

Kyrgyz Republic

Kyrgyz Republic

Data Collection Survey on Dairy Industry

Final Report

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Abbreviation List

Abbreviation	Formal Name
AES	Atomic Emission Spectrometry
AKF	Aga Khan Foundation
DDT	Dichloro Diphenyl Trichloroethane
FAO	Food and Agriculture Organization of the United Nations
GC	Gas Chromatography
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HACCP	Hazard Analysis and Critical Control Point
HCH	Hexachloro Cyclo Hexane
HPLC	High Performance Liquid Chromatography
HV	Helvetas
ICP	Inductively Coupled Plasma
ILAC	ILAC: International Laboratory Accreditation Cooperation
ISO	International Organization for Standardization
ITC	International Trade Centre
KCA	Kyrgyz Centre of Accreditation
MFS	Management of Food Safety
MS	Mas Spectrum
SESS	State Sanitary Epidemiological Surveillance
SI	State Inspectorate of Veterinary and Phytosanitary
SMC	Standardization and Metrology Center
TR-K	Technical Regulation of Kyrgyz
TTC	Testing and Certification Centre
USAID	United States Agency for International Development
VD	Veterinary Diagnostic
WB	World Bank

1 Implementation Methods of Research Operation

1 Implementation Methods of Research Operation

1.1 Basic policy of operation

Background of operation

(1) Outline of the agricultural sector in Kyrgyzstan

Agriculture constitutes a large part of the Kyrgyz economy. The percentage the agricultural sector accounts for of gross domestic product is 22.1% in 2011 and about 14% (213 million dollar) of the whole export. 66% of the Kyrgyz population live in rural areas and half the labor populations are engaged in agriculture. Agriculture plays an important role for sustainable economic development in Kyrgyzstan. However, the income of farmers remains low being only 30 to 50% of that of other sectors. Most of them live under the poverty line and reduction of poverty has been a big issue in rural areas.

Livestock raising accounts for as much as 47.6% of the agricultural sector in Kyrgyzstan and dairy husbandry comes second only to meat production constituting 14.1%. Also, 90% of the commercial milk production is concentrated in Bishkek city in Chuy state due to the issues related to the lack of cold chain and distribution.

The export of milk products to Kazakhstan, one of the marketing target areas for Kyrgyzstan, was stopped for the reason of zoonosis. Though, two out of 11 major companies are allowed to export products to Custom Union countries presently as a result of acceptance of the inspection by the union in December, 2012. The inspection was conducted in July, 2013 again and five more companies gave permission. However, the export destination is limited to the southern Kazakh area and they are not allowed to be exported to other Customs Union areas such as other areas in Kazakhstan or Russia.

(2) Recognition of issues in Kyrgyzstan

“Agricultural Development Plan until 2020” (The Ministry of Agriculture and Land Reclamation) is currently under discussion in Kyrgyzstan. The goals are to fulfill the demand of nationals, secure the agricultural economy and the food safety, increase production, develop qualities and establish effective agricultural management. By achieving the goals, export competitiveness is improved and the increase of incomes of producers is expected. The outline of dairy industry in this strategy is as follows:

- The total output by livestock raising is 52,874.9 million som (about 1,090 million dollar). * converted at 48.5 som to a dollar
- Between 2005 and 2010, the actual production output of meat was increased by 3%, raw milk 15%, egg more than 18% and wool 3% respectively.
- The total number of livestock(excluding pigs) in all the farms in 2010 reached the highest standard in the past 15 years.

Table 1-1 The current situation and issues in Kyrgyz dairy industry

No.	Point	Current Situation	Issues
1	Productivity	<ul style="list-style-type: none"> • The average production per milking cow is 2,036kg and wool is 2.6kg in 2010. It has been decreasing since 2005. • The regional difference of productivity is prominent. 	<ul style="list-style-type: none"> • Breeding by grazing is common. Compared to indoor breeding, it is not efficient as it has the limitation in the number of animals. • There is no certification system matching the international standard and no modern meat production company (necessary for international export).
2	Stored Feed	<ul style="list-style-type: none"> • 49% of the total feed of 4,069 ton has deteriorated. The improvement of stored feed efficiency necessary. • Deterioration of productivity and decrease of pasture areas due to the climate change. 	<ul style="list-style-type: none"> • Improvement of rights and interests related to pasture use. • Lack of funds to transport livestock to remote pasture lands • Large funds necessary for improvement of infrastructure of pasture lands • Lack of pasture use management techniques
3	Veterinary Medicine	<ul style="list-style-type: none"> • Epidemic of livestock was prevalent and 10,000 domestic animals were infected in 2010. Thus, some countries have banned to import meat from Kyrgyzstan. 	<ul style="list-style-type: none"> • The standard of veterinary medicine is not sufficient. • The effort by the national agencies is not enough. • Farmers lack knowledge, economic power and sense of responsibility. • Laws related to veterinary medicine are not sufficiently developed.
4	Breeding	<ul style="list-style-type: none"> • The rate of pure breed pedigree fell from 99% to 10% in 2010 (1.1% of the whole of domestic animals). • The pedigrees of better breed of wool, ingredient for textile products, have been lost and now they constitute less than 5 to 7%. • 180 artificial of insemination have succeeded. Genetic enhancement program is running partly. 	<ul style="list-style-type: none"> • The better breed or products of high quality cannot be proposed at production fields. • Producers lack land, feed and funds chronically. • The standard of machines and facilities for production management and feed work is not updated.

(3) Policy of the Japanese Government

In the foreign ministerial conference between Japan and Kyrgyzstan 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. Kyrgyzstan 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 Kyrgyzstan engage in and is 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. In JICA Analytical Work, it is designed to focus on “agriculture and business promotion” for the development of the export industry and “upgrading of transportation infrastructure” aiming for the economic growth by business promotion and ending poverty.

(4) Purposes of this Research

According to those background, we are settled the purpose of the research and target areas and items as bellow.

Table1-2 Purposes, Target Areas and Target Items of this Research

Item	Content
Purposes	<ul style="list-style-type: none"> • Analysis of the current situation and issues of the dairy sector in Kyrgyzstan and organization of the basic information • Classification of the priority order of the issues in the dairy field and analysis of needs by people concerned with the solution • Proposal of securement of human resource to cooperate and possibility of procurement of resources based on the comparative advantage of Japan
Target areas	Bishkek, Chuy Province ※Almost 100% of the milk products are produced. Concentrated in large-scale factories.
Target items	Dairy products (mainly raw milk and processed milk)

(5) Composition of this report

This research is to collect local information on “Kyrgyz Republic Data Collection Survey on Dairy Industry Inception Report” and verify the actual situation and report the results based on the purposes above.

The contents are divided into the following five parts. In Chapter 1, the purposes of this report and the general conditions of the area are explained, and the current situation and problems at the production stage of dairy products in Chapter 2. Marshaled in Chapter 3 to 6 are the conditions of the related fields such as livestock production and management environment and then the inspection, certification, market trend and management situation relating to distribution are reported in Chapter 7 to 9. Based on these, the proposal for problem resolution is made in Chapter 10.

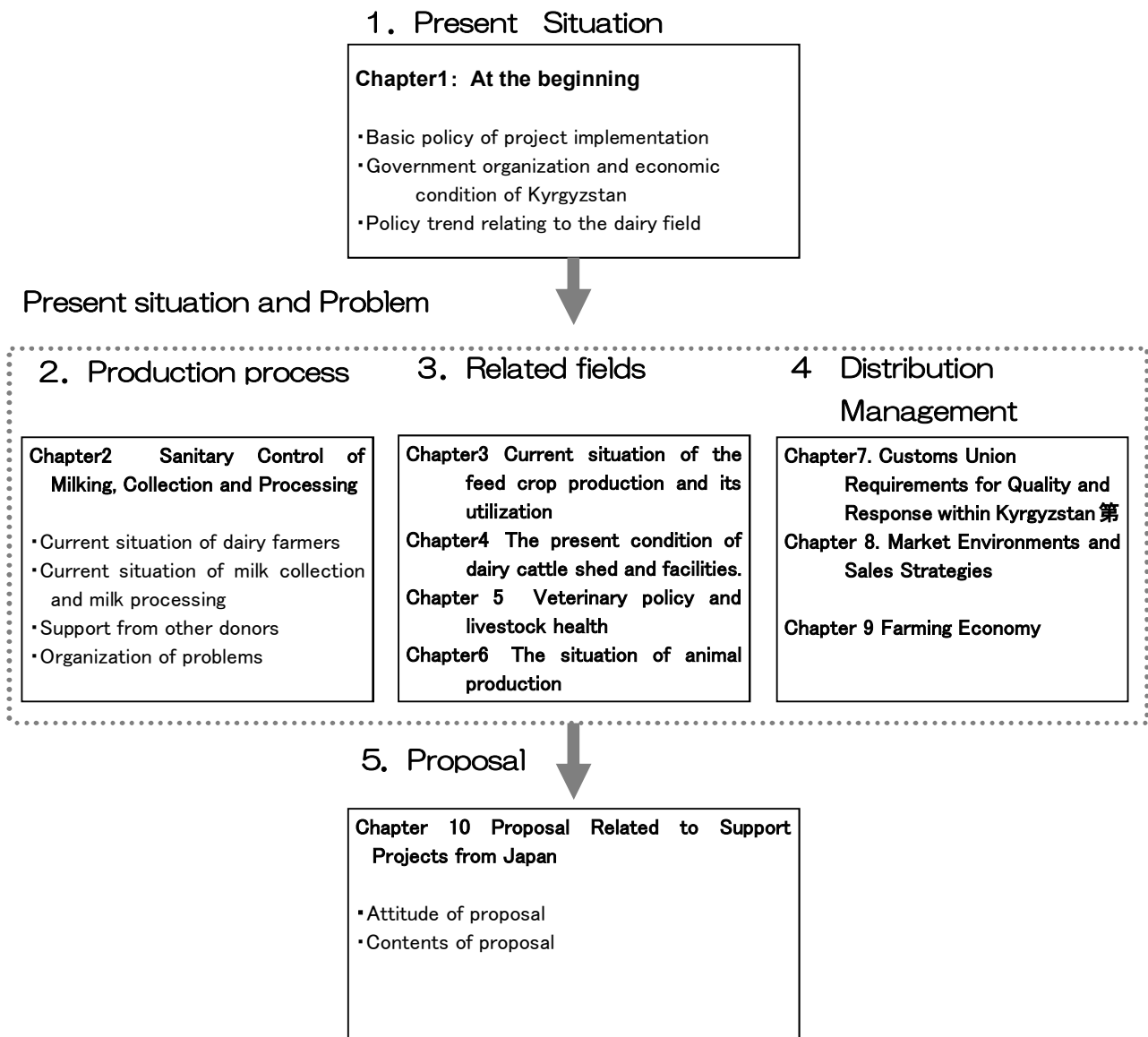


Figure1-1 Composition of this report

1.2 Governmental organizations of Kyrgyzstan and economic situation

(1) Governmental organizations of Kyrgyzstan

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

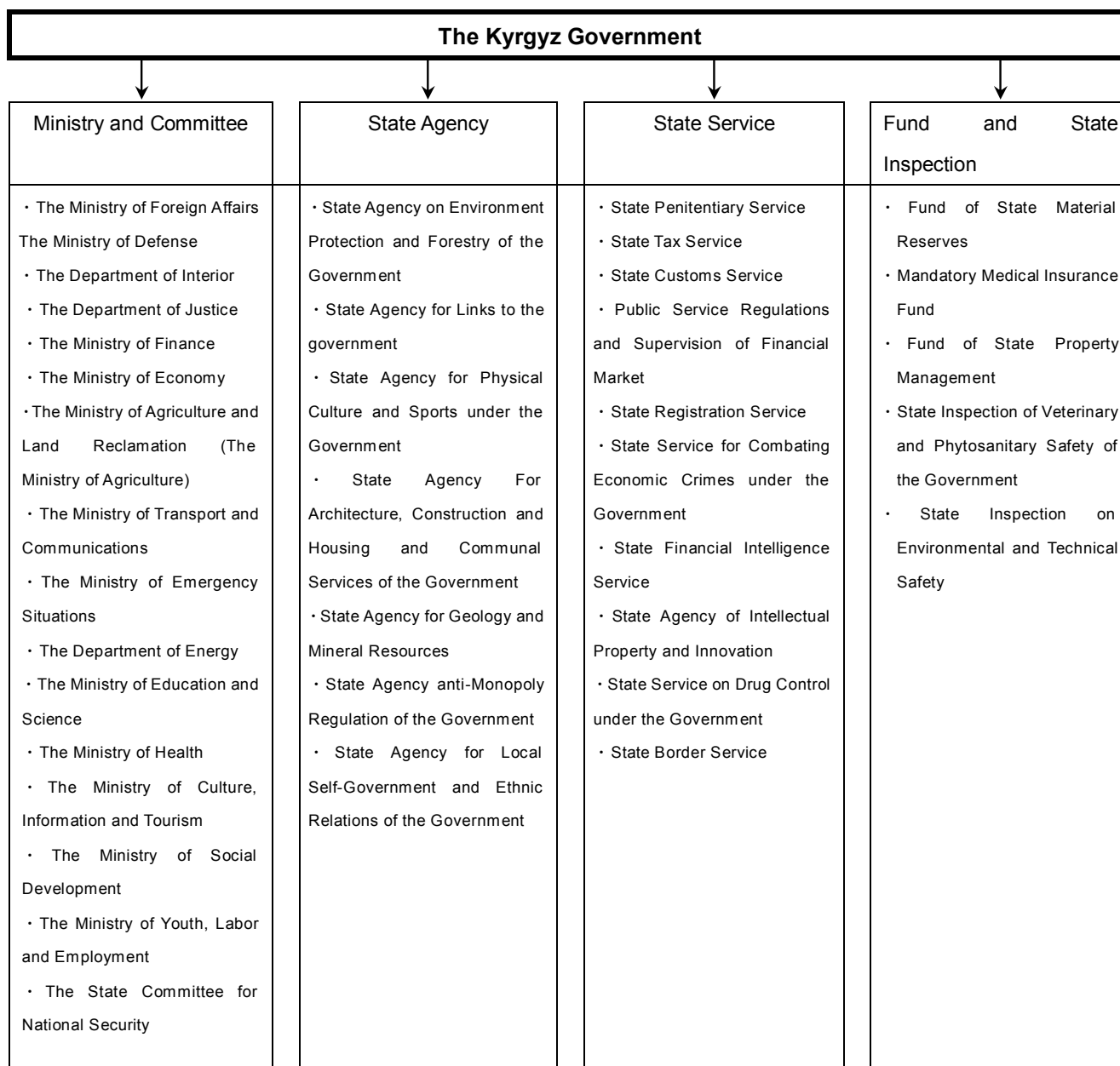


Figure 1-2 The government organization of Kyrgyzstan

Source : WEB site of October 25, 2013

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. State veterinary agency and national center for veterinary diagnosis are not a subsidiary of the Ministry of Agriculture anymore.

Table 1-3 Subordinate organizations of the Ministry of Agriculture of Kyrgyz

Agency	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 Medicine 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>

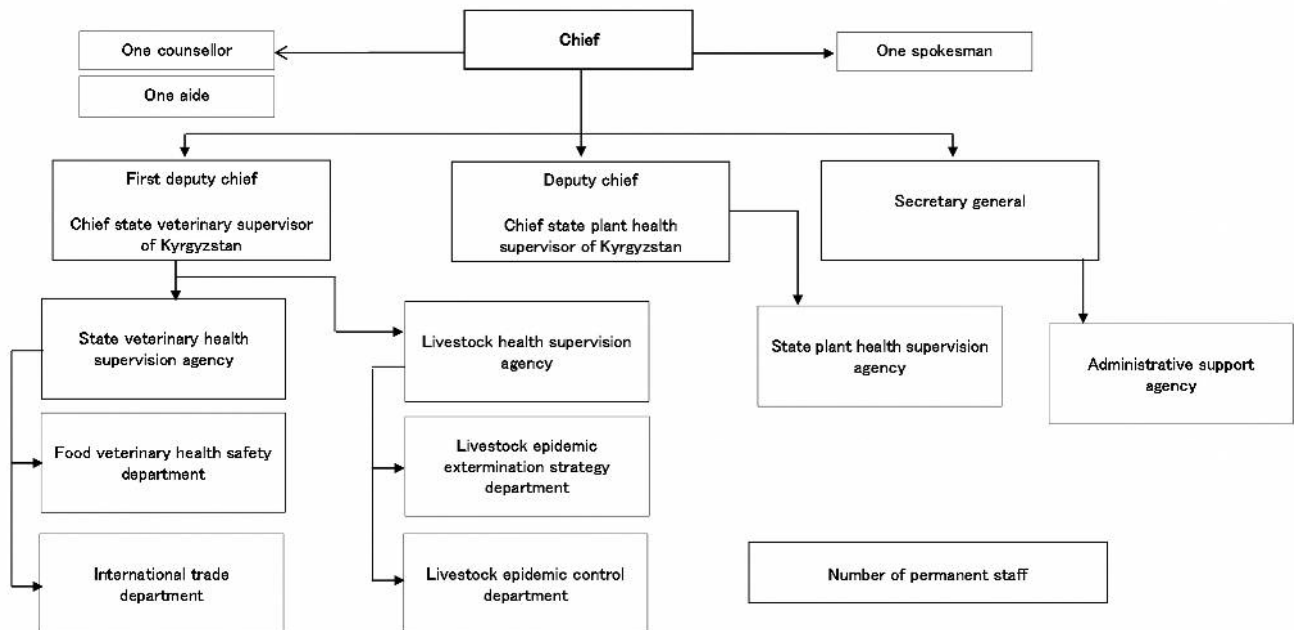


Figure 1-3 Organization chart of veterinary and plant quarantine supervision agency

(2) Outline of economy of Kyrgyzstan

The main social and economic Index of Kyrgyzstan is shown as bellow.

Table 1-4 Main Social and 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 agricultural, 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 1-5 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 1-5 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

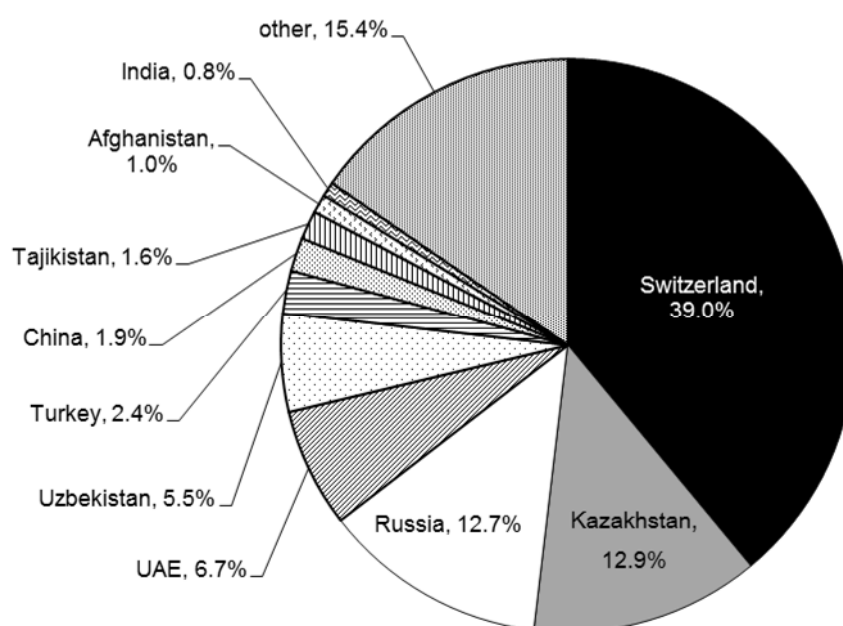
In Table 1-6, it is notable that the trade value with CIS fell below that with non-CIS countries for the first time after 2007. The main trade partners other than CIS are Switzerland and UAE, and mineral resource is traded.

Table 1-6 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%	vegetables (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

Figure 1-4: Export counterpart of Kyrgyz 2011



Source: Produced from “National Statistical Committee”

1.3 Policy trend relating to dairy field

(1) Current condition of dairy field

In this section, the current condition relating to the number of milk cow and production volume of raw milk in Kyrgyzstan and Chuy state based on various statistic data is verified.

(2) Policy trend relating to agricultural field

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 the 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.

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 1-7 “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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

Table1-8 Agricultural Sector Investment Projects (2013-2017)

☒※Parts directly related to dairy husbandry is enclosed with a thick-frame : USD mil.

No.	Project name	Total estimated cost	Implementation time frames
1	Construction of a mineral fertilizer plan	2.0	2014-2015
2	Establishment of 14 seed farms	7.4	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	2013
4	Creation of a complex of modern laboratories that meet international standards of quality certification	1.6	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	2013-2017
6	Procurement of equipment for points of bovine artificial insemination (300 sets)	0.50	2013
7	Funding for financial leasing of agricultural equipment - 225 units of equipment	5.00	2013
8	Funding for financial leasing of agricultural equipment	20.00	2013-2014
9	Procurement of construction equipment Department of Water Resources and Land Reclamation of the Ministry of Agriculture	10.00	2013
10	Completion of the irrigation facility (Burgandy range, array Kadamjay Raion, Batken Oblast) and acquisition of 3498 hectares of new irrigated land	8.3	2013-2015
11	Construction of the Kara Bulun Channel in the Jety Oguz Raion	4.2	2013-2014
No.	Project name	Total estimated cost	Implementation time frames
12	Irrigation of lands using wastewater in the Cholpon Ata City.	1.7	2013-2014
13	Rehabilitation of the principal water intake facility on the Ak Sai River, Ak Tala Raion (commissioning of 500 ha)	1.7	2013
14	Construction of the Karakyshtak-Boz Channel in the Kadamjay Raion (yield of 270 ha)	8.1	2013-2015
15	Reconstruction of the Sarymsak Channel in the Kara Buura Raion of the Talas Oblast (yield of 1000 ha)	9.4	2013-2015
16	Construction of a daily run-off pond on the Shamsy River of the Chui Raion of the Chui Oblast	4.2	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	2013-2014
18	Construction of the "P-4кв" channel and expansion of the existing "P-4" channel in the Batken Raion.	5.2	2013-2014
19	Reconstruction of the Ak Olen Channel in the Ton Raion	8.4	2013-2016
20	Construction of the Bakhty-Nogoi Channel in the Kara Bura Raion	2.5	2013-2014
21	Reconstruction of the Kara Tuma daily run-off pond and construction of internal network in the Panfilov Raion	5.2	2013-2014
22	Irrigation of lands, Bashkugandy, Jungal Raion	0.7	2013
23	Design of irrigation development plans	2.2	2013-2017
24	Melioration improvement of irrigated land	11.0	2013-2017
	Total	141.35	

Moreover, “Agricultural Development Plan until 2020” has been developed 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 1-9 Development strategy of Kyrgyz agriculture and industry 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) Δ 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

(3) Current Situation of Dairy Farm in Object Area

i. Milk Production in Kyrgyz

According to data for the past few years, the number of cow demonstrates an upward trend. The Number of cattle including calves follow a similar pattern, excluding Narin Province. (Figure 1-5 and 1-6) Especially Jalal-Abad, Osh and Chuy Provinces are leading producers of dairy cattle in Kyrgyz.

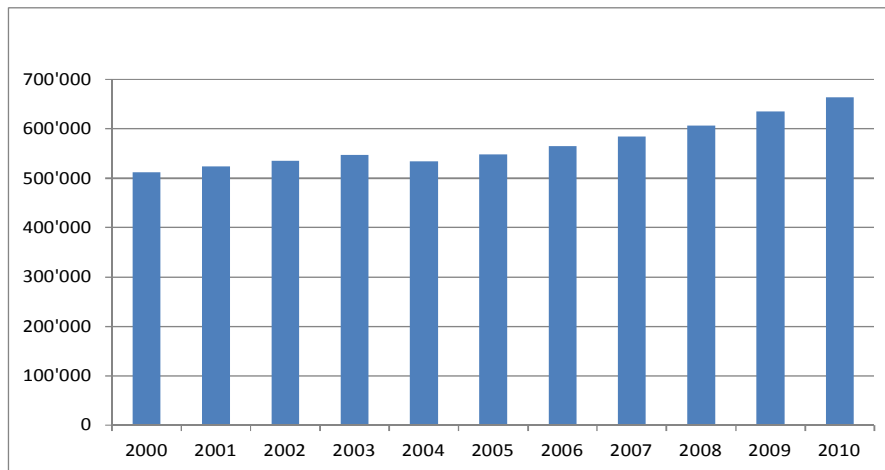


Figure 1-5 Cow Numbers (2000-2010)

(Source: FAO)

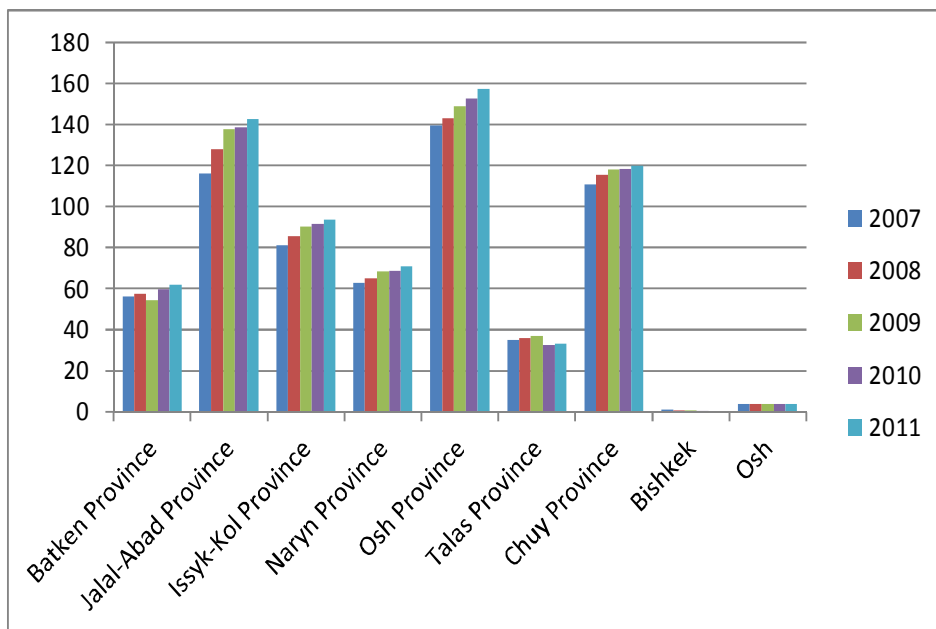


Figure 1-6 Number of Cattle by Province

(Source: National Statistical Committee Statistics)

Total production of milk is also in an upward trend. Excluding Talas province, the production in all provinces is increasing. There is an especially high production volume in Jalal-Abad, Osh and Chuy Provinces. (Figure 1-7)

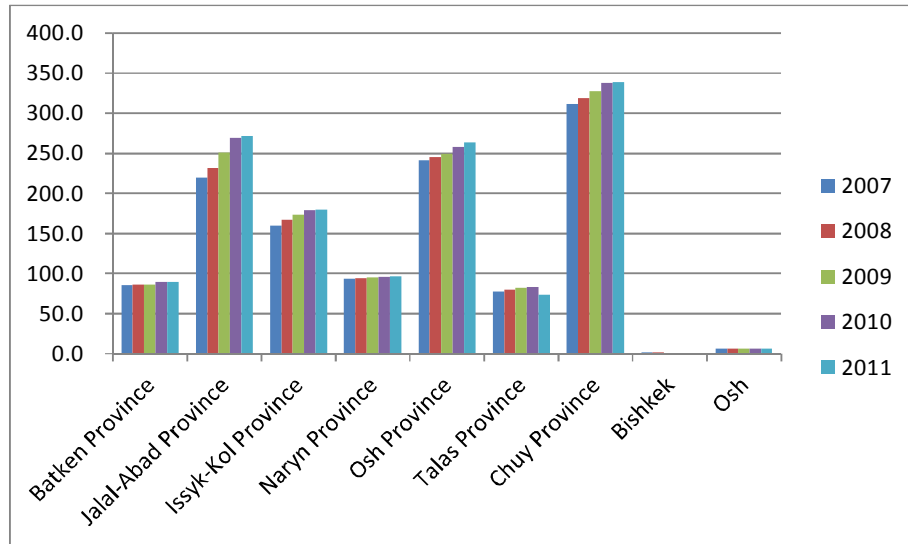


Figure 1-7 Milk Production by Province
(Source: National Statistical Committee Statistics)

Figure 1-8 shows current milk production for the first quarter by province in 2012 and 2013. The production is higher than last year.

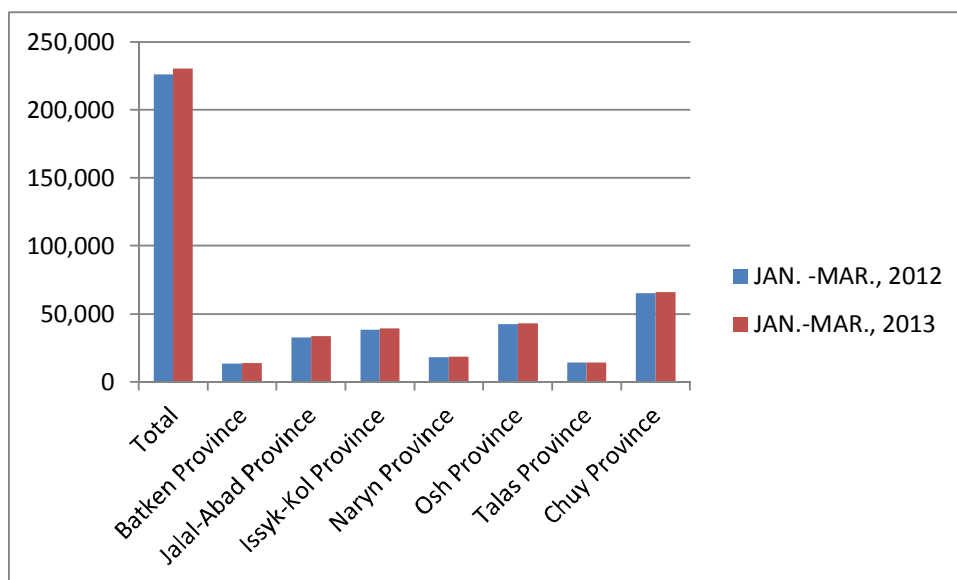


Figure 1-8 Milk Production in First Quarter by Province
(Source: National Statistical Committee Statistics)

ii. Characteristics of Raw Milk Production

The number of dairy cattle and milk production has increased. But milk production increase comes from increasing the number of dairy cattle. Contrastingly, milk production per cow is decreasing (Figure 1-9).

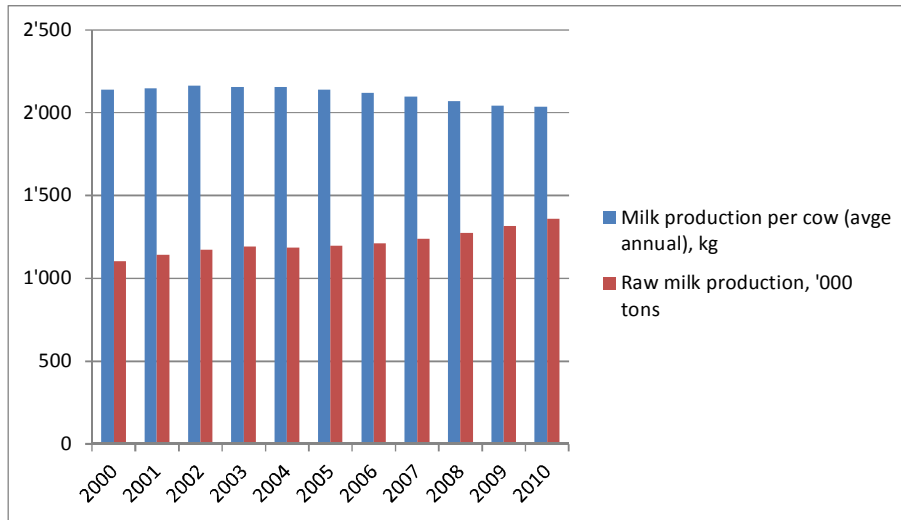


Figure 1-9 Milk Production and Production per Cow (2000~2010)

(Source: FAO)

iii. Raw Milk Production

Chuy Province is the biggest location for milk production in Kyrgyz. Their production is the highest, and still increasing. Chuy has 8 districts, most of them are dairy regions. Figure 1-9 shows milk production for the first quarter in 2012 and 2013. Sokuluk and Ysyk-Ata districts have one of the highest productivities in the province.

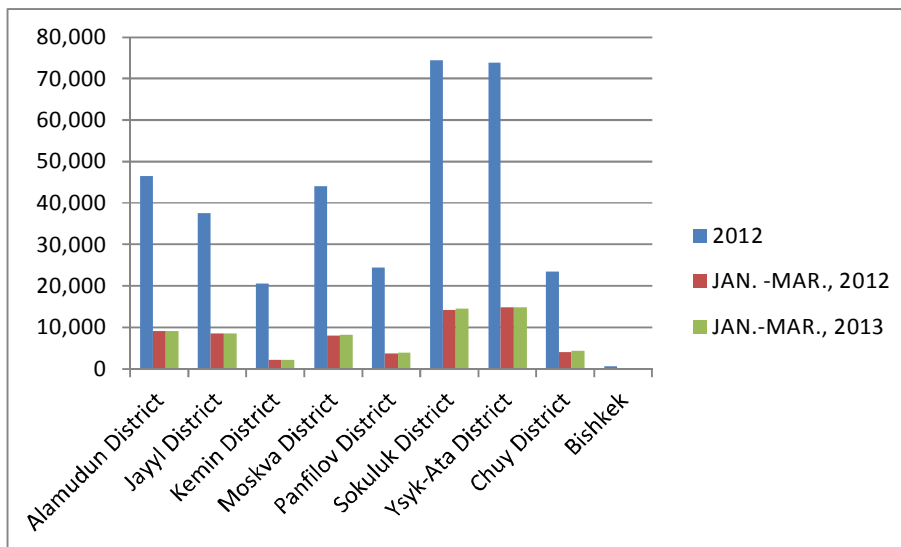


Figure 1-10 Milk Production in Chuy by District (First Quarter in 2012 and 2013)

(Source: National Statistical Committee Statistics)

The production per cow is decreasing, same as other provinces.

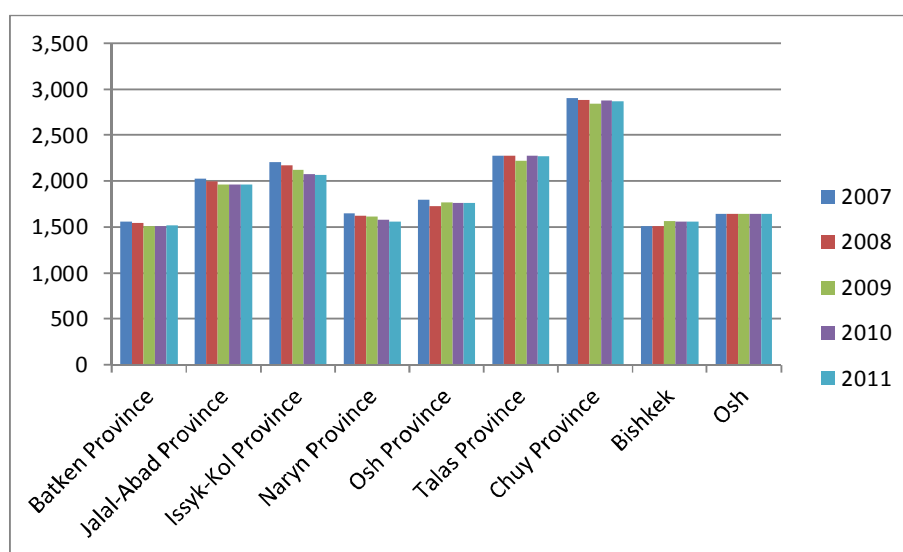


Figure 1-11 Milk Production per Cow by Province

(Source: National Statistical Committee Statistics)

(4) Dairy-relating policy

In “policy challenges and target index until 2020,” The policy themes and numerical goals in the dairy field are set as in Box1-1.

Table 1-10: Policy challenges and target index until 2020

	index (at the end of year)	Standard value	Target index ※In () is the rate over 2010	
		2010	2014	2020
Production volume	Raw milk production volume per head per year (kg)	2,036	2,380 (116.9%)	3,260 (160.1%)
	Wool production volume per head per year (kg)	2.6	3.1 (119.2%)	3.5 (134.6%)
Number of livestock	Cow (thousand)	1,298.8	1,344.0 (103.5%)	1,425.0 (109.7%)
	Sheep and goat (thousand)	5,037.7	5,620.2 (111.6%)	6,500.0 (129.0%)
	Number of farmers (thousand)	378.4	387.8 (102.5%)	407.0 (107.6%)

Dairy center development policy has been set for realization of the goals above. For this the draft has been made with the support from FAO and summarization of opinions from people concerned in and outside the country has been done mainly led by FAO.

In the policy, goals are set for seven themes predominantly and the current condition and measures are organized. Individual projects are expected to be implemented based on this policy after 2014, however, financial resources, sections in charge and concrete steps have not been clarified until now.

Box1-1 Dairy sector development policy in Kyrgyzstan (2014)

1. Vision

Dairy husbandry contributes to the sustainable securement of food and nutrition for Kyrgyz people and equitable development of social economy, environment and culture.

2. Role of policy

It allows dairy producers, grazers, stock raising community and those related in the value chain to sustainably utilize the natural resources of the country through systematic responses in adequate techniques, policy and the conditions of each ecology, culture and economy for the improvement of the national economy and nutrition status with keeping the sustainability of the resources.

3. Goal

For the securement of food and nutrition for Kyrgyz people, development of local living and environmental and socioeconomic development, comprehensive and effective policy and organization climate are to be constructed in the dairy sector.

