing many bacteria. However, that unsanitary milk is not abandoned, because the farmer sells to another company which does not so strictly carry out quality inspection. There are rare cases where those companies refuse to accept that low quality milk. As a result, that un-sanitary milk is utilized to produce dairy products, and consumers eat them. These are important issues from the point of food safety at the national level. It cannot be said that there are no issues in large scale farms. Usually, one of the farm managers should have responsibility for the actual situation that arise on the farm, but many of the managers don't care so much, aside from their interest and are directly unacquainted in the farm[11].

There are small scale, middle scale and large scale management for dairy companies. The existing main issues are concerned with the quantity and quality of raw milk. Regardless of the large scale or small scale of the company, compared with the operating capacity of the factory, the amount of raw milk obtained is not sufficient, and it has led to the slackening of sales in almost all dairy companies.

The production quantity of the raw milk here has a strong seasonal variation. It is a feature where the product quantities in winter decreases greatly compared to summer[12]. Only conscientious dairy companies are involved in the low quality issues of raw milk as mentioned above. Some of large-scale companies predicted prospective demand production and finished capital investment. Therefore, an increase of quality raw milk is an urgent issue. There are many issues also about the manufacture facilities of dairy companies, and improvement in management ability. The dairy companies of the State of Chui and of Issyk-Kul takes the lead, and the dairy company's association is organized[13].

The member companies belonging to this association get a high evaluation as superior companies regionally. The investigating commission from the customs union visited the country in December 2012, and the product manufacturing capacity of the milk processing companies which have received certain evaluation were inspected. Although the member companies of the milk union also underwent the inspection, there are 2 companies which passed inspection (Bishkek sut, Kanto sut), and 5 companies have received an evaluation score which has the possibility to pass the inspection by the

[10] There is an organization named RAS which is conducting extension activity such as technical guidance to the farms. It is explained in full detail in "box 2-2"

[11] In rare cases, when somebody questions the person responsible for the farm about farming conditions such as total number of bacteria in the raw milk at the time of receipt, there are some who can answer promptly.
Many of them reply by checking with the person in charge of inspection.

[12] Pasturage aiming at natural breeding is carried out in summer and in spring.
Therefore, the time of delivery and the amount of the maximum milk production tends to occur in the summer and in spring. Moreover, the shortage of feed in winter is also a cause.

[13] For details, box 2-4 refers to dairy-products processing Producers' Association.

result of other improvements.

It is possible enough to take part in the planning of an export activity dependent on future company efforts.

Concerning the issues about distribution and export, the inferior transport infrastructure (roads) is the cause of quality degradation of raw milk. About export, export formalities are complicated and simplification is necessary. There is competition with an import product. The Kyrgyz product is inferior in quality (including packing) to the product from Russia Kazakhstan, etc., and the product from China is lower in price. Inspection capability is insufficient as a whole (the shortage of inspection machines in the companies and the government labs, the shortage of inspectors, low inspection technology).

Photo 2-9: the sample milk being pointed to became receipt refusal due to its containing many more bacteria than company's standard. Such polluted milk goes up to an average of 25%

Photo 2-10: Typical small scale dairy farm.

Photo2-11: Although milking machines are expensive, they are not properly maintained. Cleaning of milker is not thoroughly done after milking activity.

Photos 2-12: although cold water is drawn from mountain, it is not used for cooling the raw milk after milking.

2-5 Other Donor's Support and Present Conditions

In order to solve the issues in connection with livestock, the donor's supporting the persons concerned and organizations is summarized as below. About GIZ, although the support directly applied to agriculture it is not being carried out now, there is a record of having performed dairy technology-transfer activities in the past. 17 superior dairy farms were selected in the Chui state, and

dairy management techniques were carried out for each dairy farm. At the same time, 25 veterinaries were invited from the whole country, and the management technique for Brown Swiss species, which is highly evaluated as a dairy cow, was carried out as well. There were two experts (a livestock specialist and a coordinator) and the project was carried out for about six months.

2-6 Consideration of Food-Processing Industrial Development Strategy for Competitive Power Strengthening

The SWOT analysis was conducted based on the above-mentioned value chain analysis. "Opportunities" (O) and "Threats" (T) in the external factors (environment) which surround the processing industry of meat / meat processed products, and raw milk /dairy products, "Strong points (Strength)" (S) and "Weak points (Weakness)" (W) of the internal factors were analyzed, and the strategy which contributes to competitiveness power strengthening for the Kyrgyz product was examined.

(1) SWOT analysis of meat / meat processed products and raw milk / dairy processed products

(SWOT analysis of meat / meat processed products)

Since the cultivated land of Kyrgyz is rich with fertile soil, many grains such as oats and barley are produced. Many livestock such as cattle, pigs, and sheep, are raised by making these grains into feed. The policy of livestock raising industry is recognized as an important national policy, and the number of livestock is increasing gradually. However, there are many small scale farms and they don't do livestock raising and livestock breeding techniques at a sufficient level; therefore, it is hard to say that efficient livestock production for meat is performed. In the domestic market, since the rate depending on import is high, the local products and the imports from the U.S. and China, etc. compete with each other

Table 2-9: SWOT analysis of meat / meat processed products

			External factors(Environments)	
			Opportunities（O)	Threat(T）
Strengthening of competitiveness concerning meat products, and export promotion.			Neighboring countries are necessary more products. Niche market replies to the expectation of the countries in Central Asia which bears question against the safety of the China food.	Difficulty of obtaining fund. Dependency of import.
Internal factors	(S)	Important in politically. Increasing production. Relational market	"To pursue the opportunities" Market expansion of local competitive products such as quality Ham & Sausages which raised high quality feed.	To develop new market using existing facilities. Expanding products to large scale supermarket introducing freeze meat foods such as "Perimeni"
	(W)	Issues in quality and sanitary. Lack of cold chain. Old equipments Shortage of specialist	reproductive technology. Quality improvement in production level to meet required for safeties. ⇒Improvement of cattle's ability by carry out Improvement of meat quality by technical guidance to the farms.	Human resource development ⇒Introducing new packaging technology and design,

Source: Prepared by JICA Study Team

(The SWOT analysis of raw milk / dairy products)

In the agricultural zone in Kyrgyz, there are many small scale farms which raise several heads of dairy cattle. They produce butter and cheeses with domestic traditional technology at their homes, and are sold at the bazaars in the neighborhoods in many cases. Furthermore, the quantity of production in large producing districts like Chui and Bishkek is increasing every year, and it is recognized in the national policy as a very important industry.

Among small and middle scale dairy companies, they produce the cheese recognized as local specialty products as a result of research and development of their products[14]. However, the production of raw milk is insufficient, and the quality is low. Furthermore, in the domestic market, there is the tendency for the dependence on the import of products from China etc. to become high, and the local products compete with the imports from Russia and the Ukraine in recent years.

Table 2-10 Analysis of Row milk/dairy products

			External factors(Environments)	
Strengthening of competitiveness concerning dairy products, and export promotion.			**Opportunities（O)**	**Threat(T）**
			Neighboring countries are necessary more products. Niche market replies to the expectation of the countries in Central Asia which bears question against the safety of the China food.	Difficulty of obtaining fund. Dependency of import.
Internal factors	**(S)**	Important in politically. Increasing production. Relational market	"To pursue the opportunities" Market expansion of local competitive products by branding ⇒"Chechil" in Issk-kul	To develop new market using existing facilities. Expanding products to large scale supermarket.
	(W)	Issues in quality and sanitary. Lack of cold chain. Seasonal fluctuation of raw milk, Old equipment Shortage of specialist	Quality improvement in production level to meet required for safeties. ⇒Improvement of cattle's ability by carry out reproductive technology. Improvement of raw milk quality by technical guidance to the farms.	Human resource development ⇒Introducing new packaging technology and design,

Source: Prepared by JICA Study Team

(2) Strategy for the Reinforcement of Competitiveness Based on SWOT Analysis

Based on the discussion of the above figure, the study team suggests the establishment of short, medium, and long- term strategies to enforce competitiveness in the three fields of the dairy products and meat products processing industry as in the following table:

14 The company which manufactures local specialty cheese named "Chechil" is explained about in full detail in "the box 2-1."

Table 2-11: Strategy plan for enforcement of competitiveness by SWOT analysis

Area	short-term strategy	middle-term strategy	long-term strategy
Competitiveness reinforcements in raw materials	Establishment of pilot area for the technical training for small-scale farmers concerning feeding, breeding, and milk hygiene conditions etc. Introduction of artificial insemination techniques.	Expanding pilot area for technical training activity. Construction of milk collection center. Technical training for increasing raw milk production using Holstein and Brown Swiss.	Establishment of genetics strategy plan to make original Kyrgyz beef cattle and dairy cattle,
Reinforcing competitiveness within product development	Brand building such as cheese, special breeding pork sausage etc.	Development of packaging technology Improvement for long term preservation	Introduction of product development assistance system, Quality evaluation system and information services for technology.
Enhancement of competitiveness in market development	Market survey in principal cities to study future plan of food processing products	Establishing marketing strategy for big retailers. Development of distribution center in domestic market.	Development of marketing strategy for overseas market.

Source: Prepared by JICA Study Team

2-7 Improving direction of core constraints

Countermeasures to improve core constraints are examined, making use of the previously described potentials.

(1) Competitive power strengthening in raw materials

Even though large capital investment in dairy farming is not carried out, it is possible to expect improvement of feed production, general feeding management and animal health by carrying out technology transfer and equalized technology among farms. Firstly, the pilot area is selected and livestock extension activity (feeding management, milking hygiene, etc.) is carried out. Increase of raw milk production and increase of quality milk is expected by this activity. Moreover, livestock artificial insemination technology is carried out for the improvement ability for dairy cattle.

Agricultural technology extension activity is carried out by expanding the pilot area of short term strategy. Moreover, keeping support for expansion of feeding technology of Brownswess and Holstain to increase milk production. At the same time, for expansion of those two kinds of cattle, supporting activities such as financial support are carried out. The milk correction centers with refrigeration systems which are very important for maintaining raw milk quality will be installed step by step.

Development of the livestock raising industry of Kyrgyz requires for arrangement of livestock breeding strategy based on the national level. There is no particular classification between "dairy cattle" and "beef cattle" in Kyrgyz. In present condition, almost all producers are just sorting out the type for milk, and the type of meat by the capability of each head of cattle. Such a viewpoint does not recognize any confusion when only considering from the point of the domestic market, but any difficulties will be recognized when considering the livestock industry from the point of the international market. It is necessary to set up a national policy concerning livestock very soon. Moreover, it is necessary to establish livestock slaughtering facilities with sanitary and effective conditions.

(2) Competitive power strengthening by product development.

Food, such as dairy products and processed meat products, always needs to develop an improved and new product of quality according to the needs of consumers' tastes.

Since Kyrgyz does not have the structure for support for quality improvement and new product development, it is necessary to consider establishing a structure in which government-and-private study cooperates and supports competitive power strengthening.

As the function, "inspection and analysis" for the quality evaluation of the product or raw material, "simulation by the use of mini-plant for manufacture examination", "instruction training about food hygiene or safety", "an examination of packing technology", and "information dissemination which is in charge of food equipment introduction". Equipment lease for equipment introduction or purchase financial support etc. can be considered.

3 Distribution of Vegetables and Fruits - Current Situation and Challenges

3 Distribution of vegetables and fruits – Current situation and challenges[15]

3-1 Production

(1) Production volume by state/by item [16]

Tables 3-1/3-2/3-3 and Figures 3-1/3-2/3-3/3-4 show the production volume of vegetables, fruits[17], and potatoes for the last year. Regarding the total production volume by state of fruits and vegetables (Figure 3-4), the total of five regions covered by this survey accounts for 63% of the output of the entire nation, of which the total of Issyk-Kul and Chui states accounts for 71% (and 45% of output of the entire nation), indicating that these regions have big potential. By item, on the other hand, the output of potatoes is conspicuously large, indicating that potatoes are the main item among their fruits and vegetables, as separately shown below.

Table 3-1: Potatoes

Oblast	Production (ton)	
	2011	2012
(Total)	1,379,222.7	1,312,699.3
Batken	34,244.2	33,396.1
Jalal-Abad	102,486.2	111,793.7
Issyk-Kul	552,783.0	486,969.2
Naryn	80,889.6	81,400.8
Osh	161,399.2	170,062.2
Talas	267,552.7	254,980.6
Chui	176,935.7	171,856.9
Bishkek City	199.2	198.9
Osh City	2,732.9	2,040.9

Table 3-2: Vegetables

Oblast	Production (ton)	
	2011	2012
(Total)	820,900.7	865,899.0
Batken	35,183.5	46,514.1
Jalal-Abad	203,306.2	225,055.8
Issyk-Kul	44,767.2	36,991.8
Naryn	5,762.4	5,897.0
Osh	107,594.7	134,897.2
Talas	76,792.0	77,602.1
Chui	336,998.2	329,306.1
Bishkek City	1,574.4	1,536.0
Osh City	8,922.1	8,098.9

Table 3-3: Fruits

Oblast	Production (ton)	
	2011	2012
(Total)	215,057.6	222,702.9
Batken	51,071.0	54,933.0
Jalal-Abad	42,029.9	43,595.3
Issyk-Kul	44,926.6	44,769.9
Naryn	510.6	518.1
Osh	45,284.2	45,921.6
Talas	15,013.8	16,602.4
Chui	14,930.2	15,090.1
Bishkek City	109.6	65.5
Osh City	1,181.7	1,207.0

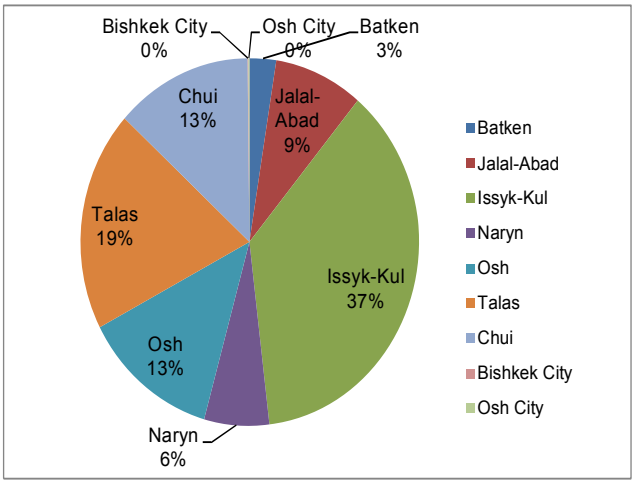


Figure 3-1:
Potatoes-Production ratio by state (2012)

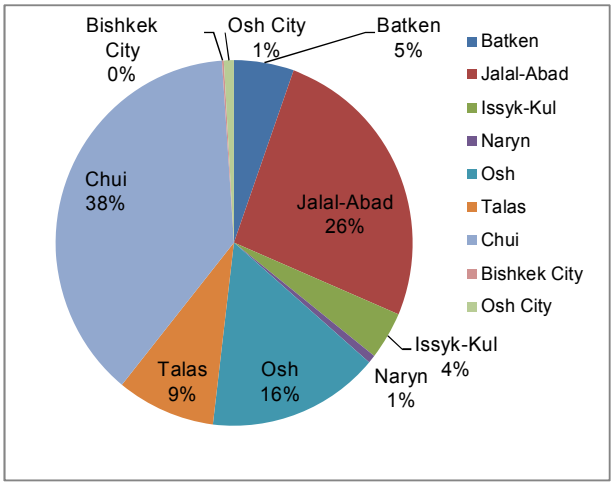


Figure3-2 :
Vegetables-Production ratio by state (2012)

[15] In the statistical data of Kyrgyz, figures even for the same period or for the same item often vary from one to another depending on database. Therefore, when the statistical data of Kyrgyz is cited in this report, their sources are firstly shown and the data only used for rough trend analyses.

