Republic of Kazakhstan
North Kazakhstan Oblast

Master Plan Study On Cluster Development

In Food Processing Industry

In The North Kazakhstan Oblast

Final Report

July, 2010

Japan International Cooperation Agency (JICA)

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

PREFACE

In response to a request from the Government of the Republic of Kazakhstan, the Government of Japan decided to conduct a study on "Master Plan Study on Cluster Development in Food Processing Industry in the North Kazakhstan Oblast" and entrusted to the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Takumi TOGASHI of HOKKAIDO INTELLECT TANK between October, 2009 and July, 2010.

The team held discussions with the persons concerned of food processing industry as well as the officials concerned of the Government of the North Kazakhstan Oblast and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of cluster development in food processing industry of the Republic of Kazakhstan, especially North Kazakhstan Oblast, and to the enhancement of friendly relationship between two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Kazakhstan for their close cooperation extended to the study.

July 2010

Atsuo KURODA,
Vice-President
Japan International Cooperation Agency

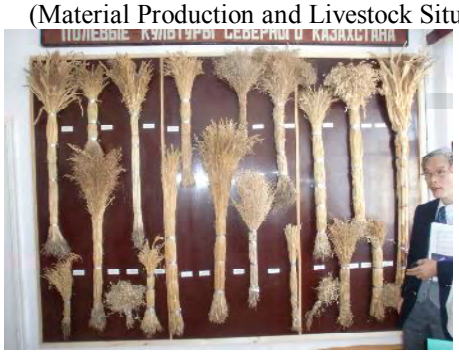
【MAP】

Source: http://coinskz.narod.ru/

【Photograph】

1 Material Purchasing

(Material Production and Livestock Situation)



【No.1】Oct 23, 2009, Esil agricultural university

The livestock industry of North Kazakhstan state is supported by the products from vast wild grassland and farmland. Those samples of grasses are collected by the agricultural universities to be utilized as teaching materials.

【No.2】Nov 4, 2009, Stripinsukoe area

Huge amount of grain are produced in North Kazakhstan state. After-harvest by-product such as wheat straws are also produced a lot every year; those are utilizing storage feed during winter time after treated as hay, haylage, and silage. Among the large company, the height of 5-6m, and the length of 50m hay is made.

【No.3】Dec 4, 2009, Kejirzaru area

Over middle-scale livestock farmers are produce grain also, those product such as wheat, barley are utilize as formula feed resources

【No.4】Nov 18, 2009, Ykoru area

Among the large-scale livestock companies, practicing self manufacture formula feed by introducing feed manufacturing machineries.

【No.5】Among the large-scaled dairy companies, huge amount of silage are producing using large machineries

【No.6】Dec 4, 2009, Kejirzaru area

The basic method of reproduction pigs in North Kazakhstan state are carry on three-way cross breeding which of F1 made from landrace species and Duroc species, then re-breed with large-yorkshire species. The level of technology is very much differences between producers.

【No.7】Nov 3, 2009, Kejirzaru area

This photo is showing typical small-scale dairy farm in North Kazakhstan. The type of cow is Red-Kazakh which is very strong to extensive care. The milk production per day is 6-8kg from one cow with 2-3heads per farm.

【No.8】Nov 3, 2009, Stripinsukoe area

Over middle-scale farm (50-100 heads) are introducing bucket type milking facilities. The milk production per day is 6-8kg from one cow by Red-Kazakh.

【No.9】Nov 11, 2009, Zen-chenko dairy farm

This photo is showing the dairy farm with Holstein. The feeding management are very much difffrent between producers, then all farms are not excellent. The milk production is about 20kg per day from one cow.

【No.10】Dec 14, 2009, Syarakin area

This photo is showing the beef fattening farm using Red-Kazakh. This species produce high quality beef meat. The fattening period is 8month. Wild grass and grain straw are given as main feed.

2 Dairy Product Processing
（From purchasing raw milk to processing）

【No.11】Nov. 3, 2009, Bolshaya Malishka
Milk collection by collection car.

【No.12】Nov. 3, 2009, Bolshaya Malishka
Raw milk inspection at milk collecion center.

【No.13】Dec. 19, Bishkul
Milk processing machine at dairy processing company.

【No.14】Oct. 20, 2009 Petropavlovsk
Cheese aging storage

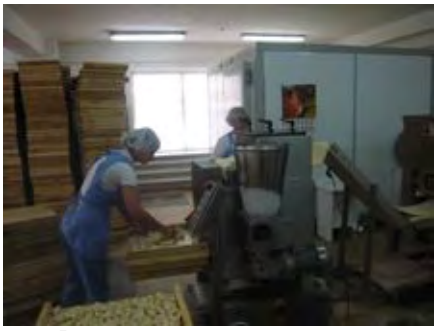
【No.15】Dec. 12, 2009, Petropavlovsk
Butter production machine.

3 Meat processing
（Sausage and Perimeni production）

【No.16】Oct. 19, Petropavlovsk
Sausage stuffing process

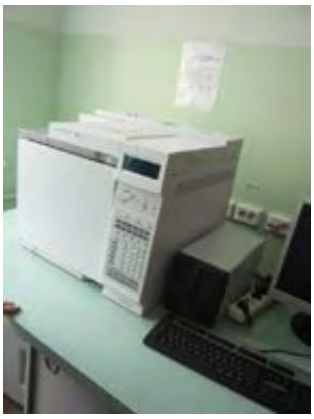
【No.17】Oct. 22, Akkayin
Sausage smoking process

【No.18】Oct. 22, Akkayin
Sausage packaging process



【No.19】Nov. 2, 2009 Petropavlofsk
Perimeni productin process

4 Government food inspection laboratory



【No.20】Nov. 6, 2009 Petropavlovsk
Hygiene and epidemiology inspection center
Gas Chromatograph for pesticide residue analysis

【No.21】Nov. 9, 2009 Petropavlovsk
Veterinary laboratory
Polymerase Chain Reaction (PCR) Apparatus for animal disease diagnosis

【No.22】Nov. 10, 2009 Petropavlovsk
Agricultural laboratory
Wheat analysing apparutus

【No.23】Dec. 8, 2009 Biskul
Livestock production and plant cultivation research and development university, Dairy product inspection room

5 Result of Technology Transfer

【No.24】After technical transfer activities concerning raw milk examination, the technicians from dairy company carry on alcohol examination test at milk collection point as routin work.

【No.25】The several food industry companies from Petoropavlovsk participated to the food exposition at Astana. All the goods were well received among the costumers.

Abbreviation List

C	C/P	Counterpart
D	DAMU	Entrepreneurship Development Fund
	DF/R	Draft Final Report
F	F/R	Final Report
G	FTZ	Free Trade Zone
H	HACCP	Hazard Analysis and Critical Control Point
I	IC/R	Inception Report
K	KAZYNA	Sustainable Development Fund
M	MCO	Microcredit Organization
	MEBP	Ministry of Economics and Budget Planning
	MIT	Ministry of Industry and Trade
	M/M	Minutes of Meeting
	M/P	Master Plan
N	NKO	North Kazakhstan Oblast
P	PPP	Public Private Partnership
S	S/W	Scope of Work
T	TOBOL	Joint Stock Company “Social Entrepreneur Corporation（SEC）”

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List of Figures and Tables

1. General outline of the Study

1.1 Objectives of the Study

The main objective of the study is to support the Government of the Republic of Kazakhstan and Akimat of the North Kazakhstan Oblast to formulate the Master Plan (M/P) for strengthening the competitiveness of small and medium sized enterprises in food processing industry in the North Kazakhstan Oblast. The objective is established for the further strengthening the competitiveness of the small and medium enterprises engaged in the food processing industry. The objective should be achieved by the analysis of the value chain and cluster promotion approach based on the situation in the North Kazakhstan Oblast.

The present study is conducted on the legal ground of "The Scope of Work" (S/W) elaborated at the joint session signed by the North Kazakhstan Oblast Government and the Japan International Cooperation Agency (hereinafter refferd to as "JICA"), and of the protocol of this session, Minutes of Meeting (M/M). The content of the study is divided into two phases:

Phase 1 Analysis of the current situation and urgent issues in the context of cluster development of the food processing industry in the North Kazakhstan Oblast on a basis of value chain analysis; and

Phase 2 Formulate the recommendation of the concrete action plan for the clusters development of food processing industry.

The following result achieved by the mutual agreement in the Scope of the Study contained in "The Scope of Work" (S/W).

(1) To research on procurement of raw materials, production, distribution and export systems of food processing industry sector including company diagnosis;
(2) To clarify the (export) competitiveness and bottlenecks of food processing industry sector;
(3) To research on the competition with imported products in the domestic market, clarify the product specification, quality level, and production cost required for the international market, and suggest effective measures for strengthening each value chain including procurement, production management, quality management, cost management and marketing etc. for enhancing small and medium enterprises' competitiveness.
(4) To recommend effective cluster promotion strategy including specific measures;
(5) To recommend the implementation structure for the specific measures with cost estimation;
(6) To conduct seminars for awareness-raising and capacity development for related personnel; and
(7) To formulated the recommendation for strengthening Privet-Public Partnership for small and medium sized enterprise promotion through cluster promotion approach.

1.2 Background of the Study

Based on the central governmental organs directions of vision, the regional administrations developed the Master Plans (M/P) for the industry development taking into account local specificity. They asked the government to realize the action plan based on the measures elaborated by them. However, the regional administrations have not enough knowledge and experience in the clusters development in small and medium sized enterprises, therefore, they experience difficulties in the plan's elaboration and practical implementation. Also, the rapid industry development based on the local characteristics and the increasing of the

competitiveness with foreign products in the domestic and international markets are the most important issues that the Akimat of the North Kazakhstan Oblast must solve urgently.

Considering the current conditions for the effective development of the industry and taking into account the local specificity, the Government of Kazakhstan and Akimat of the North Kazakhstan Oblast asked Japan to provide technical assistance in the field of the clusters development technologies and methods. Its response, in January-February, 2008, JICA conducted the preliminary study for the project formation. In the course of the study, JICA proved the necessity to provide Kazakhstan with assistance in the M/P elaboration to increase the small and medium sized enterprises competitiveness. After this, in April, 2009, the preliminary study was conducted to develop a detailed plan; the meeting with the corresponding Kazakh organizations, mainly with the Akimat of North Kazakhstan Oblast, took place; the special decision to establish meat and dairy processing enterprise as main project objectives was adopted; the S/W was signed. Based on all this, Phase 1 was started from September, 2009, and in October, the JICA Study Team was dispatched to Kazakhstan for the 1st field study.

Based on the current conditions and issue analysis of the 1st field study, the implementation of the 2nd field study (Phase 2) started in Febraury 2010 and investigations of specific policy were carried out. In order to carry out recommendations for specific action plans for cluster promotion of the food processing industry (meat processing industry and dairy product processing industry) a study was implemented with the cooperation of C/P (counter part) and a working group in relation to the study implementation. Continuing on from the 1st study a hearing was conducted with related Regional Government officials, regional related industry and Farmers. At the same time, discussions were held between the study team and the C/P in relation to methods leading to investigating reform measures and technology transfer occured. Also technology transfer seminars were held which targeted various sectors within the regional industry. Through the seminars opinion exchanges were conducted in relation to know-how of industrial promotion and technology in the food processing industry in Japan and the introduction of practical education methods was introduced as well as the current condition of issues in North Kazakhstan. The 3rd field study was implemented with the coordination targeting the participation in an international trade show for the purpose of technical transfer in relation to the mechanisms of cooperation between companies and regional brand development.

1.3 Summary of the Study Activities

1.3.1 1st Field Study

The 1st field study was carried out between the period of the 16th of October and the 25th of December 2009. The contents of the implementation are as follows.

(1) Explanation and Discussions in Relation to the Inception Report (I/R)

Based on the Inception Report the 1st steering committee was established on the 21st of October 2009, explanations in relation to the study summary, scope of the study, implementing policy for the study, study plan and contents, methods of study and analysis, methodology, etc in relation to the main study were carried out and endorsement was received in relation to the implementation of the study.

(2) Hearings with Government affiliated agencies, Food processing related companies and Farmers

For the purpose of gathering information in relation to policy and implementation of the cluster policy and small and medium sized business promotion in Kazakhstan and the North

Kazakhstan Oblast, a hearing with Local Government officials was carried out. Also, in order to grasp the situation of the food processing industry (meat processing and dairy product processing) in the North Kazakhstan Oblast, hearings with private business and farmers as well as investigations of the farms were carried out. Apart from that, studies of the hygiene control agencies and the Agriculture education facility were carried out and as a result of the hearing with Government affiliated financial institutions the Study team was looking into the mechanisms of obtaining finance.

(3) Market survey in Petropavlovsk city and surrounds

In Petropavlovsk city, surveys were carried out in relation to the distribution and sale of processed meat and dairy products. In Astana and Almaty, in relation to the selling situation of meat products and processed dairy products in North Kazakhstan market surveys were conducted and the competitivness of the said products were investigated. Also, market surveys in the surrounds to the Kazakhstan / Russian border (Omsk & Moscow) regions were implemented, and the possibility of exporting meat products and processed dairy products from the North Kazakhstan oblast were examined.

(4) Stengthening the collaboration with C/P and the working group

As a result of the establishment of the working group discussions etc and the continous opinion exchanges, efforts were made to strengthen the unity between C/P and the Study Team as well as the unity within the C/P. The results of the study which were given priority showed the growing sense of harmony in relation to the working group for the main study.

1.3.2 2nd Field Study

The 2nd field study was implemented over the period from the 10th of February to the 24th of April 2010. Based on the results of the issue analysis and conditions obtained with the 1st field study, preparation of the action plan development, the continual accumulation of information and discussions with the C/P were directed towards producing specific recommendations. The contents of the implementation are as follows.

(1) Review and follow of the 1st Field Study

The 2nd steering committee was held on the 1st of March 2010, based on the Interim Report the current condition and issues obtained at the time of the 1st study were reported. Based on the current conditions and issues that were grasped and analysed, discussions will be conducted in relation to the way in which progress is made. Also, in relation to provisional matters at the time of the 1st study, examples that were collected from Japan were provided to the C/P as was technical information and as a result of sharing, an even more specific food processing industry promotion and ways of cluster formation were proposed.

(2) Implementation of the Technical Transfer Seminar

A wide variety of seminars were held for the purpose of promoting technical transfer in the food processing industry. With the Food Processing Seminar (regarding meat processing and dairy product processing), technology and experience in the food processing industry in Japan were introduced and also introduction in relation to regional brand creation were carried out. With the Farming Seminar which was held for targeting farmers (regarding the dairy farming & pig farming), a livestock technology transfer manual made by the Study Team was introduced

and distributed. With the Seminar in relation to practical education on farms, which was held at the State colleges of the North Kazakhstan Oblast, a report was prepared in relation to staff training in practical agricultural educational facilities in Japan. Honest opinions and questions from the participants in the seminar were obtained and a lively opinion exchange between the participants and the Study Team was carried out. It became an encouraging location for related participants moving towards cluster promotion.

(3) Production of recommendations according to cooperation with C/P

Due to the 1st field study, the relationship between the Study Team and C/P was developed and also relationship among the C/P was strengthened. Through the 2nd field study the strong body was created, and with the approach of creating, recommendations aimed at cluster development, promotion of small and medium sized companies and the food processing industry in the North Kazakhstan Oblast were produced.

(4) Preparation of a specific action plan

The study was carried out for the purpose of model development towards a specific action plan recommendation and investigation of a model which was necessary for the development and promotion of food industry cluster in the North Kazakhstan Oblast. As for one of the implementing projects, the Study Team has proposed the establishment of regional food processing technology centre, and the implementation of hearings with local related industry, and detailed study were carried out directed at the establishment of the centre. Also, an inspection of the food trade show which was held in Asatana and Almaty was carried out, and an investigation into development policy for regional brands in the North Kazakhstan Oblast was carried out.

1.3.3 3rd Field Study

The 3rd field study was implemented between the period of the 22nd of May and the 12th of July 2010. In relation to the Draft Final Report (DF/R) which was put together from the results of the 1st and 2nd study, Seminars were held, and some recommendations were carried out in relation to the action plan which were being prepared from the 2nd field study. The details of the contents of the implementation are as follows.

(1) Implementation of the Debriefing Seminar

A debriefing seminar in relation to the Draft Final Report (DF/R) was convened in Petropavlovsk and Astana and was attended by a wide cross section of people including North Kazakhstan officials, Central Government officials, the private sector, other donors etc, and the aim was to dissseminate the results of the study.

(2) Partipication in International Trade Shows

The Study Team and C/P has participated in the trade show held in Asatana and confirmed the results that have been planned as a model project for local brand development. During the event, the implementation of The seminar was implemented to introduce the food processing industry of the North Kazakhstan Oblast and to aim at brand establishment of processed meat and processed dairy products from the North Kazakhstan Oblast.

2. General Information about North Kazakhstan Oblast

2.1 Brief overview of the Republic of Kazakhstan

2.1.1 General information[1]

(1) Geography of Kazakhstan

Kazakhstan is located in Central Asia, in the center of Eurasian continent. With the territory of 2,724,900 . km^2 Kazakhstan is the world's ninth largest country and the second biggest country of former Soviet Union (the first is Russia). The length of the border with China is 1,460 km, with Kyrgyzstan is 980 km, with Turkmenistan is 380 km, with Uzbekistan is 2,300 km and with Russia is 6,467 km. Total border length is 12,187 km.

There are about 8,500 big and small rivers in Kazakhstan. Total length of seven longest rivers exceeds 1,000 km. The largest rivers Ural and Emba run into the Caspian Sea. Syr-Daria runs into the Aral Sea, Rivers Irtysh, Ishim and Tobol cross the country and eventually flow into the Arctic Ocean.

There are approximately 48,000 large and small lakes in Kazakhstan. The largest lake is the Aral Sea; followed by Balhash Lake. Among other lakes are Zaysan, Alakol, Tengis, Sertengis and others. Moreover, in the west and south-west the grounds of the country are washed by the Caspian Sea, the largest lake on the globe. The length of the coastline on the Kazakhstan's side reaches 2,340 km.

26% of the Kazakhstan's territory is occupied with steppes. About 44% (167 million hectares) is comprised of deserts and 14% of half-deserts. There are almost 21 million hectares of forests in Kazakhstan.

(2) Climate of Kazakhstan

Kazakhstan has a continental climate with the various temperatures around the year. The average temperature in winter varies from -4 to -19 degrees. Midsummer average temperatures can fluctuate between 19 and 26 degrees. The lowest temperature in winter can drop to -45 degrees, whereas the highest temperature in summer can reach as high as 30 degrees.

(3) Population and ethnic groups.

The population of Kazakhstan is around 15,770,000. The average population density is 5.8 per km^2. The population of Kazakhstan has been increasing since 2004. The main reason for the population growth is the rise of the birth rate.

Kazakhstan is known as a multiethnic country. The country's principal ethnic groups include Kazakh, Russian, Uzbek and other groups of former Soviet Union nationalities. As of the 1st January 2009, the majority (about 60%) of population are ethnic Kazakhs. Ethnic Uzbek population has been increasing, reaching 3% of total population and becoming the third largest ethnic group in Kazakhstan.

Despite the fact, that ethnic Russians are the second largest group, their population has been declining over the years. The Russian population has decreased to from 30% to 24.53% since 1999 to 2009. Among other ethnic groups with decreasing population are Ukrainians and Germans.

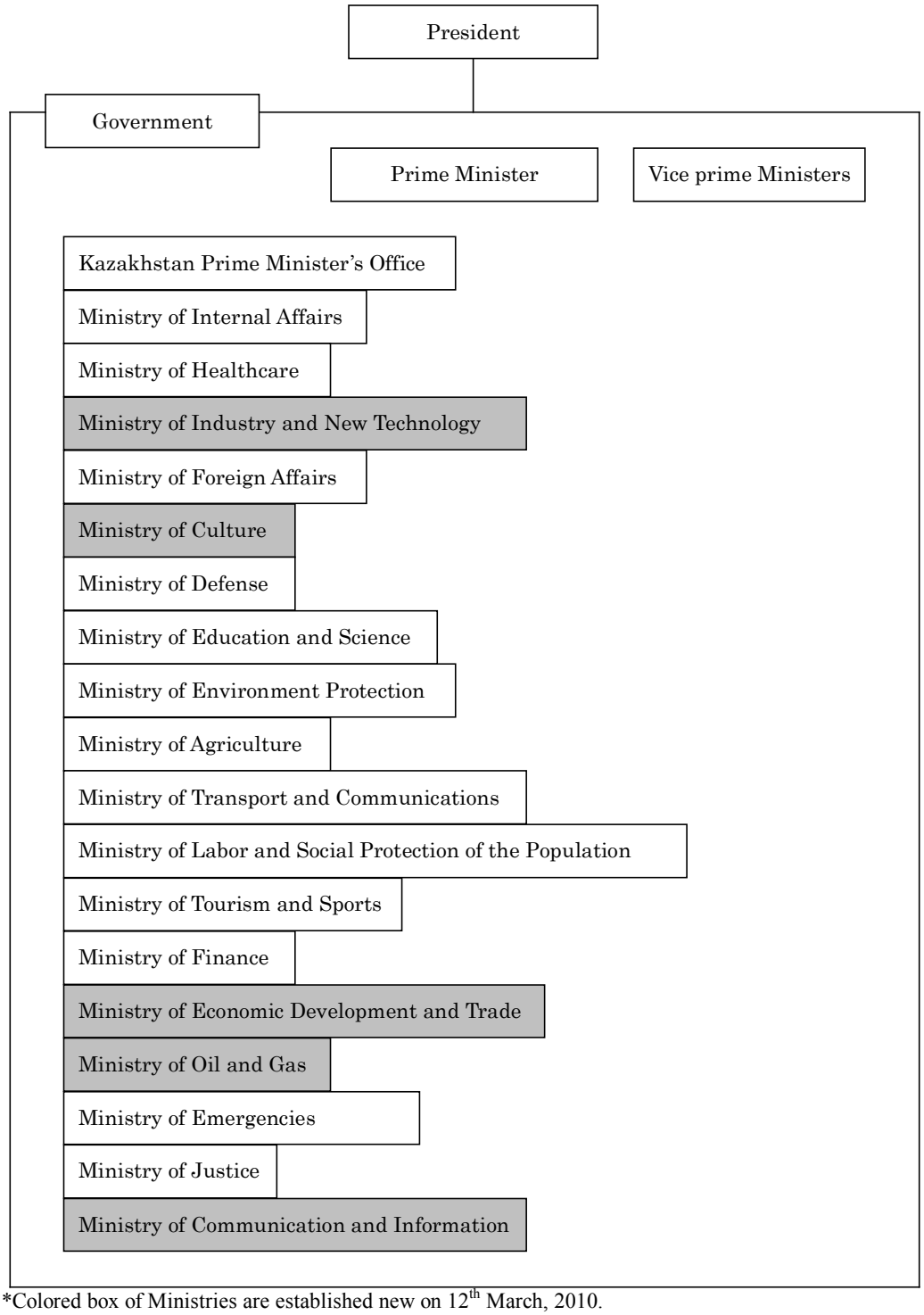
[1] Reference to HP of the Embassy of Japan in the Republic of Kazakhstan
http://www.kz.emb-japan.go.jp/jp/kazakhstan_poleco_national_j.htm

(4) Government

The Government of the Republic of Kazakhstan runs a republican institution that a presidentas a head of state. The President is elected by popular vote for a seven-year term, which will be changed to a five-year term in 2012. President Nursultan Abishuly Nazarbayev, who has been in office since Kazakhstan became independent in 1991, has been re-elected for the thirrd time for seven year term in the 2005 election.