4. Policy targets and measures

《theme》 (1) Development and promotion of comprehensive value chain of dairy production	
<p>< Current condition ></p> <ul style="list-style-type: none"> • 「While the demand for animal foodstuff in Kyrgyzstan is on rise, the supply is not enough except for dairy products, beef and eggs due to the increase of export in the national dairy sector. Thus, it is set to be a purpose to strengthen the value chain of products and improve the current situation. • There is a sustainable possibility to utilize the synergy of grain and dairy husbandry in the targeted farm system. • Product tracking from production to consumption and efficient handling supported by an effective animal identification system are essential. • Development of productivity and competitiveness of the value chain of dairy products supported by enhancement of the food self-sufficiency of the nation and competitive power of local markets is to be focused on. Private sectors are also involved in this. 	<p>< measure ></p> <ul style="list-style-type: none"> • Establishment of the portfolio of priority of the food value chain originated from animals supported by dairy husbandry, beef, poultry (meat and eggs), sheep meat and wool • Confirmation of support for the selected value chain and technical and systematic involvement for fair, safe, hygienic and sustainable operation • Planning and implementation of a ten-year support plan for the selected value chain • Planning and implementation of continuous monitoring and evaluation process for the performance of the value chain
《theme》 (2) Establishment and implementation of the comprehensive support guideline for the development of the dairy sector	
<p>< current condition ></p> <ul style="list-style-type: none"> • It is necessary to response to strengthening of the performance of sub-sectors for the operation and guidance for the development of the dairy sector. <p>(relevance: dairy hygiene, management of dairy breeding and genetic diversity, dairy breeding and feed supply, development of dairy husbandry, development of dairy sector and subsidy, health control of animals, product tracking, animal identification for recording of animal management)</p>	<p>< measure ></p> <ul style="list-style-type: none"> • Preparation of the guideline of dairy sub-sectors and dairy hygiene and establishment of portfolio of adoption process • Formulation of a ten-year implementing plan for all sub-sectors • Preparation and implementation of continuous monitoring and evaluation process for sub-sector guideline • Review of enforcement of the law on pasture in 2009 (re-evaluation)
《theme》 (3) Service supply for development of the dairy sector	
<p>< current condition ></p> <ul style="list-style-type: none"> • Reliability, high quality and efficient services are needed in the dairy value chain at all the stages until a product reaches a customer. • The development policy of the dairy sector should provide a road map on the outline of transition to cost retrieval of service supply and shifting service supply to the private sector and agriculture communities. 	<p>< measure ></p> <ul style="list-style-type: none"> • Sustainable dairy hygienic service by effective dairy identification and traceability • Dairy breeding and breeding service • Dairy feed/nutrition service (feed supply) • Crackdown operation (including meat inspection) • Research service

《theme》 (4) Promotion of engagement with the private sector and systematic innovation in the dairy sector	
<p><current condition></p> <ul style="list-style-type: none"> • The role of the private sector in development of the dairy sector has been more and more important in all the value chain. This trend is significant not only in “post-farm-gate” stage (processing and retail sales) but also at the production level. • Development policy of the dairy sector supports this trend and simulates a pair of guidance mechanism. This guidance refers not only to the contract with the domestic private sector but also to the FDI (foreign direct investment) activities of the dairy development based on FDI policy of the government. By private investment, the areas are to be transformed to those where the synergy between private and public sector is maximized and where small-scale farmers can be active participants and beneficiary. • In relationship development with the private sector, the public sector is to focus on the guidance of prescriptive framework (process regulation) furthermore and refrains from the direct involvement in supply, production, retail sales and marketing. For this transition process, a customized PPP (public-private partnership) has been planned and supported and monitoring of the performance has been started based on the PPP policy of the government. • Innovative and systematic procedure (production group, contract/contact agriculture, stock holding and farmer company) to engage small-scale farmers who intend to develop processing and commercializing activities is to be planned, verified and supported. • Production and branding of local specialties is to be supported and development of dairy farmer communities based on agriculture tourism initiative is to be encouraged. • On development policy of the dairy sector pursuing its goal, the development priority of the nation should be honored and the modernization of economy which the Kyrgyz government intends should be supported. 	<p><measure></p> <ul style="list-style-type: none"> • Investment guidance for domestic and international private companies in the value chain of dairy products (including public-private partnership) • Promotion of systematic innovation for small-scale farmers engaged in coordination in the expanding dairy product market • Specification of local specialties and public support activities for their commercialization • Authorization of potential sightseeing spots and dairy and agricultural community trekking based on agriculture tourism/dairy tourism initiative
《theme》 (5) “Payment for ecological service (PES)” toward dairy husbandry improved on the natural resource management and utilization basis	
<p><current condition></p> <ul style="list-style-type: none"> • Grain and dairy farmers in Kyrgyzstan are the most important land users in the country and they have a privileged role in achieving the goal of environmental sustainability by the Constitution (article 12). It is a particularly important role to use the small forest and rugged land as the pasture ecologically considering. • On the environmental service of farmers and stockbreeders who keep diverse, active and powerful pasture which absorbs carbon in the air, it is not sufficient to evaluate only animal product price. • In the payment to the environmental service of pasture user communities, development policy of the dairy sector is to keep sufficient funds and support the Constitution’s principle to achieve the sustainability and equality. • Sustainable utilization and management of the vast pasture area is also related to water flow management of hydropower generation. Simultaneously, efficient management of pasture and watershed strengthens the reliability and efficacy of water source of downstream harvesting irrigation. 	<p><measure></p> <ul style="list-style-type: none"> • “Payment for ecological service (PES)” essentially agreed on the supply to the selected local agriculture and pasture community for improvement of sustainable utilization of the pasture which stock density is controlled and pasture management. (It was stated that the payment to dairy farmers relating to the bio-gas product plan for C management is also adequately prepared.) • Evaluation and coordination of effective methodology of PES on the condition of the selected target areas and systems • Steering effective methodology of PES in the selected areas • Effective implementation of PES plan including funding partnership

<ul style="list-style-type: none"> • The achievement of goals of development policy of the dairy sector contributes to decrease of concerns for sustainable utilization of the natural resources and loss of pasture related to the decrease of productivity in Kyrgyzstan. 	
<p>《theme》 (6) Emergency risk management of dairy husbandry</p>	
<p><current condition></p> <ul style="list-style-type: none"> • Development policy of the dairy sector expects an emergency risk management relating to dairy husbandry to create “standard operation procedure (SOP)” including the organization responsibility toward emergent risks. Included in emergent risks are epidemic animal diseases (especially those influencing human health potentially) and both natural and man-caused disasters. From the international experiences, emergency management policy/strategy is expected to strengthen rapid and efficient action by the government and the participation of powerful investors (public and private sector, civil social organization) is especially important. Also included are compensation/bailout mechanism in case of a major crisis and insurance response. 	<p><measure></p> <ul style="list-style-type: none"> • Preparation by multiple organizations related to dairy emergency risk management strategy toward emergency such as natural disaster/public health/epidemic (eligibility definition of dairy insurance, dairy disaster relief/compensation fund, relief reportage) <p>In close cooperation process with the government office of disaster management, other relating documents such as disaster risk management policy, insurance policy and public health policy are considered.</p> <ul style="list-style-type: none"> • Implementation and management of emergency risk management strategy related to the dairy husbandry by multiple organizations those agreed
<p>《theme》 (7) Organization strengthening in support for development of the dairy sector and capacity of human resources</p>	
<p><current condition></p> <ul style="list-style-type: none"> • For dynamic, coordinated and sustainable development of the dairy sector expected in the development policy of the dairy sector, an efficient systematic framework is needed. This framework is currently provided by the government (MoAM) academically supported by Kyrgyz agrarian university in the development partnership at the practical and specialist level. • Human resource development elements : INPUT/OUTPUT service, processing facilities, information management on all products, animal breeding/improvement, development of breeding and feed, veterinary laboratories at various levels, animal health services (public medical services) including sub-veterinary function, animal nutrition, dairy husbandry protection in the country, capacity development at academic, practical and specialist level 	<p><measure></p> <ul style="list-style-type: none"> • Re-evaluation (review) of the national systematic framework supported by the dairy sector and policy measure plan responding to coordination and addition • Re-evaluation of the specialized ability development framework of the nation related to the dairy sector at all the levels from the farms to academy and construction of a long-term master plan and design of the human development in each field • Implementation of a master plan for human development based on the dairy sector development • Systematic adjustment/planning (designing) of consultation process between different sectors (public/private/civic society) in conducting dairy-related activities

(5) Policy on the needs for individual identification for the Customs Union

The biggest challenge in the dairy field of Kyrgyzstan has been the ban on export of the Kyrgyz milk products by the government of Kazakhstan. Committee of veterinary control and supervision of ministry of agriculture of Kazakhstan introduced the import limit on the milk and milk products of Kyrgyzstan. Kazakhstan cited as a reason for this ban that there is not enough information to objectively confirm that the area where the milk producers are located is safe in terms of infection.

Following the first inspections by the Customs Union inspection group, two companies have been allowed to export their products to the southern Kazakhstan and five more companies after the second inspection. However, Kyrgyz milk and dairy products are not considered safe by the Customs Union at the time of this research.

The challenge in the field of veterinary medicine is especially big and demands for improvement were issued as follows as a result of inspection in March, 2013.

- Information on the international regulation, the Customs Union regulation and veterinary health regulation concerning producing and processing of export products to companies has not been provided.
- The veterinary health organization is not classifying areas based on infection and not providing public information about the current situation of the animal infectious diseases in the country to international veterinary infectious disease organizations.
- Producers are collecting milk from the areas where the infectious diseases have been identified in the past 12 months.
- Information in the attached documents on veterinary health of raw milk fed is not sufficient. (There is no information on the owner of products, the name of products or inspection conducted.)
- The documents that confirms the pre-inspection conducted by the veterinary health organization of Kyrgyzstan to the companies in order to show the ability to fulfill the veterinary health regulation and standard of the Customs Union.

Considering this issue important, the Kyrgyz government has been replacing the government officials concerned and working to pass “legislation on individual animal identification” in the government committee in February, 2013 and to legislate it before the end of the year.

It is expected that more than 7 million dollar is needed for introducing the individual system of milk cow and beef cattle according to the press report by the Kyrgyz government and they also report that the support from IFC and the Turkish government is anticipated.

Table 1-11 Outline of the companies targeted for inspection by the Customs Union inspection group

Name of company	Found ation	Number of employee /veterinar ian	Major product	Export destination	Raw milk processing capacity/actual processing capacity	Customs Union inspection		
						2012	2013	
Chuy Province								
①	Ак-Сут	1982	90/1	Powdered skim milk, butter	Kazakhstan, Pakistan	100 t /day 50~65 t /day	×	○
②	Ursus	2009	63/1	Processed milk (liquid), butter, cheese	Kazakhstan	60 t /day 12 t /day	×	○
③	Belovodskiy dairy farm	2011	46/1	No data	No export	30 t /day 16 t /day	—	×
④	Kant-Sut	1970	34/1	processed milk (liquid), butter, lactic acid food	Kazakhstan	70 t /day 70 t /day	○	—
⑤	Umut & K	1997	208/1	Only ice cream	No export between 2011-2013	Up to 50 t /day Up to 45 t /day	×	○
⑥	MIS	1961	340/0	Only milk	No export between 2011-2013	16 t /day 14 t /day	—	×
⑦	Shin Line	2000	167/1	powdered milk, butter	Kazakhstan	75 t /day 30 t /day	×	×
Bishkek								
⑧	Bishkek-Sut	1989	375/1	Processed milk (liquid)	Kazakhstan	200 t /day 33 t /day	○	—

Source: Summarized by the research group based on “Report on official trip by veterinary specialists of Ministry of Agriculture veterinary inspection and supervision committee in Kyrgyzstan (2012, 2013)” (The companies allowed to export are those shaded above.)

2 Sanitary Control of Milking, Collection and Processing

2 Sanitary Control of Milking, Collection and Processing

For sanitary and quality control, it is necessary to take milk in sanitary conditions, to protect milk from foreign bodies, and to control time and temperature. Problems are scattered widely, from milking to consumption. The main causes are from lack of knowledge in sanitary and quality management. Especially it is important to improve raw milk related any dairy products' quality and safety in Kyrgyz. In this chapter, current conditions, problems, and the solutions in the Kyrgyz milk sector are outlined. In this report, farmers are classified into 3 groups by the number of milking cows: large farm (100 heads or more), medium (11~99 heads) and small (1~10 heads).

2.1 Current Sanitary Conditions and Problems in Milking

In this section, current processes, conditions and problems during milking, by size of dairy farm, are mentioned.

(1) Small Farm

i. Before and during Milking

(i) Cleaning Cow Nipples before Milking

It is important to clean and wipe top of nipples with a wrung, wet, clean towel with a bacterial agent, then wipe the nipples with another dry clean towel before milking. But farmers in Chuy only clean them with water without the agent. Moreover, the farmers use the same water for cleaning other cows. Such cleaning might cause infection to the cows.

(ii) Pre-Milking

Pre-milking is useful for early detection of aberrational milk and garget, contamination prevention by polluted milk and exciting nipples for improving milk quantity. Nipples are expressed 4-5 times, milk condition is checked, and then the milk is discarded during pre-milking. Pre-milking is not common in Chuy, and some middle or small scale farmers say they have never heard of it. In contrast, most big farmers know basic and necessary techniques for milking, and of course do pre-milking.

(iii) Milking Method

Nobody uses sanitary milking gloves during hand milking in Chuy. There are harmful microbes that are difficult to remove by washing one's hands. Therefore, distribution of the gloves is necessary.

About half of the farmers have milkers made in China or Turkey. Milkers help reduce the burden of farmers, but the machines may cause contamination of milk due to microbes growing in the milkers when improperly handled.



Picture2-1 Hand Milking



Picture2-2 Bucket Milker

(iv) Dipping

Cow nipples should be dipped into a dipping agent in a dipper for milk contamination prevention by microbes while the nipple mouth is closed after milking, to disinfect and protect the nipples. At present, the dipping method and the agent are not used in Chuy, though some farmers care for cow nipples using their ingenuity.

Dipping is a necessary technique for prevention of garget. Therefore, the method should be diffused and the use of the dipping agent should be ensured.

(v) Cleaning Equipment

Usually milking equipment should be cleaned with alkali detergent after every milking, and with acid detergent every 4 days. Alkali solution can dissolve milk fat, while an acid one dissolves minerals and milk stones.

Most small farmers in Chuy rinse their equipment or wash it with a household detergent which seems to be a neutral detergent; however, the cleaning is not sufficient. Therefore, cleanness of the equipment is poor. In an alcoholic test in this survey, milk taken from cows did not clump, while milk samples from milking buckets clumped. This means that the milking bucket was dirty and the milk might have been contaminated by microbes.

The alcoholic test is widely used for checking for denatured proteins caused by the growth of microbes; an equivalent amount of 70% ethanol and milk sample are mixed together in a glass dish. When the sample clumps, that might show abnormal or polluted milk. When it does not clump, it is normal/uncontaminated.



Picture2-3 Storage Situation of Milking Equipment



Picture2-4 Household Detergent



Picture2-5 Alcoholic Test



Picture2-6 Alcoholic Test



Picture2-7 Test Result from Milk Sample from Caw (Clump Negative)



Picture2-8 Test Result from Milk Sample from Bucket (Clump Positive)

ii. After Milking

(i) Principle of Raw Milk Management

“Clean Milking and Quick Cooling” is a simple expression to describe raw milk management. It is necessary to keep sanitary conditions for any equipment for milking (Bucket, Milking Can etc.). That method is described as above. The temperature of milk just after milking is about 35~40 degree Celsius. Many microbes can grow above 10 degree C; some microbes might cause serious food poisoning. For example, enterotoxin formed by *Staphylococcus aureus* can resist sterilization at 100 degree C for 30 min. Therefore, it is very important to immediately cool milk below 10 degree C after milking to keep raw milk safe and quality control. In other words, it is necessary to not only pasteurize milk properly, but also to hygienically keep raw milk at a proper temperature.

(ii) Current Situation of Chilling

Some small farmers cool raw milk by well or mountain runoff water. The temperature drops about 14 degree C at cooling by well water. That cooling provides a certain level of effectiveness, but farmers use a bucket or can without a lid. Therefore, foreign bodies can enter the milk from the air, such as dirt, insects and microbes.



Picture2-9 Cooling Condition in Small Farm



Picture2-10 Raw Condition before



Picture2-11 Milk Collection

(2) Big Farm

i. Before and during Milking

In Kyrgyz, former kolkhoz became big farms that were made into corporate bodies. The farms usually hire technical experts educated in the former Soviet Union, such as veterinarians, food processing technicians and chemists. Those technicians provide quality and a technical control system and practical training in the companies. Veterinarians also preserve cattle breeds by artificial insemination. Farms can select cattle breeds according to their purpose, i.e a high-producing breed or an easy-handling breed. Of course veterinarians and milk technicians understand different characteristics of milk from the breeds. However, the number of such technicians is limited, and many former and collection workers do not have knowledge in sanitary and quality control.

Big farms contracted with dairy companies usually have quality control rules and chill milk after milking adequately. Also, they check milk quality at their own laboratory and handle it carefully. But the farms are still using old equipment and machines leftover from the former Soviet Union, and their effectiveness has likely degraded substantially.

Most big farms understand the necessary and basic techniques related to milking. All such big farms did pre-milking when visited during this survey. Many big farms use a pipeline milker, while small farms use hand milking or a bucket milker. That type of milker is washed properly by alkali and acid detergent in big farms.



Picture2-12 Pipeline Milker



Picture2-13 Tandem Parlor



**Picture2-14 Automated Cleaning Line
in Pipeline Milker**



**Picture2-15 Alkali Detergent (Sodium
Hydrate)**

ii. After Milking

Big farms send milk to a cooling bath, and keep it cool with stirring. The bath is covered by a lid or mesh to keep out foreign bodies, such as insects or dirt.

Such farms do not have a tank truck either; a milk collector or dairy company take milk from them every day. Cooling tank truck was not seen in Kyrgyz during the survey.



Picture2-16 Bulk Cooker and Lid



**Picture2-17 Filter Cloths and Milking
Cans and Buckets**

2.2 Current Sanitary Condition and Problems in Milk Collection and Processing

Usually a milk collector goes around each dairy farm, and gathers up and analyzes milk at collection points in Chuy. Then the milk is delivered to a dairy processing factory. Most milk collectors are independent; only some dairy companies have their own or contracted farm and collect milk by themselves. Most milk collectors are similar in size to each other and have 10~15 employees. In the processing sector, Bishkek-sut is the biggest company; other processing companies have fewer than 300 people. There are many differences in knowledge and skill among them.

In this section, current conditions in Kyrgyz milk collection and processing are highlighted.

(1) Milk Collector

i. Collection

A typical farmer in Kyrgyz has only 2~3 milking cows, and most milk collectors provide milk from such farmers to dairy companies. Usually the collectors have their own tank truck, and go around to farms and collect milk by the truck. There were only a few collectors who checked milk visually, smell- and taste-checked at the farm, and took individual milk samples and analyzed them. They only analyzed milk after mixing with some other farms (acidity, density, fat, alcoholic check etc.). Therefore, if a farmer adds water or chemicals iniquitously, or handles milk un-sanitarily, the collector might not find such a problem during their check due to mixing milk with other farms. Collectors and dairy companies acknowledge that, but no one deals with the problem once and for all, due to the lack of workers' knowledge and the company's low problem consciousness.

ii. Cooling and Avoiding Foreign Bodies

Milk should be chilled to below 10 degree C for quality preservation as soon as possible after milking. However, Kyrgyz small farms do not have cooling machines and cannot chill milk to a low enough temperature. To make matters worse, most milk collectors do not have a cooling tank truck, and deliver the milk at normal temperature. Some collectors cannot chill all milk accepted at their collection point, because they do not have enough equipment adapted to their milk volume. That is why the milk is kept at 15 degree C or more without enough cooling at the collection point; such a situation is common in Kyrgyz during summer. Moreover, some foreign bodies, such as dried straw, floating in a tank truck due to poor handling and other measures, can allow microorganisms to grow quickly in such unsatisfactory conditions.



Picture2-18 Filter Cloth



Picture2-19 Bulk Cooler



Picture2-20 Sending Valve



**Picture2-21 Waiting Tank Track with
Opening Lid and Milk during Analysis**



**Picture2-22 Laboratory at Collection
Point**



Picture27 Milk Accepting Bath

(2) Dairy Company

i. Current Situation

There is only one big dairy company, Bishkek-sut in Chuy. The others are medium and small businesses. In each region, town and village, family operated small dairy companies buy milk from neighbors and make dairy products. Bishkek-sut has HACCP and ISO22000 certificate, the latest laboratory, and a fine zoning system. While there are some problems in other dairy companies, such as lack of laboratory skills and foreign body removal equipment, improper zoning etc.

Only 2 companies, Bishkek-sut and Kant-sut get export permission from Kazakhstan as of September, 2013. Other companies can sell products in the domestic market only, then grab the market share of each other. Customs Union surveyed the condition of dairy companies in July, 2013. Then the Kazakhstan government announced an ad report on the website of the government in August. In the report, the Kazakhstan Government will allow 5 more companies to export milk and dairy products to south Kazakhstan.



Picture 2-24 Scale and Plate Heat Exchanger



Picture2-25 Product Tank



Picture2-26 Cheese Fermentation Bath



Picture2-27 Cheese in Brine



Picture2-28 Cheese Maturation



Picture2-29 Cheese Packing Machine



Pcture2-30 Bottle Washing



**Picture2-31 Heating Tank for
Pasteurization**



Picture2-32 Plastic Bag Packing Machine

ii. Analysis of Milk in Milk Collectors and Dairy Companies

Most medium and big dairy companies and milk collectors analyze milk at when they receive it. Those standards follow Kyrgyz Technical Regulation (TR-K) (ref Table2-1), but they have their own standard in each company. Some companies buy fatty milk at higher price; the price changes by fat content. But a price system is not common in Kyrgyz. There are some dishonest companies that can buy dirty or polluted milk if the price is lower. This is why consumers distrust the product's quality and safety, and farmers and collectors are not interested in milk quality.

Table2-1 Standards in Kyrgyz Technical Regulation

Measurement Items	Non Pasteurized Milk	Drinkable Milk and Processed Milk*
Fat	2.8~6.0%	0.1~8.9%
Protein	2.8% or more	2.8%(When sample has less than 4% fat , this index is 2.6%)
Solid Non Fat	8.2% or more	8.0%
Appearance	There is no sediment and flake form, when it is not frozen.	-
Taste and Flavor	Healthy taste and flavor	-
Color	Bright cream color	-
Acidity	16.0~21.0 Thorner Degrees (0.16~0.21% lactic acid)	-
Density	1027.0kg/m ³ (20°C、 3.5% Fat (w/w))	-
Freeze Point	0.520°C or more	-

Source: Kyrgyz Technical Regulation (Unofficial translation)

*Include milk products that contain fat less than 9% fat.

2.3 Support from Other Donors

Some donors have supported the Kyrgyz food sector; therefore this section shows current situation for them.

No one has any specialized project for milk collectors or dairy companies. Some donors are providing training for HACCP and ISO22000, but it is not lecture with practice concerning process control and sanitary handling. For improvement of the product's quality and export promotion, it is necessary to show a good example to people and improve factory conditions through process management training with practice.

Table2-2 Donor's Support related to Dairy Sector as of September of 2013

	Milking & Milk Collection	Milk and Dairy Processing
FAO	No Support	No Support
GIZ	No Support	HACCP and ISO training session
WB	No Support	Financial assistance to organizations that have responsibility for food quality guarantee and control, and installation of quality control system to companies (Plan in 2013)
HV & AKF	No Support	No Support

Source: JICA Survey Team and announcement of the Kyrgyz government concerning WB support plan)

Note: HV: Helvetas (Swiss NGO), AKF: Aga Khan Foundation (UK Private NGO)

(Food and Agriculture Organization (FAO))

As of September of 2013, FAO does not support this sector. They support development of Kyrgyz national strategy and planning to provide a support program for farmers.

(Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ))

GIZ extended KSTU analysis and practical equipment and provided training about international certificates such as HACCP and ISO. Also, they had the a training session for general companies and government personnel. This session was mainly classroom lecture explaining about general considerations and common case studies, did not contain practical or specialized cases in Kyrgyz.

In 2013, GIZ and the International Trade Centre (ITC) are planning to start support for bottled drinkable water and agriculture products (fruits and vegetables) in accordance with value chain. For that purpose, GIZ is surveying requests from Customs Union; it does not have supporting activities in the dairy sector.

(World Bank (WB))

WB started industrial a development project in 6 sectors with ITC. (1.Tourism Business, 2.Fruits and Vegetable, 3.Raw Meat and Meat Products, 4.Fruit Products, 5.Clothes, 6.Bottled Drinkable Water). They do not support dairy sectors directly, while they offer financial support to farmers and government through commercial banks, pastureland management, livestock hygiene, seeds and fertilizer funds for wheat crops, irrigation facility repair, and farmers' education project. The Kyrgyz government announced WB support plan for solution of the problem of technical barriers in business activities and the commercial sector. That plan shows that WB will provide financial support to organizations related to food quality guarantees and control, and training in quality control systems (HACCP, ISO etc.) to companies that want to install them.

(Helvetas (HV) and Aga Khan Foundation (AKF))

HV and AKF do not have supporting activities that focus on the dairy sector. HV will join the rural development project that AKF have been taking part in.

2.4 Typical Problems and Solutions

In this section, typical problems and their solutions adverted to in the Kyrgyz milk sector.

(1) Problems and Solutions for Farms

Table 2-3 shows the current condition for each scale of farms. Small and medium scale farmers in Chuy have some problems, such as skill shortage for sanitary control, pre-milking, nipple cleaning, dipping, facilities cleaning and chilling after milking. While most big farms have necessary and basic techniques, their handling is better than small and medium scale ones. Their awareness of sanitary and quality management is likely relatively high.

Table2-3 Condition of Farms

Farm	Scale	NC	PM	Milking	DIP	Detergent	Cooling
1	Small	○	×	Hand	×	Household	Well Water
2	Small	—	○	Hand	*1	Water Only	×
3	Small	○	×	Hand	×	Water Only	×
4	Small	○	○	BM	×	Household	Well Water
5	Small	—	—	BM	—	Household	BC
6	Medium	○	×	BM	—	Household	BC
7	Medium	—	—	PLM	—	Household	BC
8	Big	○	○	BM	—	Dedicated	※3
9	Big	—	○	PLM	—	Dedicated	—
10	Big	○	○	PLM	*2	Dedicated	—

(Source: JICA Survey Team)

Note: NC: Nipple Cleaning, PM: Pre-Milking, DIP: Dipping, BM: Bucket Milker,

PLM: Pipe Line Milker, BC: Bulk Cooler

*1: Clean nipples by Vodka.

*2: Apply dedicated cream.

*3: Use low function cooler that can chill milk to 22~24 degree C.

Scale: Number of Milking Cows, Small- 1 to 10, Medium- 11 to 99, Big- 100 heads or more

(2) Cases in Japan

Figure 2-1 shows the typical milking process in Japan. At each stage, farmers have a chance to find and avoid problems, such as cow's illness and pollution. The person doing the milking should use sanitary gloves to prevent contamination of the cow's nipples.



Figure2-1 Typical Milking Process in Japan

Japanese collectors usually perform a simple test at each farm, then put the milk into a collecting tank (Figure2-2). If polluted milk is put into a collecting tank, the milk will contaminate all milk in the tank. Then collector should dispose of the polluted milk without abnormal loss.

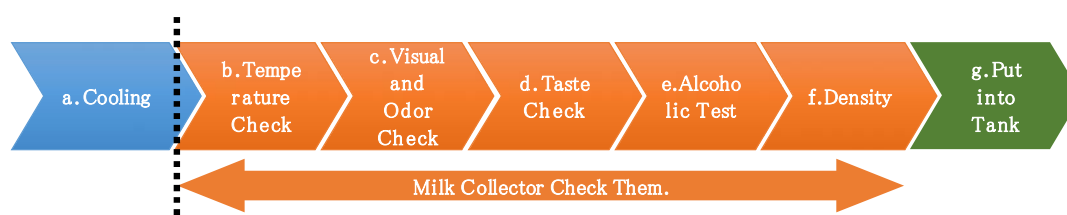


Figure2-2 Raw Milk Management in Japan

(3) Problems and Solutions for Milk Collectors

Table2-4 Condition of Milk Collectors

Collector	Visual Check	Cooling	Removal Foreign Body	Analysis	Price Differentiation
1	×	○	×	○	×
2	○	*1	○	○	×
3	×	○	×	○	×

(Source: JICA Survey Team)

*1. Only evening milk is kept in chilled condition until morning. It is not done for the morning one.

Table 2-4 shows the current condition of milk collectors. Some of them have problems not only with milking, but also during collection, due to collection the workers' poor skill. The workers are only drivers who have not learned food sanitary norms. Only a few workers check milk appearance and smell before mixing it with other milk; most of them put it into a tank even if foreign bodies are in the milk.

Some collectors who were visited have their own laboratory in a collection place. They can check basic quality analysis, but the accuracy is low, and only a few companies give bonus purchase price to high quality milk. As a result, farmers cannot be interested in quality improvement.

To solve the problems, it is necessary to provide technical and practical training to collection workers, a purchase price system according to quality, and proper quality check management.

(4) Problems and Solutions for Dairy Companies

Some companies are hiring technicians educated in the former Soviet Union. The technicians check and control processing area, therefore hygiene condition in the factory is better than farms and collection places. However, there are some problems, such as improper zoning, lack of foreign body removal method (hair, insects etc.), poor analysis etc.

Customs Union is requesting quality and processing control during manufacturing, and attestation to the dairy companies. HACCP and ISO22000 are typical accreditations for them. Most western countries also request HACCP. Therefore, a dairy company that exports to such countries should get HACCP or ISO22000. However, most companies analyze and inspect the last product only, do not use quality and processing control during manufacturing. Moreover, there is no HACCP or ISO22000 accreditation organization in Kyrgyz. Those situations inhibit diffusion of the accreditations. First, sanitary, a quality and processing control method and analysis system should be developed. Then companies can install HACCP and ISO22000. There is no quality guarantee system for raw food quality, or distribution management either. Therefore, traceability and cold chain should be installed step-by-step.

Proper training and practices that are suited to each level is necessary for dairy companies, collectors and farms.

Table2-5 Current Situation of Dairy Processing Companies

Company	Scale	Association	Accepting Milk (t/day)	Laboratory	HA CCP	ISO 22000	Zoning
Bishkek-sut	Big	MU	80	⊙	○	○	○
Company 1	Medium	MU	-	○	×	×	×
Company 2	Medium	NP	15~20	○	×	×	×
Company 3	Small	MU	-	○	×	×	×
Company 4	Small	MU	-	○	×	×	×
Company 5	Small	NP	10	○	×	×	×

(Source: JICA Survey Team)

Note Scale: Number of Employees, Big- 300 or more, Medium- 50~299, Small- 49 or less

MU: Milk Union, NP: No Participation

Laboratory: ⊙- Analyze Quality and Microbe、○ - Analyze Quality Only

* Milk union is a producers' association that 14 dairy companies belong to.

< Lack of problem consciousness of low quality milk, and leading to ingredient's company and farm >

As noted previously, some companies can buy dirty or polluted milk, if the price is lower. This is one of the reasons that arouse mistrust in consumers about product quality and safety, and farmers and collectors are not interested in milk quality. Some companies are contracting with collectors and trying to keep and improve milk quality. But only a few companies focus on quality control from farm to factory. Those collectors' analysis skills, quality guarantee and sanitary control skills do not improve to a high enough level, either. Moreover, many farmers, collectors and dairy companies do not trust each other. Therefore, they cannot cooperate to improve quality and sanitation. It is necessary to provide a fair price system according to quality, analysis of hygiene level at farms and for collectors, bonuses for honest persons, and so on.

<Poor Ability of Laboratories>

Customs Union requests dairy companies have their own laboratory ability certification and some kind of analysis certifications published by governmental laboratories. Only KCA can judge the laboratory level based on ISO 17025, but following ISO 17025 rules demand a large amount of the budget of a company. Therefore, small and medium scale companies hardly get and keep the certificate by themselves. For solution to this problem - establishment of private laboratory assessment system that is easier than the ISO, skill check of private laboratory ability and chemists in a laboratory, and training for the chemists - should be done with the Kyrgyz government. Of course, KCA accreditation skill should be improved.

Problems and solutions in government laboratories are mentioned in Chapter 7.

<Defects in Zoning, Sanitary Control and Pest Control>

Only a few companies can manage zoning in a factory with proper flow planning. In some companies, there are washers for shoes, insect killing lamps and sanitary uniforms. But some problems exist in those companies, such as “ambiguous border between sanitary and insanitary zone”, “workers who are working in dirty, insanitary zone with sanitary uniform”, “toilet, break room and storage of packing material in sanitary zone“ and “lack of hand washing and foreign body removal equipment”. In order to meet Customs Union’s demand and installation of quality guarantee and a control system, it is necessary to provide some training corresponding to solution of the problems, such as zoning technique and administration of operations in dairy factories.

Proper zoning can help to protect products from harmful and unfavorable matters. Therefore, food factories should be located in some zones according to sanitary level. And, products should be made by one-way flow. But only a few factories have such a zoning system in Chuy.

(5) Support Plan in Farm, Milk Collection and Dairy Processing Sector

There are wide technical gaps in the Kyrgyz dairy sector, and very few factories can manage proper process and hygiene conditions. Therefore, it is necessary to a consider support plan according to their level, such as technical training, development of manuals (Total Management, Process Control, Factory Management etc.), periodical check from third parties and proper quality check management system.

Most companies in Kyrgyz are small or medium scale. Therefore, there are some considerable projects that support development of skills for medium and big companies, and their contracted collectors and farmers through a producer’s association, support to small and medium ones through a university or governmental organization, and provide overseas training in a customs union’s member country or Turkey, and/or Japanese dairy company.

i. Equipment

Most Kyrgyz companies lack necessary equipment for sanitation in the dairy sector. This paragraph mentions such equipment in each process.

Table2-6 Necessary Equipment

Timing	Purpose	Equipment
Milking	Cleaning Nipples	Sanitizer, Sanitary Towel
	Dipping	Dipping Agent, Dipper
	Improving Work Efficiency	Milking Machine
	Sanitary Control	Working Uniform, Sanitary Gloves
After Milking	Removal of Foreign Bodies	Milk Can with Lid, Filtering Cloth, Strainer
	Initial Cooling	Bulk Cooler, or Heat Exchanger and Cool Bath
	Cleaning Equipment	Alkali and Acid Detergent, Proper Brush

Collection	Quality Analysis	Thermometer, Alcoholic Check Kit, Somatic Cell Check Kit, Gravity Meter, Cylinder, Correction Table for Milk Specific Gravity, Sample Bottle
	Sanitary Control	Working Uniform, Sanitary Gloves
	Chilling Handling	Refrigerator, Chilling or Cool Tank Truck
	Cleaning Equipment	Alkali and Acid Detergent, Proper Brush
Collecting and Accepting Milk	Quality Analysis	Some Analyzing Equipment (Milk Analyzer, Acidity Analyzer, Gravity Meter, Alcoholic Check Kit, Somatic Cell Check Kit, Microbe Analysis Equipment)
Collecting and Processing	Additives and Chemical Management	Dedicated Depository
Processing	Processing and Quality Management	Working Uniform, Sanitary Facility (Hand Washing Space, Removal of Foreign Body Equipment etc.), Equipment for Avoiding Insects and Vermin
	Zoning	Working Uniform, Sanitary Facility, Decontamination Facility

ii. Technical Support Component

Some farmers, collectors and companies lack necessary and basic knowledge and skill. Therefore, this paragraph mentions support components for development of human resources and organization.

Table2-7 Support Plan Component

Objective	Purpose	Envisaged CP	Envisaged Support Component
Farmer	Milking Skill	PA, UNIV	Expert Detachment (Milking Sanitary Control)
	Sanitary Control	PA, UNIV	Expert Detachment (Milking Sanitary Control)
Farmer and Collector	Cooling Control	PA, UNIV	Expert Detachment (Milking Sanitary Control), Oversea Training
	Removal of Foreign Bodies	PA, UNIV	Expert Detachment (Milking Sanitary Control)
Collector	Analysis Skill	PA, ABCC	Expert Detachment (Inspection and Analysis), Overseas Training
	Transportation	PA, ABCC	Expert Detachment (Food Sanitation), Overseas Training
Collector and Dairy Company	Additive and Chemical Management	PA, ABCC	Expert Detachment (Food Sanitation), Overseas Training
	Purchase Price according to Quality	PA, UNIV	Expert Detachment (Food Marketing), Overseas Training

Dairy Company	Analysis Skill	UNIV, ABCC	Expert Detachment (Inspection and Analysis), Overseas Training
	Zoning	PA, UNIV, ABCC	Expert Detachment (Food Factory Management), Overseas Training
	Processing and Quality Management	PA, UNIV, ABCC	Expert Detachment (Food Factory Management), Overseas Training
	Information for Consumer	PA	Expert Detachment (Food Marketing, Product Development), Overseas Training
Government	Food Safety System	ABCC	Expert Detachment (Food Certificate), Overseas Training
	Private Laboratory Index Development	ABCC	Expert Detachment (Inspection and Analysis), Overseas Training
All	Cleaning Skill	PA, UNIV, ABCC	Expert Detachment (Food Sanitation)
	Sanitary Handling	PA, UNIV, ABCC	Expert Detachment (Food Sanitation)
	Technical Regulation Training	PA, UNIV, ABCC	Expert Detachment (Technical Regulation)
	Temperature Management, Traceability	PA, UNIV, ABCC	Expert Detachment (Food Certificate), Overseas Training

Note PA: Producers' Association, UNIV: University, ABCC: Agribusiness Competitiveness Center

3 Current situation of the feed crop production and its utilization

3 Current situation of the feed crop production and its utilization

3.1. Current situation and the problem

(1) Overview of the feed utilization

A. Farmland utilization in Kyrgyz Republic

In Kyrgyz Republic (“Kyrgyz”), the structure of its animal feeding relies on grazing countrywide as more than 50% of the national land is being utilized for livestock grazing (10,617 thousand hectare of permanent grasslands/grazing land over 19,850 thousand hectare of the national land).

The grazing lands are controlled by an organization called grazing committee¹ which allocates grazing land and collects the fees, and the farmers use the grazing land according to the allocation by the committee.

The grazing land farmers use changes seasonally, that farmers use cooler region at high altitude in summer, warmer region at low altitude in winter, and the midway region in spring and fall.

The cultivated area in the country is limited as 1,276 thousand hectares, and concentrated in Chuy province.

Note: This chapter defines cultivated land as the land cultivated by tractor etc., and grazing land as agricultural land mainly used for grazing.

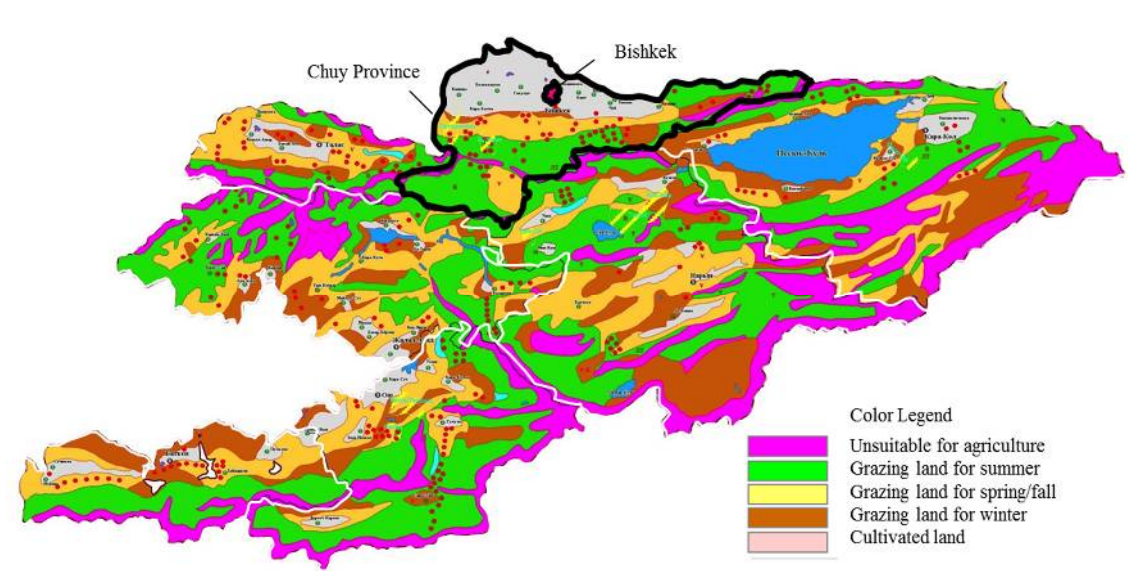


Figure 3-1 Utilization situation of agricultural land in Kyrgyz

¹ Agricultural Ministry related organization

B. Farmland utilization in Chuy province

As characteristic of Chuy province, cultivated lands are also distributed widely while natural vegetation regions are used for seasonal grazing.

In cultivated land, other than grains and vegetable there are produced feed crops such as Alfalfa, Sainfoin, Dent Corn, and barley and wheat for animal feed which are supplied to cattle farmers.

Chuy province locates near Bishkek and holds large production plants. Accordingly, the province is populated with Kyrgyz's cattle farmers, and animal feed productions are conducted including concentrated feed (e.g. grains) to promote the volume of milk production.

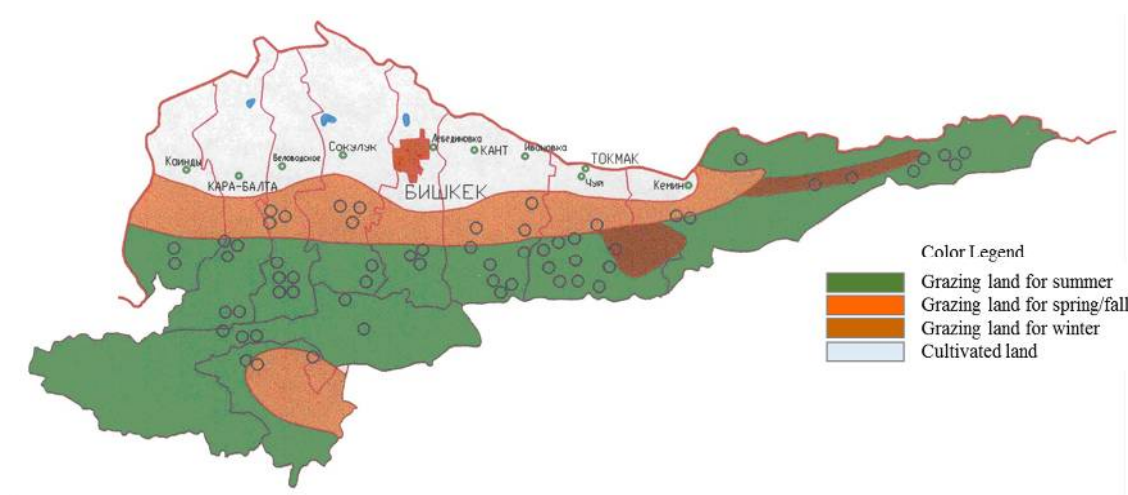


Figure 3-2 Utilization situation of agricultural land in Chuy province

(2) Situation of animal feed production in cultivated land

A. Situation of cropping in Chuy province and Bishkek

Among the cultivated land in Chuy province, 100 thousand hectare, which is about 25% of the cultivated area, is used for the production of coarse feeds. Also, the produced barley and wheat are used as concentrated feed.

Table 3-1 Crop acreage in Chuy province and Bishkek (Year of 2011)

Category	Chuy Province		Bishkek		Remark
	Area Thou. Ha	Proportion %	Area Thou. Ha	Proportion %	
Crop acreage	400.0	100.0	0.241	100.0	2007-2011 Derived from Agricultural Annual Report of Kyrgyz Republic
Grains	247.4	61.9	0.001	0.4	
Wheat	150.9	37.7	-	-	
Barley	71.6	17.9	-	-	
Corn for cereal	22.6	5.7	-	-	
Other type of grains	2.3	0.6	0.001	0.4	
Industrial crop	18.7	4.7	-	-	
Vegetable	30.7	7.7	0.2	83.0	
Feed crop	103.1	25.8	0.04	16.6	

Feed crops produced in the cultivated land are mainly Alfalfa while Sainfoin is also produced. Mixed-seeding of grass family and pea family (e.g. Timothy Hay, Orchard Grass, Clover and such), is basically not practiced as seen in Japan, but solo seeding is the main practice.

While on the subject, below explains Chuy province exclusively since there is little agriculture in Bishkek as its crop acreage is merely 40 Ha.



Picture 3-1 Alfalfa (plant length over 1m)



Picture 3-2 Sainfoin



Picture 3-3 Dent Corn

Left: Chuy type (plant length app. 2m)
Right: Small type (plant length app. 1.6m)



Pic 3-4 Wheat field after mowing

B. Yield of Alfalfa and its ingredients

Planting cycle of Alfalfa is 4 years (4 years of cropping per single seeding), and after 4 years the land either goes into fallow period or rotation cropping.

Also, harvest frequency per year is 3 to 4 times, and the fourth harvest is considered based on the condition of the crops which is affected by rainfall amount, temperature, and the situation of irrigation plant.

The growth situation of Alfalfa is very positive, and the estimated yield is also high even comparing to the feed crops of Hokkaido's main farming areas (two harvests per year).