[16] Source: Statistical data compiled by National Statistical Committee (2013)

[17] Fruits include berries.

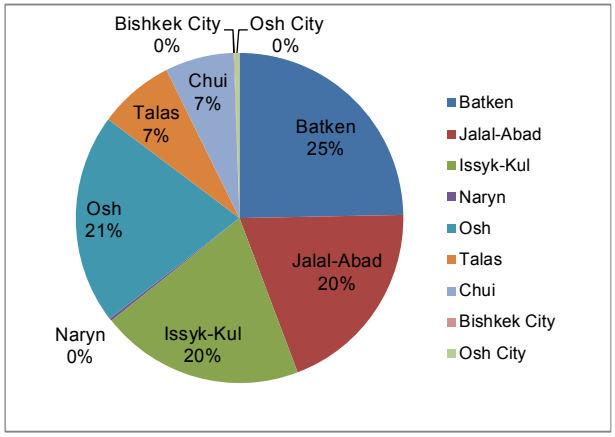


Figure 3-3:
Fruits-Production ratio by state (2012)

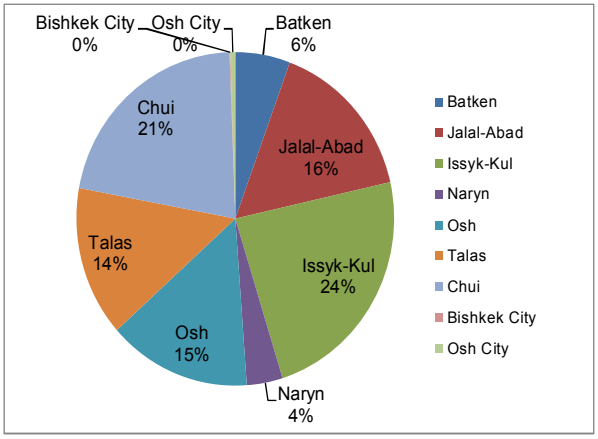


Figure 3-4:
Fruits and Vegetables-Production ratio by state (2012)

(2) Production of vegetables and fruits by item [18]

Regarding vegetables, aside from potatoes, six items account for nearly 90% of the total output: tomatoes, carrots, watermelons, onions, cabbages, and cucumbers. Regarding fruits, apples account for 70% or more of the total output of fruits every year, followed by apricots (8%), plums, grapes, and cherries (3% each).

3-2 Supply-demand and export-import

(1) Supply-demand balance and trends in export/import [19]

Figures 3-5/3-6/3-7 show the current situation of the supply-demand balance as well as trends in export/import of vegetables, fruits[20], and potatoes. According to these figures, regarding farm products, production has been surpassing domestic consumption during these years. Also, each of these figures shows that quite a large amount is imported relative to the production amount; regarding imports, there is a characteristic trend that imports of potatoes and vegetables are very small, while imports of fruits every year are large (the background will be discussed later).

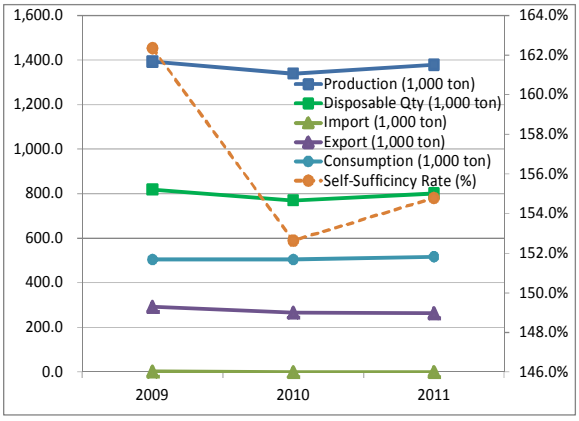


Figure 3-5: Potatoes-Supply-demand balance & trends in export/import

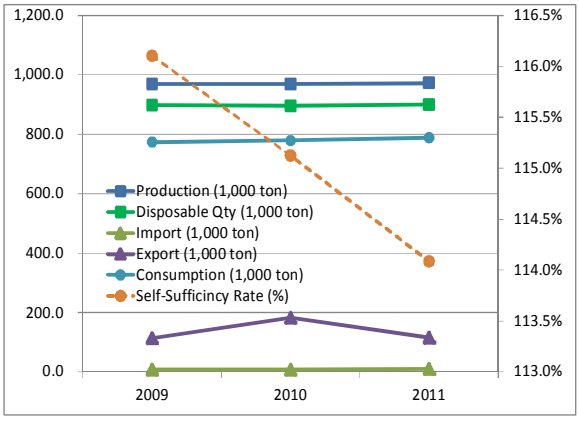


Figure 3-6: Vegetables-Supply-demand balance & trends in export/import

18 Source: FAOSTAT (March 2013)

19 Source: Prepared by the survey team based on the report "The Study on setting up TLC for Distribution of Fruit and Vegetables" (Niet-Araket/JICA, 2013) / Disposable Quantity = Production - (Seed + Fodder + Losses)

20 Vegetables include melons; fruits include berries.

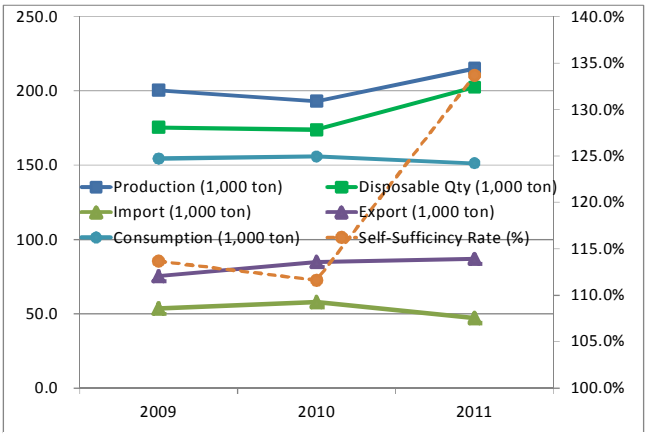


Figure 3-7: Fruits-Supply-demand balance & trends in export/import

(2) Export-import counterparts and items [21]

Regarding vegetables (including potatoes and beans), export items include potatoes, cabbages, carrots, dried onions, tomatoes, kidney beans, etc.; their destination mainly used to be Russia, but export of these items to Kazakhstan has increased in recent years. Regarding the export of fruits; grapes, apricots, apples, plums, etc. are the major items. By far, their major destination is Russia every year, but export of these items to Kazakhstan has increased in recent years. As for processed products made from vegetables and fruits, they are mainly heading for Russia and Kazakhstan, and a relatively large amount of dried onion is exported. Although other processed items are exported, the amount is quite small.

Kyrgyz does not import a lot of vegetables, but certain amounts of tomatoes and dried onion are imported from China every year. Conversely, large amounts of fruits are imported, because in addition to bananas and mandarins, which are not produced in Kyrgyz, lots of apples, pears, etc. are imported, which compete with domestically produced ones. As for import counterparts, bananas come from Ecuador but most other fruits come from China. The imported amount of bananas, mandarins, apples, and pears combined accounts for 70% of the import amount of all fruits and vegetables.

3-3 Distribution channels and their features

In Kyrgyz, vegetables and fruits are distributed through a variety of channels; in order for us to grasp their features, Figure 3-8 is compiled to show just major distribution channels. Arrows in the figure indicate flow of goods.

[21] Source: FAOSTAT (March 2013)

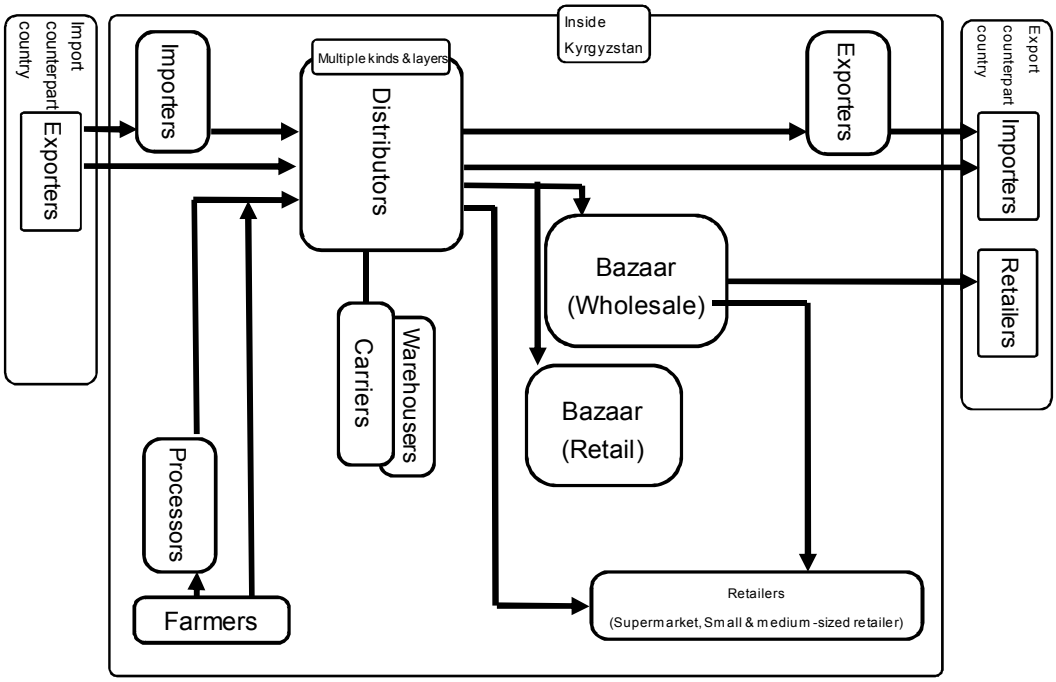


Figure 3-8: Major distribution channels of vegetables and fruits
Source: Compiled by the survey team based on on-site survey results

(1) Distributors, carriers, warehousers

As the figure shows, a key player in the distribution of vegetables and fruits are the so-called distributors. In a broader sense, distributors include village-level collectors. It is said that 85-90% of vegetable/fruit-related distribution in Kyrgyz is undertaken by distributors[22]. Those distributors, owning transportation vehicles, purchase farm products from farmers and processors, and sell them at a bazaar (wholesale and retail selling) or to retailers. Their major domestic sales counterparts are wholesalers at bazaars. They are also deeply involved in export and import. In addition to transactions through Kyrgyz exporters and importers, they do business directly with their counterparts' exporters and importers. Usually multiple distributors exist with different roles within the distribution flow in a multi-layered manner, and are engaged in their own business depending on the area of activity, item, buying and selling counterparts, export, import, etc. Partly because of this, some survey results indicate that for certain items/periods the ratio of retail price to producer price reaches to 8 to 10 times[23]. Just for reference, the retail price/producer price ratio of fruits and vegetables is 2.0-2.5 in ordinary years in Japan[24]. Distributors do their business in cooperation with carriers and warehousers depending on the situation. Carriers are divided into two categories depending on the loading capacity and the number of vehicles they own: carriers engaged in domestic long-distance transportation and export, and those engaged in domestic short-distance transportation. As for the number of carriers, the latter category is numerous, while less than 10 companies make up the former. Warehousers own warehouses and are engaged in the warehouse-renting business. Warehouses (in particular, freezers and refrigerators) are in extremely short supply compared with the large demand.

(2) Bazaar

Bazaars are traditional markets in Kyrgyz, found everywhere throughout the country. Some of them are owned by public organizations and others by private sector, and the latter outnumbers the former. There are several types of bazaars depending on their functions: wholesale type, retail type,

[22] Source: Results of survey conducted by local consultants (2013)

[23] Source: Report "The Study on setting up TLC for Distribution of Fruit and Vegetables" (Niet-Araket/JICA, 2013)

[24] Source: MAFF "Price-formation of fruits and vegetables at each distribution level and ratio of each distribution cost etc. to retail price" (up to 2010)

and wholesale-retail combined type. Some bazaars deal with farm products only, while others deal with industrial products and everyday goods in general as well. Control and management of the markets is assumed by steering committee-like organizations consisting of non-public workers, and shop-rental fees collected from dealers doing business in the market are used for management funds. The largest wholesale market in Kyrgyz dedicated to fruits and vegetables (Dyikan Bazar) is located in Bishkek, functioning as a sort of distribution center for fruits and vegetables from Kyrgyz and its neighboring countries[25]. At each market (bazaar), no transaction data is recorded. Also, transactions at those markets are basically conducted on a weight basis. Quality/grade standards have not been established, so price is not linked to quality. The inside of the market place is cramped, inefficient, and unsanitary. Most of the roads and passages inside and outside of these markets are not paved, becoming mud after rainfall and snowfall, while the dust rises up on sunny days.

Photo3- 1: Dyikan Bazar (Bishkek)

Photo3- 2: Ak Tilec Bazar (Karakol)

The line linking distributors and wholesalers at bazaars is generally viewed as something murky or negative. However, in such a situation where distribution infrastructures (both software and hardware) are not well developed, it is true that they are active in doing their businesses making full use of their information gathering abilities as well as mobility; it is obvious that if their activities come to a halt, the distribution of fruits and vegetables in Kyrgyz would immediately be interrupted and become totally confused. Therefore, there is an urgent need to develop distribution infrastructures as well as to establish a system for promoting fair and transparent transactions.

(3) Processors [26]

The Food processors association (AFVPEK) has been organized mainly to target the fruits and vegetables processing business, and is engaged in a variety of activities for its member enterprises (44 companies in total, among which 38 are engaged in fruits and vegetables processing, and 6 in dairy-related businesses). In Issyk-Kul and Chui states, where the production volume is large, there exists a relatively large number of processors. Each processor studies and makes an effort individually, while they develop, manufacture, and sell varieties of processed products. Their main processed products include fruit juice, dry fruits, tomato juice, canned vegetables & pickles, compote, sweeteners, tomato paste (source/ketchup) etc. In some areas (Chui state), vegetable processors and lots of farmers have been engaged in contract culture, establishing a win-win relationship among them[27].

Among the total production amount, however, the ratio of produce used for processing is small, accounting only for 10-20%. Also, the production volume itself is not enough to promote export. Many processors have pointed out that, in addition to the difficulty of direct exportation (instead of exporting through distributors), their small production scale makes it difficult for them to promote export. They also have difficulties ensuring the stable procurement of a certain quality/quantity of materials (agricultural products) from farmers. As for domestic sales, in many cases, processors sell their products at retail as well as to large-scale consumers through distributors. Although 90% of the processing equipment is antiquated (equipment introduced in the old Soviet era) and inefficient, it is

[25] Details are shown in "Box 3-2"

[26] Source: Information in this section comes from the results of a questionnaire conducted by AFVPEK and answered by its member companies (2012) as well as from results of an on-site survey conducted by the survey team (2013).