Legislative power is vested in the two chambers of parliament. The Senate is the upper chamber, and the Majilis is the lower chamber. The Senate has 47 members, 32 of whom are elected for a six year term in double-seat constituencies by the local assemblies (Masurihat) of each 14 regions, the capital Astana and Almaty city, half of them renewed every three years. 15 senators are appointed by the President.

On 12th March, 2010, the administrative machinery of Kazakhstan has changed. Following ministries are aboliched; Ministry of Economy and Budget Planning, Ministry of Industry and Trade, Ministry of Energy and Mineral Resources, Ministry of Culture and Information, and Agency for Informatization and Communications. Instead of those ministries the following ministries have been established; Ministry of Economic Development and Trade, Ministry of Industry and New Technology, Ministry of Oil and Gas, Ministry of Culture, Ministry of Communication and Information. This change was implemented suppose to the realization of "State Program of Forced Industrial Innovation Development of Kazakhstan for 2010-2014". New administrative organ is shown in next page.



*Colored box of Ministries are established new on 12th March, 2010.

Source: Preparede by JICA Study Team

Figure 2-1 New Administrative Organ of Central Government of Kazakhstan

2.1.2 Overview of Economy

Since gaining independence in December 1991, Kazakhstan, under the strong leadership of the President Nazarbayev, has actively pursued the main goal of promoting economic reforms, based on rich oil and gas reserves. As a result of these reforms, the foreign investments have been increasing and starting from 2004 annual GDP rate is consistently high (about 10%).

Kazakhstan's sharp economic growth is mainly due to its leading economy sectors – oil and gas. It is also greatly aided by increased prices on the world markets for Kazakhstan's leading exports. In order to continue the economic growth and maintain the political and economic stability of the country, the main goals of the current, structural policy are diversification and strengthening of the non-oil sectors of economy and higher-value added industries, the effective entry of domestic products on the international markets.

However, since 2007, in the aftermath of the subprime loan crisis in the United States, the international crunch on credits has spread over the world. Moreover, due to the worldwide decline in the demand for oil and falling prices of crude oil in the second half of 2008, Kazakhstan's GDP for that year sharply dropped to 3.3%. In particular, agricultural production declined by 5.6% due to the harsh droughts.

Table 2-1 Kazakhstan's Main Economic Indexes

Unit: % of growth, as of the previous year

	2004	2005	2006	2007	2008
Gross domestic product GDP	9.6	9.7	10.7	8.9	3.3
Industrial production	10.4	4.8	7.2	5.0	2.1
Agricultural production	▲0.5	7.3	6.2	8.4	▲5.6
Farm products	▲4.9	9.5	7.7	12.7	▲13.2
Livestock products	5.6	4.6	4.5	4.0	4.0
Capital investment	23.1	34.1	11.1	8.2	4.6
Retail trade	18.2	13.5	15.0	10.7	4.2
Trade with CIS countries	47.8	19.4	36.4	35.6	26.6
Trade with other countries	57.1	45.6	37.2	27.9	38.9
Inflation rate	6.9	7.6	8.6	10.8	17.0

Source: 2008 Statistical yearbook (Kazakhstan's Agency for Statistics)

2.1.3 International Relations

In March 2001 Security Council of Kazakhstan officially approved a new "Concept of Foreign Policy". Based on this concept, priority was given to strengthening of the regional integration process and promotion of the bilateral cooperation.

In terms of regional integration, Kazakhstan participates in the following organizations: 1) The Eurasian Economic Community (EAEC), 2) The Shanghai Forum (at present, The Shanghai Cooperation Organization), 3) The Conference on Interaction and Confidence-Building Measures in Asia (CICA), 4) The Collective Security Treaty Organisation (CSTO), 5) The Central Asian Economic Association (at present, The Central Asia Cooperation Agency, soon to be integrated into EAEC).

As for bilateral relations, Kazakhstan's diplomacy was successful in establishing and developing good relations with neighboring nations, including Russia, China and CIS countries,

as well as the United States, EU, Japan, India, Turkey, Iran and and other European and Asian countries.

(1) The Customs Union

On 27 November 2009, the presidents of Belarus, Kazakhstan and Russia signed a number of joint documents on the creation of the Customs Union. According to the deal, the Customs Union starts functioning from January 1, 2010. In line with the agreement, the three countries begin using common customs tariffs. 90% of tariffs were adopted from Russian Customs. The final stage of creating a Union will take place in July upon adjustment of the customs systems.

According to the locally conducted interviews, dairy products exported to Russia are subject to additional 18 % customs tax. On the contrary, only 12% customs tax is imposed on the dairy imports from Russia to Kazakhstan. Such a discrepancy, obviously, is a big disadvantage for the domestic producers. Similar customs matters will be examined and regulated before the Customs Union starts functioning. At this stage, intermittent reports and arrangements play an important role in the export research.

(2) An exchange rate fluctuations

On 2 February 2009, Central Bank of Kazakhstan devalued the tenge by 18 % and within 4 days announced that it will support its currency at about KZT150 to 1 USA dollar. The Central Bank heavily intervened in the currency markets to keep the tenge stable and in its attempts to protect the exchange rate opened the country's foreign currency reserves. The bank allowed fluctuations of 3 percent on either side of that rate. On Kazakhstan's Stock Exchange, the exchange rate quickly fell 15 % from KZT122.32 (previous day's close) to KZT143.98. Since February 2009, the average exchange rate fluctuates between 150 and 152 tenge. As a result of currency devaluation, the prices of imported goods went up, which, in turn, is a positive factor for improving the competitiveness of domestic production.

On the other side, during the period of the 11th November 2008 to 19th January 2009, the Central bank of Russia implemented step-by-step devaluation of the ruble. This resulted in increased value of tenge against the ruble. In January 2009 the exchange rate rose to its highest point since 2006, 3.43 KZT for ruble. According to the information obtained during the hearings, at the time of devaluation, a large amount of Russian imports entered the markets. Considering the export of Kazakhstan's production, it is very necessary to pay attention to such currency fluctuations.

Table 2-2 Exchange Rates of Russian and NIS States' Currencies (2009)

Country	Currency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Against Russian Ruble													
Belarus	ruble	77.71	80.01	83.41	84.96	89.72	90.67	89.72	89.49	91.85	93.98	93.3	94.66
Kazakhstan	tenge	3.43	4.21	4.44	4.54	4.86	4.82	4.8	4.79	5.02	5.19	5.13	4.92
Russia	ruble	-	-	-	-	-	-	-	-	-	-	-	-
Ukraine	hryvnia	0.22	0.22	0.23	0.23	0.24	0.25	0.24	0.25	0.27	0.27	0.27	0.26
Against 1 USA $													
Belarus	ruble	2752	2858	2837	2825	2780	2837	2849	2825	2764	2730	2782	2863
Kazakhstan	tenge	121.47	150.43	151.4	150.72	150.44	150.41	150.71	150.8	150.95	150.74	148.72	148.36
Russia	ruble	35.41	35.72	34.01	33.25	30.98	31.29	31.76	31.57	30.09	29.05	29.82	30.24
Ukraine	hryvnia	7.7	7.7	7.7	7.7	7.62	7.63	7.7	7.99	8.01	8	7.98	7.98
Against 1 Euro													
Belarus	ruble	3548	3613	3738	3729	3896	3979	4005	4048	4034	4043	4137	4106
Kazakhstan	tenge	156.3	190.31	199.73	199.27	210.93	210.81	213.22	216.55	220.1	223.56	224.14	212.84
Russia	ruble	45.66	45.35	44.94	43.84	43.38	43.82	44.69	45.3	44.01	43.07	44.36	43.39
Ukraine	hryvnia	10.1	9.84	10.16	10.21	10.56	10.76	10.82	11.48	11.65	11.83	11.91	11.45

Source：http://www.cisstat.com/

2.1.4 An Educational System in Kazakhstan

(1) An educational system

Kazakhstan's educational system structure, much like that of Japan, consists of primary, basic and general secondary education (shkola, 11 years in total) and higher education, such as universities, academies and institutes (usually 4-5 years). The structure of education in Kazakhstan as follows:

Structure of Education in Kazakhstan

Duration of compulsory education	Starting from 6 or 7 years old to 15/16 years old (9 years)
Duration ofschool	September 1st to May 25th
School term system	【4 school terms system】 First term：Sep 1 – Nov 4 Second term：Nov 13 – Dec 26 Third term：Jan 11 – Mar 23 Fourth term：Apr 1 – May 25
Eligible age for entering school	Children reach the eligible age by September 20th of a school year (effectively the system is flexible, so a 6 year old child can start a first term of compulsory education in September of the same year, or next year, after turning 7 years old)
Structure of educational system	11 years of school education (primary, basic, general secondary) plus 4 years of university, 11 years plus 2 years of professional or vocational school. Also 9 years of school education (primary and basic) plus 4 years of professional college, or 11 years of school plus 2 years of professional school plus 4 years of university ＊ Often, after graduating professional schools students continue education at university. If they continue the same specialty, they can be exempt from obtaining grades for the first year and directly start 2nd year of university. All three educational levels are usually taught at the same school. There is no clear distinction between primary, basic and secondary schools. Compulsory examination is held after the 9th year in order to enter the general secondary school.

(2) Educational Institutions in Astana

Kazakh Agrotechnical University

Kazakh Agrotechnical University was established in 1957. Two originally independent departments (Veterinary faculty and Farm animal breeding and production department) were integrated into Veterinary and livestock breeding faculty in April 2009. 970 undergraduate students are attending the university, 24 graduate students are enrolled in Master's course and 3 graduate students – in Doctor's course. Students major in the following subjects: Veterinary, Veterinary hygiene, Livestock breeding, Hunting and fishing, Food production technology, Microbiology and biotechnology. Number of pedagogical staff is 70. Until the government established a special facility for testing livestock diseases, such tests were conducted at university.

(3) Educational Institutions in Almaty

Almaty Technological University/ATU

ATU is a higher education institution established in 1957, for training the experts in food processing, textiles, and light industries. More than 50 years has passed, ATU raised 20 thousands technical experts, and they are contributed to the development of food processing or light industries not only in Kazakhstan, but also all over the Central Asian countries.

In 2009, more than 6 thousands students are enllored at ATU, and 381 teachers are instructing them (11 of them are member of the academy, 48 of them has doctor's degree) .

There are several institutions established in ATU; Institution of food engineering, Institution of light industries, and Institute of qualification improvement and staff retraining. The departments of ATU are as follow; Food products, Light industry and design, Engineering and information technologies, and Economics and business.

In ATU 22 educational programs are implemented for training the experts and classes are conducted by Kazakhstani and Russian.

There are Technological park established in ATU and small machinery such as flour mill, bakery machine, greenhouse are equipped for learning the technique of food making and processing. However, machinery and materials for dairy products processing and meat processing are not equipped at ATU.

2.2 Brief overview of North Kazakhstan oblast

2.2.1 General information

(1) Geography of North Kazakhstan

North Kazakhstan oblast has an area of 98,000 km^2 (3.6% of total area of the Republic of Kazakhstan). Population density is 6.6 people per km^2.

Most part of the oblast is situated in the southern part of Western Siberia plate lies at 200 meters above sea level. South-west part of the region is surrounded by mountain masses of Sary-Arka and north-west part – by Kokshetau mountains.

Figure 2-2 Map of North Kazakhstan Oblast

(2) Climate of North Kazakhstan oblast[2]

The climate of North Kazakhstan is extremely continental with long and cold winters, strong winds and snow storms, and short summers.

The average January temperature in the north is – 18.5 degrees centigrade, in the south – 17.6 degrees centigrade, the lowest temperature reaches – 45 degrees centigrade.

In summer (July), the average temperature in the north goes up to 19 degrees centigrade, in the south 19.5 degrees centigrade, the highest temperature is 41 degrees centigrade.

Annual precipitation is 290-435 mm, with south-west areas getting less precipitation. 80% of precipitation falls on period from April to October. North Kazakhstan receives about 30 cm of snowfall annually (from November to March).

(3) Population and ethnic groups in North Kazakhstan oblast

In 2008, population of North Kazakhstan amounted to 648,000 people, 4.1% of total population of the Republic of Kazakhstan. Urban population – 35.4%, rural population – 64.6%.

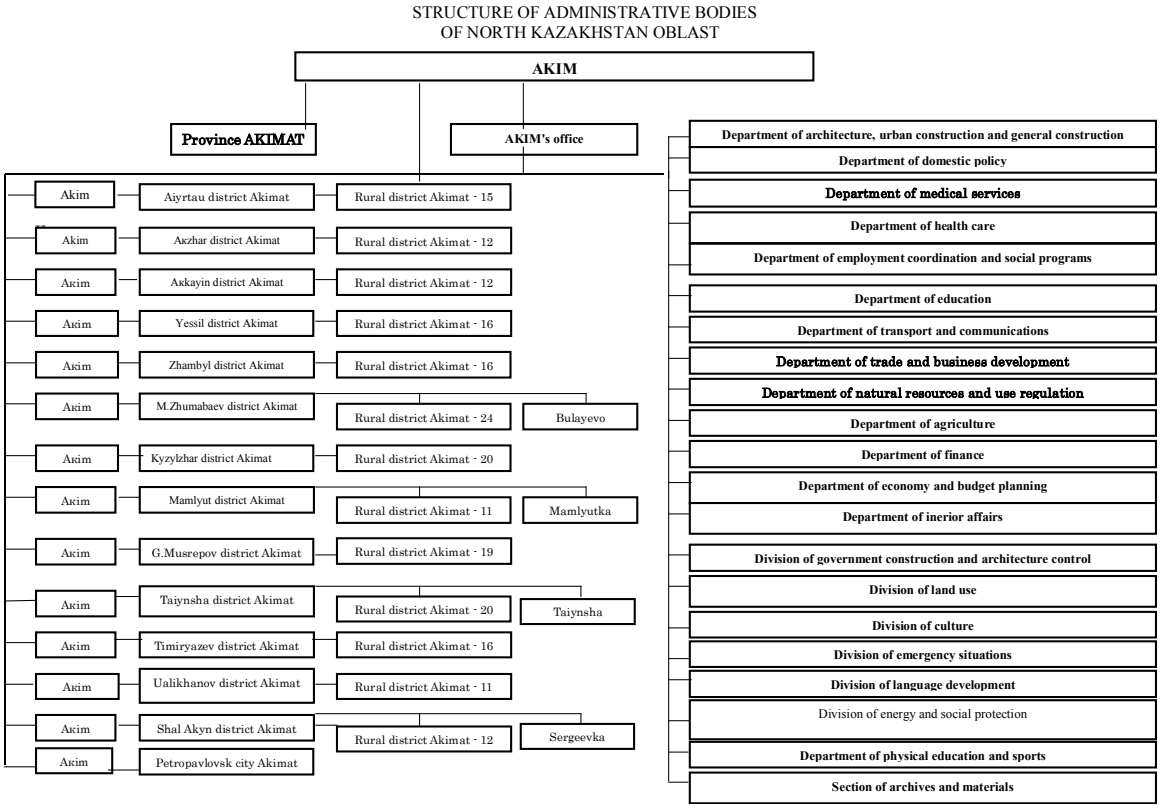
Since 2004 population has been continuously decreasing, due to migration and predominance of the death rate over the birth rate.

(4) Administrative bodies

The head of Kazakhstan administrative units (oblast, city, district) is called Akim. Akim Bilyalov Serik Sultangazinovich, appointed by the Presidential decree of the 9th October , 2007, is currently a Governor of North Kazakhstan oblast.

[5] Reference: North Kazakhstan oblast HP

Regional executive organs, or Akimat, consist of Akim (Governor), Deputy Akim and other major administrative bodies. According to North Kazakhstan oblast's HP, the administrative structure of North Kazakhstan oblast is as following:



Source: North Kazakhstan province HP

Figure 2-3 Structure of Administrative Bodies of North Kazakhstan Oblast

2.2.2 Economy Outlook

(1) Main characteristics of economy

The North Kazakhstan oblast includes 13 districts and city of Petropavlovsk. The following are main economic characteristics of the region.

In 2008 North Kazakhstan's industrial output reached 61,265,100,000 tenge, 71% of which was produced by Petropavlovsk city (43,595,100,000 tenge).

Agricultural production reached 193,826,400,000 tenge, G. Musrepov district's output equals to 31,031,900,000 tenge (16%), Taiynsha district's – to 24,859,500,000 tenge (12.8%).

Total fixed capital investment is 39,867,600,000 tenge, with 45.8% belonging to Petropavlovsk city – 18,259,400,000 tenge.

Total retail turnover is 51,308,200,000 tenge. Petropavlovsk city's share is 45,099,700,000 tenge (87.9% of total).

Table 2-3 Main Indexes of Social and Economic Development I (2008)

	Population (people)	Average monthly wage (tenge)	Lowest cost of living per person (tenge))	Industrial output (1 million tenge)	Agricultural output (1 million tenge)	Fixed capital investment (1 million tenge)	Retail turnover (1 million tenge)
Total sum	**648,343**	**39,695**	**11,519**	**61,265.1**	**193,826.4**	**39,867.6**	**51,308.2**
Aiyrtau	48,517	30,131	11,778	1,189.3	18,141.9	1,953.5	427.4
Akzhar	21,644	29,405	11,913	181.1	7,585.0	677.7	373.1
Akkain	27,284	29,142	11,488	552.4	11,341.1	1,794.0	324.5
Yessil	33,628	31,236	11,802	326.5	13,954.2	837.2	340.5
Zhambyl	31,881	30,891	12,005	89.2	12,571.2	956.8	332.1
M.Zhumabaev	42,624	32,347	11,242	542.2	21,245.2	1,315.6	469.4
Kyzylzhar	49,523	35,480	11,757	2,911.5	14,266.5	2,192.7	497.9
Mamlyut	25,441	32,419	11,575	321.6	7,916.7	1,475.1	849.2
G. Musrepov	48,623	36,307	11,873	4,729.8	31,031.9	3,827.3	851.5
Taiynsha	57,450	31,651	11,632	5,356.7	24,859.5	2,711.0	845.4
Timiryazev	17,396	31,678	11,618	487.9	9,959.6	956.8	303.8
Ualikhanov	23,402	33,011	11,527	69.6	7,075.1	1,993.4	194.1
Shal Akyn	26,828	32,984	11,822	912.2	10,741.6	917.1	399.6
Petropavlovsk city	194,102	48,080	11,095	43,595.1	3,136.9	18,259.4	45,099.7

Source: Social and economic characteristics of North Kazakhstan oblast (2008)

Table 2-4 Main Indexes of Social and Economic Development II (2008)

(compared to previous year)

	Population	Average monthly wage	Lowest cost of living per person	Industrial output	Agricultural output	Fixed capital investment	Retail turnover
Total sum	**99.1**	**115.3**	**117.1**	106.1	**95.1**	**99.6**	**100.1**
Aiyrtau	99.4	113.4	117.4	100.3	99.2	53.1	178.7
Akzhar	99.8	105.7	122.7	115.8	60.9	30.2	83.3
Akkayin	98.2	115.5	123.1	89.7	98.1	4.2double	73.5
Yessil	98.4	111.0	120.7	101.6	99.0	95.8	83.5
Zhambyl	98.6	119.2	122.1	103.5	107.3	67.7	130.0
M. Zhumabaev	97.5	122.7	118.2	100.4	126.0	3.1double	93.8
Kyzylzhar	99.0	112.3	120.2	128.8	102.9	121.5	93.8
Mamlyut	97.7	110.5	117.5	101.3	100.3	3.4double	66.1
G. Musrepov	98.6	117.0	124.6	105.7	92.7	1.9double	52.1
Taiynsha	99.3	127.6	124.6	103.6	91.5	43.7	61.7
Timiryazev	98.6	108.2	123.8	102.1	95.6	84.1	100.3
Ualikhanov	101.0	114.4	123.7	60.6	71.9	93.2	109.0
Shal Akyn	98.4	113.1	119.8	93.9	84.9	1.8double	52.2
Petropavlovsk city	100.0	114.8	107.2	107.1	100.4	109.3	105.1

Source: Social and economic characteristics of North Kazakhstan oblast (2008)

(2)Gross regional domestic production (GRDP)

GRDP of North Kazakhstan oblast has been on the growth since 2004. In 2008, the GDP amounted to about 403 billion tenge, 2.6 times more than in 2004. The oblast ranks 15th among other regions of Kazakhstan. In 2008, the GRDP of North Kazakhstan oblast constitutes 2.5% of Kazakhstan's total GDP.