Table 3-2 Estimated yield of Alfalfa

Category	Number	Unit	Remark
Number of blocks per 1 HA	a	200 blocks/Ha	Result of field survey
Weight per 1 block	b	20 kg/block	Result of field survey
Crop yield per 1 Ha	c=a*b	4,000 kg/Ha	-
Dry matter conversion ratio	d	18 %	Technological System of Hokkaido Agricultural Production (<i>Hokkaido Nougyou Seisan Gijyutsu Taikai</i>) (Agricultural Policy Planning Department of Hokkaido)
Fresh forage equivalent	e=c/d	22,222 kg/ha	-
Harvest frequency per year	f	4 times/year	Result of field survey
Yearly yield	g=e*f	88,888 kg/ha	-
(for reference) Betsukai-cyo in Hokkaido		38,404 kg/ha	Agricultural Improvement Promotion Center of Nemuro (<i>Nemuro Nougyou kairyuu Fukyu Cente</i>) (average of 2007 to 2011)

As to the ingredient in TDN (Total Digestible Nutrients), the numbers are typical as Alfalfa but it is slightly lower than the dry-matter equivalent of the crops generally used in Hokkaido.

Table 3-3 Excerpt of result of ingredient analysis (Chuy province, year of 2011)

Category	Chuy province		Hokkaido	Remark
	Hay Alfalfa 1 st harvest	Hay Alfalfa 2 nd harvest	Hay Feed crop	
Water	16.58	13.52	12	
Crude protein	9.93	13.87	10	In dry matter
TDN	43.6	43.1	52.8	In fresh form

The main stream of irrigation method is the contour ditch irrigation that draws water into agricultural field by excavating channels following the land shape and letting the water overflow from the channel. However, some large-scale farming companies are adopting the irrigation method by self-propelling sprinklers.

Incidentally, the irrigation facilities of the regions are made by utilizing the infrastructures of Soviet era; however, aging of the infrastructure is significant that numbers of water channels are fragmented and unable to use.

Also, in some cases the land is used for grazing after the last harvest of the year, which is considered to contribute to the supply of organic substance.

Table 3-4 Result of feed crop analysis (Chuy province, year of 2011)

Category	Chuy county Hay (Alfalfa, 2 nd harvest)	Issik-Ata county Hay (Alfalfa 1 st harvest)	Kemin county Wheat for animal feeding	Kemin county Barley for animal feeding	Kemin county Flaked corn	(Hokkaido) Hay (feed crop)
Number of samples	252	256		253a	262a	–
Water, %	13.52	16.58	9.80	8.00	14.70	12
Portion of dry matter, %	86.48	84.36	90.20	92.00	85.30	–
Ingredient in the dry matter, %						
Crude protein	13.87	9.93	13.50	10.00	10.30	10
Crude fat	1.83	1.41	20.00	2.00	4.20	–
Crude fiber	39.42	37.62	16.90	6.62	3.70	–
Crude nitrogen free extract	36.43	46.50	6.10	78.53	65.30	–
Crude ash	8.45	7.55	1.20	2.85	1.77	–
Ingredient in the fresh from per 1kg						
Unit of feed crop (sample)	0.42	0.47	1.29	1.20	1.34	–
Exchangeable energy, MJ	6.36	7.71	10.80	10.90	12.20	–
Digestible protein, g	73.50	36.80	106.30	66.20	73.40	–
Digestible fat, g	6.30	5.00	21.20	12.10	42.50	–
Digestible fiber, g	160.20	140.50	18.40	25.60	38.10	–
Digestible nitrogen free extract, g	182.70	247.23	544.10	606.90	653.00	–
Calcium, g	10.16	2.82	0.80	0.83	0.50	–
Phosphorus, g	0.20	0.25	3.60	2.94	5.20	–
Carotene, mg	32.20	18.50	-	--	40.60	–
Category of feed crop	III	II	II	-	II	–
TDN	43.1	43.6	71.7	72.6	86.0	52.8

※TDN = digestible protein + 2.25 × digestible fat + digestible fiber + digestible nitrogen free extract

Source: State Pasture Department. TDN is preliminarily calculated by the investigation group.

Numbers of Hokkaido's hay are derived from Technological System of Hokkaido Agricultural Production (*Hokkaido Nougyou Seisan Gijyutsu Taikei*).

C. Harvesting and assembling

About 90% of Chuy province's cattle farmers are small operation owning 3 to 4 cattle, and in most cases they secure feed crops either by purchasing or delegating the harvesting task of their agricultural field to others.

Generally, harvesting of feed crop is practiced in the order of reaping, blending and drying in the agricultural field, collecting, and packing. A block packed by hay baler weighs 20kg per a block, which is tolerable for small cattle farmers to operate by man power.

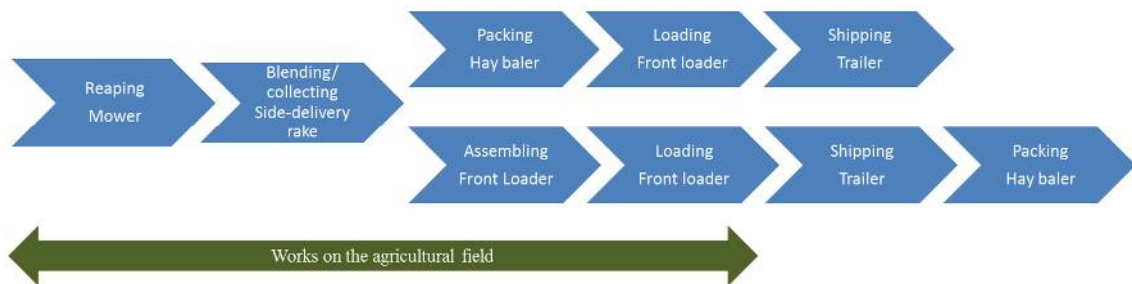


Figure 3-3 Practice order of hay processing



Picture 3-4 Collection after the reaping



Picture 3-5 Assembling in the agricultural field



Picture 3-6 Hay baler



Picture 3-7 Trailer

Many of the machines used for harvesting are from Soviet era, which are significantly old exceeding the service life.

In this circumstance, some farmers are purchasing Chinese or Belarusian tractor/harvesting machines with bank loan, though such cases are limited.



Picture 3-8 Decrepit machine 1



Picture 3-9 Decrepit machine 2



Picture 3-10 Newly purchased machine 1



Picture 3-11 Newly purchased machine 2

In most cases feed crops are dried on the agricultural field and assembled to hay bale, but some large scale agricultural companies prepare silage or haylage by utilizing the bunker silos from Soviet era.



Picture 3-12 Work in bunker silo 1



Picture 3-13 Work in bunker silo 2

D. Distribution

Dried Alfalfa assembled to hay bale are loaded to truck and transported to feed crop retailing spaces or livestock market located in each municipality.

Farmers visit this retailing space to confirm the quality of the crops and select the crop to purchase, and have the crop sent to cattle shed on a need basis.

In each municipality there are also retailing spaces of wheat and barley other than hay bale where the neighboring farmers visit to purchase.

Also, in some regions there are companies which provide blended feed crop. These companies provide detailed services such as calculating the crop blending ratio based on the cattle types and milk production volume of the each farmer.



Picture 3-14 Retailing space of hay bale in a settlement



Picture 3-15 Retailing space of concentrated feed crop in a settlement



Picture 3-16 Inside crop blending factory



Picture 3-17 Blended feed crop produced

(3) Utilization situation of grazing land

A. Distribution condition of grazing land

In Chuy province there are 450 thousand hectare of summer grazing lands, 300 thousand hectare of spring/fall grazing lands, and 100 thousand hectare of winter grazing lands. This comes to total of 850 thousand hectare of grazing lands, which is more than double of 400 thousand hectare of cultivated lands.

In many cases grazing lands locate in mountain area far from the habitation areas, and especially summer grazing lands may be located at a distance of at least 100 km from the home.

In this circumstance, in summer it is often the case that farmers make rotations in the family to stay at temporary housing around the summer grazing land to handle the cattle. However, in the recent years farmers tend to use grazing land near the habitation area, which is concerned to cause overgrazing, vegetation deterioration, production downturn, and desertification.

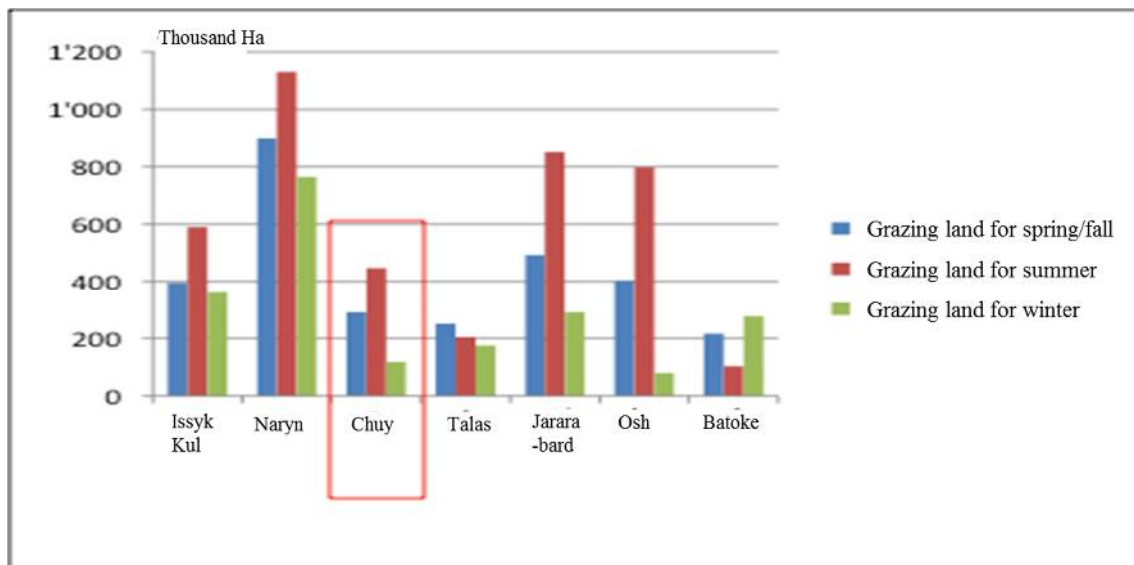


Figure 3-4 Distribution condition of grazing lands

B. Vegetation in grazing land

The grazing lands are natural vegetation, which does not contain seeding of improved feed crops or fertilization control as it is practiced in Japan.

The vegetation of the area was almost dried up when the investigation was conducted in September, but it is said the fields are grown and fresh around April to May.

Chuy province's natural vegetation grows up to about 50 cm in the picking season. Also, in the grazing cattle picks up to eat the plants around 2 cm which are soft and rich in nutrients.

The investigated summer grazing land locates at the height of 2,000 m to 4,000 m, which is a tough environment above the forest line where grasses and shrubs grow. In such an environment, the vegetation is sustained on a fragile balance, and it is estimated that the recovery would be difficult once the vegetative cover is lost.



Picture 3-18 Condition of the grazing land 1



Picture 3-19 Condition of the grazing land 2

C. Utilization situation of the grazing land

The grazing lands available are allocated to each farmer by the grazing land committee run by a government-appointed control body (mostly municipality).

Each farmer pays the fees to the grazing land committee for the number of their cattle, and grazes the cattle in the designated field. At this time, non-milking cattle such as male cattle, beef cattle, or dry cattle are grazed to distanced land mainly.

The unit area per one cattle is defined as approximately 1.2 ha per cattle, but the supervisors of the grazing lands do not check it strictly. Thus, many farmers use 3 ha per cattle, which are leading to congestion above the regulation.

Also, since there is no agricultural land nearby, the cattle farmers inhabiting around the grazing lands make hays out of the unused feed crops or straws from summer, and store the hays to use them as feed crop for winter or as litter.

Among cattle farmers mainly conducting grazing, many of them farm Alatau specie or Brown Swiss

spices, because Holstein specie is difficult to farm in grazing as they are inferior in its walkability and disease resistance.



Picture 3-20 Cattle farmer inhabiting near grazing land



Picture 3-21 Utilization situation of grazing land

3.2. Situation and problems in the utilization of feed crops

(1) Overview of the utilization of feed crop

Farming scales of Chuy province can be generally divided into three; small-scale, middle-scale, and large scale.

Around the urban there are small-scale farmers who conduct farming as side business and own milk cattle of less than five in stall barn. In such scale of farming, farming tends to be a supplemental income that there are many farmers who have other source of income. Also, since farming machine operations is difficult for this scale of farmers, they tend secure the feed crop either by purchasing or outsourcing the works for the agricultural fields they own.

Farmers who mainly conduct grazing tend to inhabit far from the urban area, and the scale of their farming inevitably becomes certain scale as they have less opportunity for side job. Thus, in mountain areas there are middle-scale farming which utilizes grazing land close to ranch. Also, though their primary job is grazing, they store feed crops collected from the grazing land because cattle are placed in ranch in winter as plants do not grow naturally.

In regions that can secure certain scale of agricultural lands in flat terrain, companies are conducting organized farming by utilizing the facilities such as old-Kolkhoz. These companies practice modern managing method that includes feeding planning calculated by the feed crop prices, or seeding planning to achieve that salary planning.

Table 3-5 Farming styles of Chuy province

Farming scale	Farming style	Number of cattle	Location of ranch	Operation style
Small-scale	Mainly ranch	Less than 10	Urban are	Private
Middle-scale	Mainly grazing	11 to 100	Mountain are	Private + employed
Large-scale	Mainly ranch	Over 100	Urban	Company

Source: Derived from the result of the investigation

(2) Situation of feed crop utilization by the categories of farming

A. Small-scale farming

In small scale farming feeding are conducted in their own way that feed crops are put to the feed tub in the stale barn. Quantity or type of the feeding is not based on calculation, that there are some cases when feeding exceedingly depends on Alfalfa that may cause significant decrease in the milk production. Such cases where feeding crops are too Alfalfa-centered or lacking fibers is considered to deteriorate the cattle's health, thus it is needed to spread the feeding method based on the scientific knowledge. Also, lack of feed water is considered to be another serious problem.

Table 3-6 Feeding of small-scale farming

Category	Feeding Method	Milking Frequency	Milking Volume
Farmer 1	Hay (Alfalfa, orchard, wild plant), wheat, gardened vegetable and fruit	Twice (morning and night)	18~20 kg/day/per cattle
Farmer 2	Hay (Alfalfa), wheat, barley	Same above	15 kg/day/per cattle
Farmer 3	Granule (Alfalfa), barley powder, salt, calcium, Loess	Three times (morning, evening, night)	35~40 kg/day/per cattle
Farmer 4	Hay (Alfalfa)	Twice (morning and night)	5 kg/day/per cattle
Farmer 5	Hay (Alfalfa), wheat, barley, grazing (day time)	Same above	16 kg/day/per cattle

Source: Survey result of the investigation group



Picture 3-22 Situation of feeding at small-scale farmer

1



Picture 3-23 Situation of feeding at small-scale farmer

2

B. Middle-scale farming

In middle-scale farming, cattle are grazed after morning milking, and put back to the barn for evening milking. However, it is unknown how much of feeding are supplied by the natural vegetation, or what type of natural vegetation are existing and its nutrition.

Thus, as a future task it is needed to establish the method of scientific grazing management that involves research of natural vegetation in each grazing land, improvement of vegetation in grazing lands, and grazing control that corresponds to the recovery speed of the vegetation.

Table 3-7 Feeding of middle-scale farming

Category	Feeding Method	Milking Frequency	Milking Volume
Farmer 1	Summer: grazing Winter: hay from the naturally grown plants	Twice (Morning, night)	Brown Swiss Summer: 15kg/day/per cattle Winter: 20kg/day/per cattle Alatau specie Year-round: 10kg/day/per cattle
Farmer 2	Summer: grazing Winter: hay from the naturally grown plants	Same above	Brown Swiss 9~11kg/day/per cattle High summer: 4-5kg/day/per cattle (the above indicates shipping volume) (excluding the volume for runt and self-consumption)

Source: Survey result of the investigation group

C. Large-scale farming

Large-scale farming is employing a scientific farming method based on the concept from Soviet era, in which relatively highly educated agricultural specialists conduct the analysis of feed crops and feeding planning.

Such farming are conducting preparation of silage and haylage from Alfalfa and Dent Corn utilizing the Soviet facilities, and thorough planning and control of feeding that adjusts volume of concentrated feed crops for each cattle.



Picture 3-24 Bunker Silo



Picture 3-25 Feeding situation at large-scale farming

3.3. Problem and countermeasure for feed crop production and feeding control

Below summarizes problems and countermeasures for feed crop production and feed control in Chuy province.

Table 3-8 Problem and countermeasure for feed crop production and feeding control

Category	Problem	Countermeasure
Production Method	Fragmented irrigation system	Planned maintenance and control based on the stock management method
	Aging and shortage of agricultural machine	Improving the institutional financing, shared use of agricultural machine, implementation of intensive grazing
Feed Crop Production	Production decrease of feed crop, inflow of foreign-made crops	Production increase by improving the knowledge of feed crop production
	Hay-centered preparation. Silage preparation is limited (better nutrition value and tasting)	Joint operation for crop preparation, establishment of TMR center
Grazing Land Control	Productivity deterioration of grazing lands due to over-grazing	Analyze the current situation to establish a method for appropriate grazing
	Lack of management system in grazing lands	Re-consider the system of grazing land allocation
Feed Planning	Lack of scientific knowledge in feeding planning etc.	Spread the method of feed planning based on scientific knowledge

3.4. Activity of Kyrgyz government and other donors

Where the foundation of milk production is good quality feed crop, the capacity of Kyrgyz's feed crop self-sufficiency is on a downward trend because of factors such as loss of feed crop production technology or infrastructure and inappropriate use of grazing lands. On the other hand, the number of animal feeding is on an upward trend that securement of sufficient feed crops is considered to be a primary agenda among the Kyrgyz government and its donors.

In such circumstance, State Pasture Department under the Ministry of Agriculture is collaborating with IFAD to launch an extensive project that focuses on analysis of the current situation of grazing lands utilization and facilitation of its efficient use.

This project has launched 3 years ago by the support of Canada, Switzerland, and Kazakhstan, and just has consolidated its methodology. In order to prepare a guideline of grazing land utilization, currently the project is conducting an extensive research including yield analysis of the natural vegetation and the feed crops.

Also, national institution of experimental laboratory is playing a considerable role in the feed production of Kyrgyz, which conduct analysis of crude feed crop, feed crop planning, various promotion activity, and to answer the request from private companies.

Also, in Sokuluk district of Chuy province, by the support of GIZ a demonstration project has launched this year that intends to establish a method of feed crop production. In addition, as a non-government project USAID is introducing the production of mixed feed crop as a first case in Kyrgyz,

and offering the analysis tool to distribution companies.

Also, though it does not directly relate to feed crop production, WB is leading an aid to fix and maintain the irrigation system that is essential to feed crop production.

3.5. Plan of activity from Japan for feed crop production and animal feeding control

As to the feed crop production and animal feeding control, it has been already approached widely by the government and various donors. However, the scopes of these projects are vast both in terms of the targeted areas and its contents, that it would require a fair amount of time until the results are achieved.

The most serious problem in feed crop production is aging and shortage of agricultural machines. Currently hay and hay bale are produced as a mainstream of feed crop production; however, since the Soviet facilities are expected to be out of service in the next few years due to aging, it is estimated that production and hay and hay bale will also become unsustainable.

Here, “intensive grazing” as practiced in Japan is a method in which cattle are grazed within small divided blocks corresponding to recovery of the vegetation to let the cattle eat nutritious grass, rather than harvesting the crops (Alfalfa, etc.) by machine (short grasses are more nutritious). The equivalent of this method was practiced during Soviet era, and some farmers in Kyrgyz are starting to implement this method again.

Since what this method requires is only the physical segmentation of the grazing lands, the method can easily be introduced to the small farmers who do not have enough financial capacity. Thus, this method has a potential to cover the production decrease of crude feed crop which may happen due to the machine aging.

Japan possesses accumulation of knowledge and experience for this intensive grazing, such as for selection of plant type suitable for the intensive grazing or how to balance the grazing and feed crop preparation in relation to winter. These knowledge and experiences can be shared to Kyrgyz community through the field activities or the training in Japan.

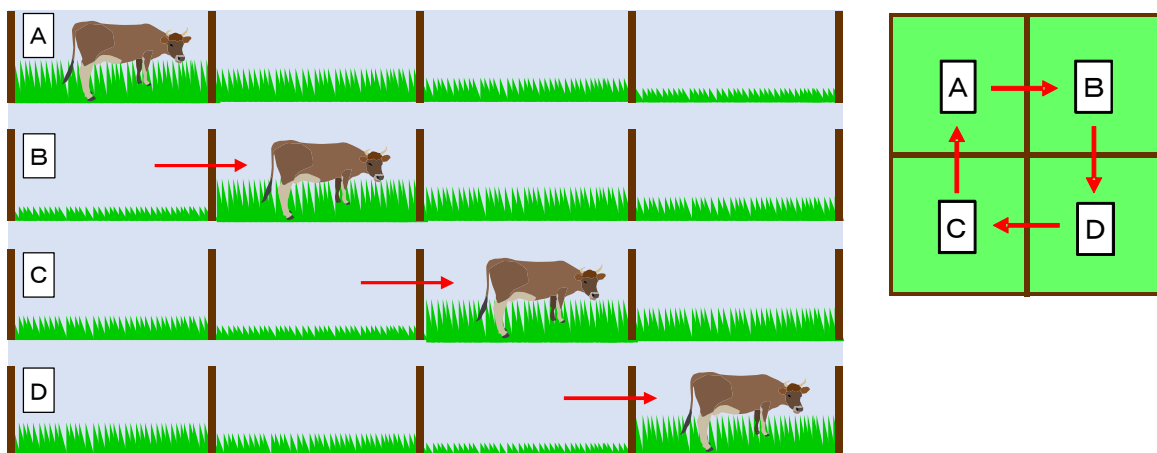


Figure 3-5 Concept of intensive grazing

4 The present condition of dairy cattle shed and facilities

4 The present condition of dairy cattle shed and facilities.

4.1 Dairy cattle management.

The characteristics of cattle sheds in the area are divided into three types. The first one has been in use since the former Soviet times. The second one has been in use after remaking the buildings that had been used as various warehouses during former Soviet times. The third type are seen especially on small-scale dairy farms; originally they had been utilized as beef cattle sheds, but are now utilized as dairy cattle sheds. The first one, equipped with the basic structure needed as a dairy cattle shed, are improving somewhat, although they see particular problems. On the other hand, there are several things to be remade in the cattle sheds of the second and third type. Cattle floor sheets are too short and the ventilation facilities need to be improved.



Picture 4-1 Large scale dairy farm



Picture 4-2 Large scale dairy farm

It was constructed during Soviet times, and most of facilities are well settled.

The ventilation of the cattle shed has to be designed most carefully to raise cattle healthfully.

The ventilation system is the structure to incorporate outside air as much as possible in the summer, focusing on a ventilation structure with emphasis on natural ventilation.

For the winter season, a structure to prevent condensation by maintaining the minimum ventilation to reduce the amount of blowing snow and cold air is desirable.

Most issues with the shed structure in this area are the insects in this ventilation and adjustment of the ventilation. Ventilation is not sufficient in cow sheds, especially in small-scale farms.

Current sheds have been a hermetically sealed environment and increase the humidity of the entire shed. This is not desirable for the physiology of dairy cattle. In addition, working in a healthy environment with low humidity is also very important for the farmers. The structure of the roof should be open on the top of the roof, as indicated in figure 4-1



Picture 4-3 Typical dairy shed at small-scale farm

①

Ventilation system is not well-designed, and cleanliness is not sufficient.



Picture 4-4 Typical dairy shed at small-scale farm

②

Floor is too short.

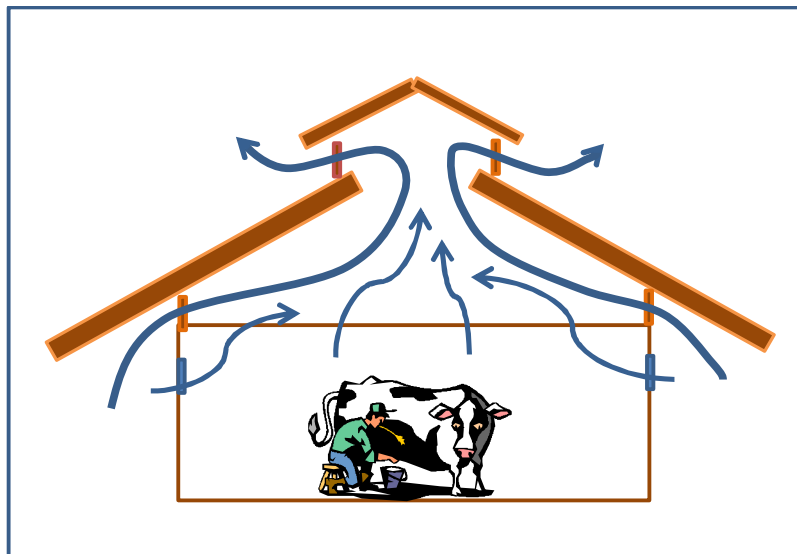


Figure 4-1 Ideal ventilation system

It is sufficient if there are several windows in small-scale shed.

Ideal dairy cattle shed and facilities

The below is an indication of an ideal dairy cattle shed in this area, to describe in each facility and explain about issues and measure.

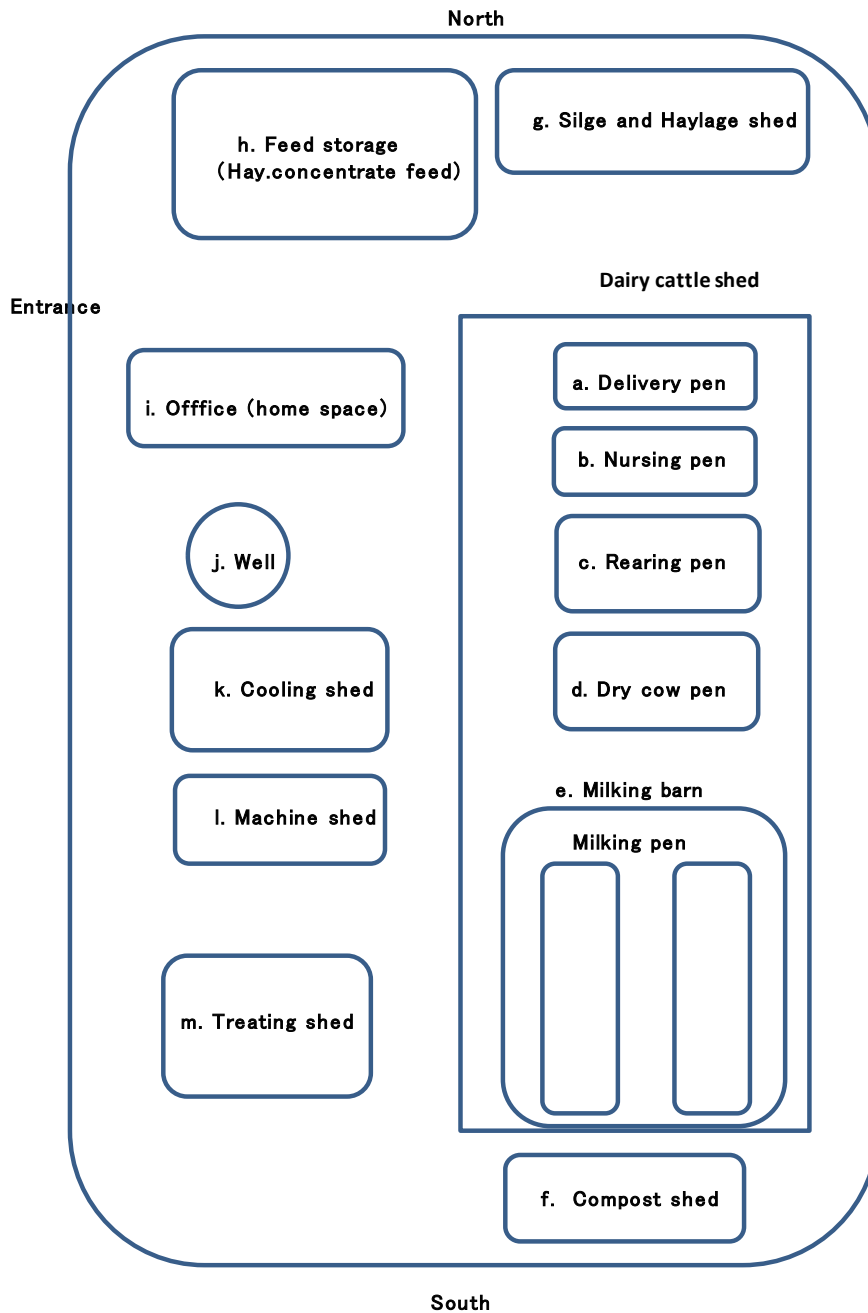


Figure 4-2 Ideal dairy cattle shed and facility.

a. Delivery pen.

There are not so many cases employing properly arranged delivery pens especially in small-scale farms. It is very much necessary to be equipped to deliver calves in health and safely. There is no problem if several cows are kept in the same pen as a group, but at the delivery time, they should be kept individually. The advisable size of a pen is 2500mmx2000. According to some veterinarians, there are some cases that need to meet difficulties in deliver of the calves due to an increase in large- sized newly born calves. Therefore, it is necessary to make wider space for the veterinarian to enter to assist the delivery.

b. Nursing pen.

It is necessary to arrange a good environment for the calf in order to avoid several diseases, such as diarrhea or respiratory diseases. Nursing pens in this area are mainly calf pens which are made inside cattle sheds. The roof is open all the time, but it is advisable to close half of the roof. In addition, it is better to close it at the back and side with some boards to protect it from cold air in the winter season. In summer time, the boards can be taken out to make good ventilation. It is necessary to put in bedding material such as straw all the time. The ideal size of a pen is 2,400mmx1,200x1200. A feeder and water container should be prepared for each calf.



Picture 4-5 One good example. ①



Picture 4-6 One good example. ②

This case was from large-scale farm, but there are some cases of good conditions among small-scale ones, too.

c. Rearing pen

For the facilities used as rearing pens it is necessary to consider not only body growth, but also changes in sociology and physiology. It is important to make groups according to growing stage. The resting area of rearing cattle is classified as free barn type and free stall type. Free barn type is a common type in this area, but it is necessary to consider about the way to clean inside of the pen. The feeder should be set up in a wide configuration so they can have equal access to the feed. The ideal size is (Number of cattle x waist width x 1.5) One of the most important things about dairy cattle raising in this area is lack of care in water preparation compared to feeding management. Regarding rearing cattle, their drinking water increases with body weight gain. Many types of watering devices can be seen here, such as re-use of drums or drainage

canals made of cement. It is important is considered carefully about the amount of drinking required, and supply it from the water resource because water should be supplied every 24 hours.

Table 4-1 Grouping indication.

Group	Age (Month)	Weight (kg)	Philological variation.
1	2–4	30–90	To learn socially after being weaned.
2	4–8	90–190	To develop stomach and sexual maturity.
3	8–12	190–290	To develop sexual maturity and establish fertilization ability.
4	12–16	290–380	Fertilization time.
5	16–20	380–470	Pregnancy
6	20 – 1month before deliver	470–500	Preparation for delivery.

Resource : Prepared by the team using reference material.



Picture 4-7 First stage of rearing cattle.



Picture 4-8 Middle stage of rearing cattle.

These are examples from a large-scale farm. The cattle are being raised in good conditions.

d. Dry cow pen

The facilities of a dry cow pen should take into consideration protection from the stress of delivery. It is better to build the pen under consideration of the first delivered cow. Free barn type is commonly constructed in this area.

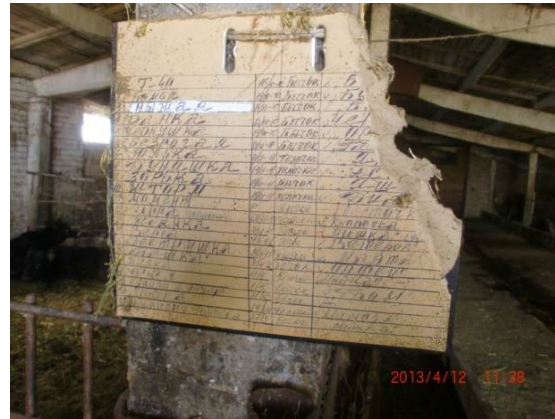
The cattle should be cared for by grouping as bellow:

- ① Two weeks from start of dry period (First stage)
- ② After first stage (Middle stage)
- ③ 2 weeks before delivery. (Near stage)
- ④ Delivery time (Delivery pen)

Those groupings are ideal, but there are few cases that have introduced the grouping system. It should be kept individually very close to delivery time.



Picture 4-9 Final stage.



Picture 4-10 Data of delivery history.

The name of cow and its data such as inseminating data, name of sire are written on the paper. It is much better if those data are written in a note book.

e. Milking barn.

The facilities in a milking barn are directly connected to the milk production and working efficiency for the workers. It is necessary to consider whole management such as feeding, barn cleaning, and amenities for cows. Milking barns are classified into two types; one is free barn and the other is tight barn types. The main issues regarding the milking barn is the lack of cleaning, especially the milking floor. In most cases, there is a large amount of manure on the floor.



Picture 4-11 Large-scale type ①



Picture 4-12 Large-scale type ②

One of the causes of producing unsanitary milk is lack of cleaning of the floor.

(e-1) Feeder

The feed taking time for cows is 6-9 hours on average. The important thing is avoiding competition among cows while they are eating. Therefore, when designing of a feeder it is necessary to consider the size of cow. The ideal size is 400-500mm in height, 1,200mm in width. This is the ideal size for taking feed for an ordinary size of cow. Regarding the feeder material, it is necessary to consider the workers' sufficiency in cleanliness after feeding time.



Picture 4-13 Feeder

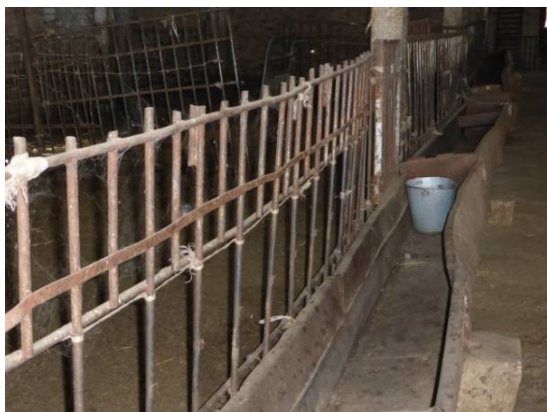
This feeder is the worst. It is difficult to eat feed because the feeder is too narrow.



Picture 4-14 Ideal size of feeder.

(e-2) water supplier

Milking cows drink their water 120kg/day on average. They drink it divided into 10-15 times per day. The dairy farmer does not care so much about drinking facilities, especially on small-scale farms. If drinking water is not sufficient, cows are not able to produce as much milk as the farmer desires. Farmers need to always seriously consider this. In addition, clean and sanitary water should always be provided.



Picture 4-15 Watering facilities ①



Picture 4-16 Watering facilities ②

Many small-scale farms do not care much about drinking water for the cattle.

f. Compost shed

During the survey, it was not possible to recognize the actual situation of compost making. Some of the dairy farms produce a lot of manure every day. Most of it is abandoned near the farm without using it as organic fertilizer. As the background of this condition, livestock production is carry out by pasturing method mainly; therefore, manure is distributed to the field naturally. In addition, there is not so much equipment, such as tractors, to transport manure to the farmland, although farmers understand the fertilizing value of manure. There is a case in a poultry farm, where the manure from their farm is disposed of directly into the river near their farm. Those cases should be strictly controlled by law. The advice is to construct a compost shed with a simple roof.



Picture 4-17 Abandoned manure.

g. Silage and Haylage shed.

Regarding the issue of feed storage, silage and haylage has been undertaken since Soviet times. They are especially utilized widely on large-scale farms. The issue in this matter is that it's not so easy technically to make silage in small amounts compared to large amounts. Therefore, it is necessary to establish a group farming system to produce silage, and utilize it together.

In addition, many small-scale farms do not have the necessary equipment, such as chopping machines.



Picture 4-18 Quality test.

Most silage quality belongs to middle class.



Picture 4-19 Small type silo.

Indonesian dairy farm making silage using this type small silo.

h. Feed storage.

Large or medium-scale farms have sufficient storage. However, small-scale farms utilize the spaces in the cattle shed. Many of the farms prepare the storage shed with a simple roof for protection from rain or snow.



Picture 4-20 Utilizing spaces in shed.



Picture 4-21 Simple type of storage shed.

i. Office

Most large-scale farms have offices, but small-scale farms do not. Wide space is not necessary for book keeping, but it is sufficient if there is a notebook for regular use on the desk.

j. Well

A basic necessity of dairy farming is water. In other words, if you are not able to obtain water sufficiently, you should not take up dairy farming. Most large sized dairy farms prepare water resources properly, small-scale farm do not do so in many cases.

k. Cooling shed.

Most large-scale farms are equipped with milk cooling facilities , but there are not so many on small-scale farms. The reason is that many farmers do not have enough knowledge or skill about milk sanitation. Many cases can be seen, where the raw milk goes to a milk collection point without initial cooling. It is not easy to introduce expensive cooling machines, especially to small-scale farms, but all of them should understand the effect of cooling on the results.

l. Machine shed.

As is commonly understood, farms should keep their farming tools properly in a machine shed; it is recognized as an “outstanding farm”. During this survey, there was only one case that could be recognized:



Picture 4-22 Machine shed

All the farming tools are well arranged.

m. Treating shed.

Dairy cattle are apt to be contaminated by many diseases compared to other animals. The major disease is mastitis; if a cow is seriously infected by mastitis, it is better to separate it from other healthy cows, and put into a treating shed. Additionally, artificial insemination is getting popular recently; it is convenient to keep instruments used for that procedure in the treating shed, together with other drugs.

Concerning artificial insemination, 300 sets of instruments have been provided by Turkey.

5 Veterinary policy and livestock health

5 Veterinary policy and livestock health

5.1 Veterinary education

The education system of Kyrgyzstan is fundamentally the same as that of the former Soviet Union; two-year preparatory course and then higher education (college and two-year or four to six-year university). After the nine-year compulsory education, there are technical schools. Veterinary universities are five years and Medical universities are six years to complete. The details of the veterinary universities are shown in Table 5-1.

The veterinary education sets a three-year Veterinary Assistant or Para-Veterinarian course after the nine-year compulsory education and all the three veterinary universities currently existing have this three-year course (Table5-1).

Table5-1 Veterinary universities in Kyrgyzstan

Name	Area	outline
① Kyrgyz National Agricultural University	Bishkek	the former Soviet Union system five-year
②Jalal-Abad University	Jalal-Abad	50 students/class
③Osh University	Och	three-year veterinary assistant system attached
④ Kyrgyz-Turkish "Manas" University	Bishkek	EU system adopted comprised of four research sections of liberal arts, basic, applicable and clinical five-year 20 students/class The premise of the university (400,000 km ²) is offered by the Kyrgyz government and the rest by the Turkish government. Kyrgyz and Turkish language used 5% of all the students must be Kyrgyz.
⑤ State Veterinary College	Batken,Issyk-Kol, Narin,Chuy	There are four colleges of tree-year Veterinary Assistant or Para-Veterinarian course in Kyrgyzstan.

In Kant, outside Bishkek in Chuy, located is State Veterinary College which has a three-year Veterinary Assistant course. This college accepts 50 to 60% of students from each state. The quota is 25 (tuition-free), however, the over-quota is not entitled to the government grant and they have to pay tuition (10,000 Com/year). They accept 25 to 30 students a year; 20 to 30 of them are female students and 80% are from the rural areas. Those who completed the eleven-year compulsory education (preparatory course) are also accepted and they can graduate after one year and a ten-month basic education. The qualification of Veterinary Assistant or Para-Veterinarian granted after the graduation is issued from the college and it is valid in all the Central Asian countries of the former Soviet Union. Although, 90% of the graduates go on to the department of veterinary medicine, which indicates that the college plays a role as a preparatory school for a regular veterinary university. The graduates are mainly employed by local veterinary agencies, village offices, animal pharmacies and private veterinarians. It is also possible that the students gain the qualification

of artificial inseminator in college. Although the number of Veterinary Assistants and Para-Veterinarians are unclear due to the lack of the alumni associations or unions of veterinary assistants, it is estimated to be in the hundreds.

5.2 Problems surrounding veterinarians

The Kyrgyz political organizations and organizational structure deteriorated after the downfall of the former Soviet Union in 1991. Since Kyrgyzstan could not adopt the former Soviet system or organize a new system, the veterinary structure, system and their treatment have drastically changed.

Table5-2 Treatment and salary system of veterinarians in the former Soviet era

① Basic salary of state veterinarians	30%
② Allowance for animal medicine	30%
③ Allowance for veterinary services	30%
④ Veterinary counseling fee	10%

The treatment of the veterinarians was guaranteed by the government to a certain extent in the former Soviet era as shown in Table 5-2 above. However, the organizational structure of the government changed after the downfall, ①,② and ④ in the Table was cut off and their income lowered to the one-third only with ③. Moreover, the collective farm system such as Sovkhoz and Kolkhoz deteriorated, which made even the income from the veterinary services (③) unstable and the veterinarians came to be belong to the lowest class among all the university graduates in terms of income. This means that their income is about \$100 a month. Thus, they are not trusted by farmers and the society and the state veterinarians are put to grass in the deteriorated organizations. Unnatural scenes, such as a veterinary assistant who is normally supposed to work as an assistant under supervision of a veterinarian contacting with farmers, offering artificial insemination or simple veterinary services (injection, medication and so on) and gaining more income than veterinarians, can be observed.

Dr. Zholsoshbek Dadybaev, the director of Veterinary Chamber, practically a veterinary lawmaking organ, says that it is important to build veterinary system and reorganize the veterinary education stressing the following points.

Table 5-3 Improvement plan by the director

Theme	content
Fundamental reorganization of veterinary and livestock law (Legislation)	Improvement on insufficiency of right registration system veterinary graduates
Strengthening of the veterinary education (Veterinary Education)	Clarification of standings of veterinary university graduates and college graduates
Organization of Ministry of Agriculture (Structure)	Foundation of veterinarians' union and strengthening of its function

5.3 Organization of veterinary association

There is no veterinary association of the whole country. Although it is said that there are about three organizations, no precise data has been found. There are some areas where a small number of veterinarians are working as a group.