[27] Details are shown in "Box 3-1"

difficult for processors to raise the funds necessary to introduce new facilities. Containers (glass, cans, and caps) are imported, which is considered to be one of the cost increase factors. According to a recent survey, the breakdown of cost (on average) for processors is as follows: Procurement of materials: 44%; containers: 21%; wages: 14% (these three categories combined account for about 80% of the total); and the remaining accounts for 20% (including electricity, transportation, maintenance and management of equipment, depreciation).

Photo3-3: Vegetable juice

Photo 3-4: Processed bottled vegetable

Photo 3-5: Dried fruits

(4) Farmers

Most farmers are small in scale, engaged in cultivation for sales on an individual basis. The organization ratio of farmers is said to be less than 1%. Input (fertilizers, agricultural chemicals, seeds, etc.) is mostly dependent on import. Such a situation results in uneven quality, low production volume, and production/distribution cost increases. Generally speaking, the farmers' behavioral pattern is "Produce first and then look for purchasers." Post-harvest losses are big for both vegetables and fruits. The main causes are considered to be inappropriate seeds and fertilizers, lack of post-harvest treatment equipment, lack of temporary storehouses, etc. In a case where no sales channel is found after harvest and the products are not even used for processing, sometimes the loss reached is about 40% of the maximum only at the farm field stage. Storage facilities (especially freezers and refrigerators) are lacking. There are more in the Bishkek and Chui states, but in other regions there is an extreme lack of such facilities. Reflecting on such a tight supply-demand balance, their usage fee is expensive. And such a situation prompts quality deterioration that results in losses between harvest and sales.

(5) Distribution and export

Poor transportation infrastructure (roads) contributes to the quality deterioration of fruits and vegetables. And informal toll collection contributes to cost increases. Usually, tolls are levied on large

trucks of 18 tons or heavier at various passage points, called 'Road Corruption.' A cold chain system which could be used by production/distribution-related businesses has not been developed. Regarding export, procedures are complicated and simplification is demanded. Kyrgyz products are also competing with imported products. Kyrgyz products are at a disadvantage when compared to products from Russia, Kazakhstan, Turkey, etc. in terms of quality (including packaging), and to products from China in terms of price. Inspection ability is lacking on the whole (testing equipment is lacking at in-house/government laboratories, inspection staff is lacking, inspection technology is poor). A Free Economic Zone (FEZ) was set up for invitation of foreign investment in 1996, but not many food processing businesses have entered so far, and 80% of those who have started to utilize the scheme are engaged in such practices as importing materials, then processing them, and then re-exporting their products: the result being of only small benefit to Kyrgyz[28].

Box 3-1: Vegetable contract culture case[29] (Information obtained by interview; Kara-Balta, Chui state; March 2013)

Vegetable/fruit processor (Company A)
Outline of business:

- Business started in 2002. Number of employees: 60 persons (during peak season, temporary workers are employed). 90% of the products are for domestic sales, and 10% for export (to Kazakhstan and Russia). Products for domestic sales are sold to markets (supermarkets and bazaars) through distributors. The company produces tomato paste, pickled cucumbers (pickled with water, salt, and garlic), tomato juice, apple juice, apricot juice, peach juice, etc.; among which processed tomatoes and cucumbers are exported to Russia (Ikchi) and Kazakhstan (Armata, Talas, and Apyurau).
- Busy season is August to October for tomatoes, and June to August for cucumbers and others. During peak season, the workers operate in three shifts.
- Containers are glasses, cans, etc. Glass bottles are procured from the domestic market, but if the quality is not good enough, glass bottles are imported from Russia; caps are imported from Russia, while cans are procured by Turkish companies in Bishkek; and labels come from the domestic market. Labels to attach to the caps are made with support from the Agro Food Corporation, an umbrella organization of the Ministry of Agriculture. Regarding tomato juice, tetra packs are preferred, but their facility investment costs 2 million Euros. Cap-sealing equipment, an important process for canned foods manufacturing, is imported from Ukraine. Now the introduction of aseptic packaging is being examined, which enables the quality of contents to last for more than 10 years.
- Water needed for processing is drawn from underground water (from house-made wells).
- Most processing machines are imported from Italy, Hungary, and Bulgaria. Some are from China.
- Blackouts occur about twice a month, lasting for about 2 hours.
- Although the company has its own laboratory, it doesn't have enough equipment. The company uses governmental laboratories.
- The company is engaged in contract culture with about 200 farmers (among which 10 are large-scale, and others are small-scale). The company prepares fliers for recruiting farmers, distributes them to farmers in the region, and interviews applicants to select suitable ones. The company distributes seeds to contracted farmers, settling accounts at the time of harvest and collection of products; and settlement is done completely on a cash basis. Although quality is checked by means of visual inspection when collecting products, sizes and shapes are not important as the products are used for processing, and actually buying prices are not too different among contracted farmers. Aside from seeds, fertilizers etc. are not distributed because some farmers might sell them to others instead of using them for the intended contract culture.

[28] Source: Kyrgyz Chamber of Commerce and Industry (CCI)

[29] Above interviews with processors/material-producing farmers were given separately; subsequently, however, it has been known that those interviewees are the very players of contract culture, and that the contract culture was originally implemented as a part of the project (Rural Advisory Service).

Major problems:

(1) Production capabilities are insufficient, and fund raising for equipment reinforcement is difficult.

In the case of tomato paste, for instance, in order to export it is necessary to double the current daily production capability of 200 tons, which requires an investment of US$0.5 million. With the inclusion of other machinery, 50 million som are needed. The company applied for an 18%-interest loan to a governmental bank, but was turned down. It is now applying for a loan to a commercial bank (21% interest). It also applied for a special low-interest loan program (10% interest) offered by the Ministry of Agriculture, but has not yet received any response. The governmental program is not reliable. A loan interest of 10% is still high.

(2) When importing bottles and caps, 12% of duties are imposed, resulting in cost increases. There should be tax exemption and other benefits for the import of equipment and machinery used for manufacturing export goods.

(3) Experts in culturing and processing are lacking.
Experts are needed in such fields as agricultural guidance, introduction of aseptic packaging, production of high-viscosity tomato paste (needs are high in importing countries), maintenance and control of new machinery, etc.

(4) Blackouts often occur. It influences productivity.

(5) The company exports their products in bulk, and the buyers sell the goods with their own brand at the market in the destination countries. Hence the exporter's own brand is not widely known.

Vegetable-producing farmer

- The farmer cultivates 10ha for tomato production. It is engaged in the contract culture of tomatoes with a tomato processing company (Company A). The farmer plants tomatoes in April and harvests in August. Last year, it sold 800 tons of tomatoes (80 ton/ha). The selling price was 4 som/kg, and profit was 1 som/kg. The farmer expects the selling price for this year to exceed last year's price. As for settlement, 40% is done at the time of harvest and delivery, and the balance is paid when the processor has sold all the processed goods, all settled in cash. In this village, everyone knows the processor, and many farmers are engaged in contract culture with the company.
- The farmer has a greenhouse, cultivating eggplants, paprika, and a variety of seeds. Domestic wholesalers and buyers from Kazakhstan riding in trucks come to buy the products. Kazakhstani buyers' offer buying prices lower than selling prices to the nearby bazaar.
- Major problems include 1) Fertilizers are import-dependent; 2) Loan interests are high, and collateral conditions are problematic (as loan procedures are cumbersome, the farmer doesn't use one); 3) Various bribes are required by government workers.

Box 3-2: Outline of fruits and vegetables wholesale market (Information obtained by interviews; at Dyikan Bazar, Bishkek; March 2013)

Management of markets:

- Dyikan Bazar (hereinafter referred to as the market), established in 2008, is the largest wholesale market in Kyrgyz solely dealing with fruits and vegetables, playing a key role in distribution inside and outside the country. Vegetables and fruits flowing into the market from all over Kyrgyz as well as from its neighboring countries are traded in this market and then flow out from it to all parts of Kyrgyz and its neighboring countries. This means that the market has the function of broader-region distribution center covering not only the country but neighboring countries also.
- There are two markets: one on each side of the national railway line which runs through the city; but only one of them (Osh Bazaar) is functioning at the moment.
- The market is owned by the national railway company. Its management is assumed by the Administration of the Bazaar (an organization functioning as Market Management Committee; hereinafter referred to as the committee). The committee consists of 5 directors, 15 bill collectors, 4 security staff, and 4 persons in charge of accounting.
- Business people who have their shops in the market are wholesalers. In the market there are

about 600 wholesalers. The largest actors who come to the market from outside to sell agricultural products to these wholesalers are middlemen (or distributors). These middlemen buy agricultural products from farmers in Kyrgyz or import some from neighboring countries, and sell them at this market. Getting information on production volume and harvest season at each producing area inside and outside the country, and sensitively catching on to trends in prices, they procure goods at lower prices, bring them to this market, and sell them to buyers who accept higher buying prices. It is possible for farmers, if they have time, to wait for the best moment and sell their products by themselves at this market, but only a few farmers are practicing such direct sales. Domestic retailers are the largest actors who come to the market and buy agricultural products from wholesalers. And quite a few retailers come to the market from neighboring countries to buy products. It is possible for general consumers to come and buy products at the market, but as products are selling by box and not sold loose, it is difficult for them to use the market.

- Bill collectors from the committee collect a site-usage fee from each wholesaler operating in 3 shifts per day. Fees are as follows: if an annual contract is made: 350 som/m^2/month; if an annual contract is not made: for location advantageous for trade: 50 som/day; for location not-so-advantageous for trade: 30 som/day; truck outlet outside the market: 100 som/truck. These unit fees are decided every year by the Anti-Monopoly Committee of the central government.
- Fees collected by the collectors are paid to the railway company. The rough amount is one million som per month. Main usage is salaries paid to committee members, revamping of market facilities, etc. For reference, the interviewee's (director's) salary is 18,000 som per month.
- A large volume is traded every day, but trading data is not recorded at all. Therefore, no objective figures showing market size are available.

Market facilities, infrastructure, quality inspection, etc.

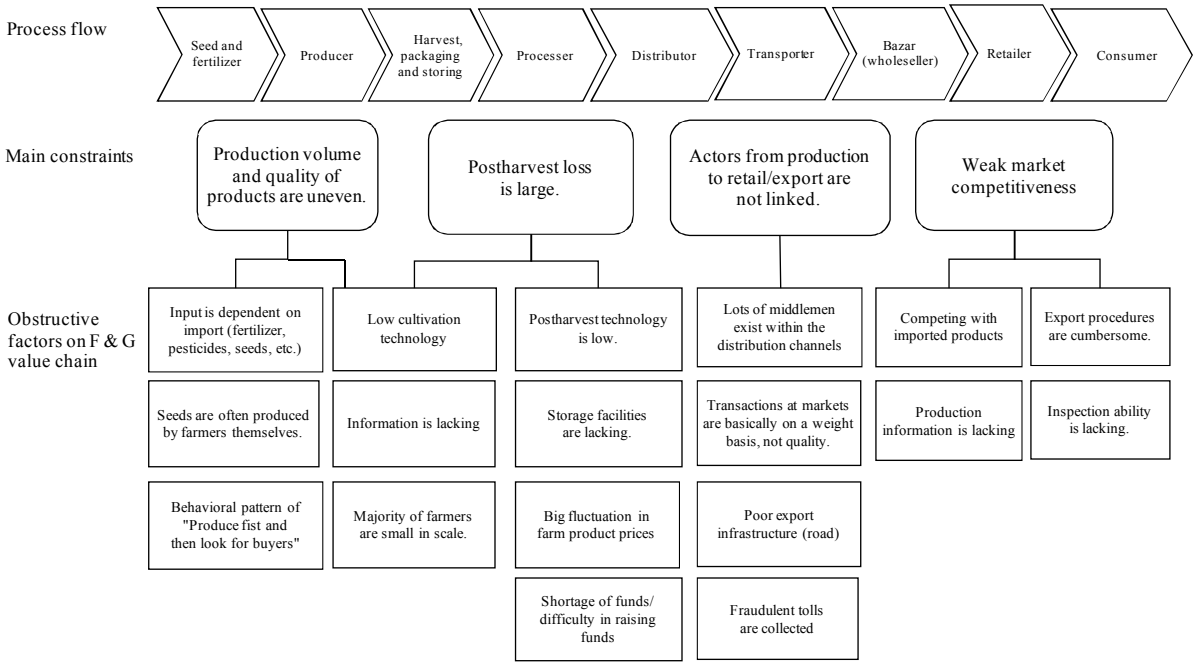
- The market has storage facilities. There are 40 box-type storages (brick building, 20-30 ton), 100 container-type (metal, 20-40 ton), and 3 large-volume warehouses. There is no warehouse with refrigeration or freezing function.
- There are various types of wholesalers' shops including ordinary flat space type (booth with no partition), above-mentioned box-type, container-type, and truck-type.
- Inside the market it is very narrow, most parts are unpaved, and lots of vehicles including large trucks frequently come and go there, resulting in inefficiency and poor hygiene. The committee negotiated with the railway company, and they say they have reached an agreement that improvements should be made within this year including development of roads to the market, a perfect pavement inside the market, development of parking places, and installation of security cameras.
- In the market there is a governmental laboratory which was set up 5 years ago. Each wholesaler must submit quality inspection at this laboratory and get a certificate, otherwise the transaction is not permitted. The workforce of the laboratory is 1-2 persons. 20 persons visit it per day on average. In addition to inspections in the laboratory, laboratory staff visit the market every 3 days, conducting unannounced quality inspections. Equipment found in the laboratory includes a lot of small bottles, probably for chemicals (usage unknown, not used at the moment), microscopes (for testing parasites in meats), and portable testers (used for checking nitrate in vegetables and fruits). As for agricultural chemicals herbicides, etc., there is no equipment to check these items; products are traded at the market without being checked. In particular, people are worried about vegetables and fruits coming in high volume from China.

Major problems:

- Operational funds are lacking. This is a nation-wide problem.
- Disposal of the large amount of waste generated at the market. Sanitation trucks, dispatched by a cleaning firm, an affiliate of the railway company, come to the market 5 times a day to collect waste, but waste still piles up. Waste-collecting costs are also a burden.

3-4 Key issues in the value chain for fruits and vegetables

The following diagram identifies key issues at each stage of the value chain for fruits and vegetables.



Figures 3-9 Main value chain diagram for fruits and vegetables

(1) Potentials and challenges at production stage

Production volume of vegetables and fruits produced in the subject five regions account for 63% of the national production, among which 71% are produced in two states: Issy-Kul and Chui states. But there are some challenges: inputs such as fertilizers and agricultural chemicals are dependent on import, the majority of farmers are small scale, postharvest technology is low, storage facilities are lacking, and in many cases deterioration of quality leads to loss.

(2) Potentials and challenges at processing and distribution stage

There are a relatively large number of processors in Issyk-Kul and Chui state, where production volume is high, and the processors have a certain profit (around 20%), enjoying benefits from processing. However, it is difficult to procure a certain quality/quantity of materials and to produce final products to satisfy importers' needs, because processing facilities are antiquated and inefficient, and there is a difficulty in raising funds.

Transactions at markets are basically conducted on a weight basis. Quality/grade standards have not been established, so price is not linked to quality.

Inspection ability is lacking as a whole (testing equipment is lacking at market, not enough inspection staff, inspection technology is poor).