Table 2-5 GRDP Growth of Kazakhstan's Regions (contents)

Unit: 1 million tenge

	2004	2005	2006	2007	2008
Kazakhstan	5,870,134.3	7,590,593.5	10,213 731.2	12,849,794.0	16,052,919.2
Akmola	166,162.5	196,761.3	254,186.2	406,298.4	477,641.1
Kostanai	272,279.1	322,711.3	387,343.8	560,378.3	704,281.2
North Kazakhstan	151,916.0	184,672.3	236,876.6	320,390.7	403,003.3
Astana	468,769.9	711,612.0	957,070.7	1,134,213.5	1,291,813.2

Source: Administrative regions of Kazakhstan (Kazakhstan's Agency for Statistics)

Table 2-6 Table GRDP rate

	2004	2005	2006	2007	2008
Kazakhstan	100.0	100.0	100.0	100.0	100.0
Akmola	2.8	2.6	2.5	3.1	3.0
Kostanai	4.6	4.3	3.8	4.4	4.4
North Kazakhstan	2.6	2.4	2.3	2.5	2.5
Astana	8.0	9.4	9.4	8.8	8.1

Source: Administrative regions of Kazakhstan (Kazakhstan's Agency for Statistics)

Table 2-7 Structure of Regional Gross Production in North Kazakhstan Oblast

Unit: %

	2004	2005	2006	2007	2008
Agriculture	36.4	36.2	30.8	27.9	27.7
Mining and manufacturing industries	13.7	11.8	9.9	8.3	10.0
Construction	1.4	3.2	3.1	2.7	3.2
Commodity sales	18.9	17.8	15.4	13.7	15.0
Transportation communication	12.3	10.8	10.6	8.0	7.8
Other	17.3	20.2	25.7	35.1	32.4

Source: Social and economic development of North Kazakhstan oblast in 2004-2008 (Agency for Statistics of North Kazakhstan oblast)

In 2008 agricultural production output of North Kazakhstan oblast reached 202,234,900,000 tenge and amounted to 14.6% of the total agricultural production output of Kazakhstan (1,384,188,400,000 tenge). North Kazakhstan came second after Kostanai oblast with its output of 237,915,000,000 tenge. Agricultural production is a main industry in the region, totaling to 27.7% of overall regional production output.

The agricultural production output of North Kazakhstan oblast has been steadily growing since 2004. In 2008, particularly, it has grown 40% compared to previous year.

Since 2004, compared to livestock products, crops firmly amounted to 70 % of total agricultural production output. However, in recent years farming production increased drastically and now is the ratio of 4:1 of agricultural to livestock production.

Table 2-8 Agricultural Production of North Kazakhstan Oblast

Unit: a real price, 1 million tenge

	2004	2005	2006	2007	2008
Gross agricultural production	85,135.6	93,979.0	108,947.4	147,471.5	202,234.9
Crop production	60,363.2 (70.9%)	65,422.8 (69.6%)	76,836.9 (70.5%)	109,381.4 (74.17%)	153,622.0 (75.96%)
Livestock production	24,722.4 (29.1%)	28,556.2 (30.4%)	32,110.5 (29.5%)	38,090.1 (25.83%)	48,612.9 (24.04%)

Source: Social and economic development of North Kazakhstan oblast in 2004-2008 (Agency for Statistics of North Kazakhstan)

(3) Number of companies, work force and average wages

In 2008 the average wage in Kazakhstan was 60,805 tenge. Among the regions, Atyrau oblast had the highest average monthly wage, 111,023 tenge, while Zhambyl oblast had the lowest average monthly wage, 37,546 tenge. North Kazakhstan oblast ranked second from the bottom, 39,790 tenge.

In 2008, the number of officially registered companies in North Kazakhstan reached 5,449. Among them, wholesale and retail related businesses amount to 1,118, education related companies – 834, and agriculture related businesses – 658.
Average monthly wages in banking sector (79,385 tenge) and transportation and communications sector 64,093 tenge) are relatively high. On the contrary, the agriculture sector, despite being a key industry in the oblast, has a very low average wage rate, 3,952 tenge.

2.2.3 Transportation Network of North Kazakhstan Oblast

Transportation network of North Kazakhstan oblast includes railways, roads and airways. Due to long and snowy winters railroads are considered to be the most reliable in terms of year-round operation.

(1) Railroads

Trans-Siberian and Trans-Asia expresses run through Petropavlovsk, connecting industrial cities in the Far East with European countries, Central Asia and China. The total length of the railway tracks is 731.96 km.

Part of the railways (186.9 km) is under the jurisdiction of Petropavlovsk Bureau of Russian Railways (South Ural Railways).[3]

The distance between Petropavlovsk and Omsk is 273 km. More than 10 trains operate daily on this rout. Travel time is between 4 and 5 hours

A night train runs between Petropavlovsk and Astana, the distance is 491 km.

(2) Roads

A number of main highways pass through the North Kazakhstan oblast. These are South – North highway from Ekaterinburg to Almaty, Chelyabinsk – Novosibirsk (East-West) and Astana – Petropavlovsk.

The total length of the roads is 9,001.4 km. Of this, 3,622 km are provincial roads, 3911.4 km are local roads and 1,468 km are national highways.

78% (7,063.5 km) of all the roads in North Kazakhstan are asphalted. 73% (5,549.5 km) of those are provincial and local roads.

According to the North Kazakhstan government data, as of 2008, 2,254 km of automobile roads are in devastating condition, 3,933 km are in need of repair. Of the last, 1,812 km are in need of full renovation and 1,123 km require partial repair. Road reconstruction and repair are supported by allocations from the republican and regional budgets. In 2009, 2,229,926,000 tenge from the republican budget and 520,657,000 tenge from the provincial budget were assigned for road reconstruction and repair in North Kazakhstan oblast.

Table 2-9 The Budget for Reconstruction and Repair of North Kazakhstan's Transport Infrastructure

Unit: tenge

	2004		2005		2006		2007		2008		2009	
Budget	Republic.	Provin	Republic	Provin.	Republic.	Provin	Republic	Provin.	Republic.	Provin	Republic	Provin.
Reconstruction							300,000	24,620	575,900		1,498,356	52,000
Full repair				13,958		64,515	565,000	382,538	801,267	43,993	731,570	3,000
Partial repair		188,490				223,975				371,390		
Light repair		199,995		409,937		224,569		191,000		461,495		438,657
Total sum	0	388,485	0	423,895	0	513,059	865,000	598,158	1,377,167	876,878	2,229,926	520,657

Source: Data of North Kazakhstan oblast's Department of transportation and communications

[3] North Kazakhstan oblast's Department of transportation and communications HP http://dptiad.sko.kz/rus/inf_transporta.html

(3) Airports

The airport of Petropavlovsk was built in 1975 and was upgraded to the status of international on December 6th, 2001. There are regular flights between Astana and Petropavlovsk (4 times a week) and Almaty and Petropavlovsk (3 times a week).

The flight time between Petropavlovsk and Astana is 1 hour 25 minutes, between Petropavlovsk and Almaty – 3 hours 20 minutes. Due to heavy snowfalls flights can be delayed or cancelled.

3. Federal and State Government support measures

3.1 Federal Government's industry promotion program

3.1.1 Kazakhstan industry promotion policy

Currently, in Kazakhstan "Kazakhstan 2030" which is the Nations master plan, is being pursued as the policy for guidance of National development, and it has been introduced as a long term economic strategy, as mentioned below, and that it will supplement the "social economic development plan" and "industry technology innovation development strategy" etc.
With the Nations Master Plan *"Kazakhstan-2030"*, one thing that has been raised is the long term goal of economic growth driven by foreign investment with market economics at its base along with security, maintaining order, Citizens health and improvements to corporate insurance, development of energy reserves, maintenance of infrastructure and staff training. The target sectors of this economic development are central to the non resource sectors, in particular, the necessity for development of the agricultural sector and training of small and medium sized companies has been pointed out. Also, the focus is on actively implementing international leading edge technology and knowledge and the implementation of a system where up and coming young people are dispateched to foreign developed regions.
Furthermore, in order to respond to changes of the times and economic environments, the development of a separate program for a period of between 3 to 5 years will be inline with the establishment of short term goals with tangible numerical values and qualitive assessments. In particular, during 2010, intensive projects and programs will be carried out to enhance the export competitiveness and training programs for small and medium sized companies.

① *"Kazakhstan-2030"*（Nation Master Plan）
As for the Government, importance has been placed on diversification of the industrial structure through training in nonpetroleum sectors and also providing an organized investment environment and promotion of technology innovation as well as a training plan for small and medium sized business in relation to new industrial sectors.

② *"Social Economic Development Plan"*（Materialization of "*Kazakhstan-2030*" 2008～2010）
In order to put into practice the above basic plan, the promotion of the development of competitiveness through liberalization of the economy, industrial promotion in the region through the implementation of agricultural development programs as well as the education of staff and the regeneration of the manufacturing industry is occuring. In addition, this 3 year plan has already been carried out between 2001 to 2005 and 2006 to 2008, and has been ear-marked as ongoing, numerical goals during the 2 period have been established and this degree of attainment has been evaluated.

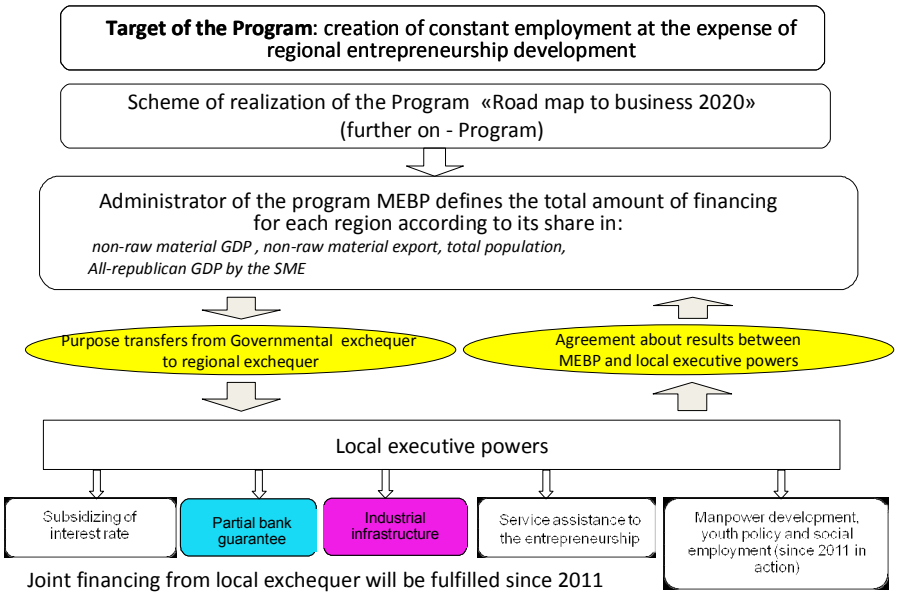
③ *"Industry・and technology Innovation Development Strategy（2003～2015）"*
The transition from an ecomony focused on resources to a new economic level, in other words in order to stimulate the export of non resources, promotion of the development of cluster 7 sector (tourism, food processing industry, petroleum and natural gas services, textile industry, transport, metallurgy and the mining industry, building materials）along with chemical research and the development and implementation of new technology are being carried out through Government budget allocation.

3.1.2 Business roadmap 2020

In March 2010, due to a lack of capital and a lack of manpower the Kazakhstan Government, in order to push along the delayed industrial promotion project, launched through a presidential speech a program called "*Business road map 2020*". This speech、known as "*A new era – new economic growth, a new chance for Kazakhstan*", a milestone for development of the business sector up until 2020 had been established and the techniques to make this reality have been made clear. A summary of "*Business roadmap 2020*" is summarized below in a diagram[4].

The purpose of "*Business roadmap 2020*" is to provide economic rehabilitation post economic crisis, secure employment opportunities and increase new and legitimate employment opportunities. For that purpose, not only through large scale projects such as old fashioned resources and the energy industry etc, but stating the importance of training at small and medium size business level. In addition, these markets are not limited to domestic markets and it is important to look abroad with the issue being to train the export industry other than that of the raw materials and energy sectors.

Within this program, as for the bottleneck for industry promotion at the level of small and medium business in Kazakhstan, the following points of ①underdeveloped finance system and high interest rates, ② the delay with an industrial platform, ③ the lack of experienced people, ④ the lack of mentality of entreapeneurs, have been raised. Among them, the finance sector has been labelled as having priority issues, with this main program, apart from argueing the enhancements of the finance system targeting small and medium scale businesses, structural changes to financial institutions that the government are investing in are being carried out at the same time, with plans to create a structure thought to be user friendly for the region as well as small and medium size businesses. The details in relation to the financial system are advised in a graph below.



Source： Ministry of economy and budget planning of Kazakhstan

Figure 3-1 A Conceptual Diagram of "*Business roadmap 2020*"

[4] In relation to the details, please refer to explanation that has been inserted in Appendix 2. This explanation is from a presentation made by the Government in Astana. Also, the ultimate validation of the same program was carried out during this study, acording to discussions from various quarters, it is unclear as to whether it will start during 2010.

Table 3-1 A Conceptual Diagram of "*Business roadmap 2020*"

A Summary of Business Roadmap 2020

Overall picture	
Theme	・Implementation of Kazakhstan national plan ・Economic recovery post financial crisis, secure working opportunities, create regular employment
Objective	・Credit decisions for refinancing are carried out according to independent decision making by banks. ・The Government carries out determination of subsidiaries and warrantees according to regional administrative bodies and related boards. ・Government-affiliated adjustments in the regional administration body have been implemented based on one stop service. ・Business owners can use assistance programs that have been packaged consistently.
Purpose	・Implementation of non resource sector growth and diversification ・Training and modernization of export orientated industries for non raw materials and energy
Issues	・Difficulties of application and high interest rates relating to various financial systems for private corporations. ・Delay in development of industry infrastructure. ・Delay in support structure for new enterprises.
Goals	・Construction of proper working organizations that use the support system ・Growth of new regional business which is non resource sector
Policy	・1st indicator：Support business initiative ・2nd indicator：Corporate revitalization ・3rd indicator：Support manufacturing industry that is striving to export
Budget	・Contributions within the scope of Government annual budgets
Expected results	・Enhancements in competitiveness in both internal and external markets according to the formation of non raw material sector entrepreneurs ・Increase GDP proportion of non raw material sector ・Increase export quantity and export destinations for the non raw material sector ・Construct a Kazakhstan brand ・Increase and develop employment opportunities in the non raw material sector ・As for other qualitive results, increase production, develop and strengthen a entrepreneur spirit, strengthen the role of small and medium size business in the industrialization process, effective deployment of production factors in the industrial sector, and the growth of human resources etc have been envisaged.
1st Policy：Business initiative support	
Purpose	Implementation of a non raw material sector project
Government support measures	・Carry part of the burden for bank interest in relation to project implementation ・Partial guaranteeing bank credit for the purpose of project implementation ・Development of industry infrastructure ・Business back up ・Human resources development, technical training for young people, arrangement of public welfare sector
Support target	・Carry out investment in necessary industry sectors required by the program, or maybe the businesses or farmers that are planning to participate. However, this excludes large corporations from the finance sector. Also, being able to establish priorities based on the needs of specific regional industry in the various regions.
Financial conditions	＜This will be organized in the next chapter＞
Conditions for development of	・The targeted projects include roads, dirty water treatment, heat supply, clean water, rail terminal, telephone cables, transformer stations, power network etc.

industrial base	・Funds will be distributed according to feasibility studies and a business plan. ・The provision of necessary business infrastructure is possible to be directed at a number of projects. ・The costs of construction and reconstruction can not exceed 50% of the total project cost. ・Industry infrastructure needs to correspond to employment development plans.
Business back up service	・Target priority projects* that have been established in the main program. ・With the application it is necessary to have a business plan, legal documents and business cost trial calculations. ・The taregeted industry will be up and coming industry, be offered to current high priority non resource projects.
2nd policy：Industry rejuvenation	
Purpose	・Rejuvenation of non raw material sector businesses
Government support measures	・Support in relation to existing bank interest ・A 3 year reprieve on taxes and compulsory levies (No tax)
Support target	・Corporations, sole traders and farmers engaged in the targeted industry sector. However, there are conditions on the provision of information relating to finance, credit and liability. Also, there are conditions that the creditor needs to agree to in relation to finance and management revitalization plans.
Financial conditions	・This will be covered in detail in the next chapter.
3rd policy：Support for export orientated manufacturing industry	
Purpose	・Support to businesses trying to break into foreign markets.
Government support package	・Supplement existing interest rates for commercial bank loans.
Support target	・All industry sectors except mining resource sector and large corporations in the metal sector. However, for companies with more than 10% of exports.
Financial conditions	・This will be covered in detail in the next chapter.

* Excluding the metal, metal production industry, chemical, petrochemistry industry, pharmaceutical, construction material manufacturers and grain as well as service industry other than farming, tourism, light industry, commerce ・ real estate・contract staff.

3.1.3 Programs related to Business road map 2020

Along with "*Business road map 2020*", programs such as "*Export 2020*", "productivity 2020" and "*Investors 2020*" have been prepared and as mentioned below, however at this point in time the specific details on the programs are not clear. With the hearing with the departments responsible for this, it is assumed that, for example, with ""*Export 2020*" support for participation in overseas trade shows as well as maintenance of export routes will be provided.

Table 3-2 Programs that will be carried out at the same time as Business road map 2020

Program name	Contents
Export 2020	Government support to various businesses for promotion of export at the same time as indicating advantages in investment for export driven industries.
Productivity 2020	Progressing with technical innovations and carrying out development of competitive goods.
Investor 2020	Arousing both domestic and foreign investment through various types of preferential treatment, progress with infrastructure development in economic sectors.

At the same time as Business road map, " A national program in relation to the development of industrial reforms to be established in Kazakhstan from 2010 to 2014" (refer to the details in the next chapter) has been published. This declares that there is a necessity to improve competitivness and diversify industry the same as the business road map over the target period with specific numerical values being determined. Even with the business road map, there is an additional statement saying that it is necessary to implement the project based on it being consistent with the main program.

Also, in order to respond to the lack of labour in the region, the transfer of know how held by the Central Government to the regional administration is proceeding. Specifically, there are plans for pesonell exchange between the Central Government and regional administrations. It is expected that staff from the Central Government will be dispatched to the Department of New Business and Industry in North Kazakhstan.

Table 3-3 Summary of the National program in relation to the development of industrial reform to be implemented in Kazakhstan between 2010and 2014

Authorization	・Kazakhstan president ordinance No. 958 dated the 19th of March 2010
Creater	・Kazakhstan Department of Economic Development and Trade, Kazakhstan Department of Industry and Technology.
Purpose	・Secure stable and balanced economic growth through diversification and improvements in competitivness.
Issues	・While securing improvements in competitiveness and economic diversification, develop priority sectors of the economy. ・Enhance social effects of the development of priority economic sectors and implement investment project. ・Construct a favourable environment with industrialization. ・Formulate economic growth based on rational territorial organization with economic potential. ・Securing effective interaction between Government and industry for development processes of priority economic sectors.
Implementation period	・Between 2010 to 2014
Financial resources	・National budget and capitalization of busineeses including capitalization of national institutions and state sponsored government owned corporations. ・The budget scale from the budget of the Commonwealth or the region will be determined at the time of the planned period of the rearranged budget.
Index	(1)Increasing ・It was more than 50% of the GDP in 2008 and was more than 7 trillion tenge and the real GDP increased by 15%. ・The processing industry occupied a proportion of more than 12.5% of the GDP. ・Total exports of non raw materials exports was more than 40%. ・The scale of exported non raw materials is more than 43% of the total of the processing industry. ・The labour productivity of the processing industry is more than 1.5 times. ・The labour productivity of the agro-industry complex is more than USD$3,000 per person engaged in agriculture and will increase more than two fold. ・The percentage of the breakdown in Kazakhstan of purchases of businesses and Government owned holdings, holdings controlled by Government offices, National institutions and private businesses are up to 60% for products and up to 90% for labour and services. ・The percentage of companies that are actively trying to innovate is only 10% of all currently operating businesses. (2)Decreasing ・The proportion of transport costs in the cost structure of the non raw material sector has decreased by more than 8%. ・The energy proportion of the GDP has decreased by more than 10% of the level compared to that in 2008.

3.2 Financial Program provided by the Central Government

3.2.1 Financial Policy of the Central Government

(1) Interest Cut

In 2009, the Government started a "monetary easing scheme" in Kazakstan that included reducing the interest rate. The index for the Kazakstan interest rate is defined as the Refinance Rate[5]. The interest rate being cut frequently since January 2009 as shown in Table XX (inset table number). There were four reductions between January 2009 to September 2009 at the monthly average of 0.375%. The Refinance Rate was 7.0 % in January 2010.

Table 3-4 Financial Policy of Interest Cut in Kazakhstan (Refinance Rate)

Year/month	Refinance Rate	Year/month	Refinance Rate
2009/ January	10.0%	2009/ February	9.5%
2009/ May	9.0%	2009/ June	8.5%
2009/ September	7.0%	2010/ January	7.0%

Source: Kazakhstan Central Bank

Reduction of the Refinance Rate is expected to stimulate further action to lower the deposit rate with the average of 2% by the Commercial Banks as their optional decision. As a result, it is expected that the bank loan rate will also decrease an average of 1-2%. The new proposed interest rate for loans and deposits with the Commercial Bank would be executed after April 2010[6].

(2) The Financial Policy in "Business Road Map 2020"

As described in Chapter (insert a chapter number), "Business Road Map 2020" is one of the economic revitalization policies implemented by Ministry of Economic and Budget Planning (MEBP). The monetary easing scheme is the core of the financial support program. The Government of Kazakhstan puts priority on earning foreign currency by promoting export after the approval in January 2010 for the customs union between Kazakstan, Russia and Belarus.

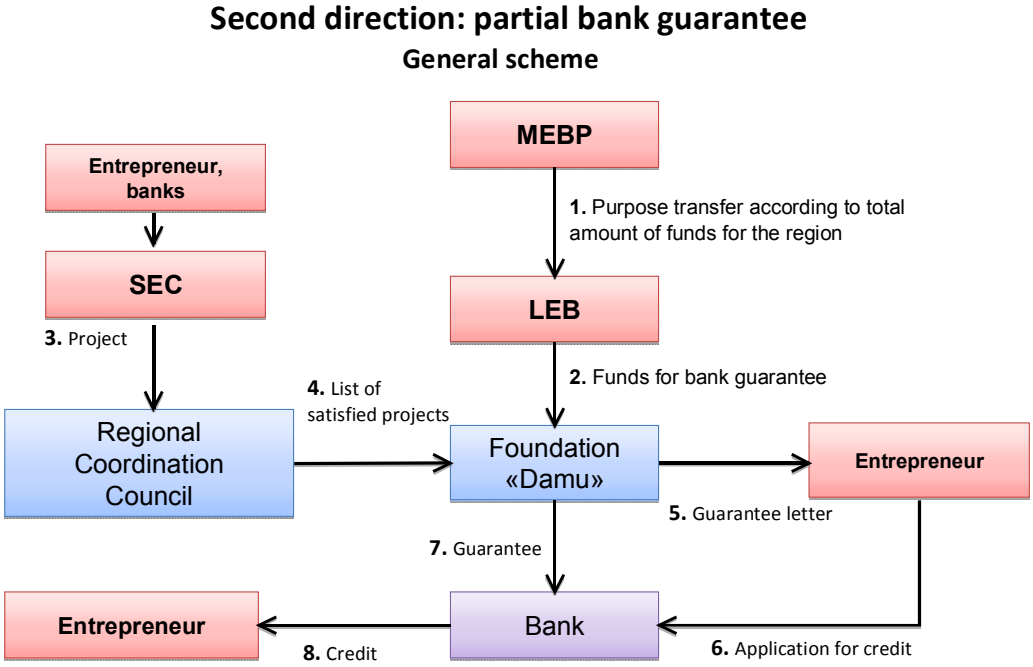
The goal of this program is to secure employment through implementation of the entrepreneurs' business plan. In order to achieve the goal, there are two measures outlined. One is to provide support for funding business implementation and reducing the capital investment cost and the other is to assist the establishment of an entrepreneurship.