We verified a group called “Association of Pedigree Stock Breeding” founded by three veterinarians where they conduct mainly artificial insemination and also possession of breeding cattle, semen collection and freeze preservation (planning)

The representative of the group is Dr. Djaparkulov Kalmurat who was constructing a sperm collection workspace next to his own house. A tank of liquid nitrogen and equipment necessary for sperm collection were loaded in the trunk of the veterinarians’ cars and it seemed that they are working energetically. Also, four veterinarians are working in the private Veterinary Clinic; two female veterinarians are in charge of the animal pharmacy and two male veterinarians are in charge of veterinary services (mainly castration, artificial insemination, birth helping and surgery). During our one-hour visit, one farmer visited to purchase digestive for cattle. Asked if there are organizations such as a union, they said no. It is important for private veterinarians to exchange information or hold a workshop for improvement of their techniques. Although the accurate number of veterinarians is unclear due to the lack of veterinary organizations or the registration system of veterinary license, it is estimated as the number below from the hearing from the government officials and private veterinarians (Table5-4).

Table5-4 Estimated number of veterinarians in Kyrgyzstan

Unit : person

Number of veterinarians in whole the country		1,500
Breakdown	State veterinarian	1,000
	Practitioner	500
others		700~800

Note: Included in “others” are those engaged in other jobs than a veterinarian for treatment problems or else even though they have a license. If others are included, the number will reach 2,200 to 2,300.

5.4 Livestock health

(1) "Veterinary Diagnostic Center"

It is considered equivalent to "National Institute of Animal health"² in Tsukuba.

There are nine sections in the main office of the center and 48 veterinarians are working. It has 27 branches in the country and each has three sections and 363 staff including 290 veterinarians. In the main center, 3.5 million bodies are tested for free every year. However, the number of 3.5 million is the final number of test items; one body is tested variously, thus, the number of original bodies may be 1/5 ~ 1/10 of it. As the various test equipment, the experiment tables and the stages of microscopes were covered with dust when we visited each laboratory of nine sections, it is unthinkable that millions of bodies are tested every year.

(2) "Veterinary Center of Certification"

Six veterinarians work for this organization and 62 veterinarians conduct the inspection at importing mainly animal medicine nationwide. 98 inspections were performed chiefly on samples of hormone drug, antibiotic and vaccine last year. Although we inspected the examination rooms along with "Veterinary Diagnostic Center," the examination of test bodies of various medical supplies was not witnessed.

258 animal medicine sales offices are registered throughout Kyrgyzstan and sampling test³ of the medicine sold shows that about 60% of them are presumed to be illegally imported. In malicious cases, Russian labels are often newly attached after unsticking labels showing they were made in China. The government is striving to protect domestic products exempting 12% of custom since the quality of Turkish and Russian animal medicine is inferior, however, there is no end to the cases of misuse of such measures⁴.

What is in common between the government organizations in (1) and (2) above is the fact that the organization is not functioning efficiently even though veterinarians are assigned and the feedback to farmers and local people are thought to be little. Thus, it may be no exaggeration to say that the fundamental improvement of animal health sector in Kyrgyzstan is essential.

As an example, when we visited "Bulls, KG" farm on the site of a former Sovkhoz, we were asked the remedy for lameness which about 20 of their cows suffer. In Japan, there exists "Livestock Hygiene Service Center" in each prefecture under the umbrella of "National Institute of Animal Health" and if a problem happens, they immediately seek the cause (bacteria) from the test body and the treatment is started through the local veterinarian in charge. There is a "Livestock Hygiene Service Center Branch" in all the 14 sub prefectures of Hokkaido and about 200 veterinarians are engaged. No movement as such is observed in

² National Agriculture and Food Research Organization, National Institute of Animal Health : A research institute that is conducting broad researches from basic to development/application on prevention, diagnosis and treatment of animal diseases with "supporting the health of all living beings" as a goal

³ According to the director, veterinary inspectors conduct the examination of the medicine on sale once a year, but this frequency is not enough to grasp the actual figure.

⁴ Based on the hearing from the director

Kyrgyzstan.

For reference, “Bulls, KG” farm had 14 thousands cows and 700 workers in the former Soviet era. They currently possess 200 milk cows (mainly Simmental), 250 meat cows (crossbreed of Hereford) and 34 workers (including one veterinarian and two veterinary assistants). The land is 62 km² and 300 m² is used for feed. Currently constructing a building for milking newly equipped with tappers, they are working vigorously.

(3) Major infectious diseases⁵

In Kyrgyzstan, foot-and-mouth disease, brucellosis, echinococcus, anthrax disease, rabies and sheep/goat chickenpox are identified as major livestock infectious diseases. As the damage by foot-and-mouth disease and brucellosis is especially huge, Ministry of Agriculture is the top priority to these. In Table 5-1, 5-2 and 5-3 is shown the transition of the numbers of affected patients of zoonotic infection (brucellosis, anthrax and echinococcus) in Kyrgyzstan. It is especially grave that the number of the affected by brucellosis has been increasing from year to year. Table5-4 shows the number of livestock affected rabies.

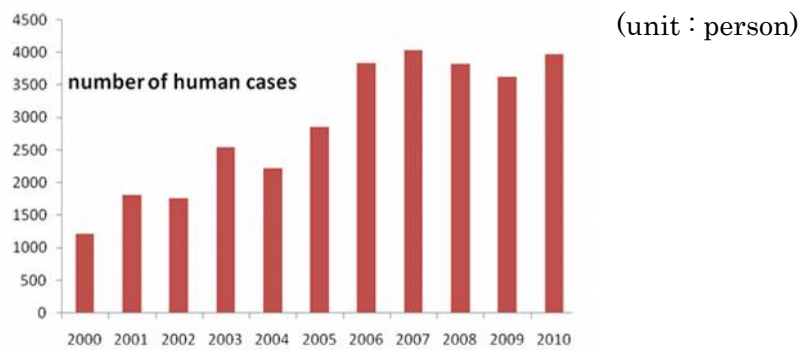


Figure 5-1 Transition of the number of brucellosis-affected patients

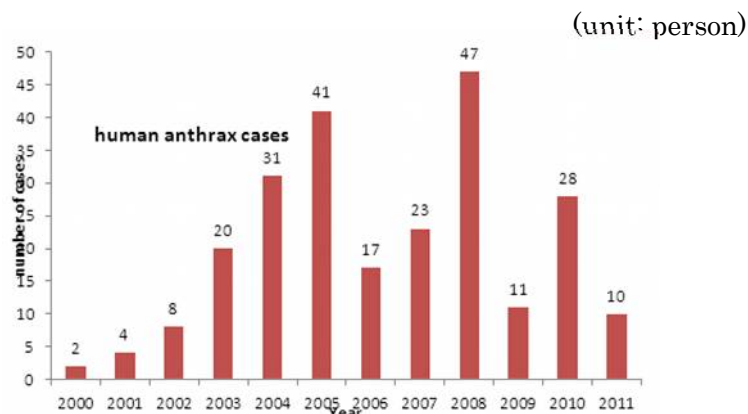


Figure5-2 Transition of the number of anthrax disease-affected patients

⁵ Based on the hearing and documents from Ministry of Agriculture and melioration of the Kyrgyz Republic Agricultural Projects Implementation Unit, Mr.Mairambec Tairov and Dr. Kalys Yumakov

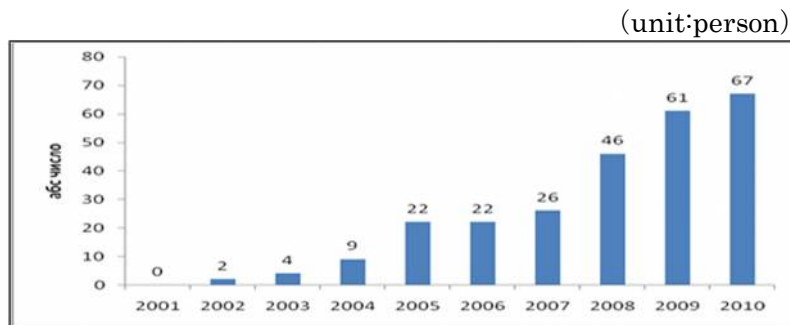


Figure5-3 Transition of the number of echinococcus-affected patients

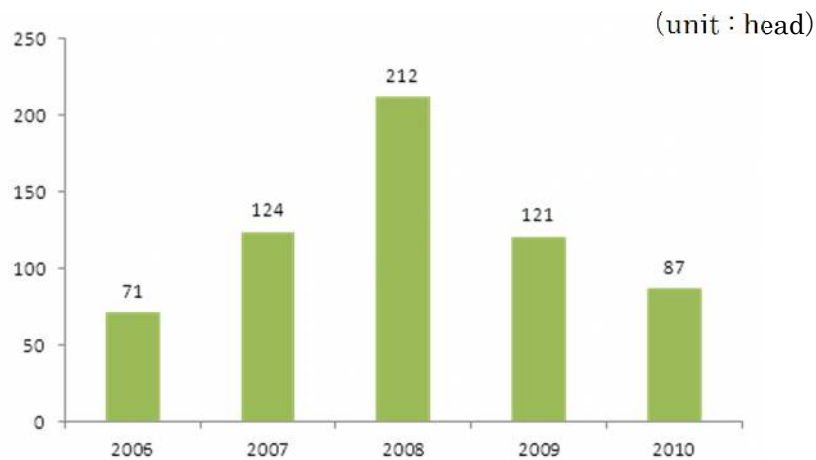


Figure5-4 Transition of the number of rabies-affected livestock

Focusing on brucellosis which is zoonotic out of all the infectious diseases, Agricultural Project Implementation Unit (APIU) in Ministry of Agriculture and have been implementing the following measures.

The extermination project has been developed in Narin state since 2008 supported by World Bank, EU and International Fund for Agricultural Development. The covered is all the livestock in AK-Tala county. 4584 blood samples from the sheep in the area and 340 from the goats were tested and 7.4% were positive. Also, 0.49% of cows (1027 blood samples) and 0.5% of horses (982 blood samples) were positive. A vaccination project, mainly targeting cows, has been developed based on this result, and the practical accomplishment as in the graph has been verified till 2010. This graph shows a drastic decrease of the patients of brucellosis in Narin state.

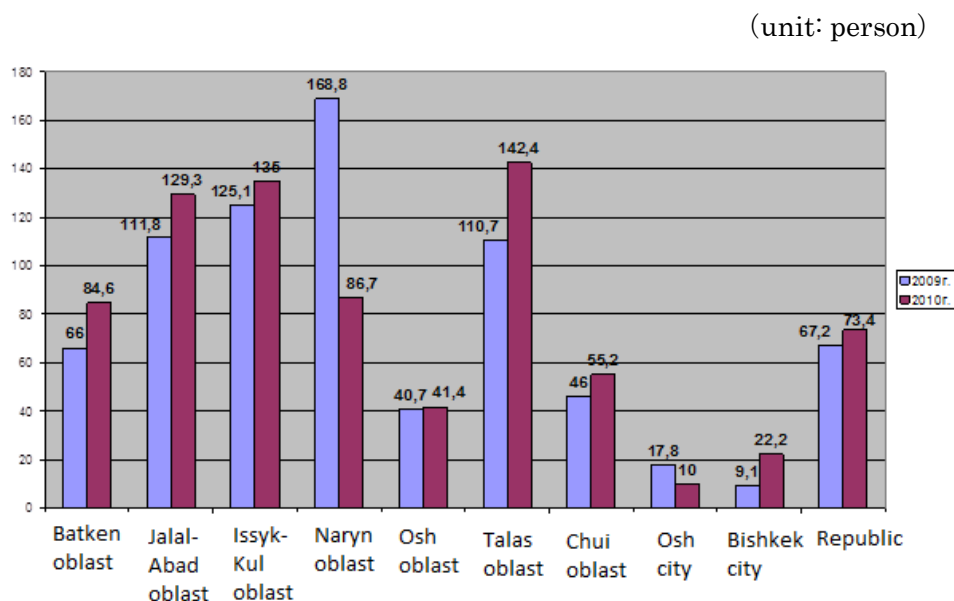


Figure5-5 Transition of the number of brucellosis-affected patients in each state (2009 and 2010)

5.5 Proposal

(1) Veterinary education

The classification of the organization, system and qualification of the two systems of five-year veterinary and three-year veterinary assistant from the former Soviet era is unclear, which tends to lower the quality of veterinarians.

It is desirable to standardize the EU system (EU standard, five-year veterinary courses) adopted by Kyrgyz-Turkish “Manas” University. But it is not simple to change an education system. For this, legislation like Veterinary License Act may be necessary and attention must be paid so that the present students are not disadvantaged.

- ① Veterinary universities with a three-year course should standardize Department of Veterinary Medicine of five-year taking enough time for transition since students are currently enrolled.
- ② The future vision for the colleges only with a three-year course should be examined allotting sufficient time. Upgrading to a department of veterinary of five-year or transforming to an agriculture university like a training school for farmers is to be considered.

(2) Improvement of livestock hygiene system

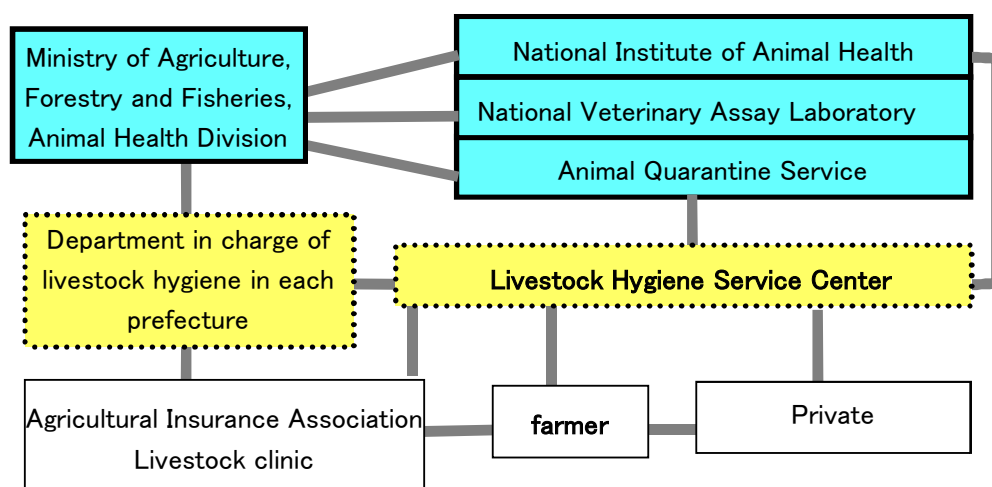
Legislation like “Livestock Hygiene Service Centers Act” in Japan should be founded and the department of livestock hygiene should be placed in the government and each prefecture based on this law. Correlating closely, improvement of livestock (animal) hygiene of the whole of Kyrgyzstan is to be aimed for.

To achieve it, the backup from the vertical (the government) and the horizontal (veterinary associations and farmers) it is needed.

Though, forming a Japan-like organization is presumed to be difficult. Therefore, starting from Ministry of Agriculture/Livestock Industry Bureau, it will be possible that a central department (National Institute of Animal Health in Japan for example) is created in the government which collaborates with related organizations in each state, promotes livestock hygiene, cultivates hygiene-related veterinarians and eventually transforms these related organizations into those like a livestock hygiene institute. It is desired that they offer services for farmers in the future.

Although the collaboration of the vertical (the government) and the horizontal (veterinary associations and farmers) will be realized by this way, it is ideal that the legislation like the Livestock Hygiene Service Centers Act in Japan is enacted.

Box5-1 【Reference】 Livestock hygiene management system in Japan



Note : Japan : Livestock hygiene service center→127、veterinarians→2,147 (March, 2009)
Hokkaido : Livestock hygiene service center branch→14、veterinarian→182 (April, 2010)

【Role of the government and related organizations】 <shown bold in the chart >

- Animal Health Division in Ministry of Agriculture, Forestry and Fisheries plays a central role in livestock hygiene management.
- National Institute of Animal Health researches and studies livestock epidemics.
- National Veterinary Assay Laboratory assays and approves animal medicine and biologics.
- Animal Quarantine Service assays animals and animal products imported or exported.

【Role of the local governments】 <enclosed by dotted lines in the chart >

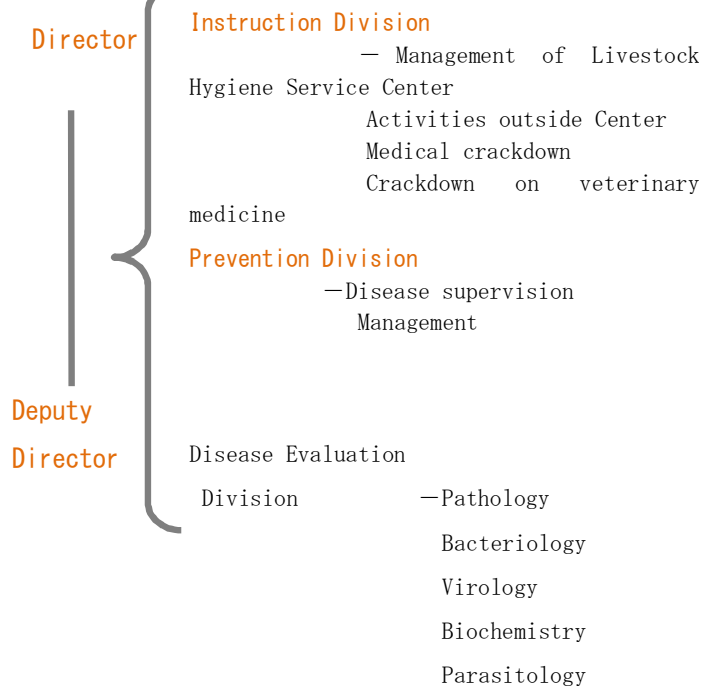
- Livestock Hygiene Service Centers in the 47 prefectures collaborate closely with Animal Health Division in Ministry of Agriculture, Forestry and Fisheries as the center of livestock hygiene management in each municipality.
- Livestock Hygiene Service Center is placed in each prefecture and it takes legal measures to livestock epidemics.
- Livestock Hygiene Service Centers supervise outbreak of livestock diseases through various activities.

※Outline of Livestock
Hygiene Service Center

(1) Major roles

- Prevention and management of animal epidemics
- Diagnosis services
- Research and examination of livestock hygiene
- Activities related to livestock hygiene, consultation for farmers on veterinary medicine and pharmaceutical matters

(2) Organization (Example of Ishikari
Livestock Hygiene Service Center)



(3) Organization of veterinarians

For informing the transfer of new technology, the outbreak of epidemics and their countermeasures in a short time, organization of veterinarians is effective. The procedure of organization is as below.

- ① Starting from small groups of those involved in artificial insemination and veterinarians, the groups are to be expanded from the local level to prefectural and eventually to nationwide organizations
- ② Veterinary universities should work together first through extension programs, credit transfer, cooperative researches and presentations (in a form of an academic conference, for instance).
By founding alumni associations of each veterinary university, meetings after graduation should be for a start of future collaboration.
- ③ By forming a nationwide veterinary medical association, it should be recognized so that information exchange, lifelong education, conference presentations (improvement and presentation of researches) and the unity and cooperation of the members can be influential to farmers, general public and also the government.

(4) Farmers' organization

Farmers should establish a new form of farmers' organizations with the consciousness that they are an owner/manager themselves, not just as a member of a large-scale collective farm like Kolkhoz or Sovkhoz in the former Soviet era.

It may be necessary to change their mentality so that they realize they are a manager and an owner of the land and at the same time, they are a farmer who lives on agriculture, being free from their own trap of thinking that they are a member of a collective farm. If it is achieved, farmer movement or action for farmers' union may grow naturally.

For improving the problems below, we make a proposal as a support from Japan as below.

5.6 Possibility of support from Japan

(1) Acceptance of human cultivation trainees

- a. Acceptance of young people who hope to be farmers by agricultural successor training school like Hakkou Gakuen, Hokkaido Agricultural Technical College. The problem is their English ability.
- b. Utilization of the existing training courses
 - i. Three-month course for veterinarians

This is "Group Training Course in Veterinary Technology for Farm Animals" delegated to Hokkaido Veterinary Medical Association by JICA Hokkaido (Sapporo). It is originally a three-month course mainly on breeding of cows in English with a history of 18 years. More than 120 of mid-career veterinarians have participated from 36 countries and they are actively working in their own countries after the course.

Box5-2 【Reference】 Outline of Group Training Course in Veterinary Technology for Farm Animals

I . Purport

With improvement of the standard of veterinary techniques as the goal, we offer knowledge and techniques of (1) veterinary management, (2) public hygiene management of farm animal-related products and (3) breeding, diagnosis and diseases of farm animals mainly through examples of cows.

The livestock and dairy industry of Hokkaido have been large-scale, equipped with the advanced technology and always leading in Japan since the latter part of the 19th century. This training course is conducted based on this experience in Hokkaido.

< Purpose > The provision of the following knowledge and techniques is targeted in this training program.

- General knowledge on disease treatment of livestock (mainly cows)
- Food hygiene treatment of meat and milk products
 - Knowledge and techniques on breeding of livestock (mainly cows)
- Veterinary management system in Hokkaido

< Subject > Government organizations or research institute belonging to the field of veterinary technology for farm animals

< Method > The participants are offered an opportunity to attend lectures about veterinary technology for farm animals, visit related facilities and participate in practical training of treatment and discussion with other participants.

II . Content

1. Period of the course : total : about 8 months

Pre-training course (in their own countries): about 2 months, actual training course : about 3 months, final training course (in their own countries): about 3 months

2. Qualification / subject organization : Department of veterinary medicine in the government organizations, experts in veterinary institutes

3. Language used : English

4. Purpose of program

At the end of the program, participants have to submit “Action Plan” about improvement of veterinary technology in their own countries. In this “Action Plan,” method to diffuse related knowledge and techniques gained in the program to relating organizations or colleagues.

The following is what participants conduct in Japan to achieve the goal of this program.

- ① To learn the method to improve clinical technique (internal medicine, surgery, breeding) of diagnosis of livestock (mainly cows)
- ② To learn the method to develop regulatory measures for epidemics and group infection
- ③ To learn hygiene management such as meat inspection and food safety for the supply of safe livestock products and veterinary public hygiene
- ④ To learn the current situation of the veterinary administration and education research in Japan and the role of veterinarians in the livestock field
- ⑤ To create a clear and realistic Action Plan to diffuse the knowledge and techniques of veterinary technology

5. Upper goal

Improvement of veterinary technology and knowledge and stable supply of safe meat and milk products in each country

ii. One-month course for organization of farmers

”Organizing farmers and human resource development course” delegated to Hokkaido University (Professor Sakashita) by JICA Hokkaido (Sapporo) is also conducted in Russian. It is effective to make it a program for Kyrgyzstan and to integrate the hygiene management and the construction of a mutual aid system for epidemics in the dairy field to the program contents.

c. Proposal of a newly-founded course (Livestock artificial insemination and so on)

In Japan, one-month “Livestock artificial insemination workshops” for artificial inseminators are held and a text book for this has been prepared. The ideal is that lectures about livestock breeding, especially selection of breeding cattle, and progeny test are offered in the first half of the course, and those about technical matters of artificial insemination in the latter half. If there is a Russian interpreter and the text book translated into Russian, this course can be conducted in JICA Hokkaido (Sapporo and Obihiro).

Meanwhile, if it is difficult to hold the course in Japan, it will be possible to consider a one-month course in Kyrgyzstan. Two to three lectures are sent from Japan. As a venue, a university or a farm which is able to provide five to ten cows for the practical training is presumable.

d. Construction of a milk plant by the Japanese fund

If the dairy cooperatives (Satsuraku) that supported this research in Japan is possible to construct a milk plant in Kyrgyzstan for example, Kyrgyzstan will become a large experimental field where the Japanese model can be applied as it is. Satsuraku with about 120 farmers as members carries out the business of purchasing oxen born, raising and selling them as meat. Also they have a formula feed manufacturing factory and gives instructions on the sales of formula feed to the members. They accept milk exclusively and sell products such as Satsuraku milk. About 15 veterinarians are conducting the detailed management of cows’ health and hygiene.

It is hoped as a long-term outlook that the construction of a milk plant in Kyrgyzstan leads to develop the “Milk Road” connecting Europe and Asia like the Silk Road in the past. Learning rare milk products brought from Europe to Asia will be enabled by this, and there is a possibility of Kyrgyzstan being a hub of the Milk Road which may help the development of new products which can be introduced to Japan in the future.

e. Short- and long-term dispatch of experts

If the construction of a milk plant supported by Japan is possible, it will be enabled to dispatch many experts of agricultural management to affiliated farmers (livestock experts), animal health management (veterinarians skilled especially in artificial insemination, mastitis, castration, birth helping and hoof cutting) and milk and food management in the short and long term.

f. Sharing Japanese experience

As a member of Asia, those involved in agriculture in Kyrgyzstan are interested in Japan which achieved economic development in a short term and now possesses the latest technology. Therefore, the attitude that they want to learn from Japan was observed among the government officials, researchers and even students. Various seminars and research conferences in the agricultural field were held in Kyrgyzstan during this research (Reference). It is considered to be beneficial for enhancing the presence of Japan to dispatch experts to these seminars and conferences and offer information continuously. Additionally, the construction of a collaboration system such as “grass-root exchange” and “academic exchange” is desired.

Box 5-3 【Reference】The first Kyrgyz collaboration forum hosted by Academy of Science, President Office of Kyrgyzstan

In the round-table meeting hosted by Academy of Science, President Office of Kyrgyzstan which the minister of agriculture of Kyrgyzstan and Koike ambassador from Japan attended, nine presentations were made mainly by the ODA donor countries (Belgium, Canada, France, Switzerland and Japan) on the union organization and union finance of each country. Japan made the following three presentations.

Theme	About the development of the cooperative union system in Kyrgyzstan
Date and time	September 5 (Thur.), 2013 10:00~17:00
Venue	President Office, Round-table meeting hall, Ala-Archa, about 100 of participants
Presentation by Japan	①Agricultural Cooperatives of Japan and its finance Tetsuro Shimizu Norinchukin Research Institute Co.,Ltd Division Manager of Basic Research
	②The comprehensive system of Agricultural Cooperatives in japan Akihiko Sakashita Research Faculty of Agriculture Bioresources and Product Science of Hokkaido University Professor
	③ Agricultural Cooperatives of Hokkaido (Hokuren) and National Agricultural Insurance Association (NOSAI) Hiroshi Kanagarwa Member of research group of Kyrgyz Republic Data Collection Survey on Dairy Industry Inception

President of Kyrgyz Bank asked Mr. Kanagawa if there is a case that a single NOSAI cannot pay in cases of big disasters and what they do in such cases. He responded that NOSAI of each area mutually collaborate, but if not enough, each prefecture gives a support. If it is not still sufficient, the government compensates for the rest based on “Agriculture Disaster Act” and farmers are definitely protected, he added.

6 The situation of animal production

6 The situation of animal production

6.1 The issues of dairy production policy.

During Soviet times, most dairy cattle were raised in groups at state farms. Bulls and cow necessary for utilization for livestock improvement activities were also kept properly. A lot of frozen semen from sires was also produced, and distributed to all the republic. However, during independent times, most of the sires were slaughtered and sold to the market as food. At present, there are almost no effective means for a livestock improvement system.

The individual ability of a cow tends to be decreasing. For example, was 2200kg of average milk production in 2000, but it was 2036kg in 2010. This was caused by insufficient cattle feeding management of dairy farms and also caused by a lack of high quality cows, as well. Some people who have knowledge and experience about artificial insemination import frozen semen from other countries such as the USA and European countries, and sell it to veterinarians in Kyrgyz.

There are also several cases of frozen semen production by private individuals, utilizing old facilities constructed during Soviet times.

Arstanbek Farm

This farm is managed under the assistance of the former Agriculture Ministry, located in the Panfilor area near Kazakhstan. It was a collective farm during the Soviet era. There are 60 employees and 400 km² in total land. There is 430 crossbred cattle between Angus and Alla Too, and 20 purebred by Alla Too bulls. They collect semen from Alla Too bulls once a week to produce frozen semen, and to provide it to the farms that are interested in breeding Alla Too species, free of charge. They imported frozen semen of Angus species from Russia (250Som/dose)



Picture 6-1 a Bull (1300kg)



Picture 6-2 Semen collection equipment

The Biotechnical Centre of the Kyrgyz Scientific Research Institute of Animal Industries and Pasture

This is one of the state farms. The number of employees is 22. 2 technicians are in charge of artificial insemination. There are 150 Alla Too species cattle, and 12 pure breeds among of them.

The main purpose of this farm is semen collection activity, but milk production is also carried out now using 50 Alla Too cows. The milk production is 4,000kg/year and the fat content is more than 4%.

Semen collection is carried out 3 times/week. The number of bulls are 5. 3 are Alla Too and 2 are Holstein. The production method and procedure were learned from Soviet technology. The frozen semen product ratio is 150-200 parts from one ejaculation. The selling price to veterinarians is 70 Som/piece. The quality reputation is high among veterinarians. The fertilizing rate is 80% on average. The problem is many veterinarians have introduced straw type insemination equipment recently; therefore, it is not applicable to their old-type method.

The below indicates the procedure to produce frozen semen.



Picture 6-3 Semen collection



Picture 6-4 Vitality check



Picture 6-5 Making Extender



Picture 6-6 Keep under 4°C



Picture 6-7 Keep under -80°C



Picture 6-8 Deposit semen into the container.



Picture 6-9 put the semen into the LN2



Picture 6-10 Depositing tank for frozen semen

While understanding this situation, some issues were recognized as below. These kinds of activity are sometimes useful if only in a limited area, but it is not advisable for any person or organization to try to apply artificial insemination by themselves without an adequate strategy for livestock production. The sire for semen collection should be chosen from the group of pedigree sires which have been selected very strictly. If people use the semen from just an ordinary class of sire, it will cause poor results, and it can never be expected to produce desirable livestock improvements. In this connection, the Ministry of Agriculture showed the below plan.

(1) Measure of Ministry of Agriculture.

The Ministry of Agriculture is also worried about livestock production issues and recognized the necessary of a strategy plan for this matter. They are trying to carry out several activities in cooperation with other donors.

a. Assistance from other donors.

(USAID)

It is very much necessary to develop a strategy plan concerning livestock improvement activities. Concerning this matter, USAID can provide US\$7,000,000 in total, and the Ministry of Agriculture has decided to establish the National Livestock Improvement Center in Chuy.

1. To introduce 10 high quality bulls, and raise them in the National Livestock Improvement Center. Those bulls will be fundamental resources for providing cattle semen within the country. There are 162 artificial insemination centers in the country at present; it will be increased to 300 in the future. Some of the existing artificial insemination centers do not work sufficiently; therefore, it is necessary to improve their condition as well.
2. The one weakness of the livestock situation in the country is the lack of technology among small-holders. As a measure for this problem, the Ministry of Agriculture is planning to establish a dairy farmer training program. 10-15 dairy farmers will be selected, and will provide various techniques, such as feeding management. Those farms will be demonstration farms for other ordinary farmers.

6.2 Utilization of other animals.

(1) Milk production from Yaks

There is stable agriculture production thanks to a good climate and fertile soil in Kyrgyz. On the other hand, about 40% of land in Kyrgyz is over 3,000m in altitude, and there are several types of livestock industry being carried out. One example is Yak raising for milk production.

Most Yaks are raised in over 2,000m altitude areas. The number of Yaks is rapidly decreasing. There were 80,000-90,000 during Soviet times, but only about 30,000 are recognized at present. Yak raising was carried out under the initiative of the government during Soviet terms, but it is all under private management at present. Although Yaks are very important for the people who live in highland areas; it is not so significant for the people who live in lowland areas.

There are an increasing number of cases of crossbreeding between Yaks and cattle, in order to handle them more easily. In addition, crossbreeds can be sold for higher prices, more than purebred animals because their weight is heavier than purebred Yaks. For the farmers, one major merit in raising Yaks is low cost of feeding them. Yaks can grow on native vegetation in the mountains without any treatment; they do not eat high- priced feed such as grains. Therefore, farmers do not need to be concerned much about they are fed. During Soviet times, there was a Yak producers' association, but it is not active any more, at present. The nutrient content of Yak meat high, and the Ministry of Agriculture also recognizes it as high-value food.

(2) Issue

Utilization of Yak milk during Soviet times has been discussed many times . Yak milk has high nutrient component. Fat content is 6-8%, with very good digestibility. It can produce high quality dairy products such as yogurt, butter etc. However, its weakness is low milk production. It can produce only 1-3kg/day. Therefore, it is difficult to utilize it as a dairy milk industry resource.

7 Customs Union Requirements for Quality and Response within Kyrgyzstan

7 Customs Union Requirements for Quality and Response within Kyrgyzstan

7.1 Requirements for Quality Management in Customs Area of Customs Union

At present, when milk and dairy products from Kyrgyzstan are exported to Customs Union nations such as Kazakhstan, procedures must be done in line with the regulations of the Customs Union. In addition, Kyrgyzstan aims to join the Customs Union by the end of 2015, so the regulations set by the Customs Union will be applied internally in Kyrgyzstan as well following joining. Therefore, the Customs Union regulations will become required items for not just exporting companies, but for all companies in Kyrgyzstan that deal in milk and dairy products. This chapter will uncover the issues in inspection verification in Kyrgyzstan based on the conditions required by the Customs Union.

(1) Results of Customs Union inspection

A. Background and results of Customs Union inspection

On October 3, 2012, the Veterinary Inspection and Oversight Committee of the Ministry of Agriculture of the Republic of Kazakhstan (hereafter, “Kazakhstan”) brought in restrictions on the import of milk and dairy products from ten Kyrgyzstan companies based on the fact that the Kyrgyzstan Animal Husbandry and Sanitary Supervision Bureau had not provided enough information to certify that the region where the Kyrgyzstan dairy producers were was free of infectious diseases. As a result, the validity of the dairy import permissions to Kazakhstan which had previously been provided to these companies was suspended.

Following this measure, over December 24 to 28, 2012, members of the Customs Union conducted inspections of Kyrgyzstan dairy producers, and on March 26, 2013, two Kyrgyzstan companies, Bishkek-Sut and Kant-Sut, were granted import permissions. Following this, at the request of the Kyrgyzstan government, a second inspection (July 15 to 24, 2013) was held, and during September 2013 a further five Kyrgyzstan dairy producers had their import suspensions lifted.

The companies that were inspected in the target areas included seven in Chuy Province and one in Bishkek City, for a total of eight (see following table). Of these, five companies had been given import permits for southern Kazakhstan by the end of September 2013.

Table 7-1. Outline of Companies Targeted for Customs Union Inspections (Chuy Province, Bishkek City)

Company name (establishment)		Inspection dates: Dec. 24–28, 2012 Inspection results: March 26, 2013	Inspection dates: July 15–24, 2013 Inspection results: Sept. 16, 2013
1	AR-Sut	Suspension of import permit	Import permit (to southern Kazakhstan only)
2	Ursus	Suspension of import permit	Import permit (to southern Kazakhstan only)
3	Belovodskiy dairy farm	–	Suspension of import permit to Kazakhstan
4	Kant-Sut	Import permit (to southern Kazakhstan only)	–
5	Umut & K	Suspension of import permit	Import permit (to southern Kazakhstan only)
6	MIS	–	Suspension of import permit
7	Shin Line	Suspension of import permit	Suspension of import permit
8	Bishkek-Sut	Import permit (to southern Kazakhstan only)	–

Source: Survey Group summary based on *Reports on Veterinary Specialist Dispatch from the Veterinary Inspection and Oversight Committee of the Ministry of Agriculture of the Republic of Kazakhstan to Kyrgyzstan* (2012, 2013) (Companies able to export are shown shaded on the above table.)

This series of investigations by the Customs Union was based on Customs Union Committee Decision N834, “Regulations Related to the Unified Method for Joint Implementation of Product Sampling and Facility Inspections under Veterinary Control (Inspections)” of October 18, 2011, and Customs Union Committee Decision N317, “Application of Veterinary and Sanitary Regulations in the Customs Union” of June 18, 2010, which requires that products distributed within the Customs Union customs zone meet the veterinary requirements.

Dairy producers in Kyrgyzstan were also handed an import prohibition from Kazakhstan in 2011, and this had a major effect not just on the export-reliant dairy business but on the Kyrgyzstan economy as a whole.

B. Issues with inspected companies

The inspection results reports for the two inspections by the Customs Union in 2012 and 2013 noted individual issues for each company, but there were two issues common to all companies: the lack of knowledge regarding Customs Union standards and regulations for veterinary health, and the complete lack in the companies of Customs Union and Russian Federation veterinary and sanitary standards and

regulations.

When local companies were visited, there were some complaints from inspected companies that despite not yet being in the Customs Union they were still required to comply with Customs Union regulations. However, the meaning behind these statements by the management level at dairy producers is fully in line with the results of the Customs Union inspection results. In order to allow products to be distributed in the Customs Union area, the Customs Union regulations must be followed, and, following membership in the Customs Union, these same regulations must be applied even domestically, but these two facts are not appreciated.

Table 7-2. (Reference) 2013 Customs Union Inspection Results:
Issues with Six Companies in Chuy Province

Province	Issues
A	<ol style="list-style-type: none"> 1. The person in charge of livestock food safety at the company lacks sufficient knowledge of Customs Union veterinary and sanitary standards and regulations. The company lacks a production management program. 2. Windows have no nets or insect traps. (The issue noted during the inspection has not been resolved.) 3. The company completely lacks Customs Union and the Russian Federation veterinary and sanitary standards and regulations.
B	<ol style="list-style-type: none"> 1. The volume of work-use disinfectant liquid next to the tank for cheese is not shown. 2. There is no temperature management when transporting raw milk. Nor is there temperature management when bringing raw milk to the company. 3. The remaining amount of acid phosphatase in the milk and whether there are damaging somatic cells are not investigated. 4. There is nothing in the milk unloading area to prevent airborne dust and sand and other undesirable particles from entering the milk. 5. The company completely lacks Customs Union and the Russian Federation veterinary and sanitary standards and regulations.
C	<ol style="list-style-type: none"> 1. There is no cleaning with Aftermall Listerine after accepting milk, and there is nowhere to wash for disinfecting. 2. The company grounds are next to normal residences and are not paved in asphalt. 3. There is nowhere to store methods for disinfecting and cleaning. 4. Inspections by the company are not certified. 5. Disinfection is insufficient in the raw milk areas. There are not cover nets. 6. There is the possibility that the raw milk contains the remains of antibiotics and materials used by the farmer for washing. There are no inspections at the company for harmful materials in the raw milk. 7. There are no regulations for disposing of raw milk, and when the raw milk quality and safety numbers are not good enough the milk is returned to the farmer. 8. The sterile and non-sterile locations in the company are mixed, and there is insufficient management by the person in charge regarding regulations for overall veterinary and sanitary. Employees go out onto public roads in their work clothes. 9. The company completely lacks Customs Union and the Russian Federation veterinary and sanitary standards and regulations.

Province	Issues
D	<ol style="list-style-type: none"> 1. The person in charge of livestock food safety at the company lacks sufficient knowledge of Customs Union veterinary and sanitary standards and regulations. 2. The company lacks a production management program. 3. There are no nets over the doors in the area where the milk is brought in. (The issue noted during the inspection has not been resolved.) 4. Purchase a fume hood for storing chemicals. 5. The company completely lacks Customs Union and the Russian Federation veterinary and sanitary standards and regulations.
E	<ol style="list-style-type: none"> 1. The area where milk is brought in lacks control for airborne materials, and there is the possibility that dust and sand and other undesirable particles can be mixed in. 2. When bringing in milk, there is a high chance that the hose used for this at the handover port will be dirty. 3. The sterile and non-sterile locations in the company are mixed, and there is insufficient management by the person in charge regarding regulations for overall veterinary and sanitary. Employees go out onto public roads in their work clothes. 4. When finished products are laid out, there are violations where the technical space from the wall is not adhered to when the finished product (butter) is stored in the refrigerator. In addition, there are violations whereby packaging is reused when storing completed products (butter) in the refrigerator. The defrosting method in the refrigerator is not up to date. 5. There are unknown components mixed in during the production process that are not in the certification documents. 6. There are no records related to temperature management kept when bringing in dry milk. 7. There are no shower rooms in the employees' changing rooms. 8. There are no forced ventilation devices in the disinfectant storage location. There are disinfectants in the production locations (refrigerators), but more is stored there than the daily limit. 9. The company completely lacks Customs Union and the Russian Federation veterinary and sanitary standards and regulations.
F	<ol style="list-style-type: none"> 1. The person in charge of livestock food safety at the company lacks sufficient knowledge of Customs Union veterinary and sanitary standards and regulations. 2. There are no medical certificates submitted for inspections for mastitis. 3. Drugs for livestock are stored on shelves without regard to storage requirements and conditions. 4. The workplace where most of the processing for milk is done (pasteurization) adheres to hygiene standards and work is done in compliance with the technical regulations. 5. The company completely lacks Customs Union and the Russian Federation veterinary and sanitary standards and regulations.

Source: Created by Survey Group based on *Reports on Dispatch to Kyrgyzstan of Veterinary Control and Inspection and Oversight Specialists of the Ministry of Agriculture of the Republic of Kazakhstan, 2013*

(2) Customs Union Technical Regulations and Veterinary and Sanitary Regulations

Specifically, when exporting milk or dairy products within the customs areas of the Customs Union, the regulations of the Customs Union Technical Regulations set forth by the governing body of the Customs Union, “Safety of Milk and Dairy Products” (TR TS033/2013) and “Application of Veterinary and Sanitary Models in the Customs Union,” need to be met.

The Milk and Dairy Products Technical Regulations set out the safety requirements for the entire process of milk and dairy products that will be distributed in the Customs Union customs area, covering production, storage, transport, sales, and reuse. They also set out the requirements related to markings and packaging for milk and dairy products to allow freedom of shipping within the region.