Poor market infrastructure causes quality deterioration of fruits and vegetables, because storage facilities are lacking and there is no cold chain system.

Photo 3-6: Government Lab in the market

Photo 3-7: Vegetable tester

Photo 3-8:
Discarded imported fruits at the market

(3) Potentials and challenges at export stage

Demands are high in neighboring counties. In particular, for Russia and Kazakhstan, import is indispensable for the time being in order to meet domestic needs.
But, export procedures are cumbersome and difficult to understand. Exporters export products in bulk, and the buyers sell the goods with their own brand at the market in the destination countries (exporter's own brand is not widely known). A Free Economic Zone (FEZ) was set up for invitation of foreign investment in 1996, but not many food processing businesses have entered so far, and 80% of those who have started to utilize the scheme are only doing such business as importing materials, then processing them, and then re-exporting their products, the result being of only small benefit to Kyrgyz.

3-5 Value chain analysis to enforce the competitiveness for vegetables and fruits

The team conducts SWOT analysis for vegetables and fruits industry based on the value chain analysis; they develop the countermeasures to enforce the competitiveness of the vegetables and fruits sector with Strength, Weakness, Opportunity, and Threat in Kyrgyz.

Table 3-4: SWOT analysis of fruits and vegetables

Enforcing competitiveness and export promotion in vegetables and fruits			External factor（Environmantal）	
			Opportunity（O）	Threat（T）
			- Demands are high in neiboring countries, import is indispensable to meet domestic needs.	- Big fluctuation in product prices depending on region and time. - Input is dependent on import.
Internal factor	Strength (S)	-Vegetables and fruits have a greater capacity to export. - Processors have a certain profit (around 20%) from processing. - Most farmers have transportatoin (vehicles).	It is necessary to select and supply the competitive products which suit to market needs **⇒ 1. To establish and disseminate quality standards and grading for vegetables and fruits**	Deliver timely information in deciding to supply competitive products to the market **⇒ 2. To set up and manage vegetable/fruit production/market information system (Info center)**
	Weakness (W)	- Shortage of funds - Postharvest loss is large - Actors from production to retail are not linked - Production volume and quality of products are uneven.	Provide the system and field for holding a matching opportunity to exchange opinion between producer and distributors **⇒3. To set up and manage a system for promoting cooperation between production and distribution**	Strengthen the competitiveness by improving value chain from production to export, with above composite practice **⇒4. Small-scale farm products export center**

Based on the SWOT analysis, the study team suggests following four countermeasures to enforce competitiveness in the vegetables and fruits sector.

a. Set-up and dissemination of quality standards and grading for vegetables and fruits
   to select and supply competitive products which suit market needs.
   Grading means size, color, shape, uniformity, and whether damaged or not.
b. Production/market information center
   To deliver timely information in deciding to supply competitive products to the markets
c. System for promoting cooperation between production and distribution
   To provide a system and field for holding a matching opportunity to exchange opinion between producers and distributors
d. Small-scale farm products export center
   To strengthen competitiveness by improving value chain from production to export with above composite practice

3-6 Improving direction of core constraints

Countermeasures to improve core constraints are examined, making use of the previously described potentials.

(1) <u>To establish and disseminate quality standards and grading for vegetables and fruits</u>

- To establish quality standards for vegetables and fruits, aiming at providing buyers with quality evaluation criteria. This is expected to lead to price formation appropriate for product quality, a benchmark for production/sales planning, and the effective set-up and management of a market information system (described above).
- As for activities, firstly, selecting specific production areas and items and establishing quality standards; performing trial operations; improving further if any problem is found; and establishing marketing models. Secondly, expanding and disseminating to other production areas and items.
- Regarding quality standards, specifically speaking, grading products by item according to size, color, shape, uniformity, and whether damaged or not; and adding country of origin and brand.

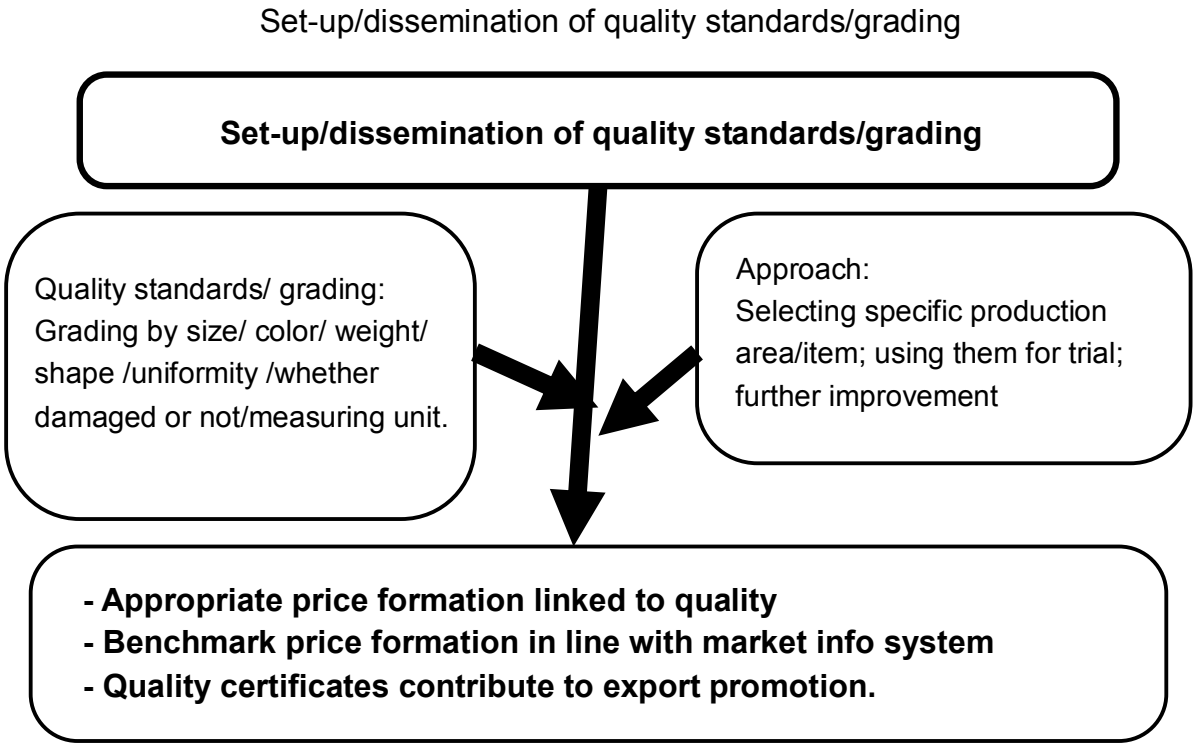


Figure 3-10: Set-up /dissemination of quality standard/grading
Source: Survey team

(2) <u>To set up and manage vegetable/fruit production/market information system (Information center)</u>

- To establish a system to collect, edit, and publicize, on a real-time basis, production information (production areas, items, past records of production volume by season of the year, estimated amounts, etc.) as well as market information (item, trading market, country of origin, wholesale prices by season of the year, retail prices, export prices, market prices in importing countries, etc.)

related to major vegetables and fruits; aiming at promoting smooth production, distribution, and export.
- How to collect production information: Past records of production volume are obtained by interviewing appropriate persons through government organizations in charge at each production area; and estimated amounts are calculated using past production records, meteorological data, etc.
- How to collect market information: As for the domestic market, establishing a system for recording and editing transaction data of major bazaars, which are not recorded at the moment. As for the overseas market, establishing a system for collecting information through Websites and others.
- How to publicize information: Utilizing widely used SMS, TV, newspapers, etc.

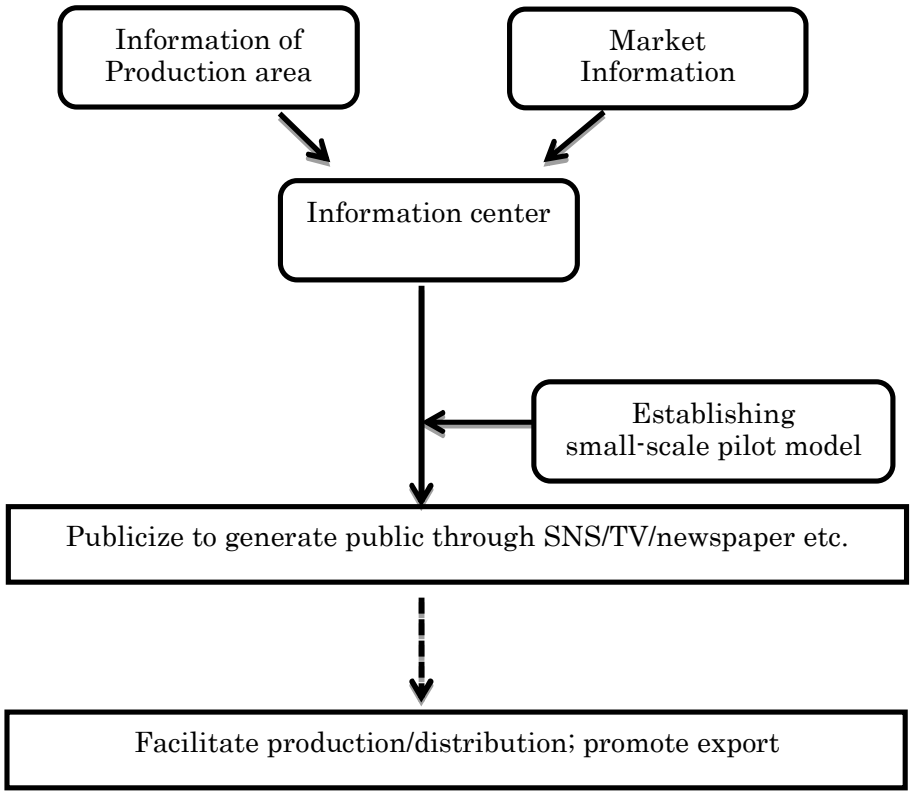


Figure 3-11: Production/market information center
Source: Survey team

(3) <u>To set up and manage a system for promoting cooperation between production and distribution (match-making opportunity)</u>

- To hold a "match-making opportunity" which offers a chance for actors including farmers, processors, distributors, and exporters to find others' needs and common ground, thus increasing win-win transactions; aiming at activating the market as well as at reinforcing the entire value chain including farmers (SHEP, Kenya, etc. are successful examples).
- Outline of activities: Letting people know about the system; registration of actors who will participate in the system; preparing/holding a materialized "match-making opportunity;" setting up items that each actor will publicize its own information by means of a preliminary survey; designing how to publicize information and how to introduce prospective trading partner actors; follow-up of management and achievement; improvement of management method utilizing follow-up results; etc.

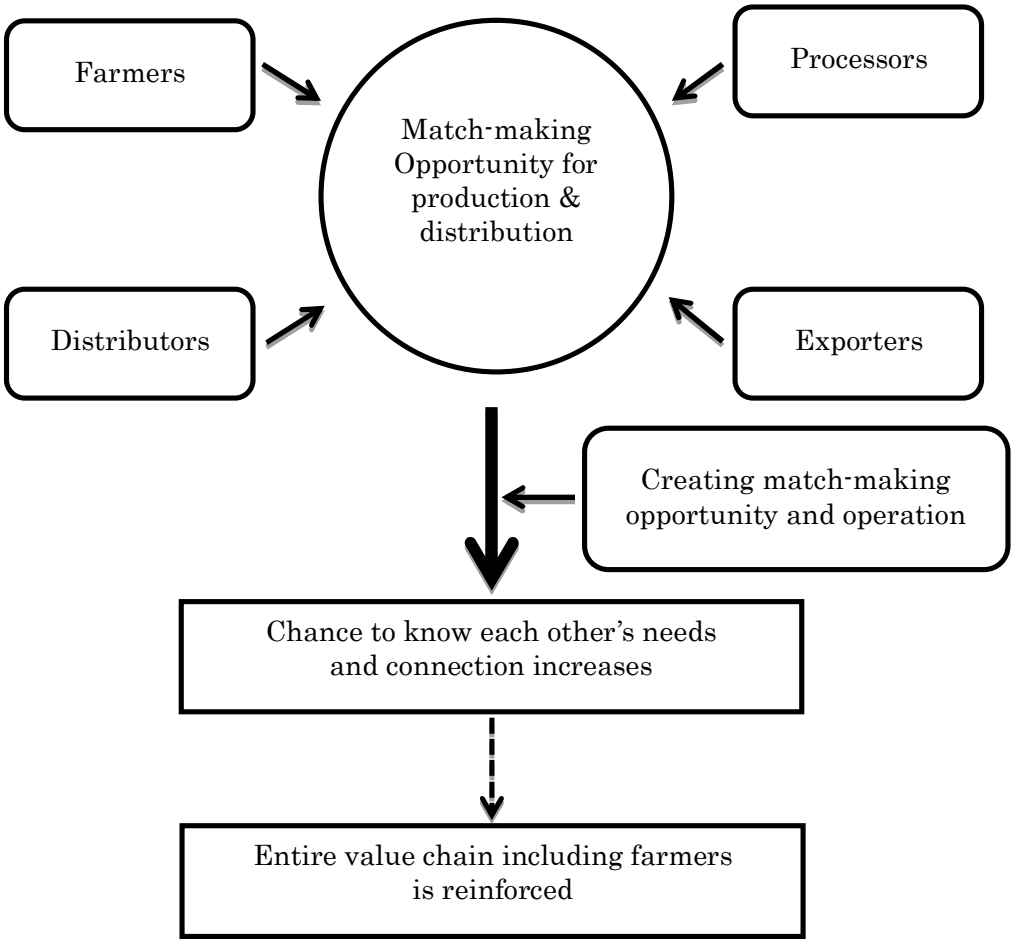


Figure 3-12: System for promoting cooperation between production and distribution
Source: Survey team

(4) Small-scale farm products export center (tentative name)
Composite practice system of above improving directions (draft)

- Aiming at practicing the above improvement directions in a composite manner, promoting "set-up and dissemination of success models by actual proof"
- Operational bodies: PPP (Conceivable participating bodies: the Ministry of Agriculture, ABCC, RAS, CCI, Food processors association, Agricultural cooperatives, etc.)
- Function: Procurement of farm products, value-adding, temporary storage and export
- Farm products are mainly procured from producers located near the center. Products are mainly sold to exporters. When necessary, contract processing is arranged with processors, and contract transportation, with carriers.
- In principle, selling prices are decided based on quality standards (described above), which are set up separately.
- Specifying production areas and subject items (1-2 items) as well as export counterparts, the goal is set to reinforce and improve value of the entire value chain from farmers through retail market in the importer countries.
- All transaction data (items, production areas, purchase prices, export prices, traded amounts, quality, etc.) is recorded and publicized by inputting into the market information system (mentioned before).