The financial measure aims to provide an environment that enables the commercial bank loan to meet the financial demand of the private sector. A soft loan and bank guarantee are arranged to promote the business implementation. The loan rate is applied to the private sector with 50~80% discount from the normal rate through the subsidy program. Both of the discounted rate and the available bank guarantee are to be promoted and provided by DAMU. The program invites the commercial banks to act as the coordinaters between the private sector and the government from the initial application stage. The commercial banks therefore play very important role for the successful implementation of this scheme.

[5] Interest rate for funding from the Kazakhstan Central Bank
[6] Comments from the Chief of the Branch Office of Euroasia Bank in Petropavrovsk

1) Bank Guarantee Program

Figure below shows the scheme and mechanism of Bank Guarantee Program. Commercial Banks finally accepted Bank Guarantee Program as compromise to the negative response to the Governments request for easing loan conditions. Although the private sector desired lowering the loan rate and extending the repayment term including the grace period, the Commercial Banks did not accept these proposals. The Bank Guarantee Program was therefore considered to be acceptable by Commercial Banks with the compromise that funding would not be approved unless the proposed collateral was sufficient. However, if DAMU guarantees for the balance of the cost up to the full value of credit sought the Commercial Banks would agree to provide funding for the private sector even in cases with insufficent collateral. Therefore, the Bank Guarantee Program will in addition provide funding to private sector applicants for bank loan as a form of bailout where required[Paul1].



Source: Ministry of Economic and Budget Planning of Kazakhstan

Figure 3-2 Bank Guarantee Program – Mechanism [Business Road Map 2020]

The fee for the bank guarantee is to be paid to the relevant Commercial Bank from the Treasury Fund through DAMU in order to allow any deficit to be made up. Commercial Banks are then able to provide the necessary funding with the conpensation from the Treasury Fund. In adopting this approach the Commercial Banks then do not loose anything in the process of providing the funding. The guarantee and funding mechanism are described in Figure.

< Column> Example of the new business plan utilizing "Business Road Map 2020"

Through interviews with the private industry, the new business plan was identified with the support under the scheme of the "Business Road Map for 2020". The interviews were carried with the Commercial Bank which has its Head Office in Astana. The Bank was established in former Soviet Union era in order to promote agriculture business, i.e. growing and trading wheat. Therefore the bank has the business priority to support agri business.

The following is the example which utilizes "Business Road Map 2020".

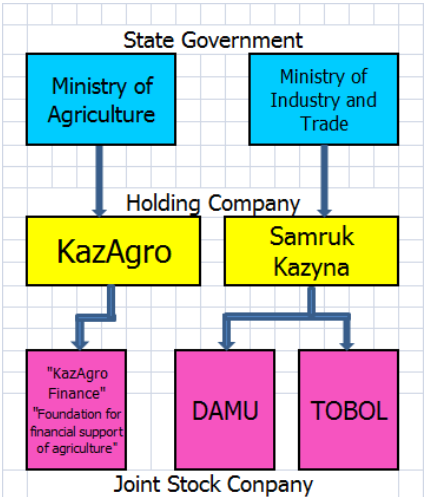
The Bank is promoting the slaughter industry as the new business with existing livestock farmer. Utilizing "Business Road Map 2020", the Bank will introduce the attractive funding from the Central Government. On the border area of Russia and Kazakhstan's north area there is an extensive pasturage, which can be use freely. The livestock farmers are planning to cooperate with the existing two corporations aming a new slaughter business. They will install a refrigeration facility and the inspection facility. Breeding livestock and slaughtering them, they will produce the frozen meat products and market them. They will focus on cattle breeding as the main product, but also breeding horses and sheep. Those meat products will be exported to Omsk in Russia. Omsk has the population of 1,350,000 people where most of that population are Muslim. The diet and food preferences are similar to Kazakhstan's, which will therefore provide the opportunity to supply the majority of the meat products required for consumption. In addition, the Russian market price of the meat products are high, therefore, Bank forecasts indicated the opportunity for generating more profit. The enforcement of the free trade zone will be critical to the success of this initiative.

As Russia is the main market, the standard of food quality will need to meet Russian standards. Therefore it is planned to import the machinery and equipment from Russia. The Russian manufacturer of the equipment provides the necessary technical information for the installation, commissioning and operation of the equipment which the entrepreneur and the bank can utilize for their business planning including the business appraisal done by the bank. Where the business appraisal proves the project proposal to be economical and financially viabile, they will apply to the "Business Road Map 2020" fund for approval of reasonable credit. The entrepreneur intends to benefit from the favorable allocation of funding from the Central Government. The "Business Road Map 2020" is funding program to promote viable export business which is fully applicable in respect to the proposed meat production and supply project.

3.2.2 Public Financial Assistance by the Government of Khazakhstan

There are three categories among the public financial support system in Kazakhstan. The support systems are provided both by the Central Government and the Local Government. The state corporations are incorporated by the investment from the Central Government and also provide financial support as well.

The support of the Ministry of Agriculture is based on a subsidy system and the support of North Kazakhstan is a financing program. The government corporations, i.e. Foundation of Financial Support for Agriculture and KazAgro Finance are incorporated by KazAgro Holding under the Ministry of Agriculture. These two corporations provide micro-credit[7], lease and financing services. There is a holding company which is called Samruk Kazyna under the Ministry of Industry and Trade. DAMU as the provider with bank loan services micro-credit, and TOBOL[8] as the investment fund have been established by Samruk Kazyna. This chapter introduces the activities of DAMU and TOBOL as the public financial organizations available to support entreprenouers of small and medium sized firms. Regarding the financial support, i.e. subisidies and loans, provided by the Ministry of Agriculture, government corporations under the Ministry of Agriculture and the details of DAMO programs are reviewed in Section / Chapter 4.5 View of Funding.



Source: The JICA Study Team (based on the interview with North Kazakhstan, as of December 2009)

Figure 3-3 Financial Support Organizations
under the Ministry of Agriculture and Industry and Trade[9]

(1) DAMU (in full then use the acronym in the body of the text)(DAMU Entrepreneurship Development Fund)

On 26th of April 1997, DAMU was established as the financial organization under the Samruk Kazyna Holding incorporated by the Ministry of Trade and Industry. DAMU provides financial assistance to the entrepreneurs (along) in accordance with the mechanisms provided in the governmental policy. DAMU's assistance programs have been expanded up to the 4th

[7] Although the financing for small entrepreneurs is sometimes called Micro-Finance, this report defines the name as Micro-Credit.
[8] The English name is Joint Stock Company "Social Entrepreneur Corporation (SEC)".
[9] Through the restructuring of the governmental organizations, the Ministry of Trade and Industry was reformed as the Ministry of Industry and New Technology on 12th of March 2010

Tranche[10] as of April 2010. The 4th Tranche was implemented and financed in December 2009 for three selected companies amongst the dairy and meat processors. The annual interest rate is 8%, which is half of the Commercial Banks interest rate and less than the previous level of 12 % prepared by DAMU.

At first, financing was provided directly to customers from DAMU. Since 2008, Commercial Banks are involved between DAMU and end users, i.e. to implement the two step loans via private banks. The reason for collaboration with Commercial Banks was to utilize the branch office network of the banks for effective banking services. However, it should not be forgotten that there can be negative aspects with the operation. The rigid and severe evaluation on the asset value for collateral is applied by the Commercial Banks. For example, evaluation of land and housing values within 60 km from the centre of Petropavlovsk is indicate to be highest. Outside the centre of Petropavlovsk, where the ordinary sectors (people / entrepreneurs) own property and live, the evaluation on such properties is less. Therefore, the allocation for loan amounts is very limited in the rural areas due to the lower assessed levels of collateral.

As referenced above DAMU as the financial institution of the government fund provides soft loan comprehensively to assist and promote the business of entrepreneurs where they are directly affected and disadvantage by their lower assessed collateral levels. As a first step DAMU tried to lower the loan rate level down to 8% through the introduction of subsidised interest rate. Secondly DAMU promoted the Bank Guarantee Program to support and enable entrepreneurs, who do not have sufficient property as collateral for the loan from commercial banks to establish their initiatives. DAMO is prepared to guarantee the deficit of the full value of collateral supplied to the Commercial Banks from borrowers. The Soft Loan and Bank Guarantee Program are two of the advantages provided by " Business Road Map 2020".

The Director, as the Regional Representative of DAMU, in PetroPvrovsk every spring season joins in as a member of the assessment mission of the Agriculture Department of the Local Government. Yearly during late March through to early April, the mission is dispatched to each Regional Administrative Unit to provide assistance and guidance in financial matters. Annually DAMU arranges several seminars for entrepreneurs. For example, from November through to December in 2009, a seminar was conducted to provide the basics for successful entrepreneurship. The introductory course was arranged including a number of case studies, which provided useful information with emphasis on the practical application and purposes. Participants of a seminar were high school students, university students, adults including jobless and also included the established entrepreneurs. A follow-up and second seminar is planned for 2010 where this will offer the opportunity for a more advanced approach addressing the needs for those who are operating business with the focus on business administration, corporate accounting and etc. As the third stage, it is planned to provide consultation services which will free of charge and open to entrepreneurs where comprehensive business objectives have been set, including the assessment of existing infrastructure.

DAMU carries out monitoring for those funded through DAMU in order to assess if the end users were satisfied and the objective met or not. The public committee[11] consists of representatives from several departments of the provincial government whose role is to report to DAMU on their funded project activities. The public committee is regularly required to confirm if the financial support provided by DAMU is being utilised according to the goverment policy. The details of the activities of DAMU are reviewed in Chapter / Section 4.5.4 "The Financial Support System by the Governmental Corporations".

(2) TOBOL (in full then use the acronym in the body of the text) (Joint-stock company
" Social- Entrepreneur Corporation")

[10] Program for Manufacturers (The 4th Tranche)
[11] Members appointed by the Governor of North Kazakstan

As well as DAMU, TOBOL is a governmental corporation established in 2007 as the subsidiary of Samruk Kazyna Holding as the holding company incorporated by the Ministry of Industry and Trade. The financial support by TOBOL is different from those of KazAgro Group and DAMU. In April 2010, however, the equity of TOBOL was transferred to the Provincial Government of North Kazakhstan. TOBOL does not deal with financing or lease service, but invests at maximum 49% of the capital share to industries who need financial support. After the investment, if the business is operated successfully as per the management guidelines, TOBOL will sell back the invested equity[12] to the industry in order to promote the independence. There is no limitation on the level of funding provided for the investment from TOBOL, but 5 Million~100 Million TENGE is the general norm.

What we should pay attention to are the activities of TOBOL where the business target of TOBOL is concentrated on the activity of the company to develop and promote the industry in North Kazakhstan. As opposed to in Astana or Almaty where the basic commercial and industrial activities are already established to a certain degree. The financial support is therefore to be limited to only North Kazakhstan and Costanay. In Costanay [Paul2] specifically the mineral resources are rich and there is significant financial support being paid to the project on a comparatively large scale. On the other hand, in Northern Kazakhstan, TOBOL focuses on supporting agricultural businesses. The application for financial support needs to be supported by a business plan reviewing the feasibility of the business proposed. In order to assess the feasibility the internal rate of return (IRR) need to be calculated and present a number of sensitivity scenarios. As the feasibility / simulation study is usually complicated, most of the employees do not have the capacity to do this by themselves. Usually it is necessary to hire consultants to proceed with the feasibility study with substantial professional fees in the order of 5,000US$ being paid to the expert as the remuneration.

The business funds of TOBOL, i.e. the investment fund for the industries, are currently financed out of the state budget. After its establishment / foundation, TOBOL commissioned government missions to advanced countries including Japan seeking funding support that would contribute to the available investment portfolio of TOBOL. It is acknowledged and supported that TOBOL seeks the investment and contribution of funds from developed countries or by outsourcing. The aim is to also utilize the dividend paid from the TOBOL's investments as an investment to their development fund as part of business as usual. As for the investment business for North Kazakhstan, 10 investments were executed in 2008. This is equivalent to 20% of the total number of applications.

As described earlier, the shareholder[Paul3] of TOBOL is now the Local Government of Kazakhstan and responsible for the administration, the following restructuring plan has been established for implementation.

The main funding source is now the Local Government. However, the Central Government also may provide funding depending on the project scheme. Joint investment is the main financial activity by TOBOL. The following are the guidelines to be adopted for the new scheme to be implemented by TOBOL:

- The project area is limited to within Northern Kazakhstan;
- The focus industries are construction, agriculture, industries related to agriculture and food processing; and
- The Customs Union of the three (3) countries[Paul4] has been approved in January 2010. The practical implementation is expected to commence from the second half of 2010.

[12] In other words, the objective industry buys back the invested equity by TOBOL in order to get back the independent administration. For buying back, payment by installments is allowed with the interest charge by the length of the installments, which is equal to borrow and loan transactions.

Putting the priority on export, promotion of exporting business will be beneficial and acknowledge the financial support provided by the government.

After the restructuring of the organization[Paul5], the procedure of application and etc. will remain the same, where the main fundamental of the reform will be to simplify the funding mechanism.

TOBOL had pursued larger scale projects in the past, i.e. 5,000,000-100,000,000Tenge. Accordingly end users were big and establishment players for TOBOL fund. After the implementation of the restructuring, TOBOL will focus on smaller scale projects such as small and medium entrepreneurs including individual farmers. In addition to the joint venture, the following scheme will be developed:

(i) Micro credit is to be implemented where projects up to a maximum 5,000,000 Tenge will be considered for funding. (The previous business was more than 5,000,000 Tenge of joint venture funding)

a) To apply a clear statement presenting a business plan will be required. Upon selection, funding will delivered[Paul6].
b) No specific rule for levels of collateral. Subject to the project, collateral system will be arranged.
   ・Commercial banks admit only 30-50% value of the collateral.
   ・TOBOL as the governmental corporation accepts minimum 70 % of the value of collateral.
c) Repayment term: 1-2 years Interest rate : 10 %

(ii) The existing enterprises of joint venture with TOBOL are to be funded by individual project and carried out by investment in equipment or in case of funding equipment or leasing investments for individual business.
(iii) The existing enterprises of joint venture with TOBOL are to be guaranteed a bank loan through TOBOL.
(iv) According to “Business Road Map 2020”, TOBOL will apply the soft loan principle with the subsidized interest rate, which is available 50-80% reduction from the normal rate. The subsidy is from the Government Treasury. TOBOL does not receive any profit but actual expenses.

3.3 Techno Park Operations in North Kazakhstan Oblast

3.3.1 Function and Activity of Techno Park

Techno Park is an organization of a state government (Akimat), belongs to Department of Entrepreneurship and Industry and provides the various services for entrepreneurs. The office is on the fourth floor of the five stories old building which has the Saturday market in the reverse side of the market (bazaar) held on every Saturday, and the facility is utilized as a rental space for small and medium-sized enterprises, such as a furniture factory and a food processing factory. It is called "business incubator", and the purpose of this organization is indicated in the brochure of techno park as follows.

Table 3-5 Function of a Techno Park

Creation and promotion of innovative project - An innovative producer's creation support - Search for an investor to an innovative project - Creation and maintenance management of a specialist database - Information dissemination in innovative fields - Participation in a technology project in and outside the country - Technology transfer and maintenance of related databases - Offer educational seminars	**Service offer to a financial institution or investors** - Information dissemination to the entrepreneur by the Internet - Search and offer institutions required for implementation of projects - Formulation of business plans - Implementation of technical investigation - Conclusion-of-a-contract support of the joint enterprise of private enterprises, etc. - Support about standardization or certification
Consulting service offer - Offer of the service in fields, such as loan, financial affairs, management, and new business - Offer of the market research about technology in and outside the country	**Support for advertisement** - Information dissemination by the Internet - Issue informational magazine - A show, a meeting, systematization and participation of a seminar about innovative technology

Source: Prepared by JICA Study Team from a techno park brochure.

Although the person in charge of the techno park is performing hearing of the requests from local small and medium-sized enterprises in each district of a state, since it is only 18 existing staff's small-scale organization, it is hard to say that it is functioning enough for innovative development of small and medium-sized enterprises. In a difficult situation, the techno park can provide some limited services such as contracting the examination and test for the new product development of the processed food in the small and medium-sized enterprises, cooperated with the research government institute and the university. The charge of an examination and analysis is 25,000 KZT by Techno park. In National Center for Expertise and Standardization (NATSEKS) of JSC which contracts same examination and analysis. Although it becomes 50,000 KZT and a double charge, this is a charge reflecting real cost, and the techno park has charged at half the price because the state government pays its share.

In addition, market research has also been performed with the analysis of competitiveness in development of a new product for small scale companies, it is indispensable to formulation of a business plan.

In order to train the specialist of market research or business plan, the specialists from an international organization like USAID (US Agency for International Development) have been accepted, and staff-oriented training has carried out in Techno Park. The staff who had training is awarded USAID to Diploma according to results.

3.3.2 The Framework of Industrial Park

The Framework for Industrial Park has been introduced in "Business Road Map 2020"[13], which is the scheme organized by the central government and differs from Techno Park already existing and operating in Petropavlovsk. The objective of the framework is to develop new technology and to promote industries for small and medium entrepreneurs.

In 2006, the Central Government commenced the project to develop an Industrial Park in Petropavlovsk, which was originally planned to be established in 2008. It has been, however, suspended by the global economic crisis. Recently the budget has been reallocated and it is expected to be implemented in 2010 based upon "Business Road Map 2020".

Industrial parks have already been established in Karaganda, Almaty (Park of Innovative Technologies in Alatau) and Uralsk. An additional four projects are planned where one of them is to be implemented in Petropavlovsk in the near future. Industrial parks in Astana, Ust-Kamenogorsk and Almatyare will also be implementated as well as that planned for Petropavlovsk. The Industrial Park is incorporated by Samruk-Kazyna (Fund of Welfare of Kazakhstan) under the direct administration of the President.

Samruk-Kazyna (Fund of Welfare of Kazakhstan) is a shareholder. JSC Center of Innovations and Technological Transfer is the main investor, but besides there are other shareholders such as Ministry of Innovative Development and New Technology, Akimat, North Kazakhstan State University, North Kazakhstan Agricultural Scientific-Research Institute and North Kazakhstan State Laboratories.

The target industries are the following:

(i) Car Manufacture;
(ii) Agri Industry (agriculture, processing of the agri products, testing and research); and
(iii) Building and Construction.

For the promotion and development of the industries indicated above, there is a proposal to invite and build satellite offices in the related sectors through including the shareholders and investors, who are strongly interested in and prepared to contribute to the financial and technical support to promote entrepreneurship. In order to promote and develop the entrepreneurship, the scheme is organized to enable the effective administration of the necessary functions, which are prepared as the useful means for achieving the goals of the industrial park.

Required function of the industrial park is the promotion and support for small and medium entrepreneurship and business administration. The planned facility includes the comprehensive business support for marketing research and business planning. Training courses for the permanent staff of the industries in the park are to be prepared in order to train staff to a level such that they are able to complete by themselves fundamental daily work activities, i.e. marketing research and business planning.

The planned location of the industrial park is in the industrial area in the North of Petropavrovsk, where the "Plant of Heavy Machinery (PZTM)" is located. The facility will comprise of three buildings; one for administration, one for machinery, and one for research and development, all yet to be constructed. There are four divisions in machinery section, i.e. plant manufacturing, agriculture and food processing and building construction. There are three divisions in research and development section, i.e.plant manufacturing, agriculture and food processing and building construction

More generally and because there are several overlapping functions within each of three facilities it is proposed that the following multi functional section is developed. Financial

[13] Refer to Chapter / Sector 3.1.2 - Business Road Map 2020

Organization (selected commercial banks among 15 banks in Petropavrovsk), Business Master Co. Ltd. and Chamber of commerce are the potential organizations as consulting firms. DAMU is also one of the potential financial institutions from the government sector. TOBOL decided to give up participation because of implementing the restructuring scheme. All those decisions are on a volunteer basis to participate for promotion of entrepreneurship in the industrial park. The positive reaction from the related each organization are expected.

According to the management[14] of Techno Park, if the framework of Industrial Park is implemented and completed, there are three options to be considered as the future settlement:

(i) Joint activity with Industrial Park. Main function is to support entrepreneurs as Incubator. The current functions of Techno Park, i.e. marketing research and development of new technology, will be taken over by new Industry Park.
(ii) Techno Park is to belong to some organization in order to conduct only the role of Incubator.
(iii) The existing Techno Park will disappear.

Table 3-6 Positioning of Techno Park, Regional Food Processing Technology Center, and Industrial Park

Organization Name	The present function	The function after project implementation	Japan (reference) *
Techno Park	Under Department of Entrepreneurship and Industry, NKO, providing incubation services, so-called incubation center	One stop center, coordination body, and activities base for regional food processing technology center	Tokachi regional food processing technology center (the food industry promotion which utilized local resources, highly advanced support of processing technology, cooperation with public institutes, universities, and private sector)
Regional food processing technology center	Nothing [It is proposed the installation in this report.]	Comprehensive support to small and medium food companies to utilized the resource of external organizations, (support to personnel training, technical know-how, new technology and quality improvement, marketing, packing technology, etc.)	
Industrial Park	Under central government. Existing industrial parks in Karaganda, Uralsk, Almaty. It is due to install by the business road map 2020 in Petropavlovsk. The advanced technical development and industrial development of SMEs are the main purposes.	Regional industry promotion support, not only food processing, but also agriculture, machinery, construction. (technology, marketing, information, the human resource development field)	Tokachi Industrial promotion center (Base of core manufacturing support in the region)

* Refer to the following page.
Source: Prepared by JICA Study Team

3.3.3 Similar Function of Techno Park for Supporting Small and Medium Food Processing Industry in Japan

[14] Deputy Director

There are many small and medium-sized enterprises among Japanese food business like Kazakhstan. There are some companies without sufficient function in the area of quality control and product development like a major company. However, regardless of the size of food business, all food companies have to consider quality improvement and product development to meet market requirements. The regional food processing technology center of the area contributes to corporate activity promotion and human resource development of the small and medium food business of them. The function of Techno Park and a similar food technology center are introduced to below as an organization which promotes regional small and medium enterprises.