However, the Veterinary and Sanitary Models are designed to prohibit the importation to and movement within the Customs Union customs area (shipping) of products that harm the health of people or animals, and regulate the inspection methods in facilities and national organizations that operate in the veterinary field within the customs area or along customs borders for the Customs Union.

The major regulations set for distribution of milk and dairy products within the Customs Union customs area are shown in the following table.

Table 7-3. Regulations Applied to Milk and Dairy Products Distributed in the Customs Union Customs Area

Technical Regulations	
Customs Union Technical Regulations	Customs Union Committee Decision N319 of June 18, 2010
Joint Register of Certification Organizations and Inspection and Testing Facilities (Centers) of the Customs Union	Eurasian Economic Commission Decision N27 of December 11, 2009 Customs Union Committee Decision N319 Supplementary Provision 1 of June 18, 2010
Joint Forms for Compliance Declarations and Conformity Certificates	Eurasian Economic Commission Decision N293 of December 25, 2012
Unified List of Products Where Conformity Assessment (Certification) by the Customs Union is Required	Customs Union Committee Decision N620 of April 7, 2011 (Final revision: June 13, 2012)
Technical Regulations Related to Milk and Dairy Products	Eurasian Economic Commission Decision N67 of October 9, 2013 (Effective on May 1, 2014)
Technical Regulations related to Food Safety	Customs Union Committee Decision N880 of December 9, 2011, employed (Effective on July 1, 2013 → Dairy products not covered, effective from May 1, 2014)
Technical Regulations related to Food Trademarks	Customs Union Committee Decision N881 of December 9, 2011 employed Effective on July 1, 2013
Technical Regulations related to Packaging Safety	Customs Union Committee Decision N769 of August 16, 2011
Veterinary and Sanitary Model	
Application of Veterinary and Sanitary Models in the Customs Union	Customs Union Committee Decision N317 of June 18, 2010

Source: Created by Survey Group based on the Eurasian Economic Commission website (<http://www.eurasiancommission.org/ru/Pages/default.aspx>)

A. “Conformity Assessment (Certification)” for milk and dairy products

(a) Forms for “Conformity Assessment (Certification)”

The “Conformity Assessment (Certification)” to check whether milk and dairy products distributed in the Customs Union customs area are in compliance with the Customs Union Technical Regulations conditions is set in the Eurasian Economic Commission Decision N67 of October 9, 2013, Customs Union Technical Regulations “Safety of Milk and Dairy Products” Chapter 14, “Conformity Assessment (Certification) of Milk and Dairy Products.” Article 99 of these Regulations classifies the formats for conformity assessment of milk and dairy products into the following four types.

Table 7-4. Forms for Conformity Assessment for Milk and Dairy Products

	Forms	Remarks
A	Compliance Declaration	Milk and dairy products other than B through D
B	National Registration of Special Foods	Dairy products for infants
C	National Registration of New Foods	New products
D	Veterinary and Sanitary Appraisal	Raw milk ingredients, non-heat treated milk stored in the plant for processing, non-fat milk, cream

Source: “Safety of Milk and Dairy Products” Customs Union Technical Regulation, Eurasian Economic Commission Decision N67 of October 9, 2013,

These Regulations classify differently milk that is unprocessed and used as ingredients and milk and dairy products as processed products. Conformity assessment (certification) of processed milk and dairy products requires a Compliance Declaration as a rule, but as exceptions, dairy products for infants and new products require national registration, which is stricter than the conformity assessment.

However, Articles 99 and 100 of these Regulations, while they do not require a Compliance Declaration, do require a veterinary and sanitary appraisal for raw milk used as ingredients, non-heat treated milk stored in the plant for processing, non-fat milk, and cream.

(b) Procedures for obtaining a “Compliance Declaration”

The process for the Compliance Declaration, the most widely applicable of the various forms for conformity assessment for milk and dairy products, is as follows.

The Compliance Declaration involves submitting documents to the relevant competent authority of the Single Economic Space and the member states of the Customs Union or the certifying bodies listed in the Joint Register of Certification Organizations and Testing Facilities (Centers) of the Customs Union, as the applicant chooses, then registration in the Unified Register of Issued Conformity Certificates and Registered Compliance Declarations (hereafter, the “Unified Register”) (Eurasian Economic Commission Decision

N293 of December 25, 2012). If the applicant’s documents are considered appropriate, a registration number for the Compliance Declaration is issued. The flow for registering a Compliance Declaration is shown in the figure below.

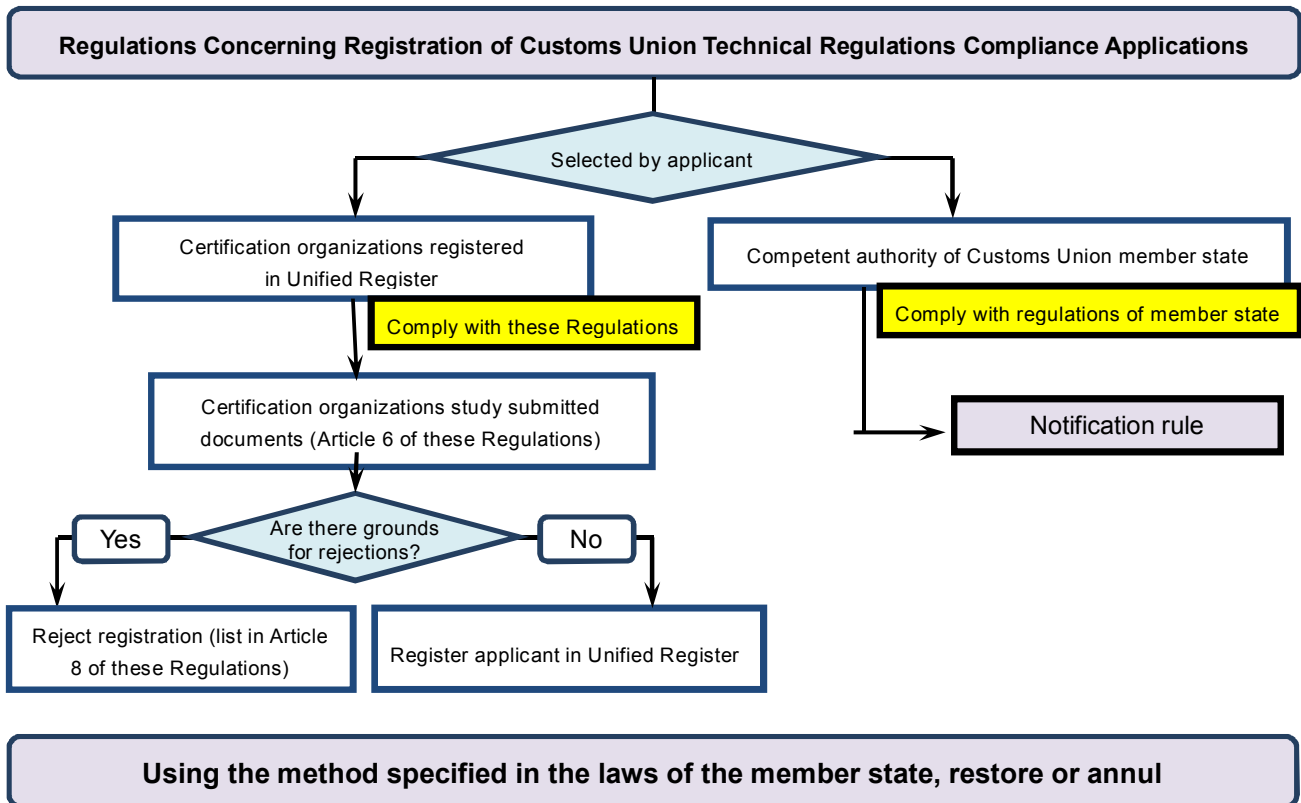


Fig. 7-1. Registration Process for Compliance Declaration

Source: Eurasian Economic Commission website

What needs to be noted here is that Article 3 of the Eurasian Economic Commission Decision N76 of April 9, 2013, regulates that an applicant for a Compliance Declaration must be “a corporation registered in the Customs Union member states or a natural person registered as an individual business owner in these member states, in accordance with the laws of the Customs Union member states, and who carries out business based on a contract with a manufacturer or sales company, or overseas manufacturer.” In other words, the applicant for a Compliance Declaration is limited to companies or individuals within the Customs Union member states.

Therefore, since companies in Kyrgyzstan cannot at present become applicants, they need their partners in the Customs Union member states to be the applicants and obtain the Compliance Declaration. The Compliance Declaration form is as follows.

EAC

(0)

Applicant _____(1) on behalf of
_____ (2) hereby petitions that
_____ (3) complies with the
conditions in _____ (4) here listed.

The _____ conformity applicant has applied based on
_____ (5).

Supplementary information _____ + _____
(6)

The Compliance Declaration is valid from the date of registration to _____ (including that date) (7).

(8)
(Signature) _____ (Applying company representative or initials and surname of the
natural person registered as an individual business)

(Seal)

Conformity application registration information

Conformity application registration number: TC No. _____ (9) Conformity
application registration date: _____ (10)

(0)	Eurasian Conformity abbreviation (in Russian, Евразийское соответствие)
(1)	Formal name of the applicant, national registration information and address of a corporate person or of a natural person registered as an individual business
(2)	Rank, name, and affiliation of the representative of the company applying for Compliance Declaration
(3)	Information on the product for which Compliance Declaration is applied
(4)	Name of the Customs Union Technical Regulation
(5)	The name of the information related to documents demonstrating that the product is compliant with the conditions in the Customs Union Technical Regulations, the certification registration number, the period of validity and the documents submitted by the applicant demonstrating compliance with the conditions in the Customs Union Technical Regulations
(6)	Product storage conditions, organs, expiration (use-by) date, etc.
(7)	Date the Compliance Declaration becomes invalid
(8)	Stamp of applicant
(9)	Compliance Declaration registration number
(10)	Date of Compliance Declaration registration in Unified Register of Conformity Certificates and Compliance Declarations.

Figur 7-2. Customs Union Compliance Declaration Form

Source: Eurasian Economic Commission Meeting Decision No. 293 of December 25, 2012

B. Obtaining the “Veterinary Certificate”

(a) Products where veterinary inspections apply

The Customs Union carries out veterinary inspections at its customs borders and at the shipping destination, the final destination, in order to prevent the importation of products that carry a risk to the health of humans or animals. Following the final veterinary inspection at the destination, a Veterinary Certificate from the Customs Union will be issued.

The veterinary inspection applies to the products listed in the Unified List of Products Where Veterinary Inspections are Required. The Unified List of Products lists each customs code separately, and milk and dairy products are all targeted, as shown in the following table.

Table 7-5. Unified List of Products Where Veterinary Inspections are Required (Extract)

Code	Product names
0401	Milk and fresh cream (unconcentrated, without sugar or other sweeteners added)
0402	Milk and fresh cream (concentrated, or with sugar or other sweeteners added)
0403	Buttermilk, solidified milk and fresh cream, yoghurt, kefir, other fermented milk or fresh cream (concentrated or unconcentrated, with or without sugar or other sweeteners, flavors, fruits, nuts, or cocoa)
0404	Whey (concentrated or unconcentrated, with or without sugar or other sweeteners), other products produced from natural milk ingredients (with or without sugar or other sweeteners), products not listed in other sections
0405	Other oils and dairy spreads produced from butter or milk
0406	Cheeses and curds

Source: Customs Union Committee Decision N317 of June 18, 2010

(b) Veterinary inspection procedure

The veterinary inspection is done at the customs border point through an inspection of documents, a physical inspection, and, if necessary, an inspection at a testing facility. Products that have obtained permission to cross national borders are conveyed to their destination via domestic transport, and given a final veterinary inspection. The flow for the veterinary inspection is shown in the table below.

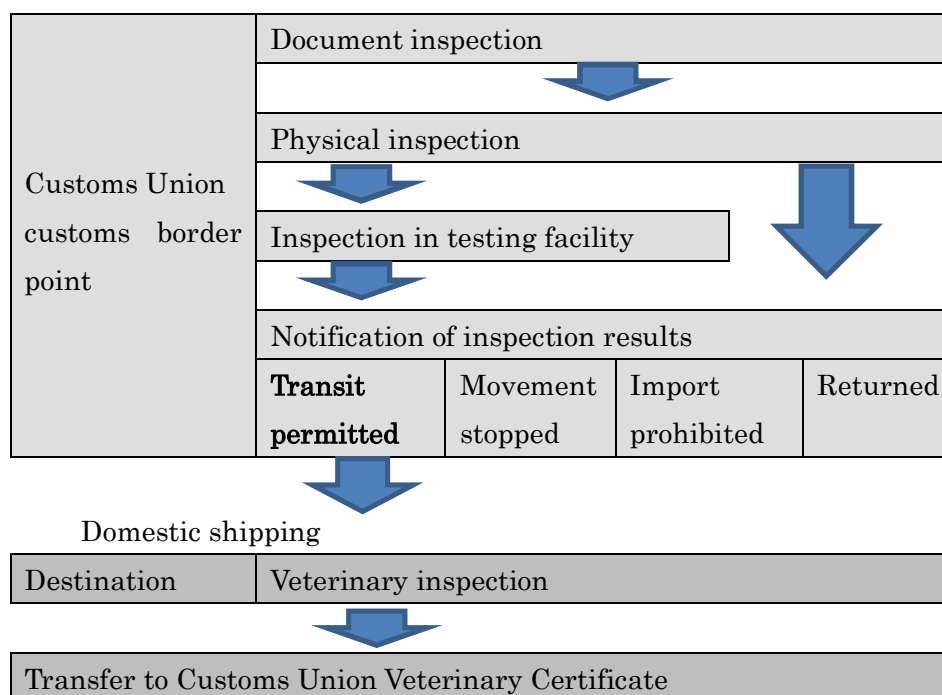


Fig. 7-3. Flow of Veterinary Inspections

Source: Created by Survey Group based on Customs Union Committee Decision N317 of June 18, 2010

In the document inspection, the documents demonstrating the product's safety, the Import Permit, and the Veterinary Certificate (issued by competent authority in shipping nation) are checked. The issuing bodies and details to check for the documents to be inspected are shown in the following table.

Table 7-6 Details of Document Inspection

Document inspection	
Documents demonstrating safety	Compliance Declaration and testing (inspection) workpapers, etc. from the testing organization
Import Permit	Documents issued by the importing nation for the company, corporation, or individual listed in the Unified Register. Issued in consideration of the status of livestock infectious disease prevention in the production (storage) site for the inspected product.
Veterinary Certificate	Documents issued by the competent authority of the exporting nation. Compliance with the unified veterinary requirements for the Customs Union is checked.

The details of the physical inspection are as follows.

Physical inspection

- Inspection of the target product and animals
- Checking that the target product matches the data listed in the submitted documents
- Inspection to check that the shipping methods meet the veterinary and sanitary requirements required for the target product
- Inspection of the transport (shipping) conditions and systems
- Whether packaging and marking matches the regulation requirements.

Inspections at testing facilities are held at testing facilities approved for this purpose when there is a clear problem found in an organoleptic inspection or when animals infected with an illness are removed.

Products inspected at testing facilities

- Products where an organoleptic inspection has revealed a clear problem
- Products where infected animals have been acknowledged

Note that the regulations in Chapter 27 of the “Unified Veterinary (Veterinary and Sanitary) Requirements Displayed on Products Covered by Veterinary Control (Oversight)” supplementary provision of the Customs Union Committee Decision N317 of June 18, 2010 (refer to the next (Reference)), state that when foot and mouth disease, rinderpest, brucellosis, and other infectious diseases affecting livestock occur, export is banned for a set period. The exporting side needs to demonstrate that the milk and dairy products for export are produced in areas that are not affected by these infectious diseases, but in Kyrgyzstan there is no system yet for determining individual animals, so the situation remains difficult.

Box 7-1. (Reference) Unified Veterinary (Veterinary and Sanitary) Requirements Displayed on Products Covered by Veterinary Control (Oversight)

Customs Union Committee Decision N317 of June 18, 2010

Unified Veterinary (Veterinary and Sanitary) Requirements Displayed on Products Covered by Veterinary Control (Oversight)

Chapter 27

Veterinary and Sanitary Requirements When Importing Milk and Dairy Products from Cattle, Goats, Sheep, etc. (Small Horned Animals) to Customs Union Customs Area and/or When Transporting These between Relevant Nations

Milk and dairy products that can be imported to the Customs Union customs area and/or transported within the relevant nations are those that have been obtained from healthy livestock from farms that have been officially confirmed not to have any of the following infectious diseases infecting livestock.

- Foot and mouth disease has not occurred in the nation or the administrative territory in accordance with regionalization within the last twelve months.
- Rinderpest has not occurred in the nation or the administrative territory within the last twenty-four months.
- Small ruminant plague has not occurred in the nation or the administrative territory within the last thirty-six months.
- Contagious pleuropneumonia has not occurred in the nation or the administrative territory within the last twenty-four months.
- Livestock leukemia has not occurred on the farm within the last twelve months.
- Bovine brucellosis, tuberculosis, and paratuberculosis have not occurred on the farm within the last six months.
- Ovine and caprine brucellosis, and ovine, caprine, and other small horned animal tuberculosis, and paratuberculosis have not occurred on the farm within the last six months.
- Ovine and caprine pox have not occurred in the nation or the administrative territory within the last six months.

Milk used in the production of dairy products is heat treated to sufficiently kill the pathogens that are dangerous to human health. Therefore the stored dairy products must pass through a process to kill the living pathogens. Dairy products are considered fit for human consumption.

The indicators for bacteria inspections, physical and chemical inspections, chemical and toxicology inspections, and radioactivity inspections must comply with the requirements and the veterinary and sanitary regulations that apply within the Customs Union area.

Items where an organoleptic inspection of the milk or dairy product shows a change or where the packaging is insufficient must not be imported to the Customs Union customs area and/or be transported between the relevant nations.

In 3.14 of “Regulations Related to a Unified Method for Veterinary Inspections at the Customs Borders of the Customs Union and in the Customs Area” of the Customs Union Committee Decision N317 of June 18, 2010, when transporting, transiting, or moving products within the Customs Union, inspected products must have a Veterinary Certificate issued by the competent authority of the exporting nation and an official of the plenipotentiary body of that nation attached throughout all processes. The following shows a sample of the Customs Union Veterinary Certificate issued by the Customs Union.

No 28/Форма № 28

1. Shipment description/ Описание поставки	1.5. Certificate No/ Сертификат № _____
1.1. Name and address of consignor / <i>Название и адрес грузоотправителя:</i>	Veterinary certificate for milk and dairy products from bovine, ovine and caprine animals, exported to the Customs Union <i>Ветеринарный сертификат на экспортируемые в Таможенный союз молоко и молочные продукты, полученные от крупного и мелкого рогатого скота</i>
1.2. Name and address of consignee / <i>Название и адрес грузополучателя:</i>	
1.3. Means of transport (No of the railway carriage, truck, container, flight, name of the ship / <i>Транспорт: (№ вагона, автомашины, контейнера, рейс самолета, название судна)</i>	1.6. Country of origin of the goods / Страна происхождения товара:
1.4. Country (s) of transit / <i>Страна (ы) транзита:</i>	1.7 Country issuing the certificate / Страна выдавшая сертификат:
	1.8. Competent authority of the exporting country / Компетентное ведомство страны-экспортера:
	1.9. Organisation in the exporting country issuing the certificate / Учреждение страны-экспортера, выдавшее сертификат:
	1.10. Point of crossing the Customs Union border/ Пункт пересечения границы Таможенного союза:
2. Identification of animals / Идентификация животных:	
2.1 Name of goods: / <i>Наименование товара:</i>	
2.2 Date of manufacture of goods: / <i>Дата выработки товара:</i>	
2.3 Packaging: / <i>Упаковка:</i>	
2.4 Number of packages: / <i>Количество мест:</i>	
2.5 Net weight (kg): / <i>Вес нетто (кг):</i>	
2.6 Seal No.: / <i>Номер пломбы:</i>	
2.7 Labeling: / <i>Маркировка:</i>	
2.8 Conditions of storage and transportation: / <i>Условия хранения и перевозки:</i>	
3. Origin of goods / Происхождение товара:	
3.1 Name, registration number and address of enterprise: / <i>Название, регистрационный номер и адрес предприятия:</i>	
3.2 Administrative-territorial unit / <i>Административно-территориальная единица</i>	

Figure. 7-4. (Reference) Customs Union Veterinary Certificate (Sample) (1)

<p>4. Certificate of suitability of products for human consumption / <i>Свидетельство о пригодности продукции для приема в пищу</i></p> <p>I, the undersigned state veterinarian, hereby certify the following: / <i>Я, нижеподписавшийся государственный ветеринарный врач, настоящим удостоверяю следующее:</i></p> <p>The certificate is issued on the basis of the following pre-exportation certificates (if there are more than two pre-exportat certificates the list is attached): / <i>Сертификат выдан на основе следующих до-экспортных сертификатов (при наличии более двух до-экспортных сертификатов прилагается список):</i></p> <p>Date / <i>Дата</i> Number / <i>Номер</i> Country of origin / <i>Страна происхождения</i> Administrative territory / <i>Административная территория</i> Registration number of enterprise / <i>Регистрационный номер предприятия</i> Type and quantity (net weight) of products / <i>Вид и количество (вес нетто) продукции</i></p> <p>4.1 Milk and dairy products which are exported to the Customs Union are obtained from healthy animals and produced at milk processing plants. / <i>Экспортируемые в Таможенный союз молоко и молочные продукты получены от здоровых животных и произведены на молокоперерабатывающих предприятиях.</i></p> <p>4.2 The milk and dairy products are produced and shipped from farm units and/or administrative territory which are officially free from contagious animal diseases: / <i>Молоко и молочные продукты произведены и отгружены из хозяйства и/или административной территории, официально свободной от заразных болезней животных:</i></p> <ul style="list-style-type: none"> - foot-and-mouth disease – for the last 12 months on the territory of the country or administrative territory in accordance with regionalization; / <i>ящура – в течение последних 12 месяцев на территории страны или административной территории в соответствии с регионализацией;</i> - rinderpest, contagious pleuropneumonia of bovine, ovine and caprine animals – for the last 24 months on the territory of the country or administrative territory in accordance with regionalization; / <i>чумы крупного рогатого скота, контагиозной плевропневмонии крупного и мелкого рогатого скота - в течение последних 24 месяцев на территории страны или административной территории в соответствии с регионализацией;</i> - pest of small ruminants – for the last 36 months on the territory of the country or administrative territory in accordance with regionalization; / <i>чумы мелких жвачных - в течение последних 36 месяцев на территории страны или административной территории в соответствии с регионализацией;</i> - enzootic leukosis - for the last 12 months on the territory of the farm; / <i>энзоотического лейкоза – в течение последних 12 месяцев на территории хозяйства;</i> - bovine brucellosis, bovine tuberculosis and paratuberculosis - for the last 6 months on the territory of the farm; / <i>бруцеллеза крупного рогатого скота, туберкулеза и паратуберкулеза крупного рогатого скота - в течение последних 6 месяцев на территории хозяйства;</i> - ovine and caprine brucellosis, ovine and caprine tuberculosis- for the last 6 months on the territory of the farm; / <i>бруцеллеза овец и коз, туберкулеза мелкого рогатого скота - в течение последних 6 месяцев на территории хозяйства;</i> - ovine and caprine pox– for the last 6 months on the territory of the country or administrative territory in accordance with regionalization. / <i>оспы овец и коз - в течение последних 6 месяцев на территории страны или административной территории в соответствии с регионализацией.</i>

Figure. 7-5. (Reference) Customs Union Veterinary Certificate (Sample) (2)

<p>4.3 The milk and dairy products which are exported to the Customs Union: / Молоко и молочные продукты, экспортируемые в Таможенный союз: - have undergone thermal processing sufficient to kill pathogenic germs that endanger human health; / прошли термическую обработку достаточную для уничтожения патогенных микроорганизмов, представляющих опасность для здоровья человека; - have undergone processing that guarantees absence of vital pathogenic flora; / подвергнуты процессу переработки, в результате которой гарантируется отсутствие жизнеспособной патогенной флоры; - have intact factory packaging / имеют ненарушенную фабричную упаковку; - do not have changes in their organoleptic characteristics. / не имеют измененные органолептические показатели.</p>
<p>4.4 Microbiological, physical and chemical, chemical and toxic, and radiological characteristics of milk and dairy products comply with the veterinary and sanitary requirements and rules existing in the Customs Union. / Микробиологические, физико-химические, химико-токсикологические и радиологические показатели молока и молочных продуктов соответствуют действующим в Таможенном союзе ветеринарным и санитарным требованиям и правилам.</p>
<p>4.5 The milk and dairy products are found suitable for human consumption. / Молоко и молочные продукты признаны пригодными для употребления в пищу.</p>
<p>4.6 Packages and packaging material are disposable and comply with the requirements of the Customs Union. / Тара и упаковочный материал одноразовые и соответствуют требованиям Таможенного союза.</p>
<p>4.7 The carrier vehicle was treated and prepared in accordance with the rules of the exporting country. / Транспортное средство обработано и подготовлено в соответствии с правилами, принятыми в стране-экспортере.</p>
<p>Place / Место _____ Date / Дата _____ Official stamp / Печать _____</p>
<p>Signature of the state veterinarian / Подпись государственного ветеринарного врача _____</p>
<p>First name, family name and position / Ф.И.О. и должность _____</p>
<p><small>Signature and stamp must be in a different colour to that in the printed certificate / Подпись и печать должны отличаться цветом от бланка</small></p>

Figure. 7-6. (Reference) Customs Union Veterinary Certificate (Sample) (3)

Table 7-7. Documents Required (Procedures) When Exporting to the Customs Union
Customs Area

* As of October 9, 2013

Document name	Issuer	Applicant	Period to obtain	Documents for Kyrgyzstan exporter to submit	Legal basis
Veterinary Certificate	Related authority in exporting nation	Exporter	Before export	As per Kyrgyzstan laws and regulations	“Application of Veterinary and Sanitary Models in the Customs Union,” Customs Union Committee Decision N317 of June 18, 2010
Customs Union Veterinary Certificate	Related authority in importing nation		After export	Veterinary Certificate and certificate of origin issued by relevant authority of exporting nation	- “Application of Veterinary and Sanitary Models in the Customs Union,” Customs Union Committee Decision N317 of June 18, 2010 - Revised Eurasian Economic Commission Decision N262 of December 4, 2012
Import Permit			The Import Permit is issued for the company, corporation, or individual listed in the Unified Register.		
Conformity Certification	Compliance Declaration (processed products)	Importer	Before export	- Information related to demonstrating that the product meets the requirements of the Customs Union Technical Regulations	- “Application of Veterinary and Sanitary Models in the Customs Union,” Customs Union Committee Decision N317 of June 18, 2010 - “Food Safety,” Customs Committee Decision N880 of December 9, 2011 - “Safety of Milk and Dairy Products,” Customs Union Technical Regulation, Eurasian Economic Commission Decision N67 of October 9, 2013
	Veterinary and Sanitary Appraisal (unprocessed products)	Related authority in exporting nation		As per the various regulations of the Customs Union members	
	National Registration of Special Foods (for infants)	Related authority in importing nation		Exporter (Producer)	- Special foods sampling test results - Materials related to functional food
	National Registration of New Foods (new products)			- New foods sampling test results - Materials related to effects on humans	

Source: Created by Survey Group based on the Eurasian Economic Commission website (<http://www.eurasiancommission.org/ru/Pages/default.aspx>)

7.2 Present Situation of Food Inspection and Certification System in Kyrgyzstan

(1) Governmental bodies engaged in food inspection and certification

There are governmental organizations engaged in food inspection and certification, as below. In this section, those organizations' structure and information are explained.

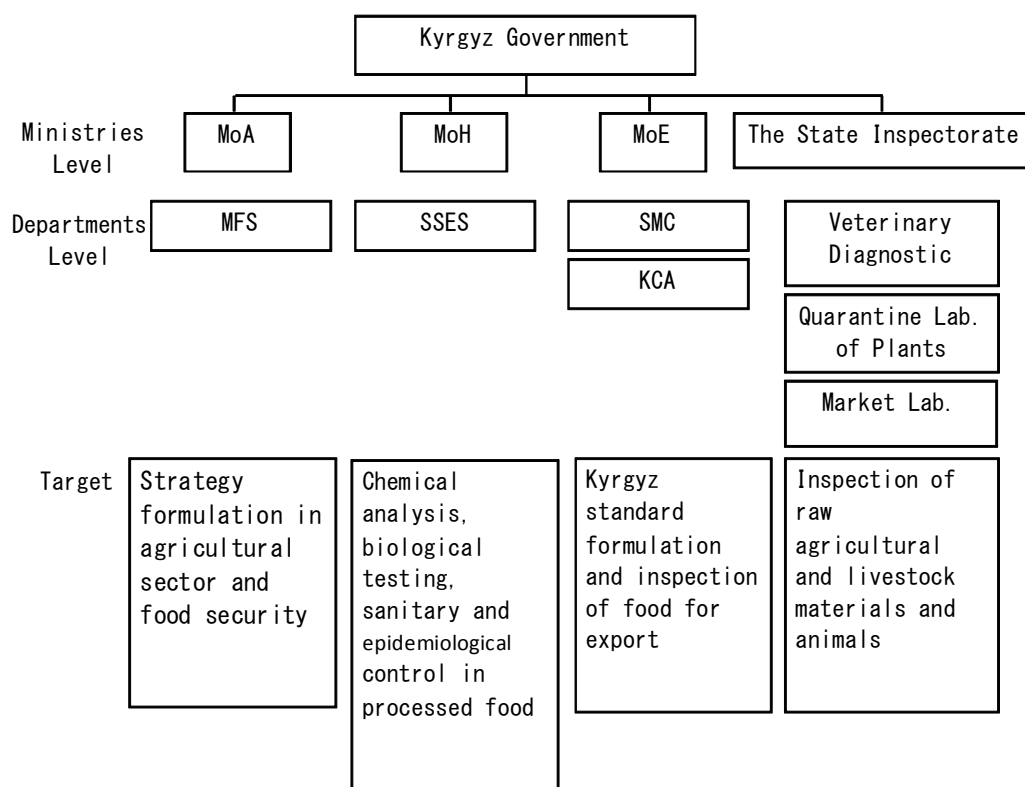


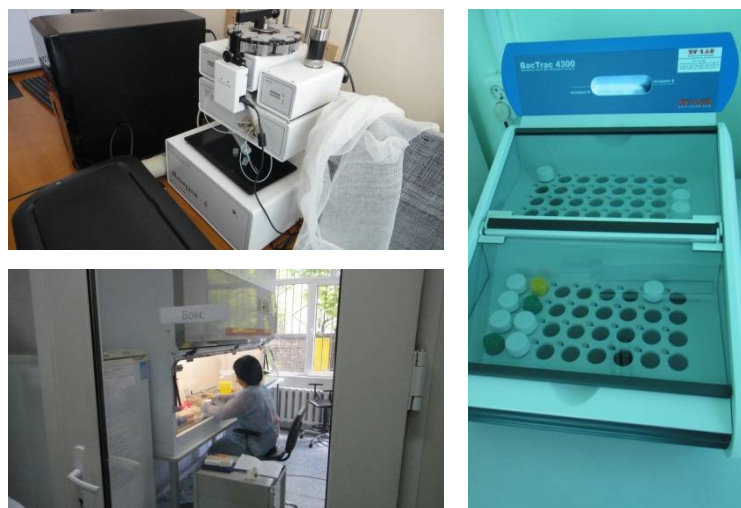
Figure 7-7: Governmental bodies engaged in food inspection and certification
(Source: JICA Survey Team)

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

The “Department of Management of Food Safety (MFS)” is handling “Food Security” in Kyrgyzstan. 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 strong influence in the above laboratory management, since MoA has decisive power, such as the budget of those laboratories, and equipment management.

ii. Ministry of Health (MoH)

Department of “State Sanitary and Epidemiological Surveillance (SSES)” conducts various inspections of processed foods, food factories and restaurants to check sanitary and epidemiological conditions. 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 standards. Mainly the department focuses on safety management of imported and domestic products.



Picture 7-1: SSES Lab. (Analyzers, Clean Bench, etc.)

iii. 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. The TCC certificate covers about 70% of domestic products. The certificate is not requested legally at export and import into Kyrgyzstan, 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. This is a member of “International Laboratory Accreditation Cooperation (ILAC)” and “Asia Pacific Laboratory Accreditation Cooperation (APLAC)”. KCA just became a full member of ILAC in October, 2013.

KCA has gotten ISO17025 certification training for inspectors from some donors, such as WB, ITC, GIZ and USAID. However, inspectors in KCA often resign because of low salary.



Picture 7-2: TTC Lab. (Autoclave, Drafting Chamber, etc.)

iv. 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 for domestic and imported products. The laboratories analyze raw samples, and then veterinary and phytosanitary certificates can be issued from the test results. Veterinary Diagnostic analyzes chemical contamination of raw livestock products, including milk.



**Picture 7-3: Veterinary Diagnostic Lab.
(Microplate Reader, Parasite Inspection Equipment, etc.)**

(1) Educational organizations engaged with milk and dairy products

i. Kyrgyz State Technical University (KSTU), Food Technologies Department

A professor who has received training on HACCP and ISO22000, provides introductory lectures to students. They have worked with GIZ since 2012. 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 workshops but also product quality improvement, stable supply improvement and new processed food development to the agriculture sector with donors. 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 their condition is still good with appropriate maintenance.



Picture 7-4: KSTU Lab. (Practical Room, Analysis Room)

ii. Food Training Technology Center (FTTC)

This center is organized under KSTU. It was funded with 30% from Japan Social Development Fund (JSDF) and 70% from WB, and established in April 2013. A detailed program and the fee have not yet decided at the survey in September 2013; this center will provide practical training to students and food industry 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 factories.

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 7-5: FTTC (Small Manufacturing machines)

iii. Kyrgyz Turkish Manas University, Food Technical Department

This is the latest university established in 2007, and has bachelor's, master's and doctor's programs. 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 studies rather than practical ones.



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

(2) Analysis Rule in TR-K and Laboratory Skills of SMC

As noted previously, there is no laboratory that can analyze any parameters following to TR-K in Kyrgyz. SMC certifies Kyrgyz Standard Certificate and the certificate is requested at export. Because the indexes are almost the same in TR-K and TR-CU (Enforcement Schedule from May, 2014). Therefore, it is compared with analysis rules in TR-K and TR-CU, and laboratory skills of SMC in this section.

Table7-8 Components of Milk and Dairy Products in TR-CU

Components of milk and dairy products KTR	Chapter1 “Applicable Information” Chapter2 “Definition” Chapter3 “Distribution Rules in Market” Chapter4 “Prescription for Product Safe” Chapter5 “Adequacy Assessment” Chapter6 “Marking of Product’s Distribution in Market” Chapter7 “Protection Clause” Chapter8 “Final Clause”
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Source: Customs Union Technical Regulation (Unofficial translation)

Table7-9 Inspection items of Milk and Dairy Products in TR-K

Inspection Items	Envisaged Analysis Equipment	
Microorganisms	Mesophilic aerobes and Facultative anaerobe, Coli group, Pathogenic microbe*, Staphylococcus aureus, Listeria, Mold and Yeast	Microbiology equipment (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, Streptomycin, 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)

* E.Coli, Proteus, Cereus, Clostridium, Vibrio Parahaemolyticus, Sulfite Reductive Bacterium, Opportunistic Bacterium, Salmonella, Listeria, Yersinia

Table7-10 Acceptable Index of Milk and Dairy Products in TR-CU

< Acceptable Level of Hazardous Substances (Max)>

Indexes	Acceptable Levels
Aflatoxin M1	0.0005 mg/kg
Chloramphenicol	0.01 mg/kg
Tetracycline Group	0.01 mg/kg
Streptomycin	0.5 mg/kg
Penicillin	0.004 mg/kg
Pb	0.1 mg/kg
As	0.05 mg/kg
Cd	0.03 mg/kg
Hg	0.005 mg/kg
HCH (in Fat)	0.05 mg/kg (Cream 1.25 mg/kg)
DDT (in Fat)	0.05 mg/kg (Cream 1.0 mg/kg)
Cs 137	100 Bq/ℓ
Sr 90	25 Bq/ℓ
Dioxin	3×10^{-6} mg/kg
Melamine	Negative (under 1.0 mg/kg)
Depressant	-

Source: Customs Union Technical Regulations (Unofficial translation)

Table7-11 Equipment and Analysis Items in SMC

Equipment	Analysis
Voltammetric Detector	Pb, Cd, Cu, Zn
Chromatometer	Fe, As
Saccharometer	Sugar Content
Refractometer	Refractivity (Soluble Solid)
pH Meter	pH
Alcoholic Densimeter	Alcoholic Content
Densimeter	Density
Gas Barometer	Pressure of Carbonated Drink
Microbial Analysis Tools	Microbial Count
Muffle Furnace	Ash Content
Light Microscope	Microbial Count
Kjeldahl Apparatus	Crude Protein
Others	Nitrate Salt, Acidity, Water Content, Amino Acid, DDT, Mycotoxin, Aflatoxin
HPLC, GC	Broken Down

Source: JICA Survey Team

SMC cannot analyze some minerals, chemicals and microorganisms in the list. Kyrgyzstan will join the Customs Union in 2015. Therefore, governmental laboratories should improve analysis level to follow TR-CU.

The Customs Union can receive analysis report only from laboratories registered on the union's list, but there is no registered laboratory in Kyrgyzstan. Therefore, some governmental laboratories should be improved and restructured for following the union's rules, and registered on the list soon.

The accuracy is low and analysis takes a long time, because it uses old analysis equipment and methods. Some equipment has been used since the Soviet era. Therefore, it is necessary to renew and upgrade the laboratory. At installation of new equipment, it is necessary to provide practical training to chemists in SMC.

(3) Current Support 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 2013.

Table 7-12 Current Support in 2013

	Food Inspection	Kyrgyz Standard	HACCP、ISO22000	ISO17025
FAO	No Support	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	ISO 17025 Seminar for KCA
WB	1)Equipment Provision to SESS 2)Loan to FTTC	Financial Assistance to Inspection and Certification Bodies (Plan in 2013)	1)Equipment Provision to SESS 2)Loan to FTTC	ISO 17025 Seminar for KCA
ITC	No Support	No Support	No Support	ISO 17025 Seminar for KCA
USAID	No Support	No Support	No Support	ISO 17025 Seminar for KCA

Source: JICA Survey Team and Report by Kyrgyz MoE

Note. KSTU: Kyrgyz State Technical University, FTTC: Food Training Technical Center, SESS: the State Sanitary and Epidemiological Surveillance under MoH, KCA: Kyrgyz Centre of Accreditation under MoE

i. Food and Agriculture Organization (FAO)

FAO has not supported milk inspection and certification sector, as of September 2013.

ii. 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 Kyrgyzstan and its neighboring countries in April 2013.

The HACCP training sessions for companies and governmental bodies were in the classroom only. GIZ did not include practical and actual cases in Kyrgyzstan. GIZ supports KCA to become ISO 17025 accreditation body, provides budget for ILAC fee, as well as equipment and facilities. However, support to KCA will be finished at the end of 2013; GIZ does not plan to continue it.

iii. World Bank (WB), International Trade Centre (ITC) and United States Agency for International Development (USAID)

They are supporting KCA with GIZ until the end of 2013. They do not plan to continue it either.

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

(4) Problems and Support Plan

i. Lack of Laboratory Skills

For conformance certificate of milk and dairy product in the Customs Union, it is necessary to submit analysis results issued by laboratory registered in “Customs Union Registry of Accreditation Organization and Laboratory”. There is no laboratory on the registry in Kyrgyz, because there is no laboratory which fulfills the union’s demand for the registration.

As an example, the union decided to request melamine analysis for milk and dairy products after an incident of detection of powdered milk containing melamine, but laboratories in Kyrgyz cannot analyze it.

In order to join the union, Kyrgyz should upgrade laboratories to suit the demand.

ii. Lack of Knowledge and Provision for the Customs Union’s Veterinary and Sanitary Regulation

The Customs Union surveyed 7 dairy companies in September, 2013. As a result, the union pointed out the lack of knowledge about the union’s veterinary sanitary index and regulation. Such knowledge is necessary for Kyrgyz companies exporting products to the union. Moreover, that will be necessary for all companies after accession to the union in 2014. Companies should take and submit some documents to the union, when exporting to a member country of the union. Therefore, the Kyrgyz government should develop experts for the union’s regulation; then, they should collect information about the system of the union, and provide the information to the private sector.

iii. Intelligence and Information Sharing

It is necessary to share knowledge and information about the union’s veterinary sanitary index and regulation with any people engaged in the dairy sector. However, the information propagation system has not been not working effectively since independence, due to a lack of trust in the administration. Additionally, there is no area for exchanging information in the private sector. Such an area should be developed for intelligence and information sharing among not only those in the same industry, but also anybody engaged in the Kyrgyz dairy sector.

iv. Support Plan

As mentioned in paragraph 7-1 and 7-2, companies should follow various regulations of the Customs Union, when exporting to a member country. The Kyrgyz government has TR-K that is similar to the union’s technical regulations. But there are some problems, such as flaws in the system, lack of knowledge in the field, and a shortage of skills in analysis. Table 7-13 shows existing problems and a support plan that Japanese companies and organizations can follow for solutions.