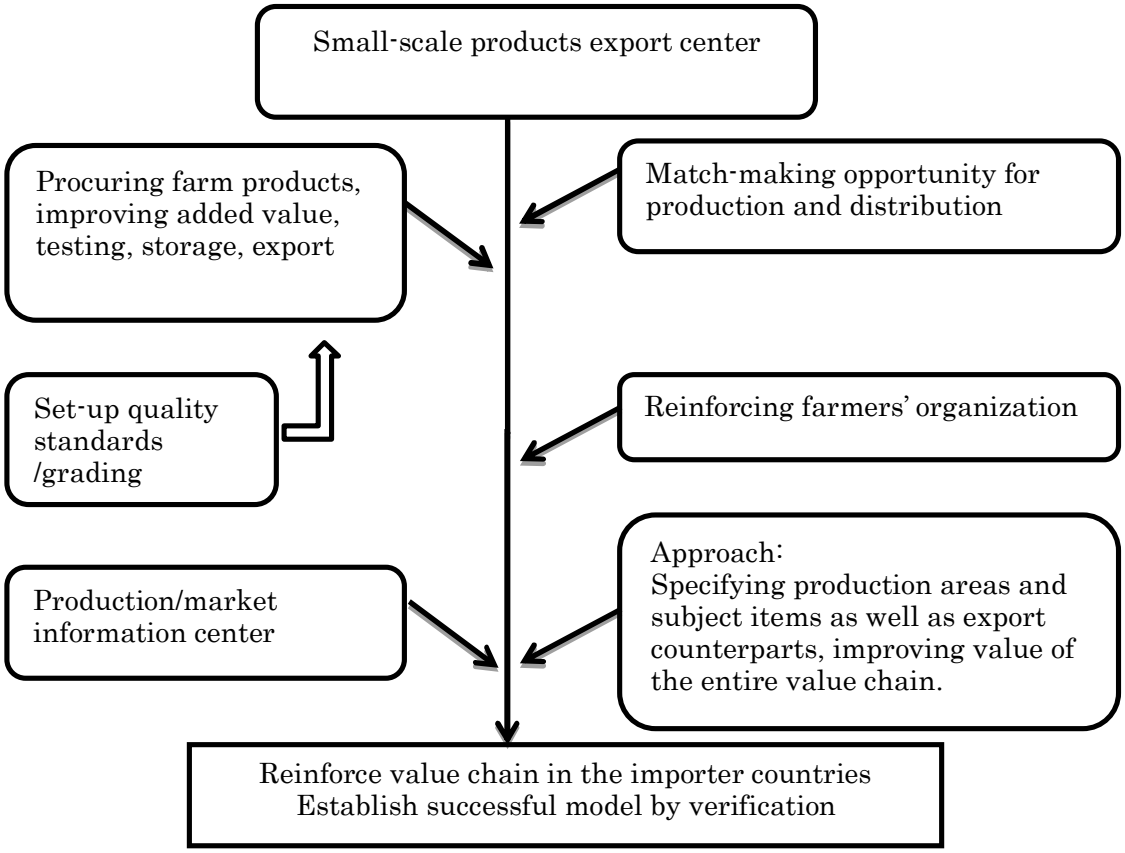


Figure 3-13: Small-scale farm products export center
Source: Survey team

Box 3-3: Vegetable and fruit distribution center and PPP

Distribution center and PPP

In terms of Trade Logistic Centers (TLC) for distribution of fruit and vegetable products, several cases to establish and manage the distribution center by Public-Private-Partnership (PPP) are explained, and the following two models are recommended.

- Reverse Build-Operate-Own-Transfer (BOOT) contract : Ownership is transferred from the government to the private sector, joint ownership or mix companies and outright sale.
- LABV (Local Asset Backed Vehicle): combine private sector finance and skills with public sector real estate as a means of driving development and investment

(Source: Report of Study on setting up Trade Logistic Center (TLC) for distribution of fruit and vegetable products in Kyrgyz, Finance & Consulting Company Niet-Araket, Bishkek 2013)

Private partner for TLC

Kazakhstan, Russia, and Turkey are main markets for the logistic center, and there are some private sectors to be partners in PPP.

The following are meeting record with Sanzhar group

- Sanzhar group is a logistic company in Simkent of Kazakhstan and handles agricultural products, materials and machines from domestic and international markets.
- Sanzhar group has a railway area, 12ha, for import products from Kyrgyz, Uzbekistan, Pakistan, India, and China.
- Sanzhar group assists the business of Kyrgyz-Kazakhstan joint venture corporation, “Agroexport” in Almaty, and its logistic center.
- Kyrgyz products are recognized as high quality by the retail industry, and they know that the products from Uzbekistan and China have a lot of residue of fertilizer and pesticides and GMO.
- There are several problems with Kyrgyz products such as bad packaging, irregular size, product shortage, late shipment,
- TLC by PPP will contribute to solve the above problems.

4 Distribution of Mineral Water - Current Situation and Challenges

4 Distribution of Mineral Water - Current situation and challenges

4-1 Features of production, distribution channels, and export/import

In Kyrgyz, mineral water is an item distributed to supermarkets and food retailers domestically, and has been exported to international markets such as Kazakhstan and Russia. Mineral water is selected as one of the study commodities because of the following reasons:

- Selected item that has export potential by previous JICA preliminary survey
- One of the Kyrgyz typical export products with export experience
- Mineral water can be analyzed in Kyrgyz laboratory with its technical regulation

Export of mineral water accounts for only 1-2% of the total production amount, and less than 0.01% of the world-wide trading volume (each figure is on value basis). The small amount of water export found in export statistics may be a case where buyers' needs are small in size and HACCP certification, etc. are not required as a part of export conditions. The Export counterparts are, though figures fluctuate slightly by year, usually 4 countries: Russia, Kazakhstan, Tajikistan, and UAE combined account for a large portion (in 2011, these 4 countries accounted for 98% of the total export amount)[30]. As for types of mineral water, there are two types depending on water sources: spring water in the mountains and underground water. In addition, as a type of drinking water popular in Kyrgyz, there is soda water[31], which is made by adding carbon dioxide to original water during the manufacturing process at the factory.

4-2 Potentials and challenges

Potentials and challenges faced by mineral water distribution, clarified by field survey, are sorted out as follows:

(1) Potentials for mineral water distribution

- Kyrgyz is a mountainous country, enjoying abundant water sources.
- When it comes to domestic sales, a direct selling system has been established from manufacturers to retailers or to consumers.
- At major manufacturers, an in-house quality control system has been established to a certain degree.

(2) Challenges with mineral water distribution

- Shortage of funds, high-interest loans, political unrest
- To satisfy export counterparts' needs, a drastic improvement in production ability is required, but it is difficult to raise funds for equipment investment.
- In many cases, buyers from export counterpart countries require exporting companies to acquire ISO and HACCP certifications, but no Kyrgyz water manufacturer has yet obtained them.
- Containers and caps are dependent on import (a factor of cost increase).
- Fraudulent toll collection (a factor of cost increase)
- As construction of factories is not allowed near water sources due to environmental considerations, when drawing spring water from mountains as the water source, it is necessary to transport the water to the factory over a long distance (a factor of cost increase).
- Regarding large-volume bottled water, cost of the container exceeds the selling price of the product, which is a big barrier to export (domestically, water is distributed in reusable containers) .

[30] Data source: Statistical data compiled by National Statistical Committee & Customs Committee / ITC: Sector Profile - Bottled Water 2012
[31] Aerated Water

- Experts in the fields of production and processing are lacking.

Among the above challenges, the two core problems are reinforcement of production capabilities required for satisfying export counterparts' needs as well as acquisition of ISO/HACCP certificates.

4-3 Improving direction (draft)

In order to improve the situation related to core problems, making use of the above described potentials, suggestions are made as follows:

(1) Core problems

Although drastic reinforcement of production ability is needed in order to promote export, equipment investment is difficult due to tight fund raising. Also, buyers from export counterpart countries often demand water manufacturers acquire HACCP certificate etc., but water manufacturers have not yet met the requirements.

(2) Suggestion for improvement

Within the current investment environment, conceivable measures for promoting export may be as follows (sticking to export from Kyrgyz using original water from Kyrgyz):

i. Industry-wide reinforcement of production and cost reduction by means of restructuring of the industry, combination of companies, etc.
ii. Promoting acquisition of ISO/HACCP certificates etc. (technical cooperation with Japan may be possible.)
iii. Combination of the above two.

5 Basic Information on Export Expansion

5 Basic Information on Export Expansion

5-1 Permits and approvals in Customs Union

Kyrgyz is currently preparing to join Customs Union of Russia, Kazakhstan and Belarus. Although there are pros and cons of this government policy among agricultural food producers, they perceive it as unrefusable. Agricultural producers and processors have confidence in the quality of Kyrgyz products, however, they are worried about the standard and quality certification required by Customs Union. Here we note the standard and its certification of Customs Union. The response to them is reported in "7-3 Strategy and technical regulation about food inspection and certification" in Chapter 7 "Present situation and problem of food inspection and certification."

(1) Outline

On exporting products to the Customs Union countries (Russia, Kazakhstan and Belarus), it is required to send documents on or samples of products to an approved examination agency to have them checked if they match the standard set by the Customs Union countries. If the products are approved, a certificate of conformance (or a declaration card) will be issued and they can be sold to the markets.

At present there exists the Customs Union Technical Regulation (Act No. 319 decided by Customs Union committee on June 18, 2010) 【appendix 1】as the standard set by Customs Union committee, however, standards on respective products are planned to be issued in a phased manner and a system itself is not yet confirmed. Thus, in Article 9 of Customs Union Technical Regulation, it is stated that a certificate of conformance is issued based on the selection of applicants and a certificate of conformance of standardized style is proceeded until a proper technical regulation of Customs Union to the products in the unified product list is effectuated, and/or conformance certification is proceeded in accordance with the laws in the Customs Union countries.

In sum, when they export products which do not have "Customs Union Technical Regulation" yet, they have to have the products inspected in accordance with the laws of importing countries.

For example, there are three domestic standards in Russia presently. They are the oldest "National Standard (GOST-R), "Technical Regulation" which was revised from GOST-R and "Customs Union Technical Regulation" applied uniformly within Customs Union.

Though final unification to "Customs Union Technical Regulation" is planned, there is a possibility of effectuation of Customs Union Technical Regulation without waiting for the effectuation of Russian technical regulation.

Figure 5-1: Flow of transition from domestic standard certification system of Russia to unified system in Customs Union

Table 5-1: （reference）
Three meanings of certificate of conformance/conformance declaration card

1	Documents required on customs clearing（certification-compulsory products）
2	Documents required for quality confirmation on selling at a market
3	Documents for publicizing to consumers that the products meet the national standard

The outline of "Customs Union Technical Regulation", "National Standard (GOST-R)" and "Technical Regulation" now in effect is as follows.

(1) Customs Union certificate of conformance/conformance declaration card

Technical Regulation（date of effect or planned date of effect）	Technical regulation "On fruit and vegetable juice"（July 1, 2013） Technical regulation "On food safety"(July 1, 2013） Technical regulation "On oil products"（July 1, 2013） Technical regulation "On grain safety"（July 1, 2013）
Certification Class	Certification-compulsory
Effective Duration	Once, 1 year, 3 years, 5 years
Agency in Charge	Customs Union committee
Effectuating Agency	Certification agency approved by Customs Union committee
Primary Documents	● Copy of contract document ● Declaration card ● Details of product ● Essential information of applicant
Customs Union mark	The products that have a certificate issued by Customs Union safety technical regulation, it should be attached where defined by law.


ТАМОЖЕННЫЙ СОЮЗ
СЕРТИФИКАТ СООТВЕТСТВИЯ

Sample of Customs Union certificate of conformance
source：http://prostocert.com/certprod.php

(2) GOST-R certificate of conformance/conformance declaration card

Primary Target Products	"conformance declaration card" : agricultural products, food, drinks, alcoholic drinks, cosmetics etc. "certificate of conformance" : Many products other than those above
Certification Class	Certification-compulsory/self-certification
Effective Duration	Once, 1 year, 3 years
Agency in Charge	Gosstandart
Effectuating Agency	Certified organizations by Gosstandart
Primary Documents	● Copy of contract document ● GOST-R certificate of conformance/conformance declaration card (in Russian) ● Details of product (industrial product : document that shows product specification, chemical product, food: table of composition or ingredients) ● ISO9001/CE Making/CB Report/EMC


СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ
СЕРТИФИКАТ СООТВЕТСТВИЯ

Sample of GOST-R certificate of conformance (self-certification)
source :
http://www.stroyinf.ru/gost-certificates-0.html


СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ
СЕРТИФИКАТ СООТВЕТСТВИЯ

Sample of GOST-R certificate of conformance (compulsory certification)
source :
http://www.stroyinf.ru/gost-certificates-0.html

ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

ООО «АгроСиб-Раздолье»

Жмых подсолнечный. ГОСТ 80-96

код ОКП 91 4612. Сырьевое производство

ГОСТ 80-96

Sample of GOST-R conformance declaration card（compulsory certification）
source：http://www.test-sz.ru/files/sertif22.jpg

(3) Technical Regulation（Technical Regulation／or TR）certificate of conformance/conformance declaration card

Technical Regulation（date of effect or planned date of effect）	・Technical regulation ”On tobacco products” ・Technical regulation “On fruit and vegetable juice” ・Technical regulation “On oil products” ・Technical regulation “On milk and dairy products”
Certification Class	Certification-compulsory
Effective Duration	Once, 1 year, 3 years, 5 years
Agency in Charge	Gosstandart
Effectuating Aency	Certified organizations by Gosstandart
Primary Documents	● Copy of contract document ● Declaration card ● Details of product ● Essential information of applicant
TR mark	It is required to attach TR mark where defined by law.

РОССИЙСКАЯ ФЕДЕРАЦИЯ
СЕРТИФИКАТ СООТВЕТСТВИЯ
(обязательная сертификация)

№ ТР

ЗАЯВИТЕЛЬ

ИЗГОТОВИТЕЛЬ

ОРГАН ПО СЕРТИФИКАЦИИ

ПОДТВЕРЖДАЕТ, ЧТО ПРОДУКЦИЯ

код ОК 005 (ОКП)

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ ТЕХНИЧЕСКОГО РЕГЛАМЕНТА (ТЕХНИЧЕСКИХ РЕГЛАМЕНТОВ)

код ЕКПС

код ТН ВЭД России

ПРОВЕДЕННЫЕ ИССЛЕДОВАНИЯ (ИСПЫТАНИЯ) И ИЗМЕРЕНИЯ

ПРЕДСТАВЛЕННЫЕ ДОКУМЕНТЫ

СРОК ДЕЙСТВИЯ СЕРТИФИКАТА СООТВЕТСТВИЯ с по

Руководитель (заместитель руководителя) органа по сертификации

Эксперт (эксперты)

Sample of TR certificate of conformance
source：http://roseutest.com/imgs/tehreg.jpg

(2) Rules for "milk" and "mineral water"

There is no Customs Union technical regulation on milk, mineral water and dried fruits. Thus, it is necessary to have them certified in accordance with the law of importing countries. On exporting products to Russia, the rules for these items are defined in writing as below.