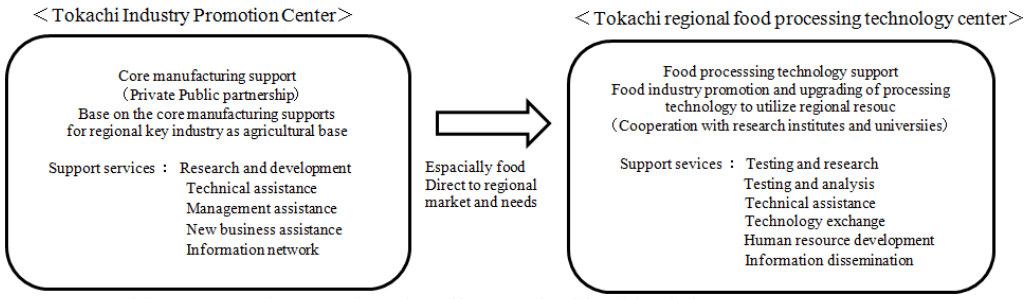
- Japanese regional small and medium enterprises promotion organizations

In Japan, in order to promote small and medium food processing industry of each prefecture, a regional food processing center is located. In Hokkaido, Tokachi area is prosperous in livestock production like North Kazakhstan Oblast, and a regional food processing technology center is located there to support the dairy and meat processing industry.

The Tokachi area promotion organization (an abbreviated name, "Tokachi Zaidan") was established in 1993 for the purpose of contributing to the promotion of local industry and the formation of a vital local community which used agriculture as the core, which concentrated industry, academia and government's wisdom and power in the Tokachi area from the gaining support of Hokkaido.

In order to support promotion of the food industry which utilized the abundant resources of the Tokachi area, and the upgrading of processing technology, the Tokachi regional food processing technology center was founded in April of 1994, and above-mentioned Tokachi Zaidan is a administrator. The center is providing services on test and research, inspection analysis, technical assistance to food processing companies corresponding to the needs of the area , cooperation with Hokkaido prefectural food-processing research center (in Ebetsu city), a related research institutions, and some universities, etc.

On the other hand, Tokachi Industrial Promotion Center was installed as a base which supports local key industries which used as the base the agriculture which is a key industry of Tokachi area, such as a machine, metal, and log processing, and core manufacturing supports in new product development or research. Tokachi Industrial promotion Center is performing regional improvement, and broad regional economy promotion support enterprises, such as regional vitalization, product promotion, and industrial cooperation, the Tokachi regional food processing technology center is undertaking food-processing consultation, technical guidance, inspection analysis, and opening of equipment apparatus.



Source: Prepared by JICA Study Team from http://www.tokachi-zaidan.jp/.

Figure 3-4 The function of Tokachi Industrial promotion Center and the Tokachi regional food processing technology center

- The function of the Tokachi regional food processing technology center

The main functions and the purposes of a regional food processing technology center, and the latest activities are shown.

Table 3-7 The purpose and latest activities of Tokachi regional food processing technology center

Function	Purpose	The latest activities
Test and research	Test and research about the processed food development which uses the agriculture, livestock and marine product as regional raw materials in order to attain the upgrading of food processing technology, or improvement of production technology	Development of goods with high added value using the functional characteristic of raw material, expansion of a shelf-life and development of normal temperature distribution food, product development to which consumers' attractiveness, market research in a exhibition, etc.
Inspection analysis	Test analysis, and product development and manufacturing technique improvement support by the request from a company	Commissioned examinations (microorganism test etc.) Commissioned analysis (food composition analysis etc.)
Technical assistance	Improvement in the technical capabilities of the food-processing manufacturing industry in the region	Instruction and advice to technical issues, such as mobile food processing technology center holding in cities, towns and villages, a new product, new technology development
Technology exchange	Research activities for examination of new technical development in the region	A frozen food study group, a natural cheese quality control study group, a product development study group, etc.
Human resource development	Quality improvement of the researcher of regional food processing companies	Marketing, microorganism test method, food safe seminar, a microorganism test practical skill short course, a trainee's acceptance
Information dissemination	Introduction of the technical know-how and technical information to the spread to food business.	Public presentation and operation of homepage, and an exhibition panel and use, etc.
Open facilities	Improvement in the quality control of food, promotion of new product development, etc.	Rental machine (a test measurement inspection machine, a processing machine)
Others	Lecturer dispatch of a center researcher, industrial property application, commissioned projects	The announcement of the details of lecturer dispatch / research to a school etc., patent joint application, business trust of government others, etc.

Source: The Tokachi regional food processing technology center. Business reporting in the 2008 fiscal year, etc.

- Revenue and expenditure of the Tokachi regional food processing technology center

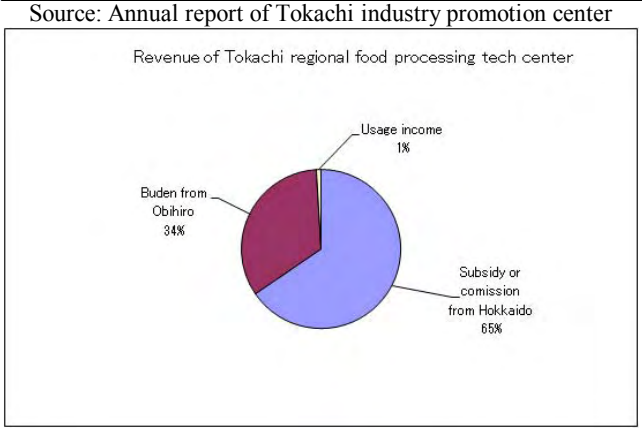
The special account and designated supervision of the revenue and expenditure budgets in 2009 fiscal year in the Tokachi regional food processing technology center are shown below. There are main revenue about 65% from Hokkaido and 34% from Obihiro, such as a subsidy and a charge of commission. The expenditure consists of 54% in personnel expenses, 29% in operating cost, and 5% in several project costs.

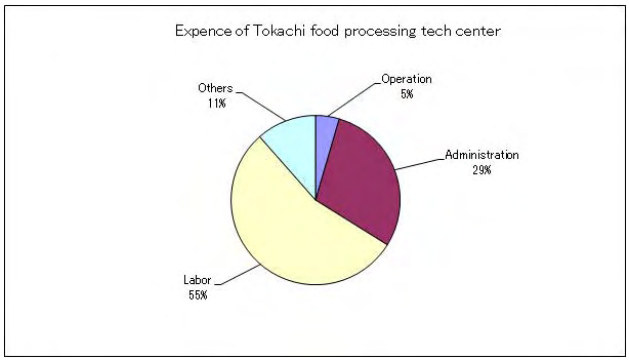
In the budget, the designated supervision system is a Private-Public-Partnership (PPP) which entrusts the operation and management to private sector with the subsidy of Hokkaido and usage fees of equipment etc., and the system will be good reference for the management of Techno park.

Table 3-8 Revenue and expenditure of the Tokachi regional food-processing-technology center

<Revenue>				
Special account		Designated supervision		Total
Subsidised income from Hokkaido	27,355			27,355
		Designated supervision	29,178	29,178
Comission income from Hokkaido	1,572	income from Hokkaido		1,572
Burden income from Obihiro city	29,804			29,804
		Usage income	855	855
Income total	58,731	Income total	30,033	88,764
<Expenditure>				
1. Operating cost				4,025
Test and analysis	230			
Test and research	2,731			
Technical assistance	318			
Technology exchange	226			
Information dissemination	119			
Human development	401			
2. Administration cost		1. Administration cost		26,026
Office management expense	1,776	Facility management cost	14,130	
		Maintenance cost	8,796	
		Office management cost	890	
Labor cost	42,715	Labor cost	5,783	48,498
		2. Corporate management c	434	
Additional cost for adm. Asset	10,215			10,215
Outgo total	58,731		30,033	88,764

Source: Annual report of Tokachi industry promotion center





Source: Prepared by JICA Study team from Annual report of Tokachi industry promotion center

4. The current situation and issues for the region moving towards Food production cluster promotion

4.1 Structural diagram of food processing cluster promotion

The purpose of this study is while forming food production clusters with dairy products and processed meat products at its core in the state of North Kazakhstan strengthen competitiveness of small and medium scale businesses in the region. An industrial cluster policy is collaboration between "Industry", "Government" and "Academia", making effective use of the regions resources including raw materials, human resources, capital and technology and creating new value added products and services.

As the diagram below indicates, at the core is a business group, more specifically, "Industry", "Government" and "Academia" which provides support in the form of finance, cluster policy and transference of technology etc. In relation to the cluster for the food processing sector, a number of private sector businesses from provision of raw materials to processing and distribution cooperate and as a result the provision of products and services which have a regional identity. As the theme for this study is the cluster has dairy products and the meat processing industry at its core, the livestock industry which is responsible for the supply of raw materials and the food distribution companies along with the processors are central to the cluster.

Consequently, in this chapter, the investigation of the food processing cluster promotion in the state of North Kazakhstan, together with the organization of the current situation and issues relating to the livestock industry, food processing industry and the distribution industry, we will report on the trend of financial support, cluster policy, transfer of technology etc provided by "Government" and "Academia".

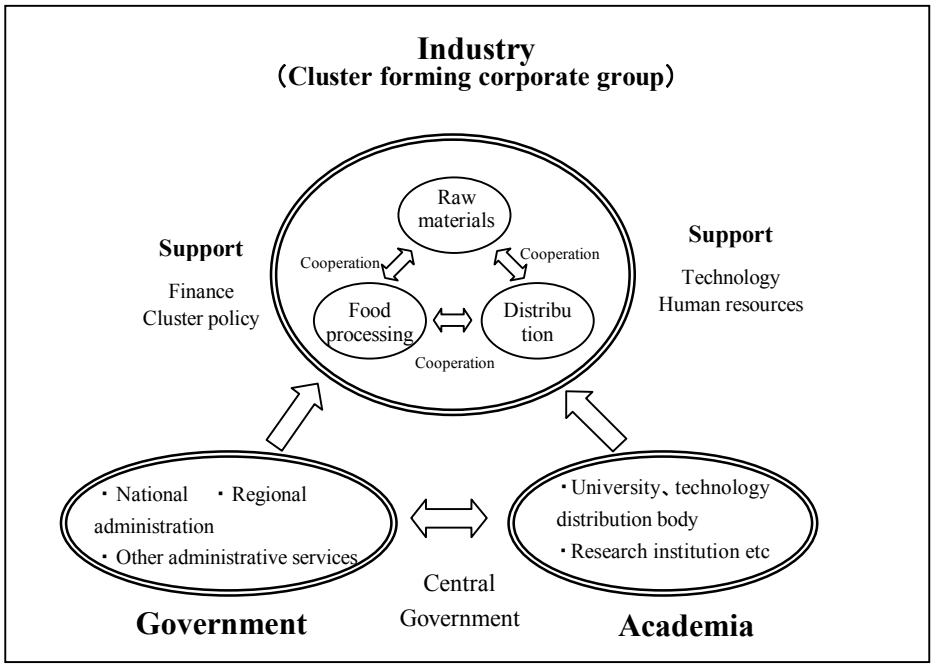


Figure 4-1 Conceptual Diagram of Food Processing Cluster Promotion

4.2 Raw materials （Livestock industry）

About raw materials which are one of the most important factors concerning food processing industry is reported in this article.

Initially, explain the situation of feed supply which is most influence to meat and raw milk qualities, eventually, explain the condition of animal breeding and slaughtering system. Finally, explained about animal breeding, reproduction and animal diagnosis system which are contributing role of administration in agriculture sector.

4.2.1 Situation of feed production

(1) Forage production

Kazakhstan is a country which is proud of the 6th in the world about the area of wild grass and cultivated land, which is 186 million ha. This is equivalent to 70% of the Kazakhstan country area. Furthermore, the area of North Kazakhstan state is about 8.4 million ha.[15] It is equivalent to about ¼ of the total area of Japan, which is 37.78 million ha.The grain production of North Kazakhstan state is the most productivity in the country.

Table 4-1 Transition of grain production area in North Kazakhstan state (2005 - 2007)

(1000 ha)

Year	The total sowing area	Spring grain	Fallow ground	Grain and legumes	Wheat			Barley	Oat	Mixed grains	Winter rye	Legume cereals	Buckwheat	Corn
					Gross area	Winter	Common wheat.							
2005	3540.3	3130.7	799.1	3135.6	2756.0	0.4	51.6	315.3	29.8	25.64	0.3	4.7	2.9	0.5
2006	3626.6	-	788.0	3194.8	2751.0	1.5	70.2	384.6	28.6	21.18	1	5.3	2.7	0
2007	3747.2	-	768.8	3335.4	2854.3	0	56.5	411.8	32.9	23.1	2	7.4	2.1	1.7

Souce: North Kazakhstan state agricultural office

Table 4-2 Transition of grain production area in Kazakhstan (2005 - 2007)

（1000 ha）

Year	The total sowing area	Spring grain	Fallow ground	Grain and legumes	Wheat			Barley	Oat	Mixed grains	Winter rye	Legume cereals	Buckwheat	Corn
					Gross area	Winter	Common wheat.							
2005	**13781.4**	-	-	-	-	-	11198.4	1527.5	160.0	-	-	-	43.7	432.1
2006	**16511.5**	-	-	-	-	-	13460.5	1952.9	183.3	-	-	-	58.9	413.6
2007	**20137.8**	-	-	-	-	-	16466.9	2441.2	229.6	-	-	-	81.4	421.2

Source: Kazakhstan statics committee

[15] World Bank Technical Paper, Rangelands in Transition The Resource, the Users and Sustainable Use, and North Kazakhstan state Livestock Industry Bureau data

North Kazakhstan state produced a lot of grains which are large amount of grains consumed during Soviet Union ages. Therefore, it was called as "Grain storage of Soviet Union" The above-mentioned tables are the amount of cereal production of North Kazakhstan state, and the quantity of production of the grain produced in all Kazakhstan. When compare the both cultivation gross areas, north Kazakhstan state will grow the about 30% grain of all the Kazakhstan.

The livestock industry of North Kazakhstan state is supported by the products from this vast wild grass place and cultivated land. The primary survey was started the second half in October, and was time when cattle were notably recognized the fat stored at the pasturage term was digested for all the reflection livestock. Nevertheless, the native cow in the cattle shed was very fat, and had held the unexpected impression. This was the result of the huge resources of feed of here, and was made to realize potential with bigger livestock of here than anything.

Feeding management is carried out and many ruminants animals are kept in the producer's barn in autumn and winter period (from October to March) and kept on the pasture during spring and summer period (from April to September).[16] Although an improved variety grass was also seen in the feed used at the time of grazing, the most is the wild grass.

<Colum> Wild grass

Although a lot of grain is produced from the cultivated land of North Kazakhstan state, there are many kinds of wild grass with high feed value as a source of forage feed for ruminant animals, for example, mat glass, timothy, Ettrick recognized as forage grass and are utilized widely in the world. According to the interview, those grasses are sowed during Soviet Union age and automatically spread throughout the country. Indicated below are the major species which are presently used as forage.[17]

Stipa Lessingiana Trin.et Rupr (mat-grass)

(Appearance) It is perennial grass about 30 to 50 cm height. Many branches were attached and hard hair is grown on the leaf. The long ear is presenting and is about 10 to 20 cm.

(Growth zone) This is a wild grass widely seen in the step area, but seldom seen in the half-desert area. It is adapted for dark-brown soil, and grows wildly in the mountain slope at the step of North Kazakhstan state. It is a typical grass for grazing purpose from April to May. Although it is the suitable feed for horse, sheep and cow also like to eat. It is not good for camel. It is utilized also as hay making purpose.

(Nutrient value) The digestive protein per 100kg of dry matter is 7.8kg. Phosphorus 0.16%. Crude protein 10.0%. Crude fat 3.0%. Crude fiber 32.4%. Truckbohydrate 48.5%. Ash 6.1%.Calcium 0.34%.

Festuca valesiaca Grand (fescue)

(Appearance) It is standing type perennial grass about 30 to 60 cm height with many leaves of dark green colors. The ear is attached with upright beard about 6 to 8 cm. The seed is 8 to 12 mm length and in golden color

(Growth zone) It is grows as wild grass in a step zone widely. The most growing period is from May to June, and has the tendency to decrease when July comes. It is preferred by all livestock, and is widely used also for hay making as feed for fattening.

(Nutrient value) Phosphorus 0.15%. Crude protein 12.7%. Crude fat 3.3%. Crude fiber 29.7%. Truckbohydrate 45.6%. Ash 8.7%. Calcium 0.36%.

Phleum phleoides (L) Karst, (timothy grass)

(Appearance) It is about 80cm height of creeping type perennial grass. Many leaves about 5mm width are attached. The ear is cylindrical shape. The seed is about 1 to 1.2 mm in length with long elliptical shape.

[16] About this time, there are some differences by the area.
[17] КОРМОВЬЕ РАСТЕН ия КАзАХСТНА

(Growth zone) It grows naturally in step zone and tree steppe zone widely. The most growing period is April to July. It is eaten by all livestock including camels. Widely used for making hay in middle of June.
(Nutrient value) The digestive protein per 100kg of dry matter is 7.4kg. Crude protein 9.2%. Crude fat 2.9%. Crude fiber 25.3%. Truckbohydrate 51.4%. Ash 3.8%.

Stipa capillata L. (feather grass)
(Appearance) It is a standing type of perennial grass of about 50 to 80 cm. Many thin smooth branches are attached. Bristles grow on the leaf. The ear is about 10 to 20 cm, in length.
(Growth zone) It grows naturally and widely in the loam and the sandy step zone as grazing grass and hay making purpose. It is utilized throughout the region. May is the most growing period. Although it is the most preferable food for horse, it is used also for fattening cow, sheep, etc. It is desirable to make hay in the period from spring to the beginning of summer. However, since beards are attached in the last stage of blooming, it requires cautions in feeding to the sheep or goat.
(Nutrient value) Phosphorus 0.15%. Crude protein 9.2%. Crude fat 2.9%. Crude fiber 25.3%. Truckbohydrate 51.4%. Ash 3.8%. The digestive protein per 100kg of dry matter is 5.2kg.

In addition, as many as 20 varieties are known and evaluated as feed in the production site.

(2) Utilization of by-product from grain harvest and wild grass.

<Hay> the most grains are harvested by large-size combines. In this case, since straws are left behind on the field, they are collected after harvest using the harvesters. Straws are conveyed to around the farmer's house or the barn by trailer, truck, cars, etc. Those are stocks without any covers. Since the area has little precipitation[18], there is no concern of quality deterioration.

If it becomes enterprises company size, the height of 5-6m, and the length of 50m hay is made. The roll bails and packing grass may be made using hay bailing machine. Since there is much fiber content and quality deterioration progress, wheat straw is not used as feed, but used as bedding materials in the shed. Mainly barley straws are used for feeding purpose. The wild grass also collected during summer time, and is conveyed to near the barn. In our quality check of wild grass hay, inside was in vivid green color and it was surmised that there was enough feed value.

<Haylage> The collecting grass for haylage making is same as that of hay making. It seems that there are more opportunities of utilizing haylage rather than silage due to moisture content of wild grass and by-product from grain harvesting. They are used at comparatively large size farms and are seldom used at small-scale farms (2-3 head of cattle). Trench type silos are mainly used.

<Silage> Similar to the haylage, it is used at comparatively large size farms. They were trying to differentiate from haylage by the moisture content of raw material. The trench and pit type silos are mostly used. In some places concrete frame was made. Although there are small numbers, the whole crop of corn is used in silage by some farms.

(3) Formula feed

During survey, the company which is manufacturing formula feed exclusively could not be found. It seems that there are many cases in which formula feed is manufactured by the beef fattening companies and poultry farming companies themselves of larger than middle-scale.

[18] Mean annual rainfall of 375 mm

About raw materials, such as grain, they purchase from the grain production farms in the neighborhood, formula feed was manufactured using their own manufacturing plant and they use the product. About the small-scale dairy farmer, the grains lower than their sales standard is stored and fed as an auxiliary feed. Therefore, in this investigation, it was not able to check the bags of commercial formula feed. In a large sized company, formula feed was manufactured for the purpose of sales in addition to their own use. The materials are wheat and capacity of pulverization is 10 tons per hour. It is sold to the market centering on North Kazakhstan state area, and although premix is made in Russia, all other materials are obtained domestically. The products are packed in 25-50 kg bags and are used in the livestock industry. Although outline information was obtained by hearing, the check of the actual sample product could not be made. Under the present circumstances, since a large demand which necessitates keeping of stocks can not be expected, they only start manufacture after confirmation of the order received.

4.2.2 Livestock feeding management

(1) Outline

The general condition of the feeding management was investigated in the North Kazakhstan state. Properly speaking such investigation should be conducted in appropriate time to judge the situation throughout year, and thus views close to the actual condition could be acquired. But this investigation was conducted only in winter. Therefore, it naturally reflected the actual condition during winter; also the views obtained could not be helped but became centering on winter condition. Furthermore, the condition of mastery of specific technology, cognition and their utilization vary largely by each production site. [19]By the range of this investigation and the data of only the limited number of cases, it turned out that the grasp and analysis of whole North Kazakhstan state are found to be difficult.

Therefore, we would like to consider this report shall present a material to grasp the present condition and to analyze them by taking up each example in this report. The scale of each production site is mentioned in this report enabling to grasp the outline of the situation by integrating and analyzing each example.

In addition, the current numbers of the livestock are as shown in the table. However, accurate classification of beef cattle and dairy cattle in this country is difficult, and the cow being raised for future milking may also be included under the category of beef cattle.