**Table 7-13 Envisaged Support from Japan for Development of Milk and Dairy Product
Safety and Quality**

Union's Demand	Problems		Object	Envisaged Support Plan
Safety Verification of Product (Technical Regulation)	Cannot fulfill the union's demand	Cannot issue certificate and analysis result followed by TR-CU	SMC	Provision of Equipment and Usage Training, Provide Analysis Training
Quality Verification in Process (HACCP, ISO22000 etc.) (Technical Regulation)	Cannot fulfill the union's demand	Lack of Cold Chain (Cold Management)	MU, ETO	Provision of Equipment and Usage Training, Management Seminar, Show Japanese Case
		Skill Shortage in Sanitary and Quality Management	MU, ETO	Provision of Equipment and Usage Training, Technical and Management Seminar, Show Japanese Case
		Skill Shortage in Analysis for Quality Check	MU, ETO	Technical Training, Support to take Certificate and Improve Lab. Reliability
		Lack of Understanding about Process Control based on HACCP	MU, ETO	Training and Seminar on Quality and Processing Management, Provision of Equipment
		Flaw in Traceability	MU, ETO	Provision of Equipment and Usage Training, Management Seminar, Show Japanese Case
		Lack of Proper Zoning in Food Factory	MU, ETO	Technical Training and Seminar, Show Japanese Case
	Difficult to install HACCP, ISO 22000 into private Sector	No Accreditation and Certification Organization	ACO	Development of Organizations, and Improve Skill of them
		Short of Knowledge in Private Sector	MU, ETO	Show Japanese Cases, Food Safety Seminar
	Lack of policy for food safety	No Experts	MoA, MoE	Improve Understanding System Training, Support Policy Making, Technical Seminar
	Safety Verification or Food Material (Technical Regulation, Veterinary Sanitary Regulation)	Cannot fulfill veterinary sanitary regulations	Cannot Analyze Necessary Things	SI
Invasion of Animal Diseases			SI	Provision of Equipment and Usage Training, Support to Develop Human Resource
Cannot fulfill TR-CU		Lack of Sanitary Control System for Milk	MU, ETO	Provision of Equipment and Usage Training, Show Japanese Case, Technical Training and Seminar

Note SMC: Standardization and Metrology Centre, SI: State Inspectorate of Veterinary and Phytosanitary, MU: Milk Union, ETO: Educational and/or Training Organization, ACO: Accreditation or Certification Organization, MoA: the Ministry of Agriculture, MoE: the Ministry of Economy

8 Market Environments and Sales Strategies

8 Market Environments and Sales Strategies

8.1. Status of Domestic Market for Kyrgyzstan Dairy Products

(1) Trends in domestic dairy products production

The volume of raw milk (raw material) in Kyrgyzstan has been edging up slightly each year, with 338,800 tonnes of raw milk (raw material) produced in Chuy Province in 2011. As shown in the following table, Chuy Province is the biggest raw milk (raw material) producer in Kyrgyzstan, accounting for one quarter of the national production.

Table 8-1. Trends in Raw Milk (Raw Material) Production Volume by Region in Kyrgyzstan

(Unit: 1,000 t)

	2007	2008	2009	2010	2011
Batken Province	85.5	86.0	86.4	89.3	89.6
Jalal-Abad Province	219.9	231.8	251.4	269.7	271.8
Issyk-Kol Province	160.2	167.3	173.6	179.1	179.8
Naryn Province	93.6	94.0	95.6	96.4	96.6
Osh Province	241.2	245.5	249.4	258.3	264.1
Talas Province	77.4	79.7	81.8	83.4	73.7
Chuy Province	311.5	318.7	328.0	338.1	338.8
Bishkek	1.6	1.4	1.1	1.0	0.8
Osh	6.6	6.7	6.3	6.4	6.5

Source: National Statistical Committee statistical data

The following figure shows the production volume by region for processed liquid milk in 2012. The two regions of Bishkek City and Chuy Province, which were the targets of this survey, account for some 98% of the total production volume of processed liquid milk.

(Unit: 1,000 t)

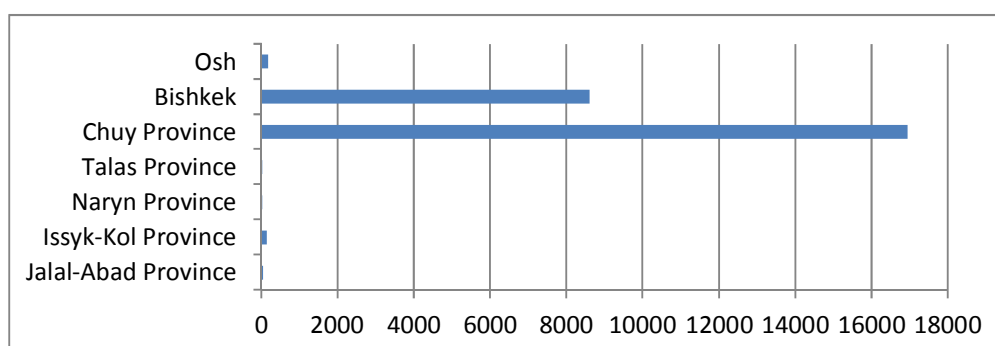


Figure. 8-1. Production Volume of Processed Liquid Milk by Region in 2012

Source: National Statistical Committee

(2) Examples of domestic market expansion

Chuy Province borders the Republic of Kazakhstan (hereafter, “Kazakhstan”), and has good major roads, making it a good environment for shipping, so there are a number of dairy producers here. In Chuy there is an increasing number of companies who are either transitioning over from beef production or who are entering the dairy products field from a different industry. The following table shows the major dairy producers in Kyrgyzstan and the products they make, and of the 23 dairy producers in Kyrgyzstan, 15 are located in Chuy.

Table 8-2. Major Dairy Producers in Kyrgyzstan

Region	Company name		Products					
			Whole-milk dairy products	Milk powder	Cheese	Butter	Ice cream	Condensed milk
Chuy Province	①	Bishkek-Sut	•					
	②	Umut & K	•				•	
	③	AK-Sut		•	•	•		
	④	Shin Line		•			•	
	⑤	Kant-Sut	•					
	⑥	Ursus			•	•		
	⑦	Elvest	•					
	⑧	Artezian	•					
	⑨	Eletsut	•					
	⑩	New Step					•	
	⑪	Ice-Queen						•
	⑫	Elimay	•					
	⑬	Belovodskiy dairy farm	•					
Issyk-Kol Province	⑭	Ak-Jalga			•	•		
	⑮	Sut-Bulak	•		•			
	⑯	AK-Bulak	•					
	⑰	Ice-Queen-Karkol						•
Talas Province	⑱	Talas-Sut	•	•				
	⑲	Arashan			•			
	⑳	Ejigey	•					
Osh	㉑	Oshmolkombinat	•					

Source: Created based on the Survey Group survey and *Basic Study for program formulation in dairy development and milk industry* (Vector, August 2013)

As will be noted later, the percentage of imported products in the Kyrgyzstan domestic dairy products market is, save for yoghurt, dominated by domestic production. However, there is a high dependence on imported dairy products in Kazakhstan, and, after it joined the Customs Union, the amount imported from fellow member states Russia and Belarus has been increasing. Therefore, after Kyrgyzstan joins the Union, dairy products imported from Russia and Belarus through Kazakhstan distributors are extremely likely to be exported to Kyrgyzstan just as before.

As part of this, some Kyrgyzstan dairy producers are starting to feel the need to look at enhancing their sales strategies for the domestic market, ensuring their domestic market. The following reports on the trends in two companies who are actively developing products for the domestic market as seen by our local surveys in September 2013.

A. Kant-Sut

Kant-Sut is a dairy producer established in 1970, and exports pasteurized liquid milk to major dairy producers in southern Kazakhstan.

The superiority of Kyrgyzstan dairy products is, first of all, thanks to the temperature climate that is suited to dairying, and, second, its high quality and the fact that they do not use chemical fertilizers. Their future business strategy is to continue moving ahead based on exports, but they are also considering stable supply to the domestic market. This shows a view that businesses that go beyond national boundaries need to ensure domestic sales routes, as they are vulnerable to political influence. In their plan, they intend to start up their own brand half a year from now and enter the domestic market. They are also considering exporting their brand a year from now.

Kant-Sut is one of two companies that were granted import permits by Kazakhstan as a result of the inspections by the Customs Union in 2012, but at the moment they are unable to export whenever Kazakhstan applies an import ban, so are working to develop products for their new domestic brand.

B. Eletsut

Eletsut purchased a plant run by Indians in 2000, and at present it produces 25 products, including kefir, yoghurt, and smetana.

It has its own grazing lands nearby, and uses the raw milk from there and the raw milk purchased from dairy farmers in the area to produce dairy products. It also produces processed meat products (pelmeni).

Its distribution routes are through major supermarkets and small-scale retailers, and for

major supermarkets it produces to order, while for small-scale retailers it sells only what is needed by going around to the shops.

Yoghurt accounts for 70% of Kyrgyzstan's domestic market. Eletsut's superiority is in the fact that it used no preservatives or powdered milk, but only 100% fresh raw milk. Its weaknesses are that the sizes of the bottles are too large and the package design is unappealing.

Yoghurt is one of the most popular dairy products, so even in supermarkets a design that catches that eye is needed. The following photograph shows 1-liter bottles of Eletsut in a supermarket (middle shelf, right side). The left side shows 300 mL bottles of yoghurt made by the Russian dairy producer Campina. As most of the market is made up of 300 mL bottles that can be drunk in one go, Eletsut is working on a plan to change its design and bottles.



Picture 8-1. Eletsut Yoghurt in 1-Liter Bottles (Middle Shelf, Right Side)

(Photographed by Survey Group, September 2013)

(3) Domestic dairy product distribution environment

The way dairy products are sold in Kyrgyzstan is through supermarkets aimed at middle and high income consumers, and open air markets (bazaars) aimed the middle and lower income consumers. Supermarkets include relatively large-scale “hypermarkets” which also carry clothing, daily goods, and electrical products, and small to medium supermarkets which are run by chains. Kyrgyzstan also has open air markets (bazaars), which have become rarer in Russia and Kazakhstan, and their cheapness makes them popular as places for citizens to purchase foods.

At our hearings with the market manager of the supermarket chain we surveyed, we heard that Kyrgyzstan suffers from high inflation and rising food prices, so consumers are flocking towards the open air markets (bazaars) for their lower prices.

A. Supermarkets

Dairy products sold at supermarkets include Russian products and Kazakhstan products, although the bulk of them are domestically produced. The biggest standout for domestic products is the Winn-Bill-Dann brand (Russia). Winn-Bill-Dann products are produced in a large number of plants, and the product plant's mark is shown on the product. Bishkek-Sut products are shown as “B,” showing that while the brand is Russian, these are actually produced domestically. The prices are set slightly higher than Kyrgyzstan makers, but according to the supermarket hearings, Winn-Bill-Dann is the best-selling brand.



Picture 8-2. Winn-Bill-Dann Brand Milk
(made by Bishkek-Sut)
(Photographed by Survey Group,
September 2013)



Picture 8-3. Shelves Full of Russian-made
Yoghurt
(Photographed by Survey Group,
September 2013)

Box 8-1. Hearings Memo for Narodnyi Supermarket

Interviewee	Marketing Manager
Company Outline	<p>Established in 2002.</p> <p>Opened its first store in Bishkek, and currently has 47 stores around Kyrgyzstan (43 in Bishkek, 2 in Kara-Balta, 1 in Kant, 1 in Tokmok).</p> <p>It has more than 1,500 employees. It is currently the leading supermarket chain in Kyrgyzstan.</p>
Distribution Routes	Kyrgyzstan products are generally purchased directly from the producers without going via distributors, but foreign products are purchased via distributors.
Popular Products	<p>The top-selling dairy products are Winn-Bill-Dann products.</p> <p>The top-selling milk is 2.5% fat milk with a use-by date of five to seven days.</p>
Dairy Product Producer Trends	<p>The supermarket is in favor of joining the Union as it will increase the product selection.</p> <p>In the Customs Union nations, they are looking closely at Belarus products as being particularly high in quality and reasonable in price. Belarus products are produced under the strict standards of the former Soviet Union, and are high in quality. Kyrgyzstan products will face a very difficult environment.</p>
Average Purchase Amount per Visit	130 to 150 som



Shelves Full of Winn-Bill-Dann Brand Products (made by Bishkek-Sut)
(Photographed by Survey Group, September 2013)

B. Open air markets (bazaars)

There are open air markets (bazaars) in about seven locations, large and small, within the city of Bishkek. Products sold at these open air markets are mainly vegetables, fruit, and meat, but there are some dairy products sold.

Dairy product sales are done by small booths in shops staffed by a single person. Hygiene management and temperature management, as well as product knowledge, appear to be substandard.

At these open air markets, local dairy farmers are able to sell their own milk and fresh cream directly on early mornings on Saturdays and Sundays. They are sold in large bowls covered by cloths only, and there are no refrigeration facilities, but there are many citizens who come to buy these fresh dairy products.



Picture 8-4. Dairy Products on Fridge Shelves



Picture 8-5. Local Dairy Farmer Selling Their Own Dairy Products

8.2. Current Situation for Imports and Exports of Kyrgyzstan Dairy Products

(1) Trade situation with neighboring nations

The major export products in the livestock sector in Kyrgyzstan are dairy products, with dairy products occupying a 1.46% share (approx. US\$28,600,000) of the total exports from Kyrgyzstan in 2011. This was the largest share of the livestock sector, and meat was very limited, at only 0.02% (approx. US\$480,000). The major export destination for dairy products is Kazakhstan, which took 91.6% (approx. US\$26,000,000) of the total dairy product exports from Kyrgyzstan. Kazakhstan is the largest importer of dairy products within the NIS nations. An examination of the import and export volumes and amounts for “Milk and fresh cream (unconcentrated and unsweetened with sugar or other sweeteners added)” (Customs Code 0401) in 2011 for the three nations of Kyrgyzstan, Kazakhstan, and Russia shows that Kazakhstan imports almost the same volume from Russia and Kyrgyzstan. Looking at export amounts, the Russian Federation exports about 1.5 times the amount of Kyrgyzstan, showing that Kyrgyzstan is supplying cheap dairy products.

The trade statistics for Kyrgyzstan are collected as separate customs codes, so these have been arranged for each product group by customs code below. Note that the customs codes for Kyrgyzstan and the Customs Union are the same.

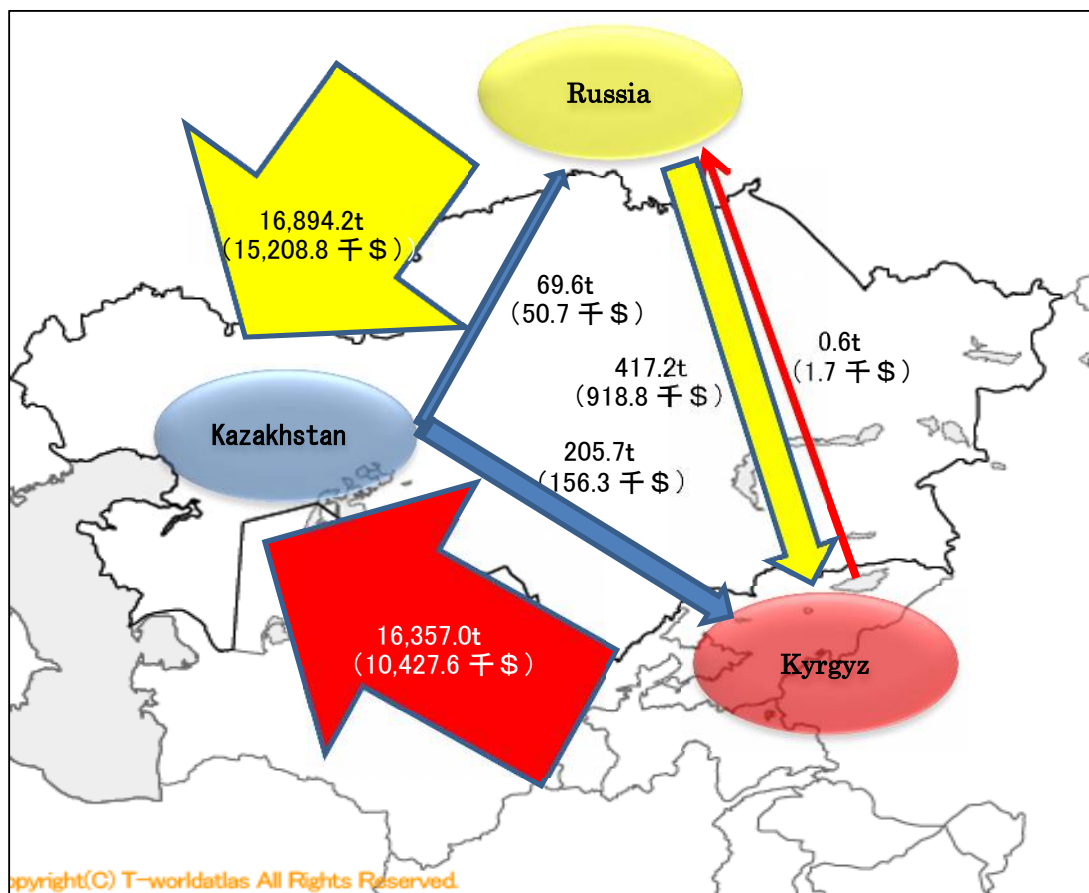


Figure. 8-2. Import and Export Volumes and Amounts of “Milk and Fresh Cream (unconcentrated and unsweetened with sugar or other sweeteners added)” in the Three Nations of Russia, Kazakhstan, and Kyrgyzstan

(2) Effects of Kazakhstan’s import bans on the Kyrgyzstan market

The effects on the Kyrgyzstan economy of the import bans with regard to milk and dairy products from Kyrgyzstan that Kazakhstan has established can be seen from the statistics.

This is a comparison of the first half of 2013 and the second half of 2012 for the raw milk production volume of Kyrgyzstan. The production volume for Kyrgyzstan raw milk in the first half of 2013 shows an increasing trend over all regions, and even in Chuy Province, where a quarter of the nation’s raw milk is produced, there is a slight rise to 101.7% over the previous year. There is no effect on the production of raw milk due to the import bans set by Kazakhstan, and instead the production volumes are trending slightly higher than the previous year.

Table 8-3. Raw Milk Production Volumes by Region in the First Half of 2013

(Unit: 1,000 t)

	production volumes (1000 t)	percentage (%)	over the previous year (%)	ranking
Republic	815,056	100.0	101.9	-
Batken Province	54,332	6.7	101.0	6
Jalal-Abad Province	159,686	19.6	102.8	3
Issyk-Kol Province	117,043	14.4	102.8	4
Naryn Province	62,976	7.7	100.5	5
Osh Province	171,918	21.1	101.7	2
Talas Province	43,792	5.4	100.6	7
Chuy Province	200,751	24.6	101.7	1
Bishkek city	544	0.1	180.0	9
Osh city	4,014	0.5	100.6	8

Source: Created by Survey Group based on National Statistical Committee statistical data

The next table compares the dairy product production volumes between the first half of 2013 and the second half of 2012. Dairy product production volumes have declined by 50% over the previous year for processed milk, and by 66.5% for butter, showing major drops. One of the reasons why the production volumes have dropped is assumed to be the import bans put into place by Kazakhstan which have caused milk producers to cut back on production due to the loss of markets.

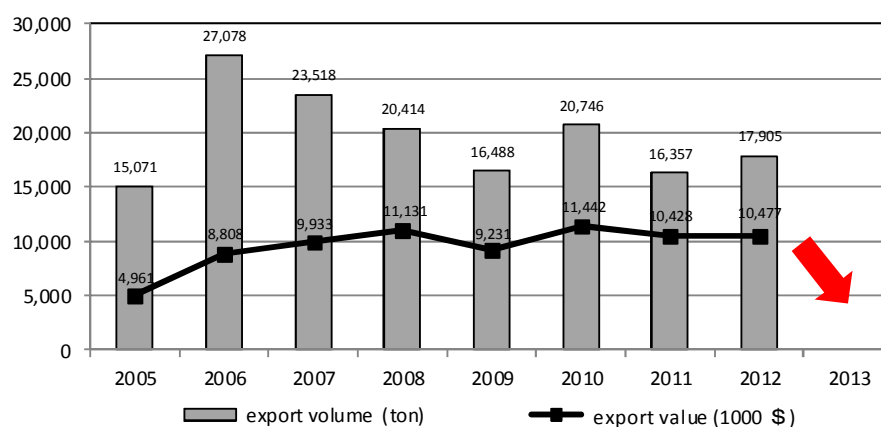
Table 8-4. Trends in Dairy Product Production Volume

(Unit: 1,000 t)

	the first half-year of 2012	the first half-year of 2013	a ratio from the year before(%)
liquid processed milk	19,900.20	10,039.30	50.4
not condensed unsweetened cream	7.5	6.3	84
butter	1,354.30	901.2	66.5
curd cheese	903.9	569.1	63
sweetened curd cheese	0.2	0.2	1
cheese	1,841.30	1,712.30	93
yogurt	239.7	208.3	86.9
ice-cream ets.	3,087.40	3,302.80	1.07

Source: Created by Survey Group based on National Statistical Committee statistical data

Figure 8-3 shows the trends in milk and fresh cream (unconcentrated, without sugar) from Kyrgyzstan to Kazakhstan. More than 15,000 tonnes of export volume is maintained each year, but there is expected to be a major drop in dairy product exports from Kyrgyzstan to Kazakhstan in 2013.



Customs Code 0401: Milk and fresh cream (unconcentrated, without sugar or other sweeteners added)

Figure. 8-3. Trends in Export Volumes of Milk and Fresh Cream (unconcentrated, without sugar or other sweeteners added) from Kyrgyzstan to Kazakhstan

Source: "Reports and Forecasts, Kyrgyz Republic Taxation Bureau: Numbers, Cases, Comments" (2007, 2008, 2010, 2011, and 2012 Editions)

During the field survey of September 2013, a number of Kyrgyzstan dairy producers told us that they are looking for new export destinations thanks to this import ban by Kazakhstan. The current examples make it clear what issues are facing the Kyrgyzstan sales strategy that depends on exports of milk and dairy products to a single country.

(3) Situation of Kyrgyzstan milk and dairy product imports and exports

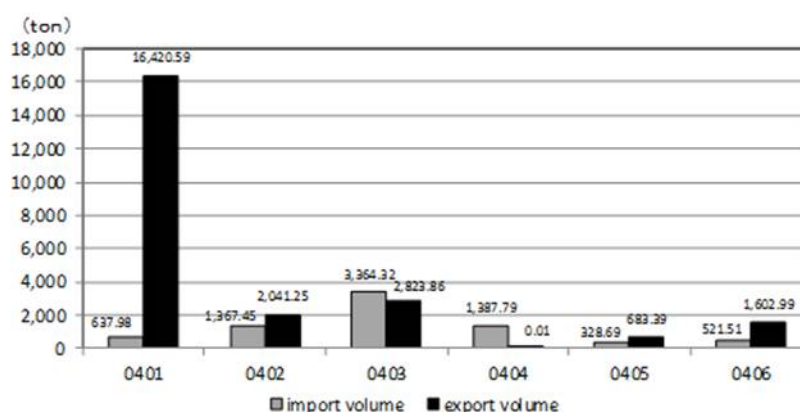
This report is based on the customs statistics for the current situation of imports and exports for Kyrgyzstan milk and dairy products in 2011.

Figure 8-4 shows the dairy product export and import volumes for each customs code in 2011, based on customs statistics.

Exports show a spike for “Milk and fresh cream (unconcentrated)” (Customs Code 0401), with around 16,000 tonnes exported in 2011. Others show some exports, including yoghurt and other fermented dairy products (Customs Code 0403), “Concentrated or sweetened milk and fresh cream” including powdered milk (Customs Code 0402), and “Cheese” (Customs Code 0406), but they are very limited.

Yoghurt and condensed (or sweetened) dairy products are imported, but overall, the reliance on imported dairy products in Kryrgyzstan can be seen to be extremely low.

(Unit: t)



0401	Milk and fresh cream (unconcentrated, without sugar or other sweeteners added)
0402	Milk and fresh cream (concentrated, or with sugar or other sweeteners added)
0403	Buttermilk, solidified milk and fresh cream, yoghurt, kefir, other fermented milk or fresh cream (concentrated or unconcentrated, with or without sugar or other sweeteners, flavors, fruits, nuts, or cocoa)
0404	Whey (concentrated or unconcentrated, with or without sugar or other sweeteners), other products produced from natural milk ingredients (with or without sugar or other sweeteners)
0405	Other oils and dairy spreads produced from butter or milk
0406	Cheeses and curds

Figure. 8-4. Import and Export Volumes for Milk and Dairy Products by Customs Code (2011)

Source: Kyrgyzstan Customs Bureau website

This next section lays out for each product the major trading partners for dairy products for 2011 based on customs statistics. There are individual differences, but the major trading partners for Kyrgyzstan are Kazakhstan and Russia, both members of the Customs Union. Kazakhstan is Kyrgyzstan’s most important export destination, while Russia has a deep-seated relationship with Kyrgyzstan as an import source for dairy products. Note that the customs statistics use the product classifications as laid out in the customs codes.

A. Unconcentrated milk and fresh cream (Customs Code 0401)

The major share of Kyrgyzstan’s dairy exports are “Milk and fresh cream unconcentrated and without sugar or other sweeteners added” (Customs Code 0401). Nearly 100% of this is exported to Kazakhstan, and in 2011 around 16,000 tonnes were exported. There are also some minor imports from Russia and Kazakhstan.

(Unit: t)

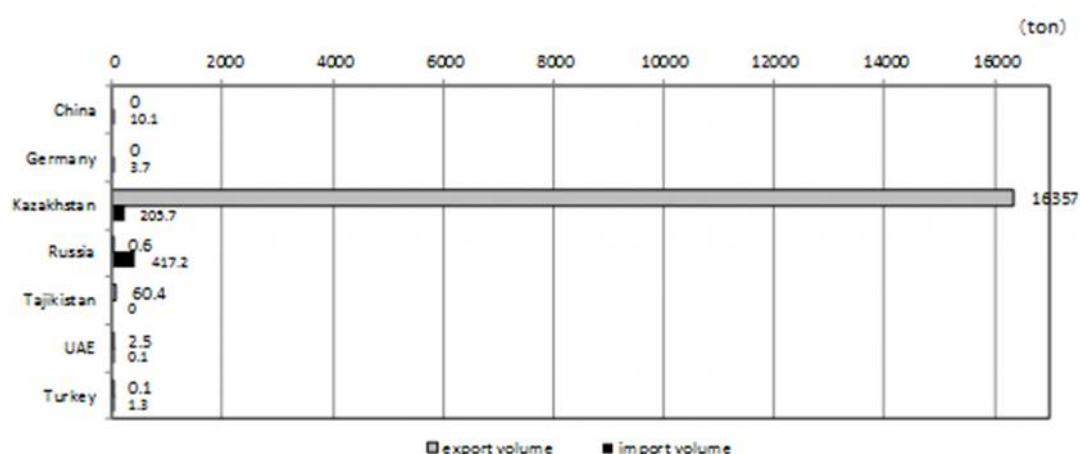


Figure. 8-5. Customs Code 0401: Import and Export Volumes by Country

B. Concentrated milk and fresh cream (including powdered milk) (Customs Code 0402)

The major export destination for “Milk and fresh cream concentrated or with sweeteners added” (Customs Code 0402) is Kazakhstan, and in 2011 around 1,800 tonnes were exported. There are some minor exports to Pakistan, Georgia, and Tajikistan as well. The major import sources are Ukraine and Russia, with 500 tonnes from each country.

(Unit: t)

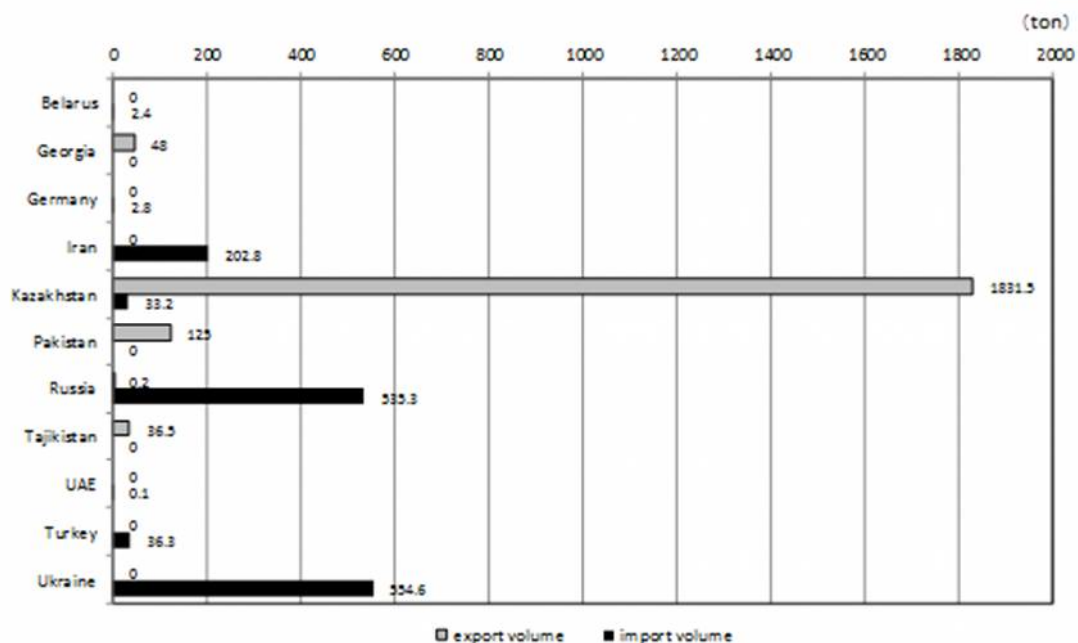


Figure. 8-6. Customs Code 0402: Import and Export Volumes by Country

C. Fermented dairy products, etc. (Customs Code 0403)

The export destination for yoghurt and other fermented dairy products is Kazakhstan, and in 2011 2,800 tonnes were exported. The import source is Russia, and in 2011 around 3,200 tonnes were imported, more than were exported.

(Unit: t)

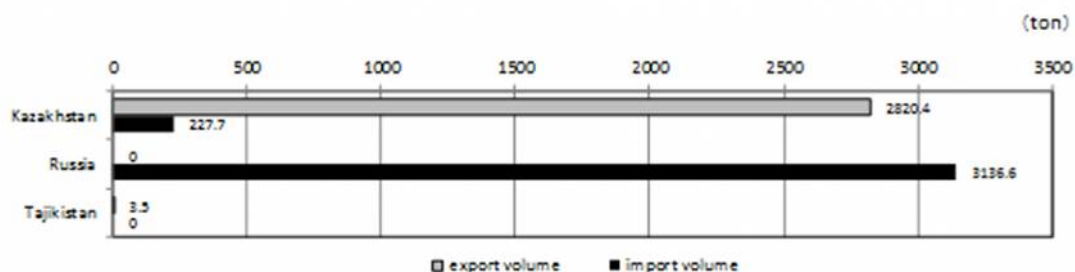


Figure. 8-7. Customs Code 0403: Import and Export Volumes by Country

D. Butter, etc. (Customs Code 0405)

The major export destination for butter is Kazakhstan, and in 2011 around 700 tonnes were exported. The major import source for butter is Russia, and in 2011 around 330 tonnes were imported.

(Unit: t)

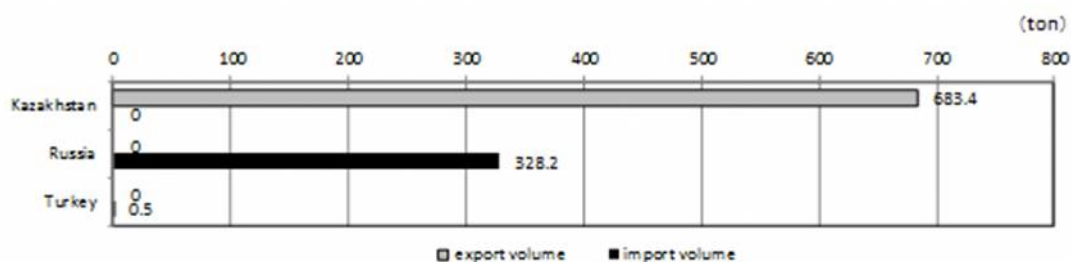


Figure. 8-8. Customs Code 0405: Import and Export Volumes by Country

E. Cheese, etc. (Customs Code 0406)

The major export destination for cheese is Kazakhstan, and in 2011 around 1,600 tonnes were exported. The major import source for butter is Russia, and in 2011 around 400 tonnes were imported.

(Unit: t)

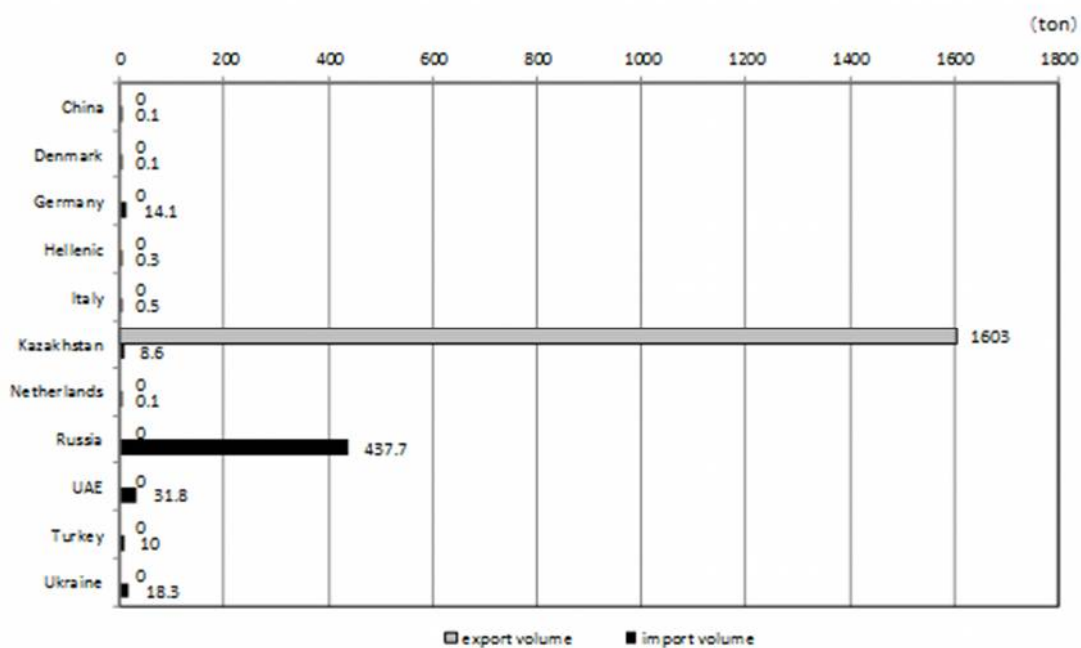


Figure. 8-9. Customs Code 0406: Import and Export Volumes by Country

(4) Examples of Expansion into Foreign Markets

The next table shows the outlines of dairy producers in Chuy Province and Bishkek City that were inspected by the Customs Union in 2012 and 2013. Chuy and Bishkek both border Kazakhstan, and there are many companies there that are expanding to foreign countries, with a focus on exports.

Table 8-5. Major Dairy Producers in Bishkek City and Chuy Province Inspected by the Customs Union

Location	Company name	Location	Year established	No. of employees / vets	Major products	Major export destinations
Bishkek	① Bishkek-Sut	Bishkek	1989	375/1	Processed (liquid) milk	Kazakhstan
Chui oblast	② Shin Line	Alamudun District	2000	167/1	Powdered milk, butter	Kazakhstan
	③ Belovodskiy dairy farm		2011	46/1	No data	No data
	④ Ar-Sut	Moskovsky District	1982	90/1	Non-fat milk powder, butter	Kazakhstan, Pakistan
	⑤ Ursus		2009	63/1	Processed (liquid) milk, butter, cheese	Kazakhstan
	⑥ Kant-Sut	Ysyk-Ata District	1970	34/1	Processed (liquid) milk, butter, fermented dairy foods	Kazakhstan
	⑦ Umut & K		1997	208/1	Ice cream only	No exports in 2011–2013

Source: Created by Survey Group based on *Reports on Veterinary Specialist Dispatch from the Veterinary Inspection and Oversight Committee of the Ministry of Agriculture of the Republic of Kazakhstan to Kyrgyzstan* (2012, 2013)

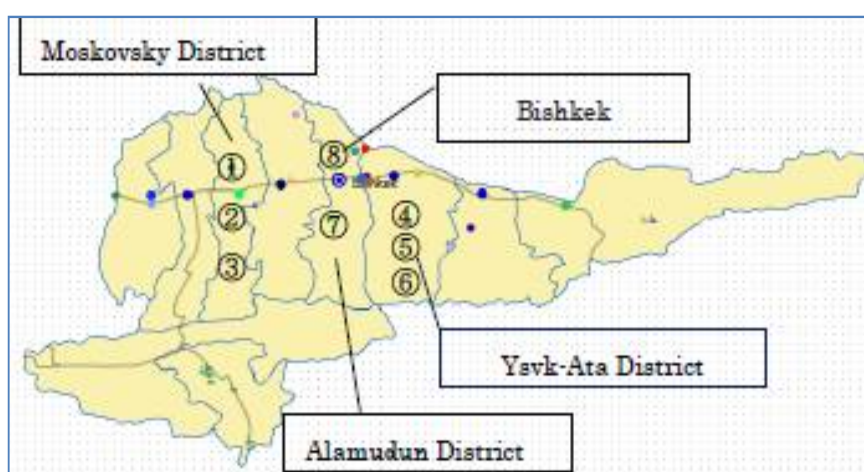


Figure. 8-10. Location of Dairy Producers in Chuy Province and Bishkek City

The only major dairy producers in Chuy Province with more than 300 employees are Bishkek-Sut and MIS, with the remainder being small to medium enterprises. In the field survey carried out in September 2013, we visited some of the companies in the preceding table, and carried out hearings on the companies' marketing strategies, including the effects of the import ban by Kazakhstan and joining the Customs Union.

The following is a report on examples of foreign expansion of three companies selected from the ones interviewed.

A. Bishkek-Sut

Founded in 1989, and with 340 employees, Bishkek-Sut is the largest dairy producer in Kyrgyzstan. It became a subsidiary of Winn-Bill-Dann,⁶ Russia's second-largest dairy producer, in October 2000, and produces low-temperature pasteurized milk, yoghurt, curd, sour cream, and other house brand products. From 2010 to 2011, it renewed its production department equipment, supplying products both for domestic and foreign consumption. The production volumes of dairy products for the domestic and foreign markets are shown in the next table. In 2010, the volume of products for export was twice that of products for the domestic market, but that reversed in 2012. This is assumed to be the result of the Kazakhstan import ban.

Table 8-6. Trends in Sales Volumes per Market for Bishkek-Sut Products

	(tonnes)		
	2010	2011	2012
Domestic market	7,936.7	9,165.9	10,558.8
Other countries	15,696.4	9,228.2	6,273.4
(of which, for Russia)	-	-	-

Source: Created by Survey Group based on *Reports on Veterinary Specialist Dispatch from the Veterinary Inspection and Oversight Committee of the Ministry of Agriculture of the Republic of Kazakhstan to Kyrgyzstan* (2012)

⁶ A dairy producer founded in 1992 in Russia. In 2005, it became Russia's first business to be permitted to export to the EC, and actively expanded not just in Russia but in Central Asia, but in 2011 it became a subsidiary of the US-based company PepsiCo. This means that Bishkek-Sut produces the Winn-Bill-Dann brand, but it became a PepsiCo subsidiary as well.

Bishkek-Sut is one of the two companies that were given export permission by Kazakhstan as a result of the Customs Union inspection of 2012. In the Kazakhstan field survey in September 2013, the sales price for milk produced at Bishkek-Sut plants was some 25% lower than the average retail price for Kazakhstan, and was a major seller at supermarkets. When hearings were conducted in Kazakhstan, it was found that consumers were comfortable purchasing it, as they saw the Winn-Bill-Dann milk sold in Kazakhstan as Kyrgyzstan milk, with Kyrgyzstan natural raw milk being produced using the latest production lines in Russia.

The approach of Bishkek-Sut can be called a success story in terms of bringing in foreign capital and restructuring management, but on the other hand, it also may show one possibility for small and medium dairy producers in Kyrgyzstan. That is, if Kyrgyzstan “natural” milk is produced using thorough quality control, it can be built up into a brand that will sell in foreign countries.



Picture 8-6. “Happy Milkman,” a Kyrgyzstan Domestic Brand

(Photographed by Survey Group, September 2013)



Picture 8-7. “Country House,” the Major Brand for Kazakhstan

(Photographed by Survey Group, September 2013)

B. Shin Line

Shin Line is a Korea-based dairy producer, and local subsidiaries with the same name, operated by a relative, based in Kazakhstan and Uzbekistan manufacture and sell dairy products under the same brand.

In the Kyrgyzstan plant, unpasteurized and unfilled raw milk, as well as ice cream, frozen foods (ravioli, mantou, frozen noodles) and other non-dairy products are produced.

Products produced at the Kyrgyzstan plant are exported to Tajikistan, Uzbekistan, Pakistan, and Afghanistan in addition to Kazakhstan. One of the problems with Kyrgyzstan is that there are no testing stations that meet the Customs Union standards.

Shin Line's strengths are in its production of non-dairy frozen foods, and its targeting of former Soviet states other than Kazakhstan. It has a diverse lineup of products, and its wide target market allows flexible corporate management that responds to changes in market needs.

C. Belovodskiy Dairy Farm

Founded in 2011 in order to export dairy products to Kazakhstan. As a result of a market survey with its Kazakhstan partner, it learned that in Kazakhstan there is a custom of adding milk to tea, so determined that there was a need for a rich milk that is held at 90°C for four hours and pasteurized for 20 minutes, and created a plan to produce 900 tonnes monthly for export to Kazakhstan.

The company completed all procedures for dairy production in January 2013, but it remains unable to export to Kazakhstan due to that country's import ban. As it planned its milk production based on Kazakhstan needs, it is unable to switch over to producing for the domestic market, and at present its production lines are stopped.

Kyrgyzstan's entry into the Customs Union is seen as a huge chance for Kyrgyzstan, and the simplified customs procedures will be welcomed. However, we were told how the company is feeling a threat due to the strong marketing abilities of Kazakhstan and Russia.