Table 5-2: Export rules to Russia

	Milk	Mineral water	Dried fruits
Legal basis and document for rule	-No.88-FZ of federal law "technical regulation for milk and dairy products" (June 12, 2008) 【appendix2】 -Act No.422 of "On approval of rules on f issuing the veterinary attachment" (November 16,2006)	・ N12 "Hygiene and epidemic regulation and standard 「drinking water. Hygiene standard for bottled water at fixed quantity. Quality management. SANPIN 2.1.4.1116－02」" (March 10, 2002)【appendix 4】 ・ GOST R 51074-2003 4.22【appendix 5】 ・GOST R 52109-2003 5.9.1,5.9.2,5.9.3,5.11.2 【appendix 6】	GOST 28501-90- technical regulation for stone fruits GOST 1750-86 - receiving condition of dried fruits and experimental methodology GOST 12003-76 package, brand, handling and storage of dried fruits
Primary certificate to support issuing of TR or GOST-R certificate (declaration card)	National registration certificate[32] 【 former hygiene and epidemiology certificate】	National registration certificate 【 former hygiene and epidemiology certificate】	National registration certificate 【 former hygiene and epidemiology certificate】
	Veterinary certificate	—	—
Type of certificate (declaration card)	TR certificate of conformance	GOST-R certificate of conformance or GOST-R conformance declaration card	GOST-R certificate of conformance or GOST-R conformance declaration card

5-2 Supposed condition of export market

In this research, we surveyed the cities in Figure 5-2 to study the promotion of export from Kyrgyz. Target countries are Kazakhstan and Russia which are members of the Customs Union which Kyrgyz is planning to join, and have cities with the comparatively large number of affluent population expected to consume safe agricultural products that Kyrgyz intend to export. The result of the hearing is shown in Table5-3. Strength and problems of each product is analyzed in Chapter 2 to 4. Here is general image of Kyrgyz products.

[32] Hygiene and epidemiology certificate was abolished in June 2010, and making process of national registration certificate was introduced to a certain group of products. National registratio n certificate is issued to object products after the inspection by "The Federal Service for Control in the Sphere of Protection Consumers' Rights and Well-Being of Humans" and registration procedure. The number of target products of national registration c ertificate is only a tenth part of that of the hygiene and epidemiology certificate.

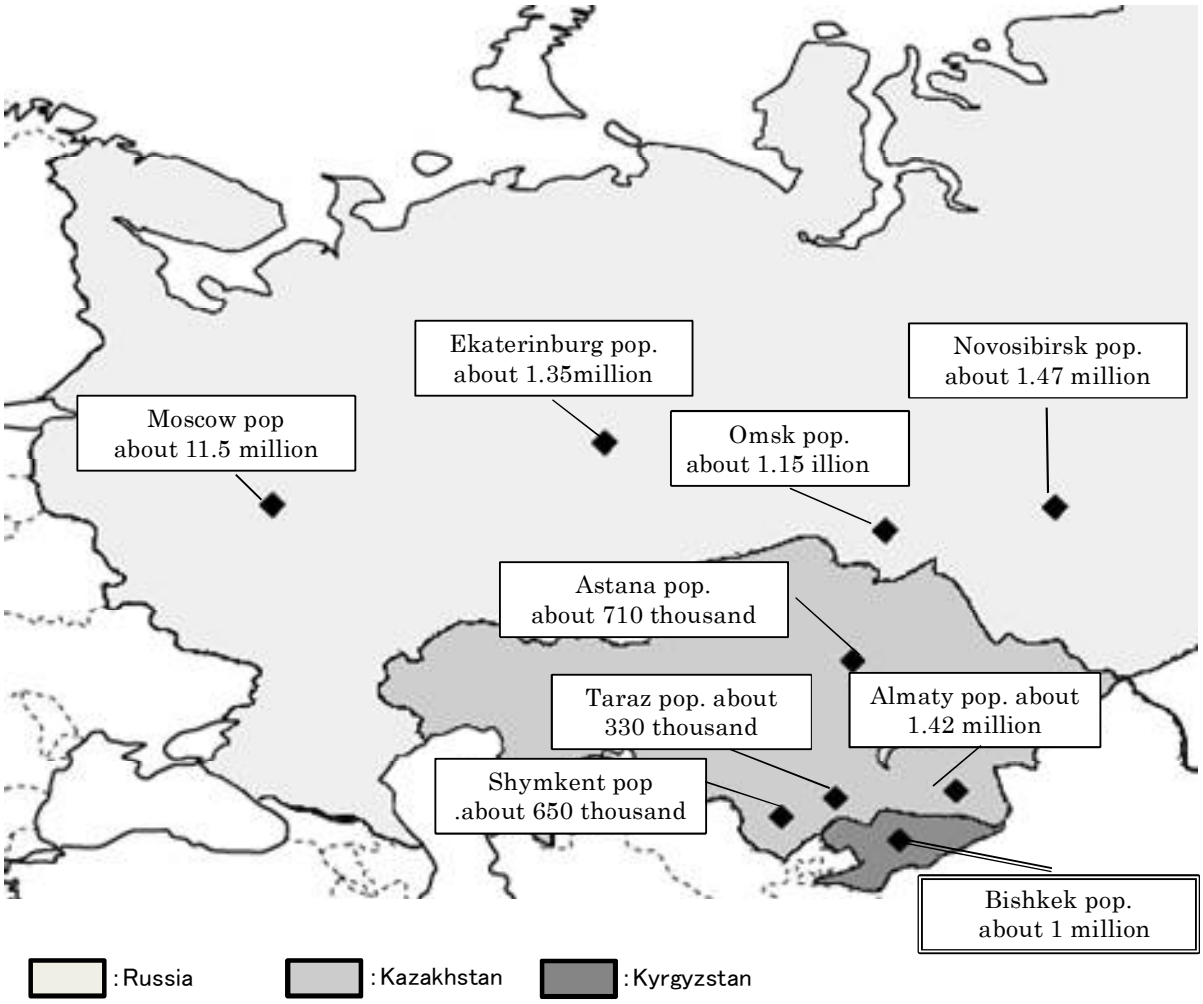


Figure 5-2: Examination Target Countries for Studying Export Market

Table 5-3: Strength and problems of Kyrgyz products pertinent in Kazakhstan and Russia

Strength	・There are consumers and distributors who consider the Kyrgyz products safe as the use of pesticide and chemical fertilizer is low ・It is known as a leading production area of apples, apricots and beans in CIS. ・Supply of fresh products is possible around the bordering areas with Kazakhstan. ・Supply of low-cost products is possible due to the low labor cost.
Problems	・The image that Kyrgyz is poor ・The ability of quality management and traceability is undeveloped (especially after market-oriented economic reform) ・There is no timely shipping system. Lack of both hard and soft aspects of distribution and storage ・Lack of contract consciousness of producers (breaking of contract, late shipping, contamination) ・Compared to other Central Asian countries, they do not have less distribution networks than in Russia and Kazakhstan.

（1）Kazakhstan

Market research was conducted in Almaty, Astana, Shymkent and Talas in Kazakhstan. Even though the hearing was limited to with those working at the market or in distribution industry, distribution samples of Kyrgyz products in Almaty and Astana were confirmed and the needs for Kyrgyz products which are not good-looking but cheap in rural cities such as Talas and Shymkent although not very interesting.

A distributor in Shymkent pointed as a reason that Kyrgyz products are hard to find in the markets in Kazakhstan that they are handled as Kazakh products as they are smuggled. Because Kyrgyz cannot issue the quality certificate of meat products, they obtain it in Kazakhstan, thus they are handled as Kazakh products. Also as Kyrgyz products are often traded at a lower price than the products from Kazakhstan and Ukraine, some traders misrepresent where they are from.

①Almaty, Astana

We conducted interviews about handling, evaluation and quality expectation of Kyrgyz agricultural products in Almaty and Astana which are expected as export markets. In fact, Kyrgyz products are hardly perceived in the Kazakh markets. As there was no handling, evaluation of and needs for Kyrgyz products were not obtained. But expectation for natural agricultural products from Kyrgyz was partly found.

What was noted is low consciousness for misrepresentation. It was pointed that there is a possibility that a Kyrgyz product is sold as an Uzbek product, a Chinese product as a Kyrgyz product. To promote export of Kyrgyz products, it will be necessary to take measures about the labeling of the production area for gaining proper rating toward Kyrgyz tackling with quality improvement.

Picture 5-1: market

Picture 5-2: potatoes produced in Kyrgyz

Picture 5-3: A shop owned by a Kyrgyz from Osh

Picture 5-4: sausage from Kyrgyz

②Talas, Shymkent

The evaluation of Kyrgyz products in Talas and Shymkent in the southern Kazakhstan is different from that in the large cities such as Almaty and Astana. This is because the road and train network with Kyrgyz is well-organized, many Kyrgyz people live, and domestic products of good quality are lacking as they tend to be consumed in Almaty and Astana.

As Talas is only three-hour drive from the border with Kyrgyz, Kyrgyz products are generally distributed in the city. In Talas, the Kyrgyz products are considered to be cheaper than Kazakh and Uzbek products even though the Kyrgyz products are not uniformly-sized and their quality is not stable. Kazakh traders come to purchase agricultural products to Kyrgyz. As they tend to choose a same farm to purchase products every year regularly, a relationship of trust has been established.

In Shymkent, on the other hand, the quality of Kyrgyz products is high, though the level as commercial products is low. What thought the problems to be size, grime and packaging. Also, due to the lack of planned production and distribution, shipping is often concentrated, which leads to the deterioration of products or lack of stock. According to a local distributor, the conscious of Kyrgyz producers is low and they sometimes sell products to other distributors if the price rises even after receiving advanced payment. Though, there is a need for Kyrgyz products as market workers were told that they expected to handle more Kyrgyz products which they think taste good and are cheap.

As for a reason for the absence of Kyrgyz products in the Kazakh markets, a distributor in Shymkent pointed out that smuggled products from Kyrgyz were handled as Kazakh products. Because Kyrgyz cannot issue the quality certificate of meat products, they obtain it in Kazakhstan, thus they are handled as Kazakh products. Also, as Kyrgyz products are often traded at a lower price than the products from Kazakhstan and Ukraine, some traders misrepresent where they are from.

Picture 5-5: a trader in Shymkent turning over Kyrgyz potatoes

Picture5-6: Kyrgyz potatoes
A distributor explained that the visible part is of good quality, however deteriorated or small potatoes and stones are sometimes mixed at the bottom.

(2) Russia

①Novosibirsk

There are three main food-distribution channels in Novosibirsk: hypermarkets, shops and bazaars. Hypermarkets are the same style as large supermarkets such as Costco or Aeon and they often located in complex commercial facilities. For example, Okey store, a Russian major food market, has some stores in Novosibirsk and they sell both domestic and imported products. They import from various areas such as CIS, Europe, Thailand and South America. The area of production is clearly presented. GOST is also attached on all processed products except for fresh vegetables and fish.

Also, some local makers operate a directly-operated store. Retail stores that sell dairy products and meat products are scattered in the city. GOST number is written on the products in these shops, and it seemed that the hygiene in the fridge case is well-managed.

Bazaars are where general people buy food. A representative is Central Market where wide range of goods, from fresh vegetables, dairy products, clothes and other household items, are sold.

As for dairy products and meat products basically, only GOST-managed products are sold here. On the boxes containing vegetables, fruits and dried fruits is written its area of production, but it is sometimes misrepresented. We spotted a product ordered that was taken from a different box.

Tomatoes are mainly imported from Uzbekistan. As there is no local product, it seems they rely on import. The common price was 100 ruble/kg. Good-shaped tomatoes were packaged separately and sold at the price of 120-140 ruble/kg.

Potatoes are imported from Uzbekistan and Ukraine. It is not possible to compare rightly as the bread of potatoes is not the same, but Ukraine potatoes were sold at 50 ruble/kg and Uzbek 20-40 ruble/kg. Bad-looking local potatoes were found, even a little amount, and their price was about 30 rubles. Dried fruits come from Tadzhikistan and Uzbekistan. Some dried grape was from Chile.

Considering the future possibility, as they rely on import food except for the summer season when local products come into circulation, Kyrgyz products will be accepted. Consumers consider Central-Asian products the same as domestic ones. It is a potential market for organic and chemical-free products as people are conscious about health and food safety and the sign of “chemical-free” and “non-GM” is found in supermarkets. They are also allergic to Chinese products. Meanwhile, Kyrgyz is not well-known as an agricultural producer. Since the Uzbek have been deeply involved in the distribution of vegetables and fruits, Uzbek products are prioritized. The lot size from Kyrgyz is small, thus, the distribution cost is high. Package design is not as good as that of Uzbekistan. As the standard management of GOST is thorough for dairy products, ham and sausages, it is essential to tackle with it. Consolidation of the system to obtain GOST before distribution is necessary. If branding of Kyrgyz as a safe agricultural producer succeeds, it will be a potential market. Especially winter to spring when the lack of agricultural products is common will be the best time to export.

Picture5-7: Hypermarket in Novosibirsk. Many imported items are sold.

Picture 5-8: Dairy products sold in Novosibirsk. All have GOST.

②Others

≪Moscow≫

At the Russian biggest food show (February 2013) in Moscow, we conducted an interview to a company handling Kyrgyz products. The Kyrgyz products they trade are dried fruits for compote and juice, and the main target markets are in Western Russia including Moscow and St. Petersburg. Although it has been only three years since they started to trade Kyrgyz products, sales figures have been boosted constantly. At the beginning, the natural-looking appearance of the products was a worry that could conjure up an image that Kyrgyz is a poor country and they might not be accepted in Russia. Now they publicize the naturalness of the Kyrgyz products. They specialize in the sales of Kyrgyz products.

As a possibility and problem for expansion of the distribution of Kyrgyz products in Russia, they indicated that it is needed to change the image of Kyrgyz as a poor country which the Russians have, the price is high considering the distribution cost and it is essential to make the quality stable. As for distribution, because the cargo from Kyrgyz to Russia is less than that from Russia to Kyrgyz, carriers are looking for the cargo from Kyrgyz. If the cargo can be assembled in Kyrgyz, distribution cost reduction will be enabled.

≪Omsk≫

It is an industrial city located at the border with Kazakhstan. It is expected to be a supply hub to the whole of Russia. The far north energy stronghold, military stronghold and distribution hub for food and agricultural products to disaster areas are set here by the Russian government. For this reason, if the permission from the government is obtained in Omsk, products are traded as Russian goods, which lead not only to the expansion of market but also to the increase of credibility. Agricultural products collected in Omsk are transported by rail, trucks and planes.

≪Ekaterinburg≫

A major urban area in the Ural region, the heavy industry, machine industry and war industry are prominent. In interviews in Kyrgyz, some people said that there are comparatively a large number of Kyrgyz emigrants in this city. This is because the industry or war industry workers migrated from Kyrgyz. The large number of Kyrgyz population will make this city a potential market of Kyrgyz products.

5-3 Development of distribution infrastructure

The rugged roads are a part of the cause for the deterioration of vegetables and fruits.

As for air cargo, since Bishkek airport functions as a logistic base of the US military, they have know-how for the facilities. The withdrawal of the US military is planned in 2014 and the entry of private distribution companies for the use of the site is expected.