Table 4-3 Transition of the number of livestock in North Kazakhstan state (2004 - 2008)

(0,000)

	2004	2005	2006	2007	2008	2008 (ratio % against 2007)
Beef cattle	324.8	332.0	338.5	344.5	351.6	102
Dairy cattle	163.6	166.0	170.0	171.5	174.1	102
The sheep and goat	181.9	196.7	220.6	234.0	247.6	105
Pig	204.2	204.4	224.1	240.9	247.6	103
Horse	74.0	77.0	80.0	83.7	88.8	106
Domestic fowls	2112.9	2218.6	2559.9	2604.0	2709.2	104

Source: The social economy index (2008) in North Kazakhstan Oblast

[19] The technology actually utilized for the old Soviet Union age is distributed with a national collapse, and the present condition is that a share in a production site is difficult.

Table 4-4 Transition of the number of livestock in North Kazakhstan state (2005 - 2009)

(0,000)

	2005	2006	2007	2008	2009	2009 (ratio%against2008)
Beef cattle	5203.9	5457.4	5660.4	5840.9	5991.6	102
Dairy cattle	2376.2	2442.6	2569.0	2605.6	2675.4	103
Sheep and goat	13409.1	14334.5	15350.3	16080.0	16770.4	104
Pig	1292.1	1281.9	1304.9	1352.7	1347.3	99
Horse	1120.4	1163.5	1235.6	1291.1	1370.5	106
Domestic fowls	25.6	26.2	28.2	29.5	30.1	102

Source: Kazakhstan statics committee

(2) Hog Raising Situation

The number of pig in North Kazakhstan state is as follows: 204,200 (2004), 204,400 (2005), 224,100 (2006), 240,900 (2007), and 247,600 (2008), It is increasing every year and the comparison ratio with the last fiscal year in the 2008 is 103% increase. The areas which show large increase are Akjar, Esil, Ualihanov, Tainsha, etc.[20]. Most pigs are bred at the individual hog farmer (82.7%).[21] There were no small-scale hog raising farms (about ten head) that bred only the pig. Most of them were raising cattle but combined the cattle for milk and for meat, sheep for meat, etc. Especially there were many cases in which fence for pig breeding (3 to 5 heads) was made inside the shed for dairy cows. At the other middle-scale farm (about 50 to 500 heads), there were many farms running both grain cultivation and hog raising farm. Although it was small in number, some large farms (thousand head) adopted the form of hog raising management almost equivalent to those of advanced nations.

1) The outline of middle and large scaled hog raising.

The species of bore was three species, landrace species, large-yorkshire species, and duroc species. The basic method of mating is three-way cross in which F1 of landrace species and Duroc species is made to mate with large-yorkshire species. The average birth rate is 9.5 baby pigs and weaning rate is 8-9 head. Inoculation of vitamin, iron, the Ore Esky disease vaccine, salmonella vaccine, etc. is completed to the baby pigs immediately after birth. Castration will be carried out at the age of the 20 day and it will be weaned at the age of 45 days and the weight of about 20 kg. The weaned baby pig is conveyed to first nursling house, and is fattened to the average weight of 60kg there. Then, they are conveyed to the finish pen and shipped at the weight of 100-120 kg, 8 month age approximately. The appearance of pigs in the finish of fattening was muscular and was especially remarkable of the back and ham back fat, average 3.3 cm. As they are cultivating grains almost all feed are self-supply. Composition of feed is wheat, barley, an oat. Large scaled management is utilizing corn.

2) Under the middle scaled raising.

On these scaled raisers using wheat, barley, an oat, legumes, and some additives sold on the market as feed. Grains for feed are made powdered using a pulverizing machine and boiled with a cauldron before they are fed. Fattening period is longer than that of large scaled raising, it is 9-10 month

[20]The social economy index (2008) in a North Kazakhstan state
[21] Same as the above

Several companies which manufacture ham sausage were inspected. During the interviews the following information was obtained "when purchasing carcass of pork, we must buy the carcass which took a long fattening period, and try to deal with the hog raisers who has let their pigs to graise as long period as possible. It is because instruction was given at the time of technical training in Germany. We were told such materials meat were desirable.

This much prolonged fattening, it was very inefficient from the point of the economical efficiency of hog raising business. When we visited the meat market in Petropavlovsk, there were the following talks from the meat sales persons concerned.

"There are two kinds of pork meat come into this market, one is produced in the large-scale farms and the other is the meat produced at the small-scale hog raising farms. With the view of the specialists, a clear difference is recognized among them. That is, although the pork from the large-scale farms does not have tightness in the whole, the pork from the small-scale one has tightness in the whole. Consumers are also well recognized, and it sells previously from the pork of small-scale farms."

There was a hog raiser who exactly corresponds to these statements. As regards the place and the period of feeding or grazing, there are some differences. But the technique of performing three-way cross mating, the Duroc species for enriching redness meat is made to mate with F1 of the landrace species which is excellent in breeding, and large-yorkshire species, and preparing the long-term fattening period of eight to nine months makes it bear a close resemblance to production of the Iberico pig of Spain. In our interview, some hog raisers explained that such prolonged fattening is not necessarily performed from a strategic viewpoint; they merely have a feel from experience that better meat is made with this method and it is automatically continued.

(3) Dairy

1) Outline

The number of breeding dairy cattle in North Kazakhstan state is as follows: 163,600 (2004), 166,000 (2005), 170,000 (2006), 171,500 (2007), 174,100 (2008), It is increasing every year and the comparison ratio with the previous fiscal year in the 2008 is 102%.increase The areas which increased most are such as Akjar, Timiryazev, and Shal akin, etc.[22]The most of the cow in Kazakhstan is the Red Kazakh species derived from the Simmental species originally inhabited in Europe, crossed with the local native species, and became present species. These species cattle is bred both for milk and meat production purpose. The species was used as working cattle once. However, these two to three years, the number of Holstein which has more rich in milk production compare to native caws is increasing.

The following table shows transition by year of the raw milk production per animal.
If it sees by the national average, an upward tendency will be seen although it is little-by-little.
However, it is desirable the improvement of dairy industry in kazafusutan since, the number of milk production which is 3,000kg or less can never be evaluated high production. (Reference: The amount of average milking per animal is 7,195 kg in Japan and the amount of average milking in the world 2,034kg "international agriculture-and-forestry fishery statistics" (Statistics and Information Department, the Ministry of Agriculture, Forestry, and Fisheries))

[22]The social economy index (2008) in a North Kazakhstan state

Table 4-5 Transition of the raw milk production per cow in Kazakhstan (2004～2008)

(kg)

	2004	2005	2006	2007	2008
Average of whole state	**2786**	**2804**	**2814**	**2832**	**2929**
Aiytau	2777	2774	2780	2785	2895
Akzhar	2810	2810	2886	2885	2908
Akkain	2632	2674	2690	2775	2819
Yessil	2790	2801	2794	2805	2922
Zhambyl	2810	2810	2869	2889	2975
M.Zhumabaev	2795	2816	2813	2830	2940
Kyzylzhar	2845	2867	2850	2870	2938
Mamlyut	2775	2806	2822	2845	3003
G.Musrepov	2809	2814	2852	2862	2962
Taiynsha	2736	2805	2852	2813	2905
Timiryazev	2810	2824	2796	2829	2870
Ualikhanov	2809	2808	2813	2829	2962
Shal Akyn	2810	2810	2829	2829	2974
Petropavlovsk city	**2810**	**2810**	**2829**	**2829**	**2908**

Source: Kazakhstan statics committee

2) The dairy farming using Holstein species.

What should be mentioned especially at this farm is that they had a strategy to introduce Holstein species not only the Red Kazakh species of a native cow in order to increase raw milk production because Holstein species have been the most effective for that purpose. They had already purchased 890 cows from Canada. An average price was 5,000 dollars per head, and about breeding management, the technicians from Canada visited the farm, and guided about Holstein breeding so that they can be appropriately adapted to local environment. The consideration paid to protect the cows from high humidity environment was noticed by many air conditioners facilities set to the barn. The type of milking barn was herringboned type, and 40 heads milking was possible. As for the number of milking times, in the case of up to 100days after-delivery was 2 times milking then after those 3 times. The annual quantity of milk production is 5,000kg per head. Some cows produced 7,000kg of milk. Dipping after milking was also done collect. Therefore, suffering from mastitis seemed very rare. About the case where mastitis symptoms happen, the raw milk from an infected animal is not shipped for seven days after medical treatment. The total number of bacteria were 300,000 pieces per cc. Breeding is 100% artificial insemination and is 2.5 times fertilization per animal.

About feeding, various devices were seen showing people's hope that the capability of the Holstein species is fully displayed. About the silage, it is the whole cropped silage which used corn. 2,000 ha of corn are grown and all-season feeding was possible. About the legumes, 260 ha of the alfalfa cultivation is carried out, and hay is made. 2 times mowing was possible. About haylage, it is a mixture of oat, wheat, barley, etc. The quality of haylage was very good. The amount of feeding of haylage is 20kg per animal. The grazing is tried as much as possible in the summer. Improved grass is not so much. Grazing on a wild grass is carried out. Since shortage of fat and protein is recognized only by wild grass, it is compensated by assorted formula feed. Now, wheat is planted in 36,000ha field and is scheduled to be utilized for feed production.

3) The large scaled dairy farming using native cattle.

Total number of breeding cattle is about 600 heads, mainly the Red Kazakh species. About 150 head were kept under the free stall system. The cow was very gentle and the ones which dislike

milking machine (made in Israel) were not seen at all. The number of times of an average delivery is about 3 to 4 times a year. The hay feeding was systemized and the nutrition situation of the milking cow was by no means bad. The situation of rumination was also good and the cows which finished milking were lying down relaxed. Although breast washing before milking was practiced, the pre-milking was not done. Milk production in summer time was 13 kg and in winter season about 6kg per day. We were told that milking related illness such as mastitis, are seldom recognized. As counter-measures whenever the symptoms of mastitis recognized, shipment of raw milk from the infected animal is stopped for seven days after medical treatment. After the end of milking, raw milk was immediately stored in the refrigerated storage tank of a raw milk processing room, and waits for arrival of milk collecting truck.

The selling price of raw milk was calculated under a standard value, 3.5% fat content. Basic prices were 44 tenges/1 kg. When milk fat content is higher than the standard value, a bonus is added accordingly. If it were 4.5% for instance, 1.0% is added and it becomes 44.44 tenges. Furthermore, since 11 tenges is provided as a subsidy from the state, it becomes a total of 55.44 tenges. 100ha cultivation of the Sudan grass was cultivated as cut and caries feed for summer season, and cutting is made twice. It was explained that 3,000 tons was made for haylage (barley straw) and hay (900 tons), silage (500 tons) were made to the storage feed for winter season. The quality was good. The problem is there is no organization which can do nutrition analysis of each feed. It was explained that as a result of this, they can not make proper feeding program. It was explanation that even the producers of the considerable scale have to judge the quality of grass by tactility (feeling), and there was no way using scientific methods. The present wheat price is 80 dollars/ton. The price of frozen semen is 1,000 tenges per doze, and as subsidy 800 tenges can be paid from the state.

4) The small scaled dairy farming using native cattle.

About 70% of raw milk production in the North Kazakhstan state is produced by small-scale farms like this example. The raw milk is collected by processing companies. Their milk collecting truck will come to every village when milking was completed in the morning (milking starts at about 6:00 a.m.).[23] There were 40 dairy farmers in this village. The average number of milking cow was 3-5 heads. Many farms have also the pigs and the hens in a cowshed. It seemed that cow bed was cleaned before milking. All the farms are milking by hand and milking is their wives' work. The amount of milking is 3 to 4kg per head. Evening milking is done around 18:00. Since raw milk in the evening is turned to home consumption, milk collection trucks will not come. Breast washing before milking was done with hot water in the bucket, and they were washing carefully with dishcloth. However, neither dishcloth nor hot water was changed. Although the pre-milking was performed, none of the farm has put the cloth for dustpans, etc. on the bucket for milking.

The Red Kazakh species is main species. The cow is very gentle and none of them kicks a bucket. The average number of times of delivery was about 4 to 5 times. The nutrition situation of the milking cow was by no means bad. Sufficient hay was given to feeding trough at every farm, and we felt that the cow was treated carefully. Water is given by buckets. Cow are kept in the grazing land of the neighborhood all summer, winter season is kept in the shed. Although formula feed was also fed, the actual feed given is the grain of off-standard for edible purpose sales which was stored for feed of winter season.

The main feed in winter is hay. They are divided roughly into two kinds by the mixed condition. (1) Is what was made by the wild grass called Casture (2) Is hay of barley straw Nutritive value of (1) is the higher. As for grain, the barley powder of off-standard is mainly

[23] The processing company which has concluded the small-scale raw milk production farm concerned and sales contract

used. About health checks, such as the vaccination of cow, two-round medical examination per year by the veterinary of the state is conducted.

5) The shipment of raw milk on the small scaled level.

Since almost all dairy farmers were not far from the collection point, they brought milk collection bucket themselves. However, it was not covered by lid in particular. There is a time lag of about 3 hours between the time when milk collecting truck visits first farmer at the farm, and the time it visits last farmer. According to explanation, the inspection about details, such as ingredient, the number of cells, made non-periodically (about once in a week). The milk collecting truck which finished milk collection from the villages conveys raw milk to the cooling tank currently built in the collection center. The all the basic equipment were fixed and the raw milk inspections for all milk collecting trucks are conducted there. The following replies were obtained to our question of: if inspection data of individual farmer cannot be ascertained it may be impossible to reflect the result of the fat content which serves as a standard price into their buying price. Besides how they question the responsibility of each farmer when trouble happens?

i) Although measurements of specific gravity is not conducted on the spot, false declaration of milk quantity after adding some water cannot happen from their experience. Actually there were no such cases in the past.
ii) According to the chapters of sales contract, it was mutually agreed if any disgraceful acts occur in the dealings, it will be the responsibility of whole village. This clause acts as mutual supervision and assist self-control. Therefore, there can be no injustice acts.
iii) The standard price of raw milk is calculated not based on data of each day but by the data of long period of time.
iv) Although it is not very often, the technicians of the processing company may inspect the raw milk which the producer shipped on that spot. When abnormalities are discovered by the inspection at this time, it becomes returned-goods.

The size of the small-scale farm is 2-3 dairy cows breeding, and the diversified management which is the combination of grain cultivation, hog rising, poultry farming, etc. is carried on by most of them. Furthermore, in quest of cash earnings, wife specializing in milking has a certain other occupation.

<Colum> An example of raw milk collection company

Some milk collection companies entrust the milk collection work to some other suitable sub-contractors. Suppose about 200kg of milk can be collected in a day, it can be entrusted. Presently company A has consignment agreements with 24 sub-contractors. We had an opportunity to visit one milk collector who operates the business with three staff members including president. Three years have past since they started business and they have contracts with three villages and 90 farmers. They can collect about 1.4 ton of milk in summer and 1.7 ton in winter. There was a milk collecting truck with a tank of 980 ton capacity. The milk collecting truck after finishing collection work goes to annex of milk center where it is washed and sterilized. The company A has six milk centers. So each dairy farmer can bring their milk to nearby center Almost of these farmers are located near to the milk center so they bring the milk in a bucket. Female staff member inspects the quality on the spot. Only the organoleptic test such as the quantity, appearance, smell and taste are conducted by scooping the milk. Payments for the sales of milk are done by milk collector directly to the dairy farmers. The price was about 22~26 tenges per kg

(4) Beef cattle fattening

The number of beef cattle in North Kazakhstan state is as follows: 324,800 (2004), 332,000 (2005), 338,500 (2006), 344,400 (2007), 451,600 (2008). It is increasing every year and the comparison ratio with the last fiscal year in the 2008 is increase of 102%. The areas which increased most are such as Akjar, Timiryazev, and Shal akin.[24]. The beef cattle in Kazakhstan are mostly Red Kazakh species, which is originated from the Simmental species of European beef cattle, and crossed with the local native species.

The interviewed farm was built by the present farm owner 1.5 years ago using the old facilities effectively. The number of employees is 12 persons. About 500 Red Kazakh species were fattened then. Four month old cattle were introduced from the affiliated company, and they were fattened to the age of eight months. Then they were shipped to an affiliated meat processing company. Hay was given basically and formula feed was given 5-6kg per head. A daily gain was 1kg. The formula feed is produced by themselves using wheat, oat, etc. which are produced at this farm or a contract farm. The rate of combination was 60% of oat, and about 40% of wheat.

(5) Poultry Farming

1) Outline

The number of domestic fowls in North Kazakhstan state is as follows: 2,112.900 (2004), 2,218.600 (2005), 2,559.900 (2006), 2,604.000 (2007), 2,709.200 (2008). It is increasing every year and the comparison ratio with the last fiscal year in the 2008 is increase of 104%. The areas which increased most are Akjar, G.Musirepov, Esil, Ualihanov, Tainsha, etc.[25]

2) Broiler production company

The interviewed companies introduced feeding system of Israel. 30,000 per one henhouse were raised and presently 180,000 birds are raised in total. 8-cm thick concrete floor was stretched for freeze protection in winter. Baby chicken shed is the window-less henhouse where the air conditioners were equipped, and the floor was covered with sufficient quantity of wood saw. Average weight will be 2.2 kg in 43 days when shipped. It seemed that the small size species were raised here, although in the case of Japan it is a white Plymouth Rock species which grows up to about 4kg. Since the yield is 75%, it will be about 1.5kg in the stage of prime meat. The number of birds in annual shipments was about 1 million birds. The destination is the wholesalers in the country. Processing apparatus were German made. Processing of 6,000 per one shift is possible with the number of workers 12.

3) Eggs production company

In the case of interviewed farm, the number of birds at the start of business was 8,000 are, it has expanded to 250,000 birds now, and the annual egg production per bird is 320 pieces. Baby chickens are imported from Russia and are 150 tenges per bird. The first eggs are laid at about the 16th week. Since it is a dual purpose breed for egg and meat, they are killed in about average 17 months. The species of hen are two species, Roman Brown from Russia, and the Load meat II. All the knowledge used regarding poultry farming was from Russia. This place

[24]Same as the above
[25]The social economy index (2008) in a North Kazakhstan state

was where poultry farming was practiced in the old Soviet Union age, and the persons who were in charge of machines then were among employees. The various experiences of those employees were utilized efficiently in this place.

The relations with Ministry of Agricultural Office are limited to only an exchange of the documents, such as submission of liquidation data, information related to credit, etc. The number of employees was 65 and 40 persons work in the direct production spot. The rest is engaged in marketing sector. The most of the maintenance work of machines is handled only by employees themselves. Eggs are sold to all over the country through distribution centers called whole sale point where the product is classified into four kinds by the difference of each 10g weight and packed by workers by hand.

The raw material of feed is locally purchased and fully automatic computer control blending was conducted. The materials were soybean, wheat, barley, sunflower, fish meal, meat and bone meal, etc... The feed blending was designed after conducting the ingredient inspection of materials in a feed inspecting room. Fish meal and meat and bone meal were imported materials from Russia. Design software was the Russian made. The cost of feed was about 200 dollars/ton.

4.2.3 Slaughtering facilities

(1) Establishment of slaughtering house

1) Outline

In this country, livestock slaughtering are done in the yard of the farm in many cases in addition to the slaughtering facilities officially approved, and an immediate improvement is desired about the place of slaughtering, when the hygiene improvement of meat is argued globally. Legal revision took place in 2008 and now slaughtering of large sized livestock can only be permitted in exclusive slaughtering facilities and demolition disposal plants. However, Slaughtering facilities in all area were due to be completed by April 2009 but they are now being constructed in many places. About 40% of the facilities built in old Soviet Union age are still usable. Therefore it is planned to build remaining 60% of the facilities.

Moreover, under the present circumstances, if the sign of the veterinary of the area can be obtained, it is possible to sell. But under a new law, the livestock killed as it is in the production site can not be sold, unless the code (blue stamp) was acquired, which means that the meat is in accordance with the meat production standard of the North Kazakhstan state. Although there is no qualification system under the present circumstances about the butcher in charge, by the system under new law, only the special member of the graduates of an engineering/technological school can engage in slaughter work.

2) Slaughtering and the meat processing company

All of the processing facilities were made in Germany. The German staff members concerned were involved in designing whole building and facility. They designed after carefully and appropriately calculating each processing operation in the scale rarely seen in Japan. Per day throughput capacity is 400 cows and 120 pigs, and in terms of weight of product, 30 tons of processing is possible. When they were asked about introduction of the foreign matter detection equipment, they seemed not interested much. In Japan, a hypodermic needle remained inside pig body, which was used in medical treatment, once became a big problem. And people took pains in developing detecting machines. However, person in charge there explained that they have never had such experience in his 15 years of career. It was presumed that in this region such incident never occurred because of fewer case of injection medical treatment at the

production site as compared with Japan. As for the situation of the present meat demolition institution, demolition process of mainly pig was practiced. In 45-person organization, processing of 150 per day is possible.

4.2.4 Livestock Breeding plan

In Kazakhstan, improvement of livestock breeding especially that of dairy cows is placed in high priority items among all policies on livestock. In 2001, the breeding improvement system such as shown in Fig 1 was made. Under such basic government plan, each state has constructed systems to promote breeding industry. In North Kazakhstan state, under the initiation of the Livestock Industry Bureau, more concrete plan was made in 2007. And its actual practice was just started. In the plan of North Kazakhstan state, one extension officer specializing in livestock industry is disposed in each district. Under him, register type engineers such as veterinary, livestock artificial insemination technician, livestock engineer, stationed in each village. Those villages are fully equipped with necessary equipment for artificial insemination such as frozen semen storage container. And whenever the artificial insemination technician performs insemination service in farms, a bonus of 540 tanges will be paid from a state. Farmers can receive such services at free of charge. Under the livestock artificial insemination development plan, led by the livestock industry bureau, so far 700 livestock artificial insemination technicians were trained in those two years. The two" Livestock Improvement Centers", under Ministry of agriculture are in charge to manufacture and supply of frozen semen. They have 100 excellent sires in total. The frozen semen manufactured there are conveyed to two "Semen Distribution Centers", then further conveyed to 300 "Artificial Insemination Centers" located at each village, where actual artificial insemination is conducted by artificial insemination technicians.

As the project of Livestock Industry Bureau, 43,641semen were used for artificial insemination in the period of January to November, 2009. As the plan for 2009, 47,990 dozen are expected to be used. Based on these numbers, the artificial insemination implementation rate in the small scale farmers is supposed to be 22%.[26].