During the field survey of Kazakhstan, a need was seen for the products that Belovodskiy Dairy Farm planned, yet there were few companies supplying them, so their strategy gives them a product niche. There is every chance that exports would go smoothly if the import ban by Kazakhstan was lifted, so this is an unfortunate case.



Figure. 8-11. PR Brochure from Belovodskiy Dairy Farm

8.3. Current Situation with Kazakhstan Dairy Products Market

Kyrgyzstan dairy producers will need to understand the special features of the Kazakhstan market, a huge market of 16 million people right next door, if they are to promote the export of dairy products in the future. Knowing the changes that have happened to the Kazakhstan dairy products market following its joining the Customs Union in 2010 should provide some important hints for predicting the future of Kyrgyzstan as it moves ahead with preparations for joining the Customs Union. The changes in the Kazakhstan market before and after joining the Customs Union are reported below, based on statistical data.

(1) Current situation of Kazakhstan dairy production

The average milk yield per cow in Kazakhstan is 2,200 kg, which makes it the lowest out of the Customs Union nations compared with Belarus's 4,700 kg and Russia's 3,500 kg. In addition, there are few organized dairy farms, just like Kyrgyzstan, so the volume of milk produced as side businesses by individuals accounts for 88% of the total production, with commensurate unstable quality. There are also major seasonal changes in the raw milk production volume, with 3.5 times the amount for January being produced in June, meaning that it is difficult to produce milk stably year-round. All of this means that Kazakhstan imports a large number of dairy products.

The table below shows the makeup of the Kazakhstan domestic dairy products market. As the autumn and winter raw milk production volumes are low in Kazakhstan, powdered milk is often used in the production of dairy products. There has been a notable increase in the consumption of powdered milk from 2010, following their joining the Customs Union. In addition, some 40% to 60% of cheese, butter, and ice cream are dependent on imports.

Table 8-7. Composition of Kazakhstan Domestic Dairy Products Market (2010–2011)

(Unit: t)

a product name	volume of the domestic production according to processing companies		export volume		import volume		share of import volume to the number of domestic consumers	
	2010	2011	2010	2011	2010	2011	2010	2011
liquid processed milk and cream	294,395	335,946	394.6	473	49,159.2	45,147	14	12
powdered milk	2,612	2,923	1	40	17,966.1	24,664	88	90
butter	12,857	14,220	12	12	8,471.8	7,370	40	34
cheese and curd cheese	15,486	16,579	776.3	614	24,435.9	22,806	62	59
milk and cream (condensation)	9,521	10,494	379.3	379	40,169.0	48,527	81	83
cultured milk products	121,534	134,822	164.3	1,577	33,429.6	31,197	22	19
ice-cream	14,669	14,307	169.2	95	11,186.1	15 540	44	52

Source: “Concept for a Dairy Production Development Program in Kazakhstan until 2020” (2012, Astana, KazAgro)

(2) Current situation of dairy product imports in Kazakhstan

The following figure shows the importing nations and imported amounts for dairy products by customs code from 2008 to 2011. The overall trend can be seen as being a shift in export sources for dairy products to Kazakhstan to Russia and Belarus following joining the Customs Union.

A. Unconcentrated milk and fresh cream (Customs Code 0401)

The biggest export source for “Milk and fresh cream” (Customs Code 0401) is Kyrgyzstan, but in 2011 imports from Russia increased greatly, narrowing the gap with Kyrgyzstan to 2,000 tonnes.

“Milk and fresh cream” (Customs Code 0401) includes raw milk as ingredients and packaged milk. Therefore we can assume that the main export from Kyrgyzstan is raw milk as ingredients, and from Russia is packaged milk.

Bishkek-Sut, based in the city of Bishkek, has been renewing its equipment and expanding its production lines starting in 2011, and is expected to expand exports to Kazakhstan of Kyrgyzstan-produced Winn-Bill-Dann products. When Kyrgyzstan dairy producers export milk to Kazakhstan, they will need to be aware that the Winn-Bill-Dann brand will be their competitor.

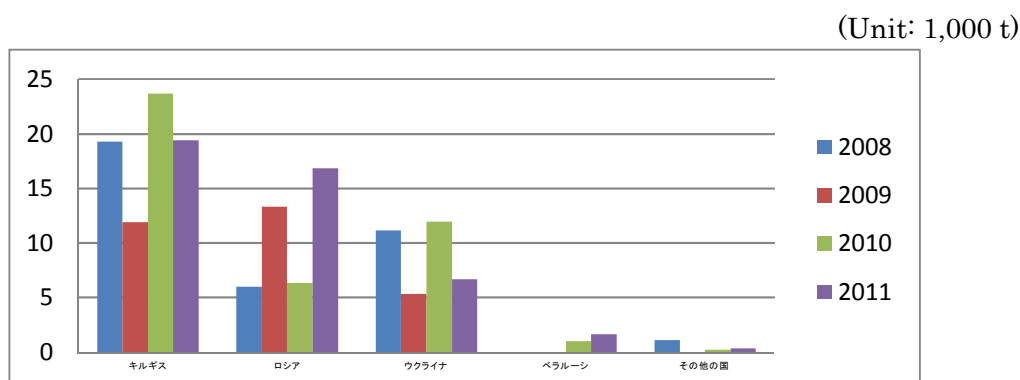


Figure. 8-12. Trends in Importing Countries and Imported Volumes of Milk and Fresh Cream
(Unconcentrated) (Customs Code 0401)

Source: “Concept for a Dairy Production Development Program in Kazakhstan until 2020” (2012, Astana, KazAgro)

B. Concentrated milk and fresh cream (including powdered milk) (Customs Code 0402)

The biggest source of imports for concentrated milk and fresh cream, including powdered milk, is Russia, but in 2011 there was a major increase in imports from Belarus, some three times the volume for 2010.

There is a demand in Kazakhstan for powdered milk as a substitute for raw milk, but there are few production plants in Kyrgyzstan, and only two in Chuy Province that can cope with this demand. There are also needs for powdered milk in China and Pakistan and other Islamic nations as well as Kazakhstan, so this could be the trump card for opening up new markets.

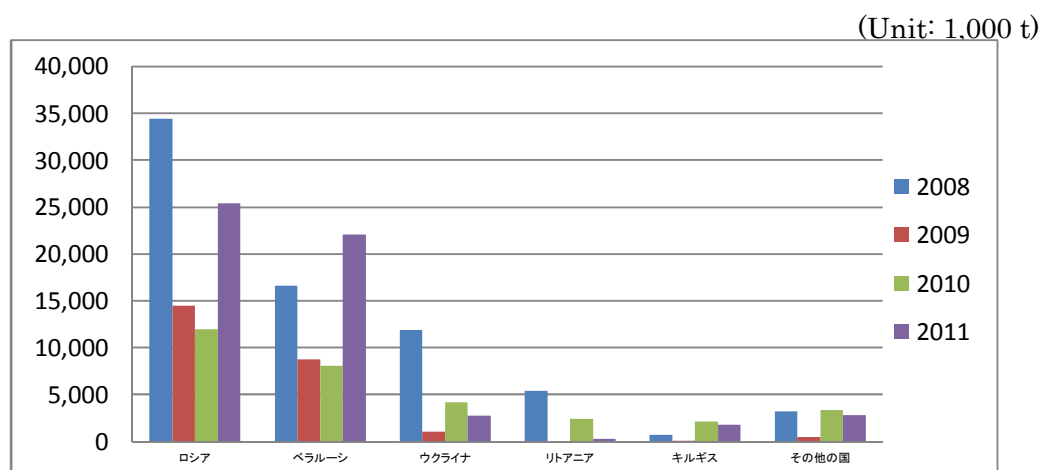


Figure. 8-13. Trends in Importing Countries and Imported Volumes of Milk and Fresh Cream
(Concentrated) (Customs Code 0402)

Source: “Concept for a Dairy Production Development Program in Kazakhstan until 2020” (2012, Astana, KazAgro)

C. Fermented dairy products, etc. (Customs Code 0403)

Fermented dairy products include yoghurt, kefir, and buttermilk. Fermented dairy products are imported from Russia, with Russia accounting for 85% of the total imports. The volume of exports from Kyrgyzstan to Kazakhstan in 2011 was 2,800 tonnes. The global brand Danone has a production plant in Kazakhstan, so there is the chance that the volume of imports will drop in the future.

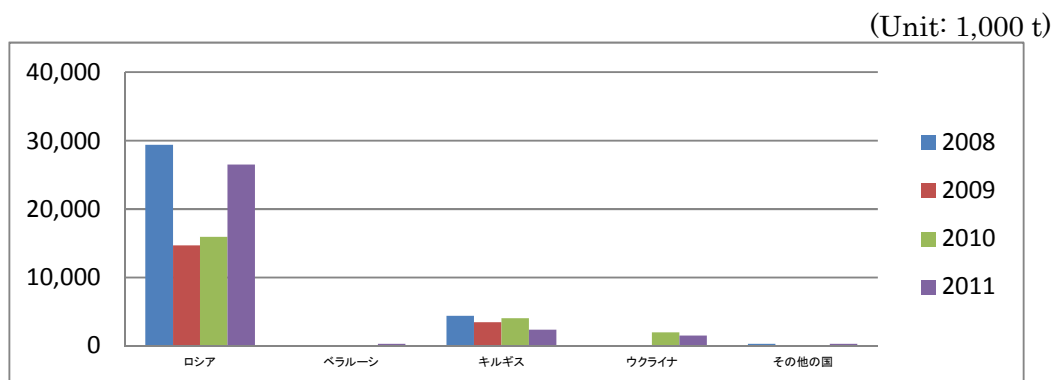


Figure. 8-14. Trends in Importing Countries and Imported Volumes of Buttermilk, Solidified Milk and Fresh Cream, Yoghurt, and Kefir (Customs Code 0403)

Source: “Concept for a Dairy Production Development Program in Kazakhstan until 2020” (2012, Astana, KazAgro)

D. Butter, etc. (Customs Code 0405)

The major import source for butter in 2008 was Ukraine, but in 2011 there were large increases in imports from Customs Union members Belarus and Russia, which between them accounted for around 70% of the total. The amount from Belarus in particular has shown a major increase of 3.5 times the previous year.

Following Kyrgyzstan’s membership in the Customs Union, it is very likely that Belarus products, which are high quality and low cost, will be exported to the Kyrgyzstan market along with Russian products.

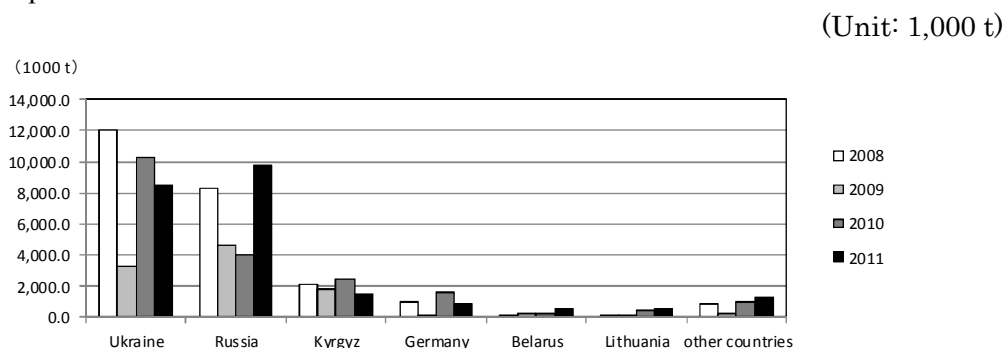


Figure. 8-15. Trends in Importing Countries and Imported Volumes of Butter (Customs Code 0405)

Source: “Concept for a Dairy Production Development Program in Kazakhstan until 2020” (2012, Astana, KazAgro)

E. Cheese and curds (Customs Code 0406)

The biggest source of cheese imports for 2008 was Ukraine, but in 2011 imports from Russia overtook those from Ukraine, making that country the major source. Kyrgyzstan-produced cheese accounted for some 1,600 tonnes in 2011, but the main distribution route for Kyrgyzstan products is open air markets (bazaars). Cheese is a high value-added food, so in order to increase exports to Kazakhstan in the future, new packaging techniques, such as individually wrapping small amounts, will be needed.

(Unit: 1,000 t)

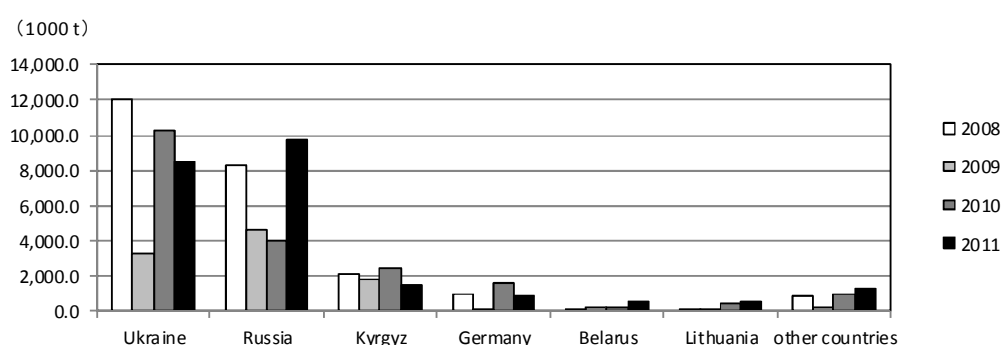


Figure 8-16 Trends in Importing Countries and Imported Volumes of Cheese and Curds
(Customs Code 0406)

Source: “Concept for a Dairy Production Development Program in Kazakhstan until 2020”
(2012, Astana, KazAgro)

(3) Kazakhstan dairy product distribution environments

Dairy product distribution in Kazakhstan is through “hypermarkets” that also act as wholesalers, supermarkets for the middle and high income classes, and open air markets (bazaars) for the middle and low income classes.

A. Supermarkets

The field survey of Kazakhstan showed that, despite the import ban applied to many producers in Kyrgyzstan, there was a major campaign underway for products of Wimm-Bill-Dann, a Russian company, produced in the Bishkek-Sut plant, which had import permission. In addition, the supermarket and market also had butter and cheese being sold.



Picture 8-8. Wimm-Bill-Dann products produced in the Bishkek-Sut plant being sold more cheaply (152 tenge) than a Kazakhstan producer's (199 tenge)



Picture 8-9. Metro, a members-only hypermarket



Picture 8-10. Popular high-quality milk from local dairy farmers (150 tenge for 500 mL, 1.5 times the normal price)



Picture 8-11. Cheese labeled as "Bishkek" for 1,175 tenge per kilogram

B. Open air markets (bazaars)

The indoor bazaars in Almaty were selling Kyrgyzstan butter and cheese. The storekeeper was asked about the popularity of Kyrgyzstan products, and replied that Kyrgyzstan dairy products were popular as they were “natural.”



Picture 8-12. Kyrgyzstan butter sold for 1,200 tenge per kilogram



Picture 8-13. Kyrgyzstan cheese sold for 1,300 tenge per kilogram

C. Evaluation of Kyrgyzstan products in Kazakhstan

In Almaty, the former capital of Kazakhstan, Wimm-Bill-Dann products produced at the Bishkek-Sut plant could be seen for sale at all supermarkets and open air markets (bazaars) visited. The open air markets (bazaars) also sold Kyrgyzstan butter and cheese by weight, and, while this was the period when imports were banned from Kyrgyzstan aside from two producers, the fact that they were being sold by weight and therefore the producer could not be determined meant that they were being sold without problems.

When people were asked about their impressions of Kyrgyzstan dairy products during the field survey, most of them replied that Kyrgyzstan products were “natural.” Most of the respondents then followed that up by saying that they “do not have any additives to make them last longer on the shelf.” The image of Kyrgyzstan products is “natural,” meaning “as nature intended,” and emphatically not “high quality products made under sanitary conditions.”

The image of Kyrgyzstan products will need to be improved by adding “high quality” to the “natural” image in the future.

8.4. Kyrgyzstan Dairy Product Market Strategy Issues

(1) Selection of target market

As much of Kyrgyzstan dairy produce is aimed at the Kazakhstan market, many companies lost their export destinations when Kazakhstan set up its import ban in October 2012.

However, Kazakhstan is one of the three nations that are part of the Customs Union that is particularly dependent on dairy product imports, and following its joining the Customs Union in 2010, imports from fellow member nations Russia and Belarus have been increasing. This situation means that the Kazakhstan government selected Government Directive N151 of February 18, 2013, “Complex Development Plan for Kazakhstan Agriculture” and is moving ahead with a plan to shift to domestic production by 2020 for the dairy products (1 million tonnes per year) that it currently depends on imports for.

Diversification of export markets is an urgent issue in order to stably sell Kyrgyzstan dairy products. High-quality powdered milk exports to next-door China are promising as the major export market and export product. When the Deputy Prime Minister of Kyrgyzstan visited China in February 2013, concrete talks were held on constructing dry milk plants in eight locations in Kyrgyzstan. It is also possible to consider exports of dairy products to nearby Islamic nations by obtaining halal certificates.

(2) Improvements to the image of Kyrgyzstan dairy products

When people were asked about the image of Kyrgyzstan dairy products during the local survey of Kazakhstan, many of them replied that they were “natural and cheap.” What “natural” means here is an awareness that they are products made using traditional methods, without any human interference. Conversely, there is the image of products that can be stored for long periods thanks to containing artificial additives.

This means that since the Wimm-Bill-Dann dairy products sold in Kazakhstan are understood to be produced using the latest Russian technology with natural Kyrgyzstan raw milk as their ingredients, they are popular in Kazakhstan as well.

This shows one “possibility.” If “natural” Kyrgyzstan raw milk is used to produce dairy products with hygienic equipment with consideration to the environment, and sold at appropriate prices, then they would be popular in the Kazakhstan market.

To achieve this, a system will need to be built that allows the production of dairy products that comply with strict standards from milking to production, and efforts made to change the image from “natural” to “high quality and appropriate prices.”

(3) Construction of a Kyrgyzstan brand: Introduction of a certification system

Setting up a system for the state to certify the quality of dairy products is an effective method for improving the image of Kyrgyzstan dairy products. Having the state certifying the quality means impartial and fair judgments and providing a unified brand, thus giving a chance to construct a collaborative system that goes beyond the boundaries of each company. Specifically, working for interaction between companies through things like annual contests for the top quality brand product or through joint exhibits at foreign exhibitions could be a chance to increase the competitiveness of Kyrgyzstan overall and increase the level of its products.

9 Farming Economy

9 Farming Economy

9.1. Situation and problem of the farming economy

(1) Average farm management in Chuy Province

In Chuy province 90% of the farmers are middle-scale farmers, who are playing the central role in the milking production of the province.

From a research to loan banks, WB organizes per a cattle earning and expense of average farm management in Chuy province as the Table below.

Based on the data below, this chapter conducts case studies which preliminary calculate the earnings and expense of middle-scale farmers with the result of hearing investigation, and analyzes the problem of farm management in Chuy province.

Table 9-1 Average cost of milk production per a cattle

Category	Number	Unit	Remark	
Shipping volume of raw milk	A	2,400	Kg/year	WB survey
Unit selling price	B	15	som/kg	Same above
Yearly sales turnover	$C=A*B$	36,000	som/kg	Same above
Maintenance cost of cattle	$D=E+F+G+H$	16,150	same above	Same above
	Hay	E	12,000	same above Same above
	Concentrated crop	F	1,800	same above Same above
	Summer grazing	G	1,750	same above Same above
	Treatment and prevention	H	600	same above Same above
Yearly income	$I=C-D$	19,850	same above	Same above
Income-sales ratio	$J=I/C$	55	%	Same above
(cost per kg)	$K=D/A$	6.7	som/kg	Same above

(2) Organization of the data for the preliminary calculation

A. Set up of the elements

The data used for the preliminary calculation were set as follows, as derived from the hearing investigation to the local farmers and veterinarians, data from WB, and the basic numeric data of the farming.

Table 9-2 Data used for the preliminary calculation

Category	Number	Remark
Production volume of milk per day	10~16kg/day	From the hearing investigation to the local farmers
Lactating period	305 days	305 days other than 60 days of non-lactating period
Non-lactating period	60 days	50 days other than 305 days of lactating period
Grazing period	275 days	March – November. From the hearing investigation to the local farmers
Unit selling price of raw milk	15~16 som/kg	From the hearing investigation to the local farmers
Proportion of feeding	—	The same above
Unit price of dried Alfalfa	100 som/block	From the hearing investigation to the local farmers and veterinarians
Unit price of silage-Alfalfa	4 som/kg	same above
Unit price of wheat	6 som/kg	same above
Unit price of barley	10 som/kg	same above
Expenses for grazing	1,750 som/cattle	WB data
Treatment and prevention	600 som/cattle	WB data
Cost for feed crops harvesting	35 som/block	Calculated from the hearing investigation to the local farmers

B. Cost for feed crop harvesting

Cost for feed crop harvesting is a cost for the farmers who have their agricultural land but need to outsource the harvesting and feed crop preparation as they do not own agricultural machine such as tractors.

By organizing the data from the hearing investigation to local farmers, the outsourcing cost is estimated as 35 som per 1 block (20kg). Though this calculation does not include the cost for seeding and sapling, it was considered that such costs per block were insignificant to include into the calculation. However, for the calculation of farmer #3, the cost was included into the preliminary calculation as a cost for harvesting.

Also, the price is 70 som when hays are brought into retailing spaces by farmers, and 100 som when cattle farmers purchase the hays from the retailing places.

Table 9-3 Harvesting cost of feed crops

Category	Number	Remark	
Fuel expense	a	10 L/ha	From the hearing investigation
	b	36 Som/L	Kyrgyz Petroleum Company
	$c=a*b$	360 Som/ha	
Packing expense	d	6 Som/block	From the hearing investigation
	e	200 Block/ha	same above
	$f=d*e$	1,200 som/ha	
Loading expense	g	6 Som/block	same above
	$h=g*e$	1,200 Som/ha	
Other expense	i	6 Som/block	same above
	$j=i*e$	1,200 Som/ha	
Fees for tractor	k	2,500 Som/ha	same above
Transportation expense	l	500 Som/ha	same above
Total	$m=c+f+h+j+k+l$	6,960 Som/ha	
Cost of hay per a block	$n=m/e$	35 Som/block	

※Excluding the expense for seeding and sapling

(3) Case study

A. Farmer #1

The farmer is a small scale farmer who inhabits an urban area and has been engaged in farming for 2 years. The number of cows they possess is 4, and they do not have their own agricultural land. Besides, they feed 4 breeding cows in an attempt to increase the number of cattle and stabilize the farming management in the future.

To calculate their earning and expense per cattle including the non-lactating period, the balance is negative as the cost exceeds the selling price. In fact, not all the milk produced would be put up for sale, so the loss is estimated to be bigger than the above.

Among the cost the biggest elements is purchasing cost of hay, which occupies 75% of the total cost. However, since the farmer does not own their agricultural land, it is difficult to reduce the cost of hay dramatically.

Also, it is also problematic that though the cost of concentrated crop occupies 20% of the total cost, the cost is not so reflected to the volume of milk produced.

Thus, this case needs to make a managerial improvement by increasing the volume of

milk produced as the cost reduction of feed crops is difficult.

The deficit would be resolved if volume of milk produced becomes 19kg/day from the current situation of 16kg/day. Also, to achieve the average profitability level of Chuy province, which is an income of 20 thousand som per cattle, the producing volume needs to be increased to the level of 23kg/day and 7,000kg/year.

To achieve this goal, other than improving the quality milk cow, it is needed to strictly manage the feeding system based on scientific knowledge.

Table 9-4 Calculation result of earnings and expenses per cattle (farmer #1)

Farmer #1

Urban, without agricultural land, 2 years of farming

Calculation of earning and expense per cattle

Category		Number	Unit
Production volume of milk per day	C	4,880	kg/year
Unit selling price	D	16	som/kg
Yearly turnover	F	78,080	som/year
Maintenance cost of cattle	$f=S+a+d+e$	90,120	same above
Hay	S	68,250	same above
Concentrated crop	a	19,520	same above
Summer grazing	d	1,750	same above
Treatment and prevention	e	600	same above
Yearly income	$g=F-f$	-12,040	same above
Income-sales ratio	$h=g/F$	-15	same above
Cost per kg	$i=f/C$	18.5	som/kg

Earning

Category		Number	Unit
Production volume of milk per day	A	16	kg/day
Lactating period	B	305	day/year
Yearly production volume	$C=A*B$	4,880	kg/year
Unit selling price	D	16	som/kg
Yearly sales volume	$F=C*D$	78,080	som/year
Sales per day		256	som/day

Calculation of cost for feed crop

	Category		Number	Unit
Alfalfa, dried, grazing	Feeding volume per day	G	30	kg/day
	Total feeding volume	$H=G*275$	8,250	kg/275 days
	Weight per block	I	20	kg/block
	Total number of blocks	$J=H/I$	413	block
	Unit price of 1 block	K	100	som/block
	Cost	$L=J*K$	41,250	som/275 days
Alfalfa, dried, stalling	Feeding volume per day	M	60	kg/day
	Total feeding volume	$N=M*90$	5,400	kg/90 days
	Weight per block	O	20	kg/block
	Total number of blocks	$P=N/O$	270	block
	Unit price of 1 block	Q	100	som/block
	Cost	$R=P*Q$	27,000	som/90 days
	Total cost for dried feed crop	$S=L+R$	68,250	som/year
Wheat lactating period	Feeding volume per day	T	4	kg/day
	Total feeding volume	$U=T*305$	1,220	kg/305 days
	Unit price of 1 block	V	6	som/kg
	Cost	$W=U*V$	7,320	som/305 days
Barley lactating period	Feeding volume per day	X	4	kg/day
	Total feeding volume	$Y=X*305$	1,220	kg/305 days
	Unit price of 1 block	Z	10	som/kg
	Cost	$a=Y*Z$	12,200	som/305 days
	Total cost for concentrated feed crop and others	$b=W+a$	19,520	som/year
	Yearly cost of feed crops	$c=S+b$	87,770	som/year

Also, as it has been told in the hearing investigation that profits are earned in terms of per day, below calculated the earning and expense balance in grazing period.

As the hearing investigation was conducted in September (grazing period), the balance of cash flow per day was merely positive; however, the balance is severely negative in a yearly term.

The first step of management is that the person recognizes the problem. Along with the techniques related to livestock feeding, it is needed to spread the fundamental knowledge of economic management.

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Table 9-5 Cash flow during grazing period

During grazing period

Category	Price	Category	Price
Production volume of milk per day	16 kg/day	Hay	150 som/day
Unit selling price	16 som/kg	Wheat	24 som/day
Sales per day	256 som/day	Barley	40 som/day
		Grazing	6 som/day
Earnings	36 som/day	Cost per day	220 som/day

B. Farmer #2

The farmer is a small scale farmer inhabiting an urban area and conducting confinement rearing throughout year. They own 4 milk cows, 2 breeding cows, 4 runts, and 25 ha of agricultural land. Currently, they are engaged in quality improvement of the milk cows, and the breeding cows and runts have been bred as milk-productive type by frozen sperm.

To calculate the earnings and expenses balance per cattle, the yearly income is around 20 thousand som which is about the average level of Chuy province. However, as some of the milk is consumed for runt, the actual income level is estimated to be somewhat lower than the above number.

The strength of this farmer is possession of their own agricultural land, which enables them to secure the dry feed crops at a lower cost than purchasing them. Also, as they have just begun to work on quality improvement of milk cows and have not started the milking of improved cows, the feed crops are currently secured by their agricultural land.

This farmer is expected to face an increasing demand of feed crops (especially concentrated feed crop) as they begin to milk the improved cows; however, as there are problems of aging irrigation infrastructure or agricultural machine in Chuy province, it will be difficult for them to secure enough amount of feed crops within their current capacity.

Thus, it is needed for them to start feed crop calculation suitable for the improved cows and planning of seeding based on the feed crop calculation in order to be able to secure enough feed crops even after milking of the improved cows become available.

Furthermore, they should start to consider steps ahead of the current feed crop production system, for example, organizing an agricultural collectivization, implementing agricultural machines suitable for their current business sides, or letting the cattle graze (concentrated grazing) within their agricultural land.

Table 9-6 Calculation result of earnings and expenses per cattle (farmer #2)

Farmer "2

With agricultural land. Outsourcing the harvest.

Calculation of earning and expense per cattle

Category		Number	Unit
Production volume of milk per day	C	4,575	kg/year
Unit selling price	D	15	som/kg
Yearly turnover	F	68,625	som/year
Maintenance cost of cattle	$f=S+a+d+e$	49,025	same above
Hay	S	36,225	same above
Concentrated crop	a	12,200	same above
Summer grazing	d	-	same above
Treatment and prevention	e	600	same above
Yearly income	$g=F-f$	19,600	same above
Income-sales ratio	$h=g/F$	29	same above
Cost per kg	$i=f/C$	10.7	som/kg

Earning

Category		Number	Unit
Production volume of milk per day	A	15	kg/day
Lactating period	B	305	day/year
Yearly production volume	$C=A*B$	4,575	kg/year
Unit selling price	D	15	som/kg
Yearly sales volume	$F=C*D$	68,625	som/year
Sales per day		225	som/day

Calculation of cost for feed crop

項目		数值	單位
Alfalfa, dried, lactating period	Feeding volume per day	G	60 kg/day
	Total feeding volume	$H=G*305$	18,300 kg/275 days
	Weight per block	I	20 kg/block
	Total number of blocks	$J=H/I$	915 block
	Unit price of 1 block	K	35 som/block
	Cost	$L=J*K$	32,025 som/275 days
Alfalfa, dried, non-lactating period	Feeding volume per day	M	40 kg/day
	Total feeding volume	$N=M*60$	2,400 kg/90 days
	Weight per block	O	20 kg/block
	Total number of blocks	$P=N/O$	120 block
	Unit price of 1 block	Q	35 som/block
	Cost	$R=P*Q$	4,200 som/90 days
Total cost for dried feed crop		$S=L+R$	36,225 Som/year
Alfalfa, silage, lactating period	Feeding volume per day	T	4 kg/day
	Total feeding volume	$U=T*305$	1,220 kg/305 days
	Unit price of 1 kg	V	4 som/kg
	Cost	$W=U*V$	4,880 som/305 days
Wheat, lactating period	Feeding volume per day	X	4 kg/day
	Total feeding volume	$Y=X*305$	1,220 kg/305 days
	Unit price of 1 kg	Z	6 som/kg
	Cost	$a=Y*Z$	7,320 som/305 days
Total cost for concentrated feed crop and others		$b=W+a$	12,200 som/year
Yearly cost of feed crops		$c=S+b$	48,425 som/year

C. Farmer #3

The farmer is middle-sized farmer mainly conducting grazing around mountain region. The number of milk cows is 11, which are Alatau specie and Brown Swiss as they are suitable for grazing.

As they live by the grazing land, their feeding solely relies on the natural vegetation of the grazing land, and feed crops for winter are also hay bale prepared from the vegetation of the grazing land from summer.

To calculate the earnings and expenses per cattle, their income is secured well because of the low cost for dried feed crops and concentrated crops.

However, this farmer is only using the grazing lands nearby their stall, and the sustainability of the grazing land directly affects their farming management. Thus, it is needed to properly control the land use in order to avoid devastation of the land caused by over-grazing.

Table 9-7 Calculation result of earnings and expenses per cattle (farmer #3)

Farmer #3

Mountain region, grazing, numbers for Alatau specie

Calculation of earning and expense per cattle

Category		Number	Unit
per day	C	3,050	kg/year
Unit selling price	D	16	som/kg
Yearly turnover	F	48,800	som/year
Maintenance cost of cattle	$f=S+a+d+e$	11,800	same above
Hay	S	9,450	same above
Concentrated crop	a	—	same above
Summer grazing	d	1,750	same above
Treatment and prevention	e	600	same above
Yearly income	$g=F-f$	37,000	same above
Income-sales ratio	$h=g/F$	76	same above
Cost per kg	$i=f/C$	3.9	som/kg

Calculation of cost for feed crop

Category		Number	Unit
Winter, haybale, production volume	Feeding volume per day	G	60 kg/day
	Total feeding volume	$H=G*90$	5,400 kg/for 90 dyas
	Weight per block	I	20 kg/block
	Total number of blocks	$J=H/I$	270 block
	Unit price of 1 block	K	35 som/block
	Cost	$L=J*K$	9,450 som/for 90 days

Earning

Category		Number	Unit
Production volume of milk per day	A	10	kg/day
Lactating period	B	305	day/year
Yearly production volume	$C=A*B$	3,050	kg/year
Unit selling price	D	16	som/kg
Yearly sales volume	$F=C*D$	48,800	som/year
Sales per day		160	som/day

9.2. The problem and countermeasure in the field of farming economy

Below summarizes the problem and countermeasures in regards to the farming economy in Chuy province.

Table 9-8 Problem and countermeasures in regards to the farming economy

Category	Problem	Countermeasure
Productivity improvement	Milk productivity at low level	Selection of cattle species suitable for the management. Quality improvement of the cattle
	Lack of scientific knowledge such as for feed crop calculation	Promulgation of scientific method for feed crop calculation
Feed crop production	Aging of agricultural machine, or its shortage	Improving the institutional financing, shared use of agricultural machine, implementation of intensive grazing
	Appropriate control over the grazing land	Awareness-building for the sustainable use of grazing lands
Management	Lack of knowledge for management	Promulgation of managerial knowledge such as farming managerial planning method

9.3. Possible activity from Japan

As to the productivity improvement and techniques relating to feed crop production, plans for activities are respectively suggested in the related chapters of cattle control and feed crop production.

As to the activity in relation to the farming economy, possible plans are; management diagnosis for the model cases, designing of managerial plans, establishment of a managerial method suitable for Chuy province, or organization of workshops for promulgation of managerial knowledge.

**10 Proposal Related to Support
Projects from Japan**

10 Proposal Related to Support Projects from Japan

10.1. Refining the Support Project

(1) Laying out the issues

Table 10-1 lays out the issues that have been discussed above in the nine business processes of (1) Policies, (2) Dairy cow breeding and management, (3) Production (milking to processing), (4) Quality management, (5) Production of roughage, (6) Farm operation, (7) Veterinary policies and sanitary management, (8) Distribution and sales strategies, and (9) Overall sanitary management systems. This shows that all processes, from (1) to (9), have issues.

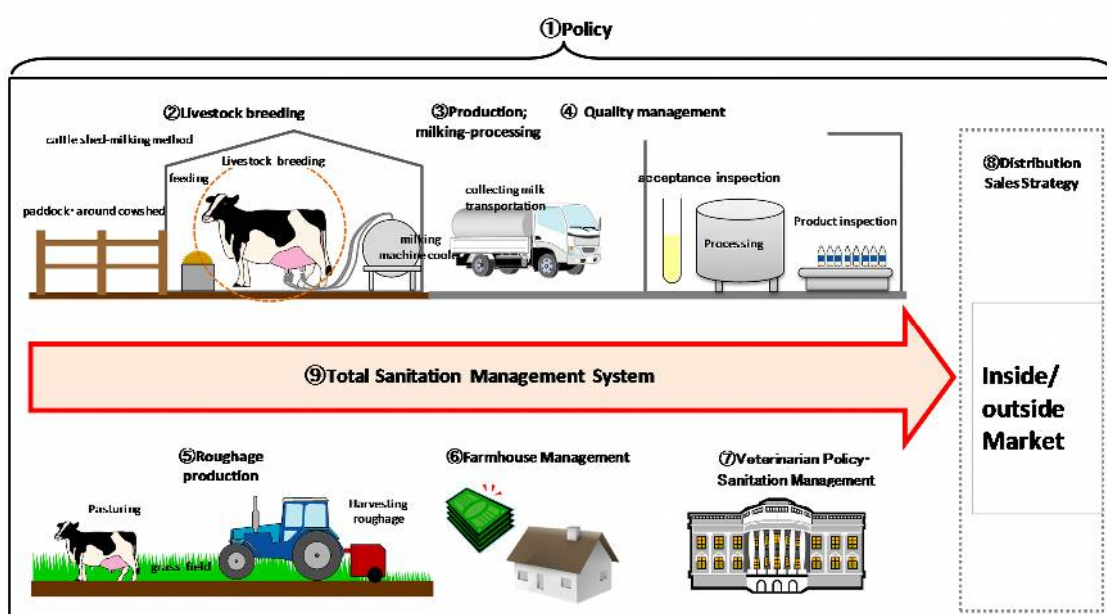


Figure 10-1 Diagram of Donor Support in Dairy Farming Processes

<Refer to the list on the following pages>

Table 10-1 Laying Out the Issues

Work process		Major issues
(1)	Policies	Lack of unified targets, no specific roadmaps prepared, information not properly shared among related persons, no manager for overseeing the entire process.
(2)	Dairy cow breeding	No proper stalls, pastures uncared-for.
	Dairy cow management	Confusion and lack of breeding policies, lack of livestock market equipment.
(3)	Production	Lack of milking techniques, lack of temperature management, no proper protection against foreign objects entering, inappropriate management of drugs, lack of sanitary management, no proper government guidance.

(4)	Quality management	Lack of inspection abilities, lack of process and quality management, lack of information for the consumer.
(5)	Production of roughage	Weakened feed production, inappropriate feed, lack of proper grazing land management.
(6)	Farm operation	Low milk yields, low feed production, lack of management ability.
(7)	Veterinary policies	Lack of proper veterinary systems, weak farmer organizations, livestock hygiene.
(8)	Distribution and sales strategies	Unable to meet requirements of export destinations, lowered brand image
(9)	Overall sanitary management systems	Inadequate management in the overall supply chain, information not properly shared among related persons.

(2) Proposal in line with the status of support from other donors

Within agriculture, the Kyrgyz Republic's key industry, dairy farming is in a relatively superior position compared to surrounding nations due to its climate, geographical features and vegetation, and various support is provided from other donors.

In ① policy, a general statement has been made in relation to the current status and need for development of dairy farming; however, a roadmap for the solution of individual problem has not been established. The processes from ② to ⑧ are progressing through independent programs, yet there is no system to combine results in a unified manner. No support has been provided for ⑨ overall sanitation control system, which follows through the entire process from the processing of milk produced by farmers into final products to be sold in the domestic and international market.

This issue requires projects involving several entities, including farmers, distributors, transporters and processors, which mean that management and guidance will not be easy; however, considering the Kyrgyz Republic's goals of quality improvement and export promotion, this is considered the most important theme.

Therefore, the most desirable support from Japan would be support that does not focus on individual processes but which provides a general management system that extends over several processes. Support is currently provided for individual processes, yet this support has not yet been coordinated. Effective execution of individual support that can be expected to produce a synergetic effect requires a system for coordinating in the Department of Agriculture as well as the provision of personnel training.

① Policy-related

Theme	Creation of Livestock Sector Development Policy of the Kyrgyz Republic (2014)		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	FAO
Target period	2014 -	Target area	Entire Kyrgyz Republic
Content	- FAO leads in the formation of Livestock Sector Development Policy in the Kyrgyz Republic. Comment Exchange Sessions for stakeholders will be held, and then the policy is presented for approval as a national strategy.		
Note	Detail noted in Chapter 1 (4) Dairy Farming Policies (p14)		

② Milk Cow Breeding and Management

Theme	Kyrgyz Republic Agro-Input Enterprise Development (KAED) and (KAED-2)		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	USAID
Target period	2001 - 2012	Target area	Entire Kyrgyz Republic
Content	- Livestock Breeding, Supply of Feed: Support provided for the purchase of feed responding to a significant issues for Kyrgyz Republic dairy farmers, particularly small-scale dairy farmers facing a constant lack of feed supply.		

Theme	Distribution of Artificial Insemination Apparatuses for Livestock		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	Turkey
Target period	2012 -	Target area	Entire Kyrgyz Republic
Content	- On-site veterinarians cite the lack of artificial insemination apparatuses for dairy farming. The Turkish government decided to supply 300 artificial insemination apparatus sets (US\$ 480,000).		

③ Production (Milking to Processing)

Theme	Creation of a MILK COLLECTION COOLING STUDY		
Executing Agency	US-AID	Donor	US-AID
Target period	December 2011	Target area	Bishkek
Content	<p>- Link to a specific project is not confirmed. Proposals for the contents below have been created.</p> <p>① Recommendations : Milk Quality Improvement, Strategies, Milk Collection Centers</p> <p>② information</p> <p>Best Practices Manual for a Bulk Milk Collection and Cooling Center, Milk Collection Centers Purchase and Delivery Maintenance of Refrigeration Systems, Construction of Milk Collection Centers, A Standard Method for Determination of Specific Gravity of Milk</p>		

Theme	Elimination of Technological Obstacles for Corporate Activities and Commerce		
Executing Agency	Department of Economic Affairs of the, Kyrgyz Republic	Donor	The World Bank
Target period	Scheduled for 2013	Target area	Unknown
Content	- According to the “Elimination of Technological Obstacles for Corporate Activities and Commerce Supported by the World Bank” plan and execution summary (2013) announced by the Department of Economic Affairs of the Kyrgyz Republic, a plan is made for the funding of support to agencies involved in food quality assurance and management, and to support corporations aiming to introduce quality control systems (ISO, HACCP, etc.)		

Theme	Introduction of HACCP and ISO22000		
Executing Agency	Kyrgyz National University	Donor	GIZ
Target period	Executed 2013	Target area	Bishkek
Content	- Equipment was provided to Kyrgyz National University and a workshop was held on international certification. A training session was also held for the introduction of HACCP targeting general corporations and government-related individuals. The training session was on the outline of the HACCP system using general case studies; however, practical training and Kyrgyz-specific case studies were not provided.		

④Quality Control

Theme	Equipment Provision to Kyrgyz National University, Analysis Workshop		
Executing Agency	Kyrgyz National University	Donor	GIZ
Target period	Executed 2013	Target area	Bishkek
Content	- Equipment was provided to Kyrgyz National University and a workshop was held on international certification. In April 2013, a workshop on analytical methods was held together with nations neighboring the Kyrgyz Republic.		