①	▬▬▬	Bishkek～Naryn～Torugart～border area between China
②	▬▬▬	Bishkek～Almaty
③	▬▬▬	Osh～Sary-Tash～Irkeshtam～border area between China
④	■■■■■	border area of Tajikistan～Karamyk～Sary-Tash～Irkeshtam～border area between China
⑤	■■■■■	Bishkek～Osh～Andijon
⑥	·····	Bichkek～Chaldovar～border area between Kazakhstan
⑦	▬ ▬ ▬	Suusamyr～Talas～Taraz
⑧	▬ ▬ ▬ ▪	Osh～Isfana～border area between Tajikistan
⑨	▬ ▪ ▬ ▪	Balykcy～Colpon-Ata～Tup～Kegen～border area between Kazakhstan

Figure 5-3: International Distribution Network

6 Present Situation of Food Inspection and Certification System in Kyrgyz

6 Present Situation of Food Inspection and Certification System in Kyrgyz

6-1 Governmental bodies engaged in food inspection and certification

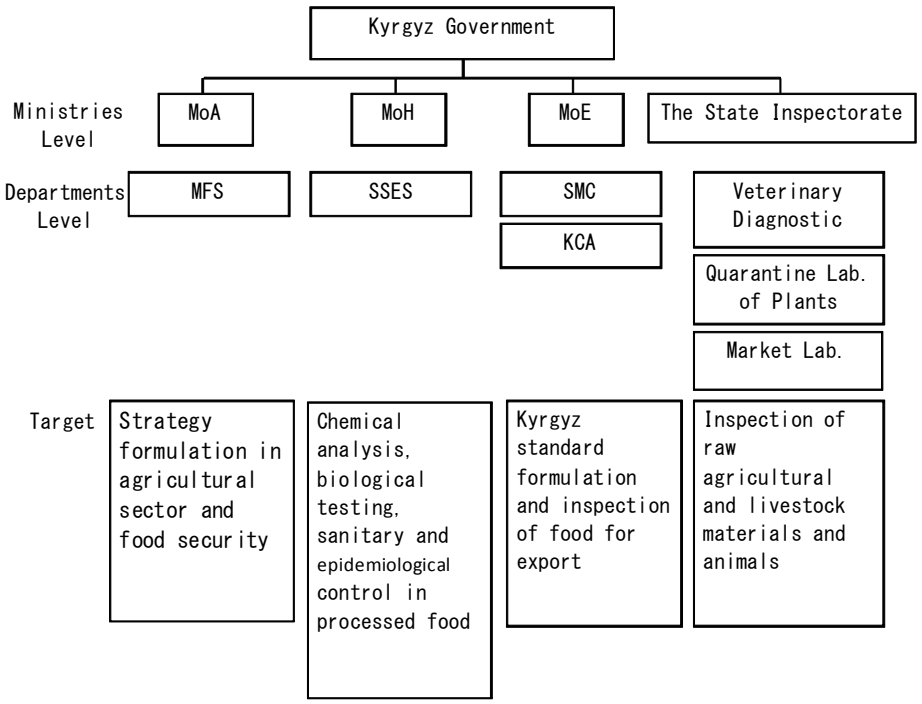


Figure 6-1: Governmental bodies engaged in food inspection and certification

Source: JICA Survey Team

(1) Ministry of Agriculture, Water Resources and Processing Industry (MoA)

The "Department of Management of Food Safety (MFS)" is handling "Food Security" in Kyrgyz. There is also a department of strategy formulation about veterinary and livestock industry. In April 2013, "Veterinary Diagnostic", "Quarantine Laboratory of Plants" and "Market Laboratory" were transferred to "the State Inspectorate of Veterinary and Phytosanitary" from MoA. But MoA still has a strong influence in laboratory management above, since MoA has decisive power, such as the budget of those laboratories, and equipment management.

(2) Ministry of Health (MoH)

Department of "State Sanitary and Epidemiological Surveillance (SSES)" conducts various inspections of processed foods, food factories, restaurants, etc. It's responsible just for the inspection of the health and safety of food. But they do not carry out inspection of the quality or standard. Mainly the department focuses on safety management of imported and domestic products.

Picture6- 1: SSES Lab. (Analyzers, Clean Bench, etc.)

(3) Ministry of Economy (MoE)

"Standardization and Metrology Center (SMC)" has "Testing and Certification Centre (TCC)" that is a laboratory for testing product quality and issues Kyrgyz Standard Certification from the test results. TCC certificate covers about 70% of domestic products. The certificate is not requested legally at export and import in Kyrgyz, but test results and certificates are requested by neighboring countries at exportation.

"Kyrgyz Center of Accreditation (KCA)" issues Kyrgyz laboratory accreditation that is suited to ISO17025. KCA is not recognized as an international accreditation body now. Therefore it cannot issue internationally recognized ISO17025 now. KCA is now an associate member of ILAC, and is undertaking reorganization for becoming an international accreditation body.

Picture 6-2: TTC Lab. (Autoclave, Drafting Chamber, etc.)

(4) State Inspectorate of Veterinary and Phytosanitary (SI)

This organization has "Veterinary Diagnostic", "Quarantine Laboratory of Plants" and "Market Laboratory" for testing vegetables, fruits and livestock in domestic and imported products. The laboratories inspect raw samples, and then veterinary and phytosanitary certificates can be issued from

the test results. The laboratories were under MoA until April 2013. MoA is still handling some of their procedures and budgets; moreover, MoE comes into any policy decisions of ministries and organizations only under the Kyrgyz government, such as SI. Therefore there is a deep conflict between them.

Picture 6-3: Veterinary Diagnostic Lab.
(Microplate Reader, Parasite Inspection Equipment, etc.)

Picture6- 4: Quarantine Lab. of Plants (Insect Sample)

Picture 6-5: Market Lab. in Issyk Kul (Simple Test Kits)

(5) Agribusiness Competitiveness Center (ABCC)

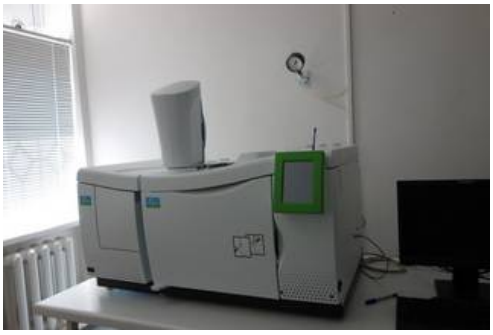
This government-controlled organization, Agribusiness Competitiveness Center (ABCC) was established by the project with another donor. The project has been finished, and their business volume tends to decline. The director shows interest in education and training in the food industry. He has experience in training about international certification and trainings for farmers. Therefore, ABCC may have the potential ability to work as an international certificate training body, the same as a university.

6-2 Private and educational organizations engaged with food inspection and certification

(1) Stewart Assay and Environmental Laboratories LLC (ALS)

This is the only private inspection agency in Kyrgyz, an international analysis company with labs in 55 countries worldwide. Their headquarters are in London. Analysis of water quality and geology for mining is a major business for them. They are preparing business expansion to food inspection. It has ISO17025(UKAS, England), Kyrgyz ISO17025(KCA) and ISO9001(BUREAU VERITAS). There are customers from over 19 countries in the world, such as Kyrgyz, Kazakhstan, Russia, Iran, Afghanistan, etc. The main customers in Kyrgyz are mining companies.

They can analyze ash, heavy metals, nitrogen compounds, etc. The laboratory has ICP/MS, GC/MS, atomic absorption spectrophotometer, ion chromatography equipment, etc. The World Bank (WB) reported that the company has the latest laboratory in mineral water inspection in Kyrgyz.[33] The laboratory already has some equipment rooms for food inspection, but hasn't yet installed microorganism testing equipment.




Picture 6-6: ALS Lab. (GC/MS, ICP/MS, etc.)

(2) Kyrgyz State Technical University (KSTU), Food Technologies Department

The professor who has received training on HACCP and ISO22000, provides introductory lectures to students. GIZ provided HACCP and ISO2000 workshop to the professors and students, and granted the training certificate to the attendants. In April 2013, GIZ provided analysis method workshop to the university staff and other chemists from neighboring countries, such as Kazakhstan and Uzbekistan.

This university has provided not only such training and workshop but also product quality improvement, stable supply improvement and new processed food development to the agriculture sector. Moreover, the Food Training Technology Center was established in this university as referred to hereinafter.

There are various analyzers and laboratory equipment provided by GIZ. Some old equipment which have been used since the former Soviet Union days are also there, and the conditions are still good with appropriate maintenance.


Picture 6-7: KSTU Lab.（Practical Room, Analysis Room）

[33] Legal and Technical Regulation for Export of Bottled Water, Final Report,2012

(3) Food Training Technology Center (FTTC)

This center is organized under KSTU. It was funded by 30% from Japan Social Development Fund (JSDF) and 70% from WB, and established in April 2013. In May 2013, the center is applying for a license to operate to the Ministry of Education. As soon as approved by the Government, the center is expected to start the operation. A detailed program and the fee was not yet decided at survey in April 2013; this center will provide practical training to students and food industrial technicians. Also FTTC focuses on international certificate (ISO22000 and/or HACCP) training program. The director said they would like to introduce more specialized classes in partnership with companies producing food additives, packaging materials, materials used in food factory.

There are small but practical manufacturing machines for cheese, dried noodle, baked goods, bread, and smoked meat products (sausage, ham and bacon) , and there are some analytical equipment for those products.

Picture 6-8: FTTC (Small Manufacturing machines)

(4) Kyrgyz Turkish Manas University (KTMU), Food Technical Department

This is the latest university established in 2007, and has a bachelor's, master's and doctor's program. This university is run on budget from the Turkish government. There are various analytical and practical equipment in good condition. But there are few machines for manufacturing practice.

They may focus on scholarly study rather than practical.

Picture 6-9: KTMU Lab. (Spectrophotometer, HPLC, PCR machine etc.)

6-3 Strategies for food inspection and certificate and Technical Regulations

The Kyrgyz government is using two state regulations, Kyrgyz Technical Regulation (KTR) and GOST which has been still used since the former Soviet Union days in Kyrgyz. KTR, which is based on GOST, contains manufacturing rules and inspection parameters, but it can cover only a few products. Hereafter KTR should be harmonized with Technical Regulation of the Customs Union (Hereinafter called TR-CU), when Kyrgyz becomes a member of the union.

TR-CU is gradually issued at this survey in 2013. Therefore some products are not covered with the TR-CU yet. The union prescribes that manufacturers or importers should take certificate of conformity according to the laws of importing country, until TR-CU is issued for the product.

There are three kinds of International Regulations in Russia: GOST of Russia (GOST-R), Russian TR, which is revised from GOST-R, and TR-CU, which will be applied in the Custom Union members. Moreover, there are other sanitary norms determined by the Russian MoH and National Head Physician of Russian Federation, called as "SanPiN". It is necessary to research those regulations, and KTR should be harmonized with TR-CU and/ or importing country regulation.

Because of an unreliable inspection and certification system, most Kyrgyz products are not allowed to be exported to neighboring countries and members of the Customs Union. Therefore it is necessary to harmonize KTR with TR-CU for export promotion as noted previously. The Customs Union requests quality and safety assurance for processed food to producer countries. HACCP and ISO2000 are recognized as the assurance tool by them. Therefore MoE is considering HACCP installation of a process control system in the Kyrgyz private sector. An Explanatory meeting of HACCP introduction was held by MoE in Bishkek, in May 2013.

Now very few companies understand process control system required in HACCP and ISO22000. Therefore primary hygiene management techniques should be provided to them gradually, such as sanitary control method, basic process control, necessary inspection, etc. Safety assurance system and transportation control of raw materials, such as GAP, traceability and cold chain system, should be considered in the next step.

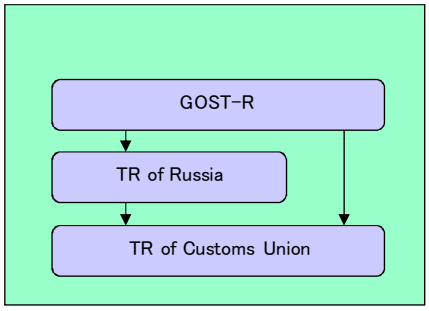


Figure 6-2: Set-up Flow of TR-CU

Source: Technical Regulation of the Customs Union

Table 6-1: Components and inspection items of bottled drinking water in KTR
<Components of KTR of bottled water>

Components of KTR of bottled water	Chapter1"General Provision" (Applicable scope, Basic concept etc.) Chapter2"Safety Requirements at production, storage, transportation, distribution and disposal" (Production safety assurance, Storage facility, Manufacturing equipments, Packing material, Label, Disposal method etc.) Chapter3"Conformity Assessment" Chapter4 "Disclosing Safety Information" Chapter5 "Responsibility" (Penal rules) Chapter6 "Transitional Provision"

<Inspection Items and supposed analytical equipment>

Water Quality (Hot spring components)	Free carbonic acid, Fe, As, Orthoboric acid, Metasilicic acid, Br, I, F, Organic substance, Rn (RN-222）, General mineral ion etc.	Titration equipment, ICP, HPLC etc.
Microorganisms	Aerobic plate count, Coli group, Heat resistance coli group, Pathogenic microbe (containing salmonella), Fecal chain coccus, Clostridiales (sporulating and nitrite-reducing anaerobes), Pseudomonad aeruginosa	Microbiology equipments (Clean bench, Autoclave, Dry-heat Sterilizer, Microscope) etc.
Parasites	Cryptosporidium oocyst, Giardia lamblia, Worm eggs	Microscope etc.
Virus	Rotavirus, Hepatitis A, Enterovirus, Polio	PCR,Cataphoresis equipments etc.
Chemicals (Heavy metals, Inorganic salts etc.)	Al, Ammonia, Ba, Be, B, Bromide, Fe, K, Ca, Cd, Co, Li, Mg, Mn, Cu, Mo, Na, As, Nitrate, Nitrite, Ni, Ozone, Hg, Pb, Se, Ag, Silicate, Strontium, Hydrosulfate, Sb, Phosphoric acid, Fluoride, Chloride, Cr, Free residual chlorine, Combined residual chlorine, Cyanogens, Zb, Caustic lime, Total hardness	ICP-AES or MS, Water-quality Analyzer, Heavy-metal Analyzer etc.
Organic substances (Residual pesticides, Halide etc.)	COD (permanganate), oil, Total organic carbon, Atrazine, Benzo [a] pyrene, Bromodichloromethane, Bromoform, Hexachlorobenzene, 2,4-DDT, Total DDT, Heptachlor, Dibromochloromethane, Bis (2-ethylhexyl) phthalate, Lindane, Anion surfactant, Simazine, Phenol, Formaldehyde, Chloroform, Carbon tetrachloride	COD meter, Oil content meter, TOC meter, HPLC or LC/MS, GC/MS etc.

Table 6-2: Components and inspection items of milk and dairy products in KTR

<Components of raw milk and dairy products KTR>

Components of milk and dairy products KTR	Chapter1 “General Provision” (Applicable scope, Concept, Objective and Definition etc.) Chapter2 “Requirements of Raw Milk and Dairy Product” (Feeding procedure, Milk constituent, Microorganisms, Chemical substances, Preparation method, Condition of Sterilization, Manufacture and Transportation, Safe control, Food additives and Flavors Chapter3 “Requirements at Manufacture” (Custodial area and Objective, Equipment and Packing that may touch products directly, Process control, Hygiene control and Facility cleaning) Chapter4 “Packing and Labeling” Chapter5 “Microorganisms used for product’s production” Chapter6 “Distribution and Utilization of Milk and Dairy Products” Chapter7 “Requirements to Manufacturer, Vendor and Other Worker” Chapter8 “Classification and Identification of Milk and Dairy Products” Chapter9 “Conformity Assessment” Chapter10 “Responsibility” Chapter11 “Final and Transitional Provision”

<Inspection Items and supposed analytical equipment>

Microorganisms	Mesophilic aerobes and Facultative anaerobe, Coli group, Pathogenic microbe (contain Salmonella), Staphylococcus aureus, Listeria, Mold and Yeast	Microbiology equipments (Clean bench, Autoclave, Dry-heat Sterilizer, Microscope) etc.
Organoleptic evaluation	Color, Visual, Viscosity, Taste, Flavor	
Harmful substances (heavy metals, mycotoxin, antibiotic, residual pesticides)	Pb, As, Cd, Hg, Aflatoxin M1, Chloramphenicol, Tetracycline, Streptmycin, Penicillin, HCH, DDT	Titration equipment, ICP-AES or MS, HPLC or LC/MS, GC/MS etc.
Radiogen	Cs-137, Sr-90	Radiation Counter
Others	Dioxin, melamine, Somatic cell count	GC, microscope etc.