On the other hand, in private large-scale raw milk industrial companies, they have their own original strategy respectively about artificial insemination activities, and already have good results. For example, in the case of our field survey, a company had improved the Holstein species raw milk production in their farm and livestock production is 100% by the artificial insemination. Moreover, at B Company, although raw milk is purchased from the contract farms, they have carried out guidance and introduction of artificial insemination and 53% of the farms had completed artificial inseminations.[27].

[26] By the North Kazakhstan state Livestock Industry Bureau
[27] Interview from an employee

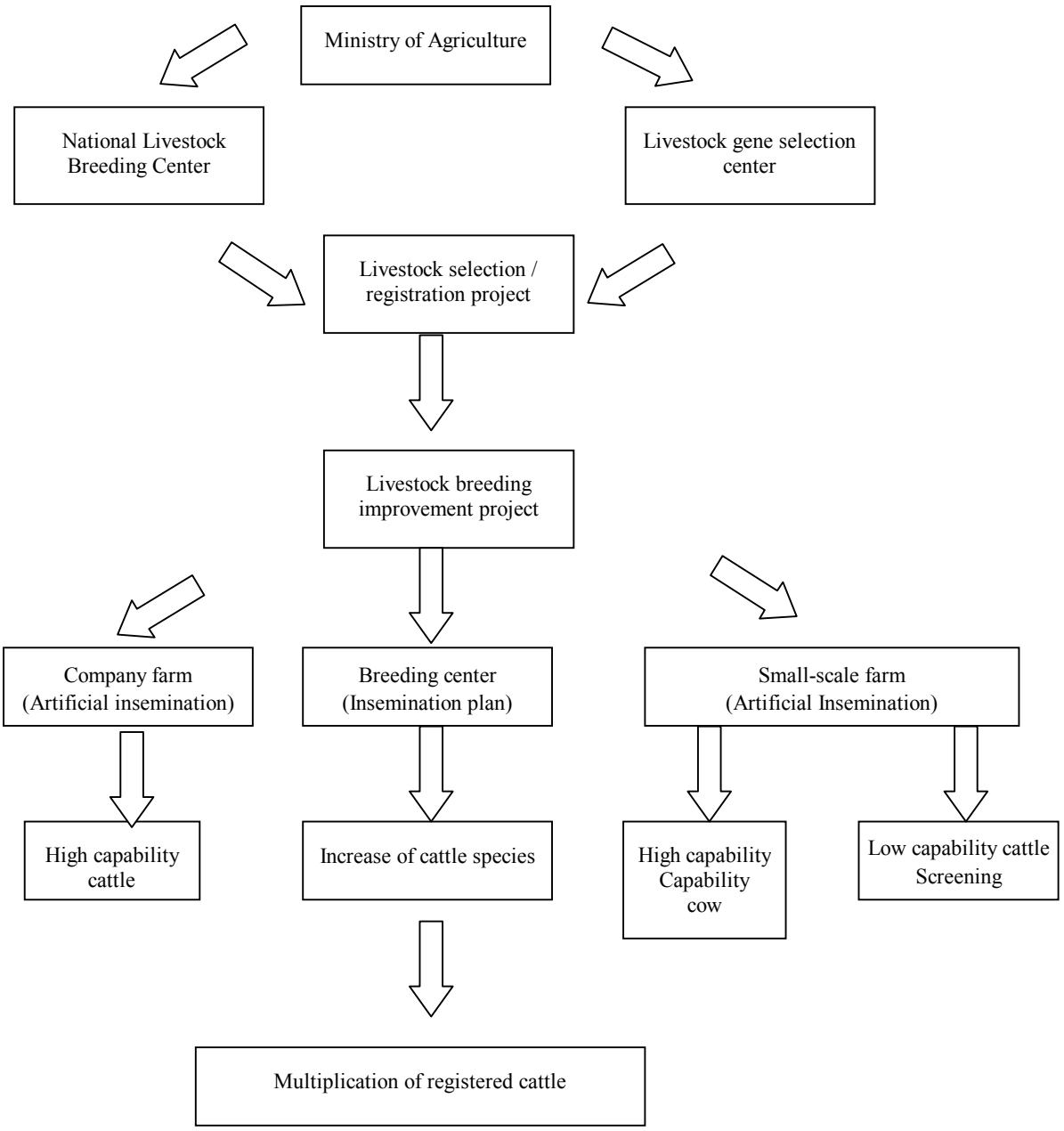


Figure 4-2 Livestock breeding system of Ministry of Agriculture in Kazakhstan

4.2.5 Livestock diagnosis service and agricultural instruction system.

(1) Livestock diagnosis service

"Veterinary inspectors" of North Kazakhstan state Livestock Industry Bureau, are in a position to supervise all the veterinaries in the state. They work at District office, but do not directly go to production area. Actual medical services are done by ordinary veterinaries in the area. Farmers who need medical services on their cattle, contact ordinary veterinaries and receive medical services. The expenses involved in the services are paid by the farmers directly to the veterinaries. The "Veterinary inspector" does not give instructions or guidance directly to the farmers. The ordinary veterinaries whenever engaged in the medical services for cattle must report to "Veterinary inspector"

(2) Agricultural instruction System

The agricultural guidance system in North Kazakhstan state is as mentioned in the clause "4.2 Livestock breeding plan" is mainly by the work carried out by agricultural extension officers. One of them who accompanied our survey team is in charge of guiding 33 farms in the village. Basically, he makes a round of consultation and guidance at least once a month. He explained that he is obliged to give prudent guidance to farms who receive government subsidy(Presently there are three farms).

To our question on the problems in agriculture in this area, he replied that although there is a local breeding center, the number of pure-bred pigs is decreasing sharply and in-breeding occurred frequently. And he is anxious about the influence it gives in breeding condition in the future. Kaz-Agro innovation activity is started in 2009. The farmer's education-related business is also included in this activity, and "Education centre" is inaugurated as part of that. It is planned to carry out farmers training at four places, Costanay, Syahatandhi, Lastopia and Al Matti about the special feature of each area efficiently. All people who feel necessity in training of special techniques will have opportunities to apply to Ministry of Agriculture and take lessons. Usually, it is the course of three to four days. The lecturers are from universities, research institutes. The base of those activities is "teaching sol-hose" of the Soviet Union era.

4.2.6 Issue of raw material (Livestock)

(1) Technology improvement of roughage producers.

To store abundant post-harvest residual substances and wild grass and use them as cattle feed is highly evaluated as effective measure for the benefit of the country. However, some points that can be improved were observed.

A large quantity of grains was left behind at the portion of the ear of hay in the field after harvest.[28] Although it is called a harvest loss, the supplementary nutritive value which this portion can contribute should not be ignored. It is supposed that there is a supplementary role of sugar especially at the time of storage in silage or haylage. Although it concerns to storage of all feed, the percentage of fiber may increase and digestive rate reduced in the feed utilizing post-harvest residual substance. There is a necessity for improvement, such as trying early harvest especially wild grass. Moreover, although it was a partial example, in the quality check of the post-harvest residual substance in silage, silage fermentation was not observed at all. Although this result may be caused by producer's technical level, the quality of raw material was supposed to be the greatest factor. Three prime factors for silage

[28] Since the machine is outdated according to interviews, if there is much generating of a loss

fermentation are pointed out such as (1) moderate moisture (70%) (2) Moderate sugar content. (3) Repression and air tightness since good quality product of the whole crop silage made from corn can be made even if it uses the same technique, true causes may be in the quality of raw material.

(2) Selectiveness of pork meat quality

A various gap is recognized in their apparatus and in their technical level in hog raising farms. There are some cases where the management level is about same as those of advanced nations, and there are some cases where the level is about 40 years ago. Some hog raisers explained that such prolonged fattening is not performed from a strategic viewpoint; but they merely have a feel from experience that better meat is made with this method and it is automatically continued. There are no extra profits found in this method. Although it is future issue, by specifying the difference of material with such special fattening method, and the other ordinary meat in a package by ham sausage companies, it may give a high-class feeling and it can sell as a brand-name product of the area. Naturally, if a price can be set to evaluate an appropriate difference about the material meat which performed such long-term fattening process, it can contribute to the stable management of hog raisers.

(3) Insufficient technical instruction regarding dairy farming.

About the milking cow, though it was regrettable, was far inferior as compared with the Case A. Every cow has no gloss in her skin and the insufficient nutrient condition was clear. It is presumed that the insufficient knowledge on the breeding management of Holstein species is probably the cause. Although introduction of the Holstein species seemed increasing, it is important to start breeding Holstein species after carefully studying the good example of advanced system of breeding. The problem is there is no organization which can do nutrition analysis of each feed. Farmers can not make proper feeding program. Even the producers of the big scale have to judge the quality of grass by tactility (feeling), and there was no way using scientific methods.

(4) Stability life of full time farmers

A wife of one of the dairy farm was a vice-principal of the elementary school. When we asked about the general condition of the life of this farm, she replied that there was a 70,000-tenge milk sales in six month, in addition, the income as a teacher was also expected. It was never a bad occupation. It is divided into two of the types for which it depends on the income from agriculture or dairy greatly about the means of living. The one (1) is the type which the fixed income from outside, (for example government official) is secured, and is performed in the viewpoint of the side job. The other (2) is the income outside can seldom is expected, and they rely on the income very much from agriculture or dairy. When it cannot say that the farm of the type of (2) is in the never blessed environment but synthetic stable development of the area by department of agriculture, the economical improvement of the farm without the income outside has realize as the very important thing.

(5) Contamination of raw milk

Whenever the raw milk produced in North Kazakhstan state became the topic of the talk, it was pointed out several times that the contamination of milk produced by small scale farmers is high. We asked views from one officer in a processing company. He said that most of the milk produced by small scale farmers is clean because farmers themselves consume as their product. They wash cow's breast cleanly and handle the milk carefully. But there are some farmers who

do not pay sufficient attention in the hygienic milking. There are large differences exist. Accordingly, as a processing company, priority is always given to the milk produced by company level producers where there is little variation in the quality. Most small-scale dairy farmers have not received instruction formally about milking technology. The present condition is that technical transfer is performed from the grandmother in domestic education from a mother to a daughter to the mother. Therefore, since the difference can see in the technique with each farm, it is issue in what kind of form technical equalization can be attained.

(6) The issues concerning agriculture instruction activities.

To our question on the issues in agriculture in this area, he replied that although there is a local breeding center, the number of pure-bred pigs is decreasing sharply and in-breeding occurred frequently. And he is anxious about the influence it gives in breeding condition in the future. When it is consider for medium-and long view, this will be the problem that it is prevent development of the hog raising business of Kazakhstan. Establishment of the breeding plan which consider for the national standpoint also about the pig is desired like the breeding plan for the dairy cow. Furthermore, about the activates of Kaz-Agro, it is very splendid in concept, but the issues are existing training points which are only four places. There are some problems in this system that dairy farmers who live in the neighborhood of a training base may be have the opportunity of training, but, for the small-scale dairy farmers who live long distance from the place or does not have independent means of transportation are not being easy for training attendance.

4.3 Food processing

4.3.1 Food Processing Industry in North Kazakhstan Oblast

The food processing industry in North Kazakhstan Oblast mainly consists of four industries: meat processing, dairy product processing, wheat flour production, and vegetable oil production. This industry can generally be classified into the materials category or processing category. The food processing industry in North Kazakhstan Oblast, with the exception of meat processing, is centered on factory machine processing rather than processing by hand, as much of it is production is performed through mass processing using large-scale facilities.

Food processing, depending on the degree of processing and combination of the extent of processing components, can be classified from primary processing to tertiary processing. Based on such criterion, this survey perceives the positioning of food processing in North Kazakhstan Oblast as described in the table hereunder. When North Kazakhstan Oblast was still a part of the Soviet Union, the state in question was positioned as the base or main source of the supply of processed foods, ranging from primary material, such as grain, including wheat, milk, and meat to primary processed foods. In the event development of food processing is considered, two aspects that are characterized by higher processed food processing (improved shelf life and furthered diversification), in addition to the production expansion of processed foods over those of the primary category, have to be taken into consideration.

Table 4-6 Feature of food processing industry in North Kazakhstan Oblast

Raw material	Primary processing	1.5 processing	Secondary processing	Tertiary processing
Raw milk	Milk, Cream	Sour milk, Yogurt	Butter, cheese	Ready-to-eat food, Retort food etc.
Raw meat	Table meat	Sausage, Ham（Heating after packaging）	Sliced pack （Packaging after heating）、Frozen food	
Wheat	Flour	－	Pasta, bread	
Oil seed	Crude oil	vegetable oil	Margarine	

Source: Prepared by JICA Study Team

The respective centers for processing and their characteristics are as follows:

* Milk and dairy product production: The main centers for processing are Petropavlovsk, Kizil Zhar, and Akkayin.
* Meat processing: The main centers for processing are Petropavlovsk, Kizil Zhar, and Akkayin. Primary materials for dairy products and meat processing are transported from production regions to the processing center of Petropavlovsk and its environs and are then processed, with the processed products being redistributed throughout the country.
* Wheat production: The main processing centers are G. Musirepov, Tainsha, and Kizil Zhar. Processing bases are located adjacent to main production regions and thereafter transported by a network of roads and rail to domestic and foreign markets.
* Vegetable oil production: The main centers for processing are G. Musirepov and Petropavlovsk.
  Extracting (crude) vegetable oil from sunflowers and rapeseeds, etc. is performed in North Kazakhstan Oblast; however, high-purity processing takes place in large-scale plants located in Almaty and elsewhere.

Table 4-7 Recent processed food production in North Kazakhstan Oblast

Food processing Production in North Kazakhstan for 2004-2008 (Unit:ton)

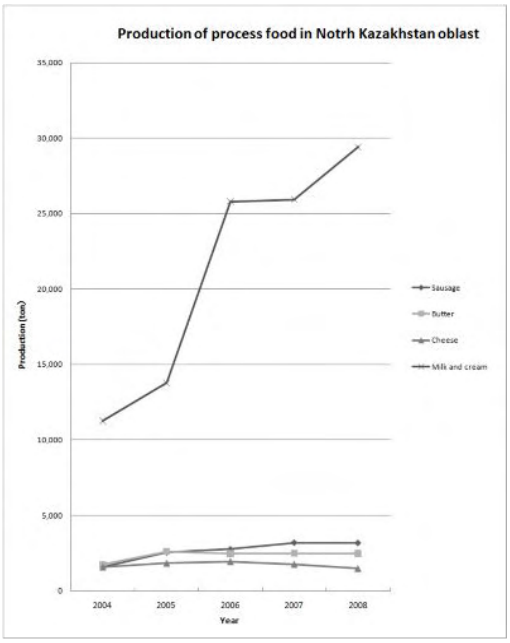
	Wheat flour						Sausage					
District	2004	2005	2006	2007	2008	2008/2007	2004	2005	2006	2007	2008	2008/2007
Airtau	4,555	7,849	7,544	9,456	9,892	105						
Akjar	2,199	1,139	942	1,147	1,262	110						
Akkayin	2,857	1,661	1,586	1,345	924	69	116	225	300	436	391	90
G.Musirepov	14,579	16,289	24,203	50,777	57,837	114	104	162	209	300	234	78
Esil	7,250	1,905	2,604	2,965	2,976	100	6	10	7	5	5	100
Jambul	1,463	3,055	1,747	1,525	1,378	90				3	3	100
Kizil Zhar	25,064	27,934	27,617	29,580	48,550	164	170	182	355	360	455	126
M. Zhumabaev	2,946	4,086	2,532	3,644	3,410	94	57	111	102	152	164	108
Mamulutsky	55,008	56,804	36,358	36,861	37,128	101	7	30	30	35	55	157
Tainsha	14,661	23,908	51,579	42,273	53,518	127	14	15	20	28	17	61
Timiryazev	2,250	6,669	9,963	12,013	12,789	106		19	19	19	19	100
Ualihanov	43,565	43,684	29,774	30,335	17,117	56						
Shal akin	856	3,396	1,536	1,231	1,092	89						
Petropavl K.	**44,171**	**64,125**	**78,667**	**94,776**	**108,223**	**114**	**1,091**	**1,798**	**1,715**	**1,854**	**1,835**	**99**
Total	221,424	262,504	276,652	317,928	356,096	112	1,565	2,552	2,757	3,192	3,178	100

	VegetableOil						Butter					
District	2004	2005	2006	2007	2008	2008/2007	2004	2005	2006	2007	2008	2008/2007
Airtau							15	14	14		5	
Akjar	2											
Akkayin							233	401	323	337	442	131
G.Musirepov	42	79	7,479	11,188	8,928	80	87	77	73	36	49	136
Esil	26	9										
Jambul							29	39	14	15		
Kizil Zhar							107	111	114	76	135	178
M. Zhumabaev	11	1	3	3			149	156	99	308	194	63
Mamulutsky												
Tainsha	17	3					383	395	353	328	541	165
Timiryazev							27	53	53			
Ualihanov												
Shal akin	22	30	18				134	205	209	249	119	48
Petropavl K.	**137**	**111**	**303**	**357**	**342**	**96**	**574**	**1,161**	**1,220**	**1,132**	**1,177**	**104**
Total	257	233	7,803	11,548	9,270	80	1,738	2,612	2,472	2,481	2,662	107

Product	Cheese & Cottage cheese						Milk & Cream					
District	2004	2005	2006	2007	2008	2008/2007	2004	2005	2006	2007	2008	2008/2007
Airtau	65	48	48		22		13	9	10			
Akjar												
Akkayin	97	219	311	241	96	40	4,503	4,765	4,884	5,124	4,529	88
G.Musirepov	99	125	93	96	95	99	37	51	84	37	39	105
Esil												
Jambul	39	47	13	9								
Kizil Zhar	147	195	277	233	262	112	4,521	5,927	6,507	6,452	6,079	94
M. Zhumabaev		149	113	59	69	117	26	965	600	89	570	640
Mamulutsky												
Tainsha	372	407	402	351	309	88	61	84	421	604	1,107	183
Timiryazev	31	34	34									
Ualihanov												
Shal akin	6	6	10	52	16	31						
Petropavl K.	**575**	**607**	**653**	**555**	**626**	**113**	**2,104**	**1,980**	**4,933**	**13,633**	**17,084**	**125**
Total	1,431	1,837	1,954	1,596	1,495	94	11,265	13,781	17,439	25,939	29,408	113

(Source: Hearing from DOA Agri processing and marketing)

As the above table indicates, the output of processed foods has tended to expand over the past four years. It is believed that the main reasons for this was increased production and supply of primary materials, such as agricultural and livestock products, increased demand for processed foods centering around the domestic market, and, as a consequence, food processing firms increasing production capacity by expanding production bases and intensifying capital investment to satisfy market requirements. The increased production of dairy products, in particular, (cow's milk, butter, and cheese, etc.) and processed meat products (sausages, etc.) at Petropavlovsk, which was subject to this survey, was outstanding.



Source: Prepared by JICA Study Team

Figure 4-3 Production of Process Food in North Kazakhstan Oblast

Whereas the market for wheat flour production was to a great extent overseas, dairy and processed meat products were processed mainly for the domestic market. Thus, one could say that this helped companies that process foods to reinforce their processing production bases near the point of consumption.

Column: Why is it that production of cheese alone does not increase amongst processed foods?

The output of milk, butter, and other dairy products has increased roughly two-fold during the past four years. Why didn't production of cheese increase? Conceivable causes for such circumstances are as follows:

1. Compared to other dairy products, more time is required (three to six months) to produce cheese through current cheese production technology in North Kazakhstan Oblast, which results in higher cost. Current technology cannot shorten such period. If the maturation period was shortened, the distinctive flavor of the cheese cannot be attained. (Only two firms in Petropavlovsk currently produce cheese.)
2. The cost to produce cheese in Kazakhstan at times amounts to 20 times the cost of the raw milk itself. The cost to produce cheese in Ukraine and Belarus, for example, is roughly one-half that of Petropavlovsk. The retail price of Ukrainian cheese on the market in Petropavlovsk is KTG 1,000, on average, while that of Kazakh cheese is an average 700–750 KTG. As retailers select more profitable merchandise, competition based on market price is difficult. (The French firm, LACTALIS, at one time considered establishing a new cheese plant in Kazakhstan; however, this project did not materialize.)
3. There is a chronic shortage of the raw milk required to periodically process cheese, as cheese production entails a large volume of high-quality raw milk.

4.3.2 Present situations of Processing Dairy Industry

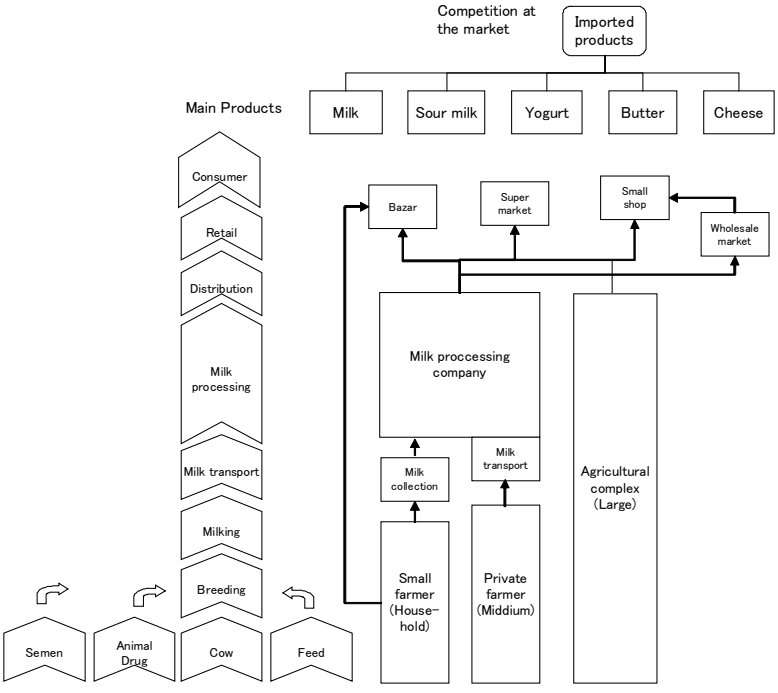
In Kazakhstan, the production of raw milk required for dairy product processing amounts to 1,000 tons during the summer season, while during the winter season 200 tons is often the norm. Seasonal fluctuation is significant. Due to these circumstances, some processors resort to mixing powdered milk with raw milk, in order to turn out products during the winter season.