Theme	Training for the Acquisition of ISO17025		
Executing Agency	Kyrgyz Center of Accreditation (KCA)	Donor	GIZ, The World Bank, ITC
Target period	Unknown	Target area	Bishkek
Content	- Executed training for the accreditation of ISO17025		

⑤ Roughage Production

Theme	Investments in Agriculture and Services project (AISP)		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	The World Bank
Target period	2008 - 2012	Target area	Entire Kyrgyz Republic
Content	- As an aspect of agricultural business environment improvement, the pasture land management guidance project was executed together with food safety control and agricultural service development projects.		

Theme	Project to ascertain the current status of grazing and pasture use, and promote effective utilization		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	IFAD
Target period	2013 -	Target area	Entire Kyrgyz Republic
Content	<ul style="list-style-type: none"> - This project began 3 years ago with support provided by Canada, Switzerland and Kazakhstan, and a method is now established for achieving objective. - Currently, large-scale research is being conducted including, yield of natural vegetation, and roughage analysis, for the creation of pasture use guidelines 		

⑥ Farming Management

Theme	Creation of LIVESTOCK AND MARKET DEVELOPMENT PROGRAMME DESIGN COMPLETION REPORT		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	IFAD
Target period	Unknown	Target area	Issyk Kul Province, Naryn Province
Content	<ul style="list-style-type: none"> - Proposed training programs for pasture land management, livestock sanitation and value chain structure. - These trainings programs target high-added value on products, low cost and management system improvement. 		

Theme	Market Development Project		
Executing Agency	Department of Agriculture of the Kyrgyz Republic	Donor	ICCO, Helvetas
Target period	2009 - 2012	Target area	All area
Content	- Execute model projects (total of 30 locations) related to value chain for fruit, vegetables and dairy products, and workshops and seminars are held for the formation of value chain model.		

⑦ Veterinarian Policy and Sanitation Control

Theme	Improvement in Milk Cow Breeding and Reproduction System		
Executing Agency	Livestock Industry Bureau, Department of Agriculture	Donor	USAID
Target period	Starting October 2013	Target area	Entire Kyrgyz Republic
Content	- Today, with complete destruction of the milk cow breeding system, drastic reform is called for improvement. UAID has decided to offer US\$ 7 million as a funding source. It has been decided that from the funding US\$ 430,000 will be used to establish an organization for livestock improvement specifically dealing with milk cow improvement project, which will be called Elite Center in Chuy Province.		

Theme	Control of Avian Influenza		
Executing Agency	Unknown	Donor	The World Bank
Target period	2012 -	Target area	Entire Kyrgyz Republic
Content	- As countermeasure for avian influenza, cooperation was provided through the provision of plague-related information, guidance for veterinarian services, and the establishment of a laboratory for veterinary medicine.		

Theme	Support for Veterinarian Services (as one AISP) ※Including Brucellosis Compensation System Experiment		
Executing Agency	Department of Agriculture, APIU	Donor	IDA, IFAD, EU, SDC
Target period	2011 -	Target area	Entire Kyrgyz Republic
Content	- Revision of veterinarian law, veterinarian organizations, vaccination measures, fostering private veterinarians, and brucellosis control (testing and identification) are executed under veterinary services. In regard to funding of compensation for brucellosis, a demonstration zone will be set up to examine the possibility of risk control during occurrence and premiums to be paid by the producers.		

⑧ Distribution and Sales Strategies

Theme	Local Develop Program		
Executing Agency	Regional Government Organization, Department of Agriculture, etc.	Donor	USAID
Target period	2010 - 2013	Target area	Entire Kyrgyz Republic
Content	<ul style="list-style-type: none"> - Expansion of trading in the regional agricultural sector (Textile was the main product until 2013) - Support expansion of fund procurement channels - Improve processing technology of the target area - Infrastructure improvement in the regional area <p>* Possibility is program expansion into food (including dairy products) after 2014 is considered.</p>		

10.2. Methods of Support from Japan

(1) Structure to Heighten Japan's Presence

A. Strategy with *KAIZEN* (Improvement) as the keyword

Japanese activities aimed at the improvement of the entire operation are known as *KAIZEN* in the Kyrgyz Republic. For this project, therefore, the Japanese concept and actions related to quality control and cooperative work can be adopted as a dairy product quality control structure, and can be introduced together with technology and funding. This will result in the project's being recognized as joint work carried out by Japan and the Kyrgyz Republic.

Participants in programs provided at the Japan Center in the Kyrgyz Republic and participants in the training provided in Japan, in particular, have a high awareness for the *KAIZEN* concept, and it is often picked up as a topic at meetings of the Chamber of Commerce and Industry and industrial organizations. It is, then, necessary to specifically root *KAIZEN* in the regional area.

B. Creating an Environment that Enables Japan to Introduce its Technology

Reliance on Japanese technology is as high in the Kyrgyz Republic as it is in other nations. Not only government agencies, but also private corporations wish to introduce Japanese equipment and technology; however, the following factors have hindered practical introduction: 1) little information about Japanese technology, 2) relatively high cost for initial investment, and 3) difficulty in ensuring procurement route. In order for Japanese technologies to be effectively used for problem solving in the Kyrgyz Republic, and to heighten the presence of Japan, there is a need to eliminate these factors and to structure a relationship that is mutually beneficial.

In relationship to 1), it is desirable to include the introduction of Japanese technology and specific task experiences in various stages in model projects, as well as providing technical and personnel training. For the relatively high cost of initial investment in 2), there is a need to have the Kyrgyz entities to comprehensively acknowledge support systems, including product durability and supply of repair parts, and cost reduction effect for fuel and personnel costs. It is desirable to understand the evaluation for equipment supply in the program. For the distribution aspect in 3), the local areas need to recognize diverse methods of procurement though an understanding of the product inventories of surrounding nations, and the possibility of direct procurement from overseas production centers established by Japanese companies. The equipment and facilities required for the execution of the proposed projects are listed below. Most of the equipment is not easy to procure within the Kyrgyz Republic and needs to be brought in from neighboring nations and Japan. In such case, Japan will be able to also supply a

system set, including management and application.

Table 10-2 List of Equipment and Facilities Required for the Promotion of
the Proposed Projects

Category	Necessary Equipment and Facilities	
Feed Production	Tractors (Including necessary attachments) Machinery for tilling, leveling, fertilizing, and planting Manure spreaders Bulldozers	Slurry tankers Various pasture seed Broad Casters Soil analyzers Soil improvement equipment Backhoes
Feed Use	Machinery for grass pasture cutting, crushing, transport and collection Combines Harvesters Grass Cutting Machinery	Silos Trailers Feed mix adjustors Electric fence wire for grazing control Round Balers
Milk Cow Management	Equipment for individual management (such as ear tag for milk cows) Calf Hatches Dehorners Feeding bottles	Holding frames Tools for caring (brush, etc.) Hoof cutting tools Scales
Milk Cow Production	Straw machinery Straw printers Straw tubes Inner foreskin cleaning devices Artificial vagina incubators Sterilized conservers Low temperature semen treatment Secondary semen diluters	LN2 rapid-freezing devices Temperature recorders Artificial vaginas Frozen semen production apparatuses Frozen semen storage units Frozen nitrogen storage units Artificial insemination apparatuses
Milking	Sterilization agents (to wipe nipples) Dipping agents Containers for dipping Thermometers with memory Equipment cleaning	Work clothes and gloves for milking Cooling tanks (bulk coolers, etc.) Milkers Alkali detergent, acid detergent Sterilizer agents (sodium hypochlorite, etc.)
Collecting and Transporting	Thermometers Alcohol test kits Vesicle number testing kits	Hydrometers, cylinders, whole milk density correction Tables Sample collection bottles Work clothing, etc.
Distribution	Refrigeration tanks, refrigeration cars Refrigeration storage units	Thermometers with memory • Management tables
Plant Facilities	Zone division and line control display equipment Work clothes, head caps, shoes Washing facilities, foreign body removal tools before entering	Contamination prevention facilities Insecticide and vermin controlled facilities Refrigeration storage units Thermometers with memory Establishment of exclusive storage areas
Quality Control Facility (Plant, Milk Collection Center)	For quality control Titratable acidity analyzers Hydrometers, Cylinders	Alcohol test kits Somatic cell test kits Microbe analyzers Milk analyzers
Quality Assurance, Safety Control Analysis	Heavy metal, poisonous fungus, antibiotic agents, agrochemical, dioxin, melanin analyzers	Radioactive substance analyzers (radiation counters)

(2) Drawing on experiences in Japanese regions

A. Expansion of the “One Village, One Product” project

Once the quality of the raw milk has been improved, we can consider using the cheese, butter, or yoghurt produced using this as its ingredient as a One Village, One Product project. In Kyrgyzstan, One Village, One Product projects have been done with support from Japan, with success in revitalizing local industries in the region, and creating trust within that region.

B. Formation of Network between Regions and Research Institutes for Extended Periods

The theme of this project is agriculture with a particular focus on the dairy field, a field that requires an extended time for final improvement results to take hold in the target nation. Therefore, a structure with which a continuously cooperative relationship can be maintained after the completion of the international cooperation scheme such as with JICA needs to be established. In the agricultural region, farming has become a part of the local community system, meaning that each technology to be transferred into the region must be made after the environment of the entire area is set up to accept the technology that Japan wish to transfer.

Kitami City, Hokkaido, has already achieved an interactive program with the Kyrgyz Republic in the fields of urban planning and disaster prevention. Obihiro City, Hokkaido, has begun international cooperation projects with the Kyrgyz Republic in the fields of bio-energy and organic farming led by the Obihiro University of Agriculture and Veterinary Medicine. International and postgraduate students studying at Iwate University, Tohoku University and Hokkaido University have become a bridge for academic exchange between Japan and their home countries.

Table 10-3 Domestic Resources

Category	Organization (Location)	Summary
Corporations	Toyota Tsusho Corporation (Head Office: Tokyo, Nagoya)	Centering on Moscow and Astana, the company works with agricultural cases of CIS nations. The company is able to supply general material. It has cooperative ties with the largest agricultural cooperative machinery manufacturer in Kazakhstan, Kazagromarsh.
	Senko Co., Ltd. (Head Office: Osaka, Tokyo)	Opened a convenience store chain in Almaty. Distribution-related company focusing on CIS.
	Saraya Co., Ltd. (Head Office: Osaka)	Supplies sanitation and environment-related products targeting central Asia.
	Iino Koun Co., Ltd. (Head Office: Kyoto)	Transports automobile parts and used cars to the Kyrgyz Republic. The company exports and ships agricultural machinery to Uzbekistan and conduct agricultural business (commissioned cultivation) in Russia.
	IHI STAR Machinery Corporation (Head Office: Hokkaido)	Deals with agricultural machinery related to dairy farming. The company has production centers in China and has plans to establish a plant in Russia. It moves to seek a market in Central Asia.

	Kubota Corporation (Head Office: Osaka, Tokyo)	The company has export achievements worldwide with its agricultural machinery. It also has business achievements in Uzbekistan.
	Satsuraku Agricultural Cooperative (Hokkaido)	A dairy maker in Sapporo in the business of collecting milk, processing and sale of dairy products. The company receives trainees from Central Asia, including the Kyrgyz Republic.
	The Hokkaido Bank, Ltd. (Hokkaido)	Working on projects involving the introduction of Hokkaido's agricultural technology to cold regions such as Russia and Mongolia. Cultivation experiment is taking place in Russia and the company's interest extends to Central Asia.
Universities, etc.	Obihiro University of Agriculture and Veterinary Medicine (Hokkaido)	Bio-energy and organic cultivation research takes place in collaboration with the Kyrgyz Republic. The university actively receives trainees from within Japan.
	Hokkaido University (Hokkaido)	School of Agriculture offers technical support in dairy farming, pomology and agricultural economics fields.
	Rakuno Gakuen University (Hokkaido)	Specializing in fostering successors to dairy farmers and farmers, matching to the needs of the Kyrgyz Republic. The university is active with international cooperation through ties with universities in Russia and Kazakhstan.
	Iwate University (Iwate)	Possessing collaboration (Faculty of Engineering) with Kyrgyz Manas University, and actively collaborates with research institutes in the Kyrgyz Republic. The university intends to promote international cooperation with a nearby technical junior college (casting, agricultural machine parts) and junior college (nutrition).
Organizations	The Institution of Professional Engineers, Japan, Hokkaido Branch (Hokkaido)	Considering technical transfer from Hokkaido to young engineers in Kyrgyz and other Central Asian nations.
	Hokkaidou Kindai Dairy Farming Co. (Hokkaido)	A dairy farmer union with an office in Bekkai, one of the major dairy farming areas. High quality milk is provided as an ingredient for ice cream. The union actively receives international technical trainees. It has had exchange with Russia.
	Kitami International Technology Cooperation Promotion Meeting (Hokkaido)	It has provided grass-root technical cooperation related to urban planning and cold area technology. It also collaborates with local educational institutes such as the Kitami Institute of Technology and the Tokyo University of Agriculture.
	Hokkaido Veterinary Medical Association (Hokkaido)	Actively involved in international cooperation for veterinary education.

For the JICA domestic center program, lecturers are dispatched and trainees are received, and organizational, corporate and academic institutes with experience in interactions with trainees from the Kyrgyz Republic show interest in the Kyrgyz Republic, expressing the desire for long term exchange. The use of existing networks and collaboration with other fields for exchange programs will mature long-term trusting relationships that are expected to ensure a firm Japanese presence.

Box 10-1 Summary of the Seminar: Will Northern Technology Save the World?

—With the Kyrgyz Republic as Example Case—

Sponsor	The Institution of Professional Engineers, Japan, Hokkaido Branch, Young Engineers Committee
Outline	Date: July 29, 2013, Participants: Approx. 70 Location: Sapporo City (Open to public)
Theme	Will Northern Technology Save the World? – With the Kyrgyz Republic as Example Case –

Young engineers led the seminar with an understanding of the status of agriculture, construction and civil engineering in Kyrgyz, and discussions were held on how technologies in Hokkaido can contribute to the solution of problems faced by nations worldwide.

Young engineers stated that the issues of Kyrgyz were similar to those in Hokkaido and that Hokkaido's technology can be applied to Kyrgyz, while there is a need to consider technology that best fit the materials and regional resources possessed by the country.

Some of the older general participants commented that Bishkek, capital of the Kyrgyz Republic, is similar to the state of Sapporo half a century ago and that with the appropriate technical training and passion on their side, the city would be on the level of Sapporo in no more than several decades.



Car traffic increases as you near capital city Bishkek, but the roads are not separated into pedestrian and automobile roads.

Combine harvesters are from the time of the former Soviet Union.

Comparison of Kyrgyz and Hokkaido

Official Name	Kyrgyz Republic	(Hokkaido)
Population	5,482,000	5,444,307
Area	198,500 km ²	83,457 km ²
Cultivated area	1,276,000 ha (12,760 km ²)	1,153,000 ha (11,530 km ²)
Permanent grassland and pasture * Permanent grassland is natural vegetation	10,617,000 ha (106,170 km ²)	—
Area per farming household	1~2 ha	22 ha
Capital	Bishkek	Sapporo
Capital Population	About 1 million	About 1.91 million

10.3. Content of Proposal

(1) Narrowing down theme · · Milking Sanitation Control Technology Improvement

A. Issue Recognition

One issue related to raw milk production in the Kyrgyz Republic is unstable quality. In particular, knowledge and technology related to milking sanitation is extremely immature among small-scale farms. One of the basic steps in milking operations is pre-milking, which is milking by hand before attaching milker cups. Few dairy farmers take this step. Milking is performed in cowsheds that are not very clean, with milkers being left on the floor when not in use and cattle manure adhering to milk buckets, just to give a few examples. Furthermore, milk collectors have not received sufficient sanitary control training, and impurities are often found in milk tanks. For these reasons, milk delivered by such milk collectors and delivered to milk processors falls below the quality standard set by the company, resulting in a large amount of milk being rejected⁷. However, such contaminated milk is rarely disposed of. Milk collectors simply take rejected milk to other milk processors that do not demand strict inspection. These milk processors rarely reject milk, and as a result milk that was labeled contaminated at the first milk processors is processed into dairy products and end up as food for consumers. This is a major food safety problem for citizens.

B. Proposal for a Structure System

In view of these circumstances, some milk processing companies have tried to provide technical training related to milking sanitation to dairy farmers that the company has tied business contracts with; however, the training was limited and not very effective. Following the technical improvement, *KAIZEN* activities are proposed for appropriately counteracting such conditions. The receiving organizations shall be the Department of Agriculture and Milk Union.

Currently, there is a production union for dairy product processing companies called the Milk Union in the Kyrgyz Republic's Chuy Province. This production union is comprised of 14 medium and large companies, including the major company in the Kyrgyz Republic, Bishkek Suit.

⁷ The survey showed that 20 to 30% of raw milk had been rejected by the milk processing company.

Box 10-2 Outline of the Milk Union

Background in the Establishment of Milk Union and its Activities

- The union was established with the common awareness that the efficient handling of diverse dairy technology issues would be more appropriately dealt with in an organizational structure than by individual companies. The Union conducts cooperative business activities aiming for the equal benefit of member companies through those activities. Initial membership fees are US\$ 150 and annual fees are US\$ 200. The door is always open, and any company that agrees with the objective of the organization is welcome to join. There has not been any interaction with donors. It is desired to have technical support activities with JICA in the future.

Below is list of specific activities.

- Investigate and identify obstacles for activities in the milk production industry, propose elimination of obstacles, and pursue friendly interaction among companies involved in the dairy processing industry.
- Aim to increase overall assets in the dairy processing industry.
- Protect the rights and interests of and ensure fairness among member companies.
- Provide useful information and data as well as organizational support and advice to member companies.
- Aim for the highest quality and provision of technology related to dairy product production, and maintenance and control both domestically and internationally.
- Actively publicize union activities through the media, and encourage members to heighten individual capacity through seminars and workshops.

These companies procure raw milk from the milk collection companies that they have tied contracts with, or directly from the dairy farmers; and all the companies are extremely interested in improving the quality of milk. The union also established as its main objective the improvement of the quality of milk procured by member companies. A quality improvement project targeting Milk Union member companies and the milk collectors and dairy farmers doing business with member companies has been proposed.

C. Concept of the Structure

Currently, the quality of milk produced in Japan is ranked highest in the world, and its technology standards, too, are the highest. Guidance from milking sanitation experts in Japan is expected to produce significant results. Simultaneously providing technological training in Japan to Milk Union experts, staff of the Department of Agriculture and Land Reform, and outstanding dairy farmers would yield synergetic effects. Dairy farming in Hokkaido is similar to that in the Kyrgyz Republic, and most of the Milk Union member companies (excluding Bishkek Suit) are similar to Hokkaido's small- and medium-size dairy processing companies. Seeing the management of such small- and medium-size dairy processing companies and the status of contract dairy farmers would be an additional learning experience related to technological improvement for issues other than milking sanitation for workshop participants. After completion of the workshop in Japan and returning home, they will have the potential of become human resources with the capacity to promote the dairy farming industry in the Kyrgyz Republic utilizing the knowledge they have acquired on milking and sanitation as well as on

improving the status of livestock sanitation and dairy union.

Results similar to those in Japan can be expected from workshops held in third-party countries. The Kyrgyz Republic still has close relation with Russia and Turkey. Workshops on food inspection systems that are difficult to attend in Japan can be provided in Russia, a veterinary medicine workshop can be offered at the Kyrgyzstan-Turkey Manas University's School of Veterinary Science in Turkey.

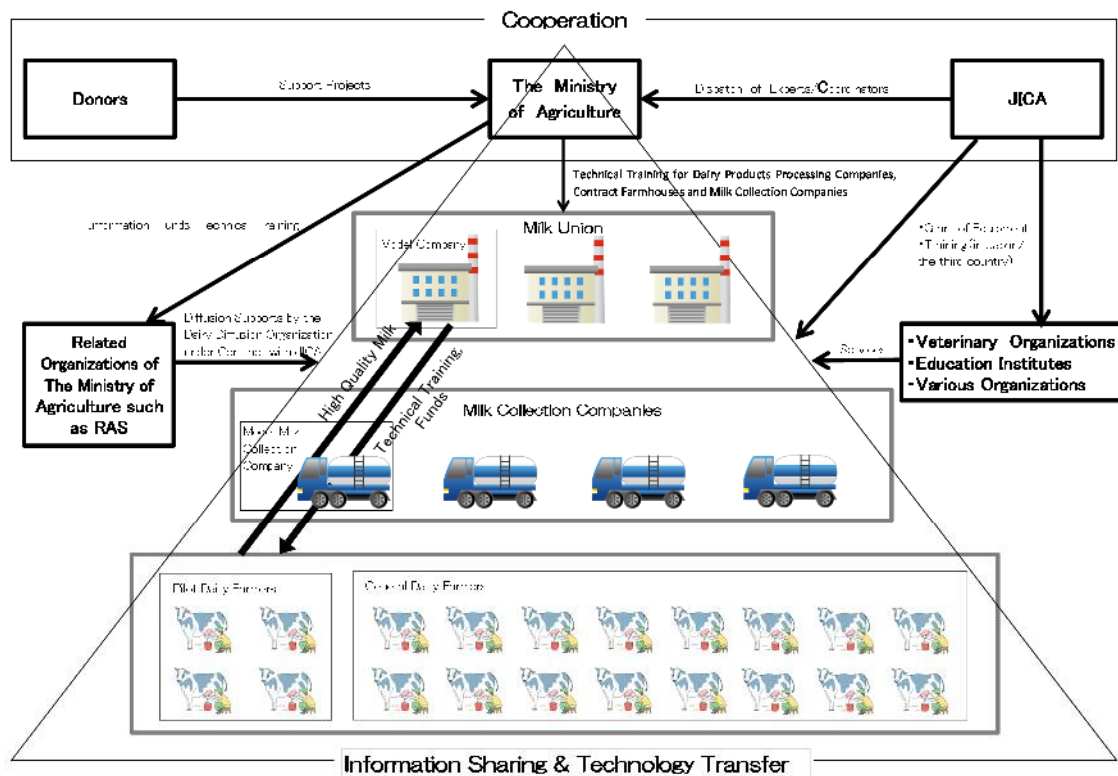


Figure 10-2 Conceptual Diagram

(2) Image of the Final Goal

Through this investigation, various related parties were able to share objectives and easily understand one another's roles and issues, which enabled the creation of individual and overall roadmaps.

In Japan's major dairy farming region, Hokkaido, the organizations in charge of collecting milk from dairy farmers are the Hokuren Federations of Agricultural Cooperatives and Satsuraku Agricultural Cooperative. Satsuraku Agricultural Cooperative participated in this investigation as a domestic cooperating agency. This proposal established an agricultural cooperative as the final goal of this support project.

The Hokuren Federations of Agricultural Cooperatives is a federation of cooperatives

throughout Hokkaido, which deal with diverse products and offer a wide range of services to farmers. On the other hand, Satsuraku Agricultural Cooperative extends its services specifically to dairy farmers in and around Sapporo City, which is located in about the center of Hokkaido.

However, Hokuren Agricultural Cooperative is only responsible for the collection of milk, and other operations are handled separately, for example business management, dairy farming guidance, and financial programs are provided by the local agricultural cooperative, and processing to milk and other dairy products is entrusted to dairy companies. On the other hand, Satsuraku Agricultural Cooperative provides unified services, from financial and dairy farming guidance, financial programs, and milk collection to the processing of milk and other dairy products.

The important point in the project proposed in this investigation is the formation of a system to expand technologies, resources and incentives targeting the milk processing companies, milk collectors and dairy farmers in the process flow.

The operation at Satsuraku Agricultural Cooperative, in particular, matches the system targeted in the project, and application of not only technology but also diffusion methods and veterinarian systems to the dairy companies in the Kyrgyz Republic is possible.

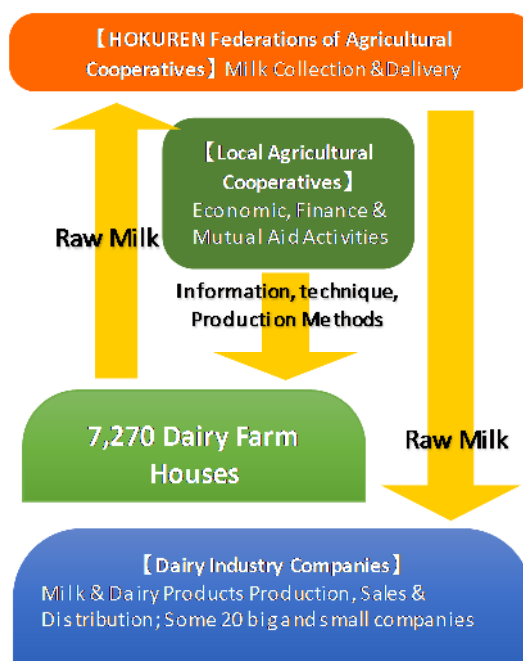


Figure 10-3 Flow of Dairy Farming Centering Hokuren

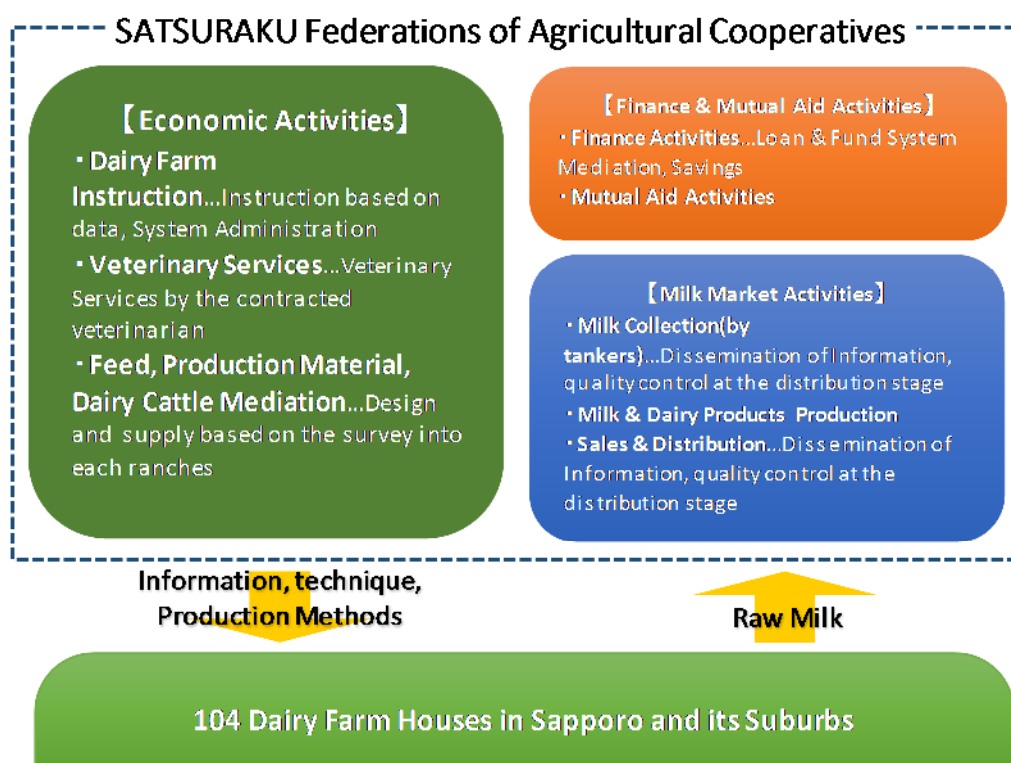


Figure 10-4 Flow of Dairy Framing Satsuraku

Table 10-4 [Reference] Target Range of this Survey and Administrative Area of Satsuraku Milk Collection Area

Survey Target	Area	Satsuraku Milk Collection Range	Area
Chuy Province	20,200 km ²	Ishikari Subprefectural Bureau	3,540 km ²
Bishkek	127 km ²	Sorachi General Subprefectural Bureau	5,791 km ²
		Iburi General Subprefectural Bureau	3,698 km ²
		Kamikawa General Subprefectural Bureau	10,619 km ²
Total	20,327 km ²	Total	23,648 km ²

(3) Individual Program

Proposal ①: Milk Sanitation and Control *KAIZEN* Project

Name of Project	Milk Sanitation and Control <i>KAIZEN</i> Project (Improvement in the technology for the sanitary management of milk)
Target Item and Area	Target Item: Milk Target Area: Chuy Province
Background and Aim	The dairy industry in the Kyrgyz Republic centers on small-scale farmers with small numbers of milking cows. The skills of these dairy farmers vary widely, with many having no training in dairy farming at all. Furthermore, operators in the business of collecting milk have not had sufficient training in sanitary management. Under these circumstances, the milk delivered by these dairy farmers and milk collectors contains a high level of contamination, and an average of 25% of the milk is rejected by the dairy processing companies targeted for the investigation. Some milk processing companies have tried to provide technical training related to milking sanitation to dairy farmers that the dairy company has tied business contracts with; however, the training is limited and not very effective. In view of these circumstances, the project is aimed at providing training on various improvement technologies to upgrade the quality of milk produced in the target area.
Benefit to the Kyrgyz Republic	Targeted Benefits: (Target of direct benefits) <ol style="list-style-type: none"> 1. Approximately 15 to 20 pilot dairy farmers 2. Approximately 400 to 500 dairy farmers affiliated with pilot dairy farmers 3. Approximately 2,000 to 2,500 dairy farmers in the target area 4. Approximately 15 to 20 milk collection companies (collection points) 5. Dairy processing companies (Target of indirect benefits) <ol style="list-style-type: none"> 1. Approximately 55,000 dairy farmers in Chuy Province 2. General consumers, dairy product exporters, agricultural machinery and equipment companies, feed companies, etc.
Support Method	Technical support project (3-4 years) free of cost
Upper Objective	Production and use of sanitary milk in Chuy Province enables production of high-quality dairy products, which in turn, will contribute to the promotion of dairy product exports.
Project Objective	<ol style="list-style-type: none"> 1. Improve milking sanitation and collection and storage technology in the target area

	<p>2. Improve capacity to diffuse milking sanitation control technology in the target area</p> <p>3. Improve the capacity of the employees involved in milk production at the Department of Agriculture and dairy processing companies</p>
<p>Content and Activities</p>	<p>Organizational and execution systems of the Department of Agriculture and Land Reform, which is to be the CP agency, still operate under the system for the distribution of agricultural material to collective farms and collection of agricultural statistics using a method determined by the Communist Party's Central Committee from the Soviet time, and the systems are extremely fragile. There are no dissemination services or staff to take on the responsibility of diffusing agricultural technology to farmers, and technology diffusion projects would be difficult to execute through the Department of Agriculture and Land Reform. Therefore, the role of the Department for this project will be restricted and the Milk Union, organized by the dairy companies in Kyrgyz, will be the contact agency. The project will be executed with transfer of technology directly to Milk Union member companies, and collection companies and dairy farmers that have tied contracts with member companies. Diffusion of technology to dairy farmers will be commissioned and conducted by the Rural Advisedly Service (RAS), established in the project executed by the World Bank (When handed over to the Kyrgyz Republic from the World Bank as the Diffusion Agency, consideration was made to including the agency in the Department of Agriculture and Land Reform; however, due to issues such as budgeting, the agency is currently operating as an NGO commissioned with projects from donors and the Department of Agriculture), in the form of trainer workshop to RAS staff, and farmer-to-farmer (FTF) diffusion from the dairy farmers that have received training from RAS.</p> <p>1. Guidance on appropriate milking sanitation control technology to dairy farmers in target areas</p> <p>① Project sites and pilot farmers will be selected considering the number of dairy farmers, operation scale and technical capacity.</p> <p>② Appropriate milking sanitation control technology suitable for each pilot farmer will be transferred.</p> <p>2. Guidance on appropriate milk collection to milk collection companies in the target area</p>

	<p>① Suitable milk collection companies and their collection points within the project sites will be selected.</p> <p>② Appropriate milk collection technology will be transferred to selected milk collection companies and collection points.</p> <p>3. Guidance on appropriate technology diffusion at target area</p> <p>① Technology diffusion method will be transferred to professional technologists (diffusion staff) of the Department of Agriculture and Land Reform, dairy Processing companies and NGOs.</p> <p>② Technology will be transferred from diffusion staff to pilot dairy farms.</p> <p>③ Technology will be transferred from pilot farmers to other dairy farmers in the areas (Farm-to-farm).</p> <p>④ Guidance on the establishment of a producers' union centering around pilot dairy farmers (aiming for joint shipment)</p> <p>4. Aim to upgrade the capacity of employees of the Department of Agriculture and Land Reform, Milk Union and dairy processing companies</p> <p>① Deepen mutual understanding, particularly about the diffusion of dairy technology among related agencies involved in milk production for both private and public sectors.</p> <p>② Upgrade capacity to share learning and experience related to dairy farming policy with other donors.</p> <p>③ To become able to provide advice on appropriate business management for dairy processing companies under the Milk Union.</p> <p>④ To become able to provide appropriate advice to the Department of Agriculture and Land Reform and dairy processing companies about milk and dairy products focusing on technological regulations.</p>
Expected Results	<p>1. Acquisition of milking sanitation and milk collection sanitation technologies</p> <p>2. Acquisition of capacity to diffuse milking sanitation control technology</p> <p>3. Upgrade capacity for milk production by the staff of the Department of Agriculture, Milk Union and dairy product processing companies</p>
Investments	<p>Long-term specialist: Leader, and diffusion, milking sanitation management, and operation adjustment</p> <p>Short-term specialist: Milk cow breeding and reproduction, feed control, roughage production and use, livestock sanitation, dairy management</p>

	Receiving trainees: Domestic technical training by nation Provision of equipment: Milking sanitation equipment and expendable supplies, refrigeration system at milk collection points, etc.
CP Agencies	Department of Agriculture and Land Reform

Proposal ②: Project for Technological Improvement of Milk Collectors and Dairy Companies

Name of Project	Project for Technological Improvement of Milk Collectors and Dairy Companies –Improving product quality and introducing quality control and assurance systems–
Target Item and Area	Target item: Milk and dairy products Target area: Bishkek, Osh
Background and Aim	Milk and dairy products are an important industry with potential for export for the Kyrgyz Republic. However, there are many problems with sanitation and quality control in the collection and manufacture of dairy products in the Kyrgyz Republic. Furthermore, milk produced under inappropriate conditions is sold with differences in quality not reflected in milk prices, which leads to low problem awareness on the part of the dairy farmers. The customs union is seeking quality assurance involving process control for the export and import of processed food, and making it compulsory to implement HACCP for dairy products in the same manner as European nations and the US; and companies wishing to export their products are required to obtain HACCP. For the goal of quality control, process management, quality assurance systems and acquisition of international certifications such as HACCP and ISO22000 for milk and dairy products produced in the Kyrgyz Republic, necessary training is to be provided through the livestock union and dairy product union, aiming to upgrade capacity of the entire dairy industry through the presentation of model cases.
Benefit to the Kyrgyz Republic	Targeted benefits: (Target of direct benefit) Milk collectors, union member dairy companies (Target of indirect benefit) General consumers, dairy farmers, dairy product exporters
Support Method	Technical cooperation project (3-4 years) free of cost
Budget	400 to 500 million yen (3-4 years)
Project Content	Specialists will clarify the technology rules, requirements of nations for the

	<p>export of products, and skill levels and requirements of the target entities, and formulate necessary training plans. Thereafter, necessary equipment will be supplied, training suitable for the technical level will be provided, and target individuals will be given opportunities for overseas training, and basic systems for the acquisition of HACCP and ISO22000 will be introduced through the livestock union and dairy union.</p> <p>Long-term specialist: Leader, and quality control, operation adjustment Short-term specialist: Food Safety Assessment System, in-house control and sanitation, analysis, product development, technology rules (Russia) Receiving trainees: Technology training at overseas locations (Russia or a third country) Provision of equipment: Manufacturing equipment, sanitation equipment and expendable supplies</p>
CP Agency	Department of Agriculture and Land Reform

Proposal ③: Project for the Technological Improvement of Milk Collectors and Dairy Companies

Name of Project	Project for the Technological Improvement of Milk Collectors and Dairy Companies –Execution of training using Food Training Centers–
Target Item and Area	Target Item: Milk and Dairy Products Target Area: Bishkek, Osh
Background and Aim	Milk and dairy products are an important industry with potential for export for the Kyrgyz Republic. However, there is limited number of skilled individuals at milk collection and dairy manufacturing worksite, and there are only few companies that have the time and funds to train younger employees in such skills. Moreover, knowledge and awareness of product safety and quality vary widely among companies. Therefore, cooperation will be provided to universities, food training centers and government training agencies to establish training programs which all interested individuals can participate in aiming to upgrade the skills of the entire industry.
Benefit to the Kyrgyz Republic	Targeted benefits: (Target of direct benefit) Kyrgyz National University, Turkey Manas University, ABCC, Small and medium-size dairy companies (regardless of membership in the union) (Target of indirect benefit) Distribution and export operators, general consumers

Support Method	Technical cooperation project (3-4 years)
Budget	400 to 500 million yen (3-4 years)
Project Content	<p>Specialists will clarify the technology rules, requirements of nations for the export of products, and skill levels and requirements of the target entities, and formulate necessary training plans. Thereafter, necessary equipment will be supplied to Food Training Centers, training suitable for the technical level will be provided, and target individuals will be given opportunities for overseas training, and basic systems for the acquisition of HACCP and ISO22000 will be introduced.</p> <p>Long-term specialist: Leader, and quality control, operation adjustment Short-term specialist: Food Safety Assessment System, in-house control and sanitation, analysis, product development, technology rules (Russia) Receiving trainees: Technology training at overseas locations (Russia or third country) Provision of equipment: Manufacturing equipment, sanitation equipment and expendable supplies</p>
CP Agency	<p>Audit: Department of Agriculture and Land Reform Training: Kyrgyz National University, Turkey Manas University, ABCC, etc.</p>

Proposal ④: Counterpart Training

Upper Objective	To contribute to the development of the dairy industry in the Kyrgyz Republic through the provision of Japan's knowledge and experience in the dairy industry through dairy related corporations, institutes and universities.
Workshop Title	Dairy Industry Training
Workshop Location	Obihiro area in Hokkaido
Workshop Objective	Learning from the training program, which includes case studies of dairy promotion and lessons by Japan's local administration, universities, dairy processing companies and dairy farmers, may become an aid for the Kyrgyz Republic in establishing dairy industry policies. One category of the training program is the learning about livestock conditions at agricultural high schools and veterinary and livestock-related universities and the structuring of a dairy union. This will create the possibility of acquiring general dairy farming technology and farm diffusion methods.
Targeted Attendees and Capacity	Employees of the Department of Agriculture and Land Reform and related agencies, employees of dairy processing companies, staff of Milk Union, superior dairy farmers, and related NOGs, etc. (approximately 15 to 20

	individuals)
Workshop Content	<ol style="list-style-type: none"> 1. Introduction of the status of dairy farming by related private and public sector agencies 2. Guidance on methods of dairy farming technology diffusion by related private and public sector agencies 3. Guidance on dairy product manufacturing technology and sanitary control by related dairy processing companies 4. Guidance on livestock disease prevention measures by related private and public sector agencies 5. Guidance on technology for the utilization of farming by-products by related private and public sector agencies
Output	<ol style="list-style-type: none"> 1. Acquire various dairy framing technologies from dairy product manufacturers and be able to introduced them 2. Acquire livestock sanitation and veterinary education and be able to introduce them 3. Acquire farming diffusion methods from related private and public sector agencies and be able to introduce them 4. Acquire dairy product manufacturing and sanitary control technology from related dairy product processing companies and be able to introduce them 5. Acquire livestock disease prevention methods from related private and public sector agencies and be able to introduce them 6. Acquire methods of agricultural by-product use from related private and public sector agencies and be able to introduce them

Proposal ⑤: Standardization of Customs Union

Name of Project	Standardization of Customs Unions
Target Item and Area	<p>Target Item: Milk and Dairy Products</p> <p>Target Area: Bishkek, Osh</p>
Background and Aim	<p>According to customs union regulations, food quality and safety certification is sought, and ISO and HACCP systems are playing this role. However, systems to control sanitation and production processes are insufficient in Kyrgyz, leading to delay in responding to the regulations.</p> <p>As a countermeasure for the above, the establishment of two projects will be aimed for to support the accreditation system: “Food sanitation control training and fostering administrators” and “Accreditation system to train and manage food-related companies.” Target food and supply chain will be</p>

	determined and pilot verification will be conducted.
Benefit to the Kyrgyz Republic	<p>Targeted benefits: (Target of direct benefit) Department of Economic Affairs, Kyrgyz Center of Accreditation, Department of Agriculture, Kyrgyz National University, Kyrgyz Turkey Manas University, ABCC</p> <p>(Target of indirect benefit) The Kyrgyz Republic, dairy producers, processors, distributors, exporters</p>
Support Method	Technical cooperation project (3-4 years)
Budget	400 to 500 million yen (3-4 years)
Project Content	<p>For the structuring of the accreditation system required for the export to customs union nations, technological regulations will be analyzed to identify issues, and formulate plans to foster the human resources required for the training and auditing accreditation. Thereafter, heightening the reliance of products manufactured in Kyrgyz will be aimed for through training provided for approval and accreditation agencies, training and introduction of safety assurance systems (GAP, traceability, etc.) in collaboration with universities and ABCC, safety assurance systems for processed food (food sanitation control, HACCP, etc.), and overseas training provided to persons in charge.</p> <p>Long-term specialist: Leader, and food accreditation system, operation adjustment</p> <p>Short-term specialist: Ensure safety of raw material, ensure safety of processed food, technological regulations (Russia)</p> <p>Receiving trainee: Overseas training (Japan, Russia or a third country)</p>
CP Agency	<p>Audit: Department of Economic Affairs, Kyrgyz Center of Accreditation, Department of Agriculture</p> <p>Training: Kyrgyz National University, Turkey Manas University, ABCC, etc.</p>