Source: Kyrgyz Technical Regulation (Unofficial translation)

The Customs Union member countries such as Russia and Kazakhstan, and their neighboring countries request the import products to comply with TR-CU. It is necessary to meet the inspection requirements in TR-CU for export to the union members. But existing laboratories in Kyrgyz cannot conduct the analysis to fit the requirements, because of a lack of equipment, method and analyst's skill. Therefore, manufacturer and exporter should send samples for analysis in advance to importing countries, such as Russia and Kazakhstan. Then the importing countries' government may check quality of the product by the analysis result. Laboratory conditions, analysis methods and certification systems should be improved immediately. It is emphasized from Kyrgyz government the necessity for improving laboratories.

The Kyrgyz government is updating KTR, and its volume is a formidable amount. Therefore, only a brief summary is tentatively mentioned above. Some laboratories already have equipment required for analysis. Unfortunately, most other laboratories do not have them or have poor performance with old ones only. However it is recommended to check necessary equipment, training, methods and current problems in laboratories through further detailed survey.

6-4 Type of Certificates and their Role

The type of certifications and typical laboratories are shown in table 6-3. Table 6-4 shows organizations that should take the certificates. Producers, manufacturers and distributors should take veterinary and/or phytosanitary certificates. Kyrgyz standard ensures only product's quality from product inspections, but does not secure the manufacturing process.

Table 6-3: Type of Certificates and Typical Laboratories

Type of Certificate	Object	Typical Laboratories	Bodies
Veterinary Certificate	Livestock / Raw livestock materials	Veterinary Diagnostic Lab / Veterinary Lab in each region	SI
Phytosanitary Certificate	Raw agricultural products	Quarantine Lab of Plants	SI
Sanitary and Epidemiological Certificate	Processed foods / Food factories / Restaurants / Markets etc.	State Sanitary and Epidemiological Surveillance Lab. / Sanitary Lab. in each region	SESS
Kyrgyz Standard Certificate	Quality assurance of processed food	Standardization and Metrology Centre	SMC
Kyrgyz ISO17025 Accreditation	Quality assurance of analytical laboratory (Not International Certificate)	Kyrgyz Center of Accreditation	KCA

Source: JICA Survey Team

Table 6-4: Bodies which should take the certificates

Type of Certificate	Bodies which should take the certificates
Veterinary Certificate	Dairy farmer / Slaughterhouse / Milk collector / Transporter / Retailer / Exporter *Food company should take a photocopy from them.
Phytosanitary Certificate	Transporter/ Exporter of agricultural products
Sanitary and Epidemiological Certificate	Restaurant / Market / Food factory
Kyrgyz Standard Certificate	Food company *It ensures quality from products inspection.
Kyrgyz ISO17025 Accreditation	Laboratory organization

Source: JICA Survey Team

6-5 Analysis of specific issues concerning food inspection and certificate

(Issues concerning food inspection and certificate)

Figure 6-3 shows process flow and main issues concerning current food inspection and certification in Kyrgyz. In inspection stage, "Inadequate Service" is the main problem. The problem occurs due to "Old Equipment & Facility", "Lack of Lab Chemist's Skill", "Laboratories that are not recognized internationally", "Lack of Producer's Knowledge" and "Producer's Dishonest Action".

In judgment and certification stage, "Cumbersome Procedure" and "Unaccepted Certifications by Importing Countries" are main problems. They occur by "Vertically Divided Administration", "Unclear Procedures", "Corruption", "Lack of Producer's Knowledge", "Inadequate Certification", "Producer's Dishonest Action" etc.

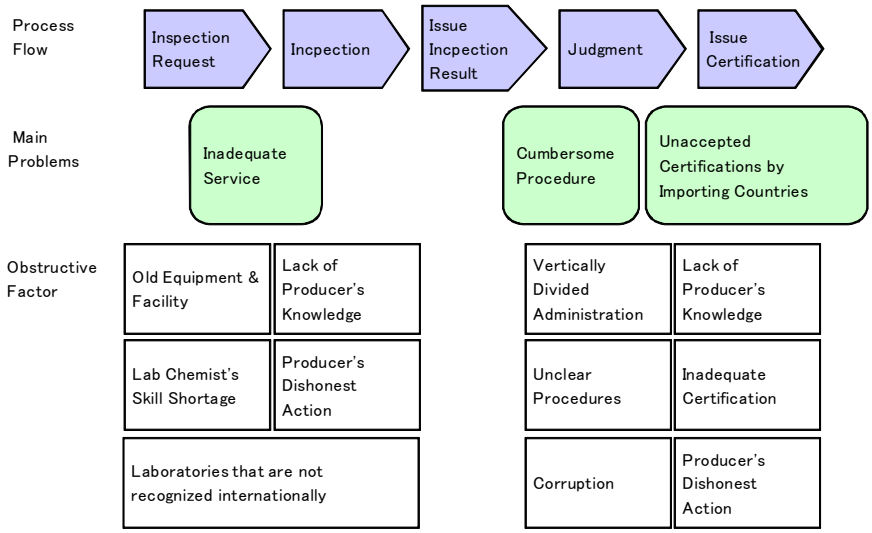


Figure 6-3: Process Flow and Main Issues

Souce: JICA Survey Team

6-6 Current Supports from Other Donors

Some donors are supporting the resolution of these issues concerning food inspection and certificate. Supporting programs are summarized as in the following table in May 2013.

Table 6-5: Current Support in May 2013

	Food Inspection	Kyrgyz Standard	Installation of HACCP and ISO
FAO	No Support	No Support	No Support
GIZ	1)Equipment Provision to KSTU 2)Analysis Workshop	Training for Reduction of Non Tariff Technical Barriers	HACCP Seminar for Private Companies, Governmental Bodies and Universities
WB	1)Equipment Provision to SESS 2)Loan to FTTC	Financial Assistance to Inspection and Certification Bodies (Plan in 2013)	Install Quality Control System to Private Companies (Plan in 2013)

Source: JICA Survey Team and Report by Kyrgyz MoE

KSTU : Kyrgyz State Technical University,
FTTC : Food Training Technical Center,
SESS: the State Sanitary and Epidemiological Surveillance under MoH

(1) Food and Agriculture Organization (FAO)

FAO has not supported food inspection and certification sector, as of May 2013.

(2) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

GIZ provided laboratory equipment to KSTU and conducted international certificate training. Moreover GIZ conducted analysis workshop that was attended by chemists from Kyrgyz and its neighboring countries in April 2013.

The HACCP training session for companies and governmental bodies were in the classroom only. GIZ did not include practical and an actual cases in Kyrgyz.

(3) World Bank (WB)

World Bank is undertaking Industrial Enhancement Project for 6 main sectors with the International Trade Centre. (1.Tourism, 2.Vegetables and Fruits, 3.Raw Meat and Meat Products, 4.Fruit Products, 5.Texile, 6.Bottled Water) They provided loans to KSTU for establishing FTTC and provided laboratory equipment to SESS. The Kyrgyz government announced that WB is planning to provide support to food inspection and certification bodies, and support establishment of control system in companies which are interested in HACCP.

It is recognized that there has been no support for the Standardization and Metrology Centre and their laboratory as equipment and training provision as of May 2013. It is necessary to improve Kyrgyz Standard and laboratory capacity building engaged in the food industry for export promotion.

6-7 Statistics on Health Hazard in Kyrgyz

Table 6-6: Kinds of Medical Data and Related Bodies

Body	Data
MoH	Number of Residents, Birth Rate, Death Rate, Population Growth Rate, Average Life Expectancy, First Pathogenesis Rate, Acute Hepatitis, Brucellosis, Tuberculosis, Viral Hepatitis, Lues, Dose, Cancer, HIV, Alcohol Abuse, Drug Dependence, Number of Health Personnel (in each Region and per 10,000 people) and Medical Agency, etc.
World Health Organization (WHO)	Per capita total expenditure on health, Tuberculosis, HIV, Metabolic risk factors, mortality and burden of disease, Behavioral risk factors (Adult risk factors), Distribution of causes of deaths in children under 5, Under 5 mortality rate, DTP immunization among 1 years old, children aged under 5 stunted, General Information (Total population, Population living in urban area, GNI, Total fertility rate), etc.

Source: Website

Kyrgyz MoH URL：http://www.med.kg/
WHO Kyrgyz Information URL：http://www.who.int/countries/kgz/en/

MoH and WHO have health and medical data, but there is no specialized data for food poisoning or accidents.

6-8 Countermeasures for Improving Kyrgyz Food Inspection and Certificate System

(1) SWOT Analysis for Kyrgyz Food Inspection and Certification System

Kyrgyz neighboring countries, such as Russia and Kazakhstan, are increasing import volume to satisfy their domestic demand, while food productivity has increased in Kyrgyz. From donor's support, some laboratories got modern laboratory equipment, and introduced new method toward more inspection accuracy in Kyrgyz. The Kyrgyz government says that some laboratories cross check their measured result consistency with each other. However, most laboratories use old equipment and methods that are not acceptable internationally. Therefore, Kyrgyz cannot comply with quality and safety assurance requirements from importing countries and those are obstacles to exporting agricultural products.

Table 6-7: SWOT Analysis in Food Inspection and Certificate

Food inspection and certification for export promotion and competitiveness enforcement			External Factor (Environmental)	
			Opportunities (O)	Threats (T)
			・Neighboring countries need imports for domestic demand. ・Chance to join the Customs Union	・Cannot sufficiently comply with the requirements from the export destination ・Competition in the domestic market with imported goods
Internal Factor	Strengths (S)	・Important as a policy ・Tend to increasing productivity ・Some laboratories have modern equipment	Improvement of existing laboratories **⇒Improve chemist's skill and install quality management system**	Certification conforming with regulation of importing countries **⇒Improving certification system for conforming with TR of importing countries**
	Weakness (W)	・Most labs are not internationally recognized ・Old facilities and equipments ・Lack of chemist's skill	Necessary to take more reliable analysis data **⇒Improve lab reliability and take ISO17025**	Necessary certification conforming with international standard level **⇒Install international standards, such as HACCP**

Source: JICA Survey Team

Based on the SWOT analysis result, gradual strategies for solving those problems are considered.

・<u>Short-term Strategy</u> : Improving the reliability of labs through capacity building and the introduction of quality management.

Donors have provided equipment and international standard training for improvement in food inspection and certificates. However the laboratories and certification bodies have not used them efficiently and not established reliability from importing countries. Therefore, it is necessary to establish a reliability system through capacity building and the introduction of a quality system. It is necessary to research analysis requirements from the importing countries, provide necessary equipment and develop human resources for improved reliability.

・<u>Middle-term Strategy</u> : Improving certification system harmonized with regulation of neighboring countries (TR-CU).

The second step is to increase export items and amount for export promotion to members of the Customs Union. In order to satisfy the demand of the regulation, it is necessary to support system improvement, such as sanitary standard compliance, quality and a safety assurance management system, through governmental and/or private bodies.

・<u>Long-term Strategy</u> : Improvement of Certification System to comply with International Standards.

In the third step, trading target with Kyrgyz will be widened from neighboring countries to the world. For this purpose, some international standards and more advanced manufacturing systems are required for international trade.

(2) Improvement of laboratory reliability

Donors have provided equipment provision and operation training to some laboratories for improvement of laboratory reliability. But the laboratories are lacking in applied technology, maintenance training, test method validation, accuracy control (such as proficiency test) and record maintenance. It is necessary to efficiently use laboratory facilities and equipment, human resources for

improvement of laboratory reliability. The overall goal is installation of ISO17025 for the laboratories.

(3) Establishment of Certification System for export promotion

<Harmonization with TR-CU>

There are the most demands from neighbor trading countries and the Customs Union for food quality and safety in TR-CU. Therefore it is important to understand TR-CU clearly. The union is still undertaking issuance and revision of TR-CU as of 2013. At the beginning, it is necessary to clear demands in TR-CU for the certification criteria, and then design the term of reference. Although KTR is based on GOST-R, Russian TR and TR-CU, the government, mainly MoE, should collect detailed information about them from Russian Standard Division or the Customs Union.

<Establishment of Certification Standard>

Prioritization is important in this process to concentrate on target products, inspection items and manufacturing process management for establishing certification standard.

<Training for Each Stage in Supply Chain>

Hygiene training should be done for each stage in the supply chain. For safety assurance, it is necessary to manage it from raw materials and process to distribution and consumption.

< Supporting System for Guidance and Supervision for Certification>

Hygiene management trainer and supervisor for management are a supporting system, and so food companies will support manufacturing target products and food safety in the product supply chain, install training and management system for certification.

(4) Improvement of Certification System

In order to improve the certification system, KCA should become an international accreditation body. And some certification bodies and training bodies should be accredited by KCA. In that case, it is necessary that five improvements should be done as in figure 6-4. (“Harmonize with TR-CU”, “Develop certification criteria and specify functions of each organization”, “Improve certification system”, “Develop international certificate expert (such as HACCP and/or ISO22000 inspector)”, “Train quality and safety food management system to food company”) The training body is not necessarily the only one. Some bodies can become the training body, such as universities and ABCC.

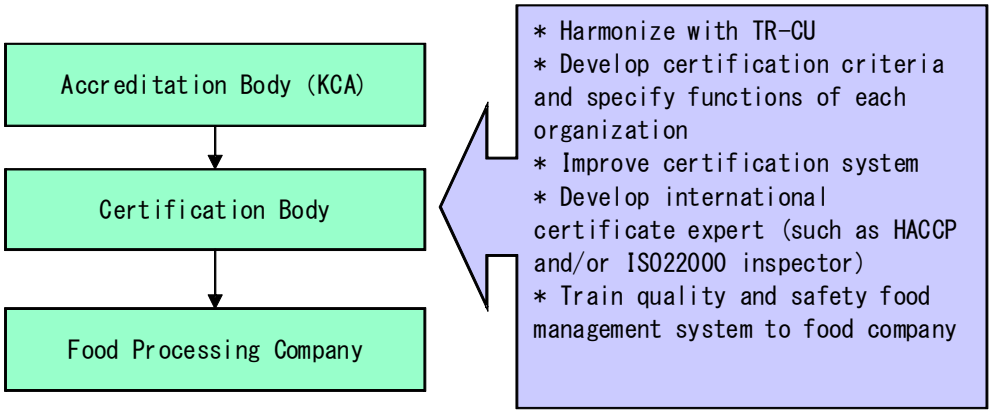


Figure 6-4: Improvement procedure of Certification System

Source: JICA Survey Team