Furthermore, in particular, milk collection from small-scale farmers from whom roughly 70% of primary raw milk is supplied entails many problems. These farmers lack the refrigeration facilities necessary to store raw milk, hygiene is not up to standard, and milk transportation vehicles are not equipped with a refrigerating function, which puts the freshness of raw milk into question, alongside obvious concerns of hygiene/bacteria buildup, due to high temperature during the summer months. Moreover, small-scale farmers are confronted with other problems, such as fodder and the rearing environment, as well as the lack of technology concerning artificial insemination ratios, etc., ending up with a varied fat percentage and other concerns.

Some processed merchandise is highly dependent on imports, e.g., cheese (40%), butter (30–40%), high fat milk and cream (80%), and ice cream (60%), which are all imported. As a result, Kazakhstan's own dairy products are forced to compete with the products and markets of Russia, Ukraine, and Belarus, and other countries of the former Soviet Union.

As the shelf life is limited or short, dairy products tend to be considered under the concept of "local production for local consumption." In North Kazakhstan Oblast, in particular, where the transportation infrastructure is not yet fully developed, dairy products, such as milk, are largely consumed in regions where distribution routes are established; however, the present situatio is that products do not make it to remote areas.

The following diagram provides an overview of the chain for dairy products from raw material to consumption in North Kazakhstan Oblast.

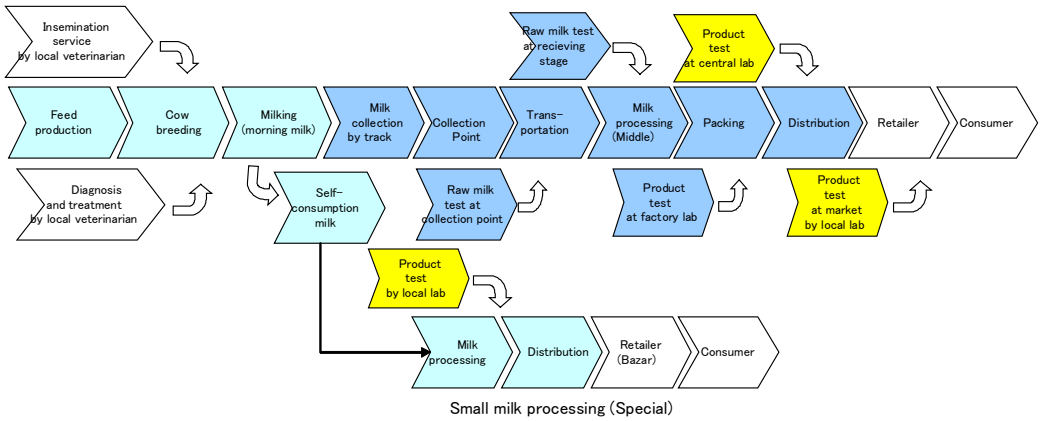


Source: Prepared by JICA Study Team

Figure 4-4 Overview of the whole chain for dairy products in North Kazakhstan Oblast

The following diagram illustrates the value chain for milk from small farmers to consumers through the milk processing plants.

Milk Value chain from small farmers to consumer through milk collector and milk processing plant



Source: Prepared by JICA Study Team

Figure 4-5 Whole chain for milk from small farmers to consumers through the milk processing plant

Small-scale farmers generally supply processing companies with raw milk that is surplus to their own household requirements. Some small farmers pasteurize the milk for drinking and/or process it into products such as Smetana that can be sold on the market, typically at bazaars. Manufacturing and retailing of dairy products is subject to testing under government regulations, so the manufacturing processes can be considered safe. However the lack of packaging materials and equipment and containers does create potential hygiene issues during the subsequent distribution and retail processes.

4.3.3 Market prices for dairy products

(1) Market prices for milk and cream

The analysis of the market in milk and cream products in Kazakhstan revealed considerable variation in the fat content of dairy products offered for sale, in contrast to Japan (NB: the study was based on a limited sample size). As the table below shows, many products are tailored to specific consumer preferences and requirements.

Fat (%)	Product price, corresponding to 1L		
	Almaty	Russian	Petrovavlovsk
1.0	145		
1.5	169		138
2.5	140	160	156
3.2	155	165	127
4.0	181		
6.0	199	190	173
7.1	221		
10.0	255		

Source: Prepared by JICA Study Team

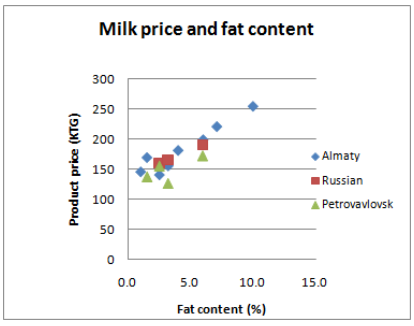


Figure 4-6 Comparison between fat content and price in milk

Milk prices (per liter in the above table) are governed by fat content; the higher the fat content, the higher the price. There is a high level of milk consumption in Kazakhstan, and the stores and supermarkets are lined with a range of different products at different fat content levels. Thus, the milk fat content dictates the purchase price in terms of the raw milk price charged by the dairy farmer.

Milk with fat content between 1.0% and 3.2% is in the low price bracket. Products from Petropavlovsk are cheaper than those from Russia and Almaty and are therefore in a competitive position. At higher fat contents of 7.1% and above, however, the situation changes: during the study period, Russian products such as Aseptype condensed milk, which can be transported at normal temperature, were available on the market. Package sizes are becoming steadily smaller, and it is expected that products of around 300 ml (like those sold in Japan) will soon become the norm in terms of market share.

The issue in terms of market prices is that although Petropavlovsk manufacturers are able to supply a wide variety of dairy products in the 1.5% to 6% fat content range, they find it difficult to compete with products from Russia and Almaty at higher fat contents. Local consumers require milk products of various different fat contents, and the market has evolved accordingly. In order to compete with imports, there should be a stronger focus on developing different products to suit different purposes, while processors need to set up distribution and retail networks capable of supplying the full range of products. However the limited shelf life of dairy products is an issue. Based on sales of a wide range of products produced in small lots, it seems wiser to shift to a production structure predicated on added value in the form of product quality, by offering drinking milk (low-fat, SNF-enriched milk with fat reduced to 1.5%, or with fat content of 3.0% - 3.5%) and processed milk/milk for milk tea (milk fat = 8.0% - 8.5%). In order to be cost competitive, it will be necessary to boost efficiency through simplification of production processes (particularly with respect to the energy cost of the repeat heat processing and cooling method) and provide safety guarantees for finished products (through internal testing and traceability) rather than just the dairy components.

(2) Market prices for yogurt

A survey of the yoghurt market in Petropavlovsk, based on a limited sample size, found that the correlation between fat content and price is same as that for milk products. In the case of yoghurt, the higher the fat content, the higher the price. The positive correlation is illustrated in the following diagram.

Fat (%)	Product price, corresponding to 1L		
	Almaty	Russian	Petrovavlovsk
1.5		300	220
2.5	368		140
3.5	152		
4.0	148		198
15.0	478		450
20.0	625	843	420

Source: Prepared by JICA Study Team

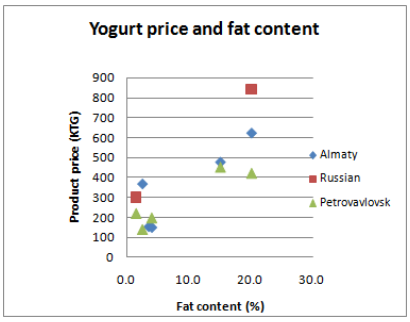


Figure 4-7 Comparison between fat contents and product price

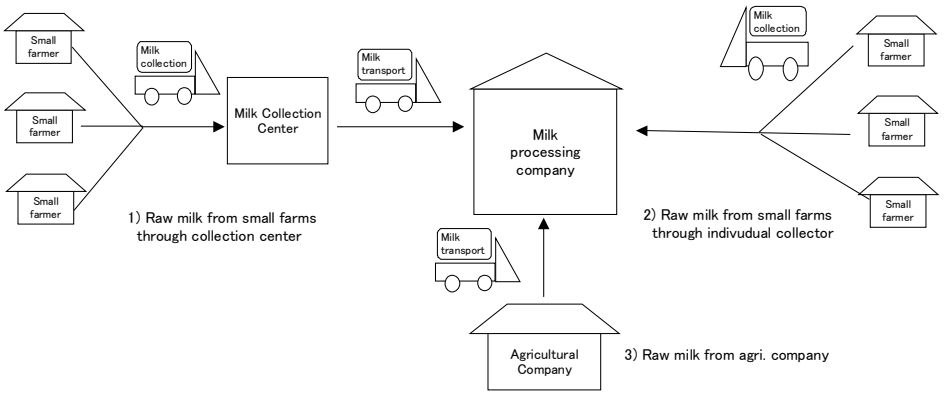
Retail outlets in Kazakhstan currently stock a variety of yoghurt products of varying fat contents. Some fermented milk products exclusive to North Kazakhstan Oblast include Kefir, Ryazhenka, Smetana, fermented cream and cottage cheese (which is different to the original). It is important to provide sales channels for these products while at the same time developing

low-fat products tailored to market preferences in order to attract local consumers. These approaches can eventually be introduced over a wider area to the point where the local products can be developed in direct competition with imports once the domestic market is deemed to have matured sufficiently.

4.3.4 Procuring Raw Milk for Dairy Product Processing

Three systematic chains exist to procure raw milk for the eventual sale of milk and processed dairy products. They are: 1) from small-scale farmers to a collection center directly managed by the processing company, and then on to the processing plant; 2) from small-scale farmers to the processing plant through a third-party individual milk collector; and 3) from an agricultural company (medium- and large-scale farmers) directly to a processing company (including cases whereby the agricultural company owns the processing company).

Explanations concerning the flow of milk and the processing company that procures raw milk are given in the following diagram and clauses.



Source: Prepared by JICA Study Team

Figure 4-8 Flow of milk and the processing company that procures raw milk

(1) Delivery from Small-scale Farmers through Collection Centers that are Directly Managed by Processing Companies

1) Collection by the Milk-collection Vehicles of Small-scale Farmers

Milk-collection vehicles make their rounds in the villages where small-scale farmers have sales agreements with local processing companies. Such farmers raise 3–5 dairy cows (at the time of survey). When observed, in the winter, raw milk that had just been milked was left in buckets and carried by hand to the milk collector when they made their rounds. The farmer stated that only raw milk milked in the morning was delivered. At the time of collection, it was observed that an inspector checked the volume of raw milk and performed a sensory test (color, taste, and smell, etc.). They then strained the raw milk with a cloth and poured it into their tank. (The farmer explained that, during the summer, frozen pet bottles were placed in the buckets as a coolant.)

2) Refrigeration and Inspection at Collection Centers

Raw milk is transferred from the milk-collection vehicle to the refrigerated tank at the collection center. Next, an inspection of the raw milk brought by each vehicle is conducted. The collection center then performs tests to determine the milk fat, protein, water, lactic acid pH,

non-fat solids etc.. The instruments used for these tests are an automated milk-quality measuring device (Danish manufacture) and an acid titration unit. However, neither the farmer nor collection center performs tests to detect antibiotics.

The temperature of the raw milk delivered to the collection center in the summer is said to be 15–20^{0}C. (As the control standard for raw milk in Japan is under 10^{0}C, attention should be paid to milk-collection vehicle temperature control, especially during summer.)

3) Delivery from the Collection Center to the Processing Company

Raw milk is then delivered directly from collection center to the processing company through the use of large tanker trucks.

(2) Delivery from Small-scale Farmers through Third-party Individual Collectors

1) Collection from Small-scale Farmers by Individual Collection Tanker Trucks

In outlying regions, operators who have concluded milk collection agreements with the processing company undertake collection. As described in (1), 1) above, an inspector accompanies collections, confirms milk volume, and, subsequent to sensory evaluation (color, taste, and smell, etc.), stores the milk in a tank. (no cooling function)

2) Delivery to the Processing Company

The milk collection tanker truck then delivers the raw milk directly to the processing company, where the raw milk is subject to quality checks, and, thereafter, the vehicle's tank is cleaned and sterilized.

(3) Direct Delivery from Agricultural Companies (medium- to large-scale farmers)

1) Using Milking Machinery

Milking is performed by milking machinery at directly-managed agricultural companies (medium- to large-scale dairy farmers) or at facilities that have entered into purchase agreements with the processing company raising some 100–2,000 head of milk cows, with milk stored in refrigerated tanks. Fodder is carefully controlled, a specialist veterinarian is in charge of breeding, and artificial insemination is performed.

2) Inspection of Delivery Samples by Scientific Veterinary Research Institute

Samples for each and every delivery lot are sent to a local Veterinary Research Institute, and an inspection certificate received.

3) Delivery to the Processing Company

Trucks from the processing firms undertake the direct delivery of raw milk.

The ratio of milk collected from small-scale farmers and that from agricultural companies in North Kazakhstan Oblast is roughly 70:30, which means that processing companies are dependent on small-scale farmers for approximately 70% of their raw milk.

A large number of small-scale farmers are part-time farmers, and selling milk is kind of a side business for them. These farmers raise a small number of cows, pigs, and poultry, while they also grow wheat as fodder. They also process their own milk for home consumption, and some

farmers not only supply raw milk to processing companies but have also installed pasteurization facilities of their own for scaled sales on the market. As sales of raw milk are seen as a vital source of income for farmers who are largely of rather old age, much importance is attached to the practice from the viewpoint of improving their income. How the processing firms can secure stable supplies of quality raw milk from small-scale farmers is a big challenge.

Summary about the advantages and disadvantages of the milk collection methods by above mentioned three kinds of farm as following table:

Table 4-8 Advantage and disadvantage of the milk collection methods

	Advantage	Disadvantage
Delivery from small-scale farmers through collection centers	・Raw milk is lower price. ・Many farmers can supply milk. ・Milk quality can be tested at collection center. ・It may support to increase small-scale farmers income. ・Raw milk is traceable to individual farm.	・Milk quality is not stable because of inhomogeneous farmer technical level. ・Low milk quantity in winter time. ・Inadequate hygiene control in farm. ・The amount of bacteria is very high in summer because of the difficulty of temperature control in storage
Delivery from small-scale farmers through third-party individual collector	・Many farmers can supply milk. ・Not increase self-cost ・It may support to increase small-scale farmers income.	・Payment to third-party collector is more expensive than the cost of self collection center. ・Milk quality is not stable because of inhomogeneous farmer technical level. ・Inadequate hygiene control in farm. ・The amount of bacteria is very high in summer because of the difficulty of temperature control in storage.
Direct delivery from agricultural companies (Medium, Large scale farmers)	・Rearing is well managed by experienced veterinarians. ・Stable quality and quantity milk can be supplied. ・They have freezing system for storage.	・The price of raw milk is higher than small-scale farmers. ・Limited number of medium and/or large scale farmers.

Source: Prepared by JICA Study Team.

4.3.5 Certification system for dairy products

(1) The Government Approval System for Producing/Marketing Processed Foods

In addition to technical regulations (safety requirements) for each food category (dairy products, etc.) of processed foods to which producers and distributors are obligated to abide by in Kazakhstan, technical requirements affecting each product (raw milk and cheese, etc.) amongst such categories are in force. Consequently, processed food companies prepare in-house technical conditions for products and production lines of each product, which satisfy said technical requirements and safety requirements.

Processing companies, in order to produce and market their products, submit technical conditions to the Committee of Metrology and Technical Regulations for each product in

advance, and are subject to scrutiny to determine whether safety and technical requirements are met. After attaining governmental approval, production and marketing becomes possible.

Again, to ensure that safety and technical requirements are met, the products of processing companies and relevant production lines are subject to inspection by the government agency in charge (the Committee of Metrology and Technical Regulations, the National Institute of Hygiene and Epidemiology of the Ministry of Healthcare, and the Veterinary Research Institute of the Ministry of Agriculture) and, furthermore, they are obligated to periodically send samples of their products to the laboratory of the agency in charge and attain certain levels of inspection certificates, which all come with a charge.

Column: Every product of food processing companies is subject to government approval.

* When a food processing company plans to develop, produce, and market a new product, it can neither produce nor market such unless it submits an application to the government listing the required data, such as ingredients and the method of production, etc., for each product and obtains the relevant approval. (As cost and time will be incurred for application, such procedures could become an obstacle for quality improvement and new product development.)
* The cost is considerable high for the periodical inspection of product samples. As certification of an inspection facility recognized by the government is required, there is no alternative but to be inspected at the government's laboratory. (Information made available at the time of survey indicated that such procedures could at times incur expenses as high as 2% of the cost of production, which has lead some processing companies to consider switching to in-house inspection.)
* Provincial government laboratories more or less concentrate their inspection on food safety, such as tests for possible epidemics and toxicity, etc., and bodies that perform inspections concerning the quality and function, etc., of products hardly exist, resulting in reliance on extra-provincial or foreign laboratories for inspections and analyses.
* Enterprises that have acquired ISO9001 certification are on the increase, in order to ensure safety for production of processed foods. This is indispensable for exports to the EU, and enterprises considering introduction of HACCP to secure food safety is also increasing. However, as the agency or organization to support such acquisition does not exist in North Kazakhstan Oblast as of yet, establishing such in the region is suggested.

(2) Safety Requirements in Processing Dairy Products

Safety requirements of Kazakhstan necessary to produce and market dairy products describe matters related to processing plants, from the time raw milk is received, to production, storage, and the distribution of end products. Each dairy product processing company prepares production standards for their products based on such safety requirements, receives government approval, and undertakes production.

* The main items of dairy product safety requirements consist of: the thermal processing of raw milk and milk products, the items to be confirmed at the time of acceptance, and product production/the production environment.

Table 4-9 Safety Requirements related to thermal processing of dairy products

Heat treatment	Temperature	Time
Thermization	60～68	30 sec
Low Temperature Pasteurization	Not above 76	
High Temperature Pasteurization	77～125	
Sterilization	Above 100	
Ultra-pasteurization	125～138	5 sec
Ultrahigh temperature treatment	135～140	Not less than 2 sec

Sources: Prepared by JICA Study Team from Technical requirement of dairy products

* Items to be confirmed at the time of acceptance and during production

Levels of toxic elements, mycotoxins, antibiotics, agricultural chemicals, radionuclides, micro organisms, and somatic cells in raw milk and dairy products should not exceed the level stipulated by the Ministry of Agriculture's veterinary hygiene rules and the Ministry of Healthcare's epidemiologic hygiene regulations and restrictions.

Table 4-10 Items to be confirmed at the time of acceptance and during production

Category	Items	Standard(ppm)
Toxic substance	Lead	0.1
	Arsenic	0.05
	Cadmium	0.03
	Mercury	0.005
Mycotoxin	Aflatoxin M1	0.0005
Antibiotics	Tetracycline	ND
	Penicillin	ND
	Streptomycin	ND
	Chloramphenicol	ND
Radio nuclides	Cesium 137	100
	Strontium 90	25
Pesticides	Hexachlorocyclohexane	0.05
	DDT and metabolites	0.05

Sources: Prepared by JICA Study Team from Technical requirement of dairy products

* Regulations concerning the production environment

Light, temperature, humidity, noise, vibration, and contaminants in the air of work areas shall be in accordance with hygienic standards.

(3) The Production Process of Dairy Products

The dairy product processing company surveyed in this case produces milk, sour milk, yogurt, cheese, and butter, etc., all from raw milk. The milk production process is exemplified below.

Source: Prepared by JICA Study Team

Figure 4-9 Milk production process (Sample)

When raw milk is delivered from farmers by way of collection centers, etc., the very first action taken is to check quality and temperature during the acceptance inspection. If accepted, raw milk is percolated and measured (through use of a flow meter and weighing apparatus,) chilled, and stored in tanks. Adjustments are made to the fat content thereafter, which is done to deal with seasonal changes in fat content and to fix the fat content formula indicated on the final product. Homogenization and pasteurization processes follow thermization, and after being chilled and packed, it is shipped out as milk.

Inspections performed by processing companies to satisfy the safety requirements of the government and those based on a company's quality control standards are of two types: in-house voluntary inspections and externally commissioned inspections. Furthermore, external plant inspections are also conducted.

1) In-house Voluntary Inspections

・Raw milk acceptance inspections
Sensory tests (flavor, taste, and color, etc.) and tests to identify physico-chemical properties (lactic acid pH, density, fat content, and temperature at the time of acceptance) per each lot accepted

・Quality inspections during production and of the final product
Sensory tests (flavor, taste, and color, etc.) and physico-chemical property tests (lactic acid pH, fat content, and temperature), as well as microorganism tests

・Production environment inspections
Inspections to count falling bacteria are performed once a week to identify plant cleanliness.

2) Externally Commissioned Inspections

* Sample inspections
Samples are sent to the governmental Central Laboratory of Certification and Veterinary Research Institute to attain inspection verification. Items inspected are as follows:
Toxic substances (heavy metals, and agricultural chemicals, etc.), once every three months
Radioactive nuclides (cesium and strontium), once every four months
Pathogenic microorganisms (staphylococcus aureus bacteria and listeria, etc.), once a month

3) Plant Inspections by the Certification Body
To investigate whether processing plants are complying with governmental regulations or not, inspectors perform periodic plant inspections, as follows:
Inspectors from the Ministry of Healthcare's National Institute of Hygiene and Epidemiology and the Ministry of Agriculture's Scientific Veterinary Research Institute make visits once every three months.
To confirm consistency with in-house standards during the production process, a Certification Center inspector visits once every six months.

(4) Butter Production in Petropavlovsk

Fat separated from other milk components (proteins, etc.) churned and condensed makes butter. Ingredient specifications of Kazakh butter stipulate a milk fat content of 72–82% (the definition of butter in Japan entails a fat content of 80% or more). Market survey of a supermarket in Astana revealed that consumers knew of Petropavlovsk (Bulaevo) butter which,

compared with others, was soft and white and had a high fat content, by which the high reputation of Petropavlovsk butter was realized.

Column: The Secret behind the Amazing Taste of Petropavlovsk Butter

The environs of Petropavlovsk presented butter produced in the region to the Czar in the days of the Russian Empire, and a butter museum still exists in Russia, in Kurgan to the west. In such context, the region around Petropavlovsk in North Kazakhstan Oblast and adjacent to Russia is considered historically to be a renowned butter-producing locale.

Why is it that even now, Petropavlovsk butter is being appreciated as delicious? When probing for the secrets of such assessment, three likely reasons come to light.
First, the butter is produced from fresh milk, milked from healthy cows raised in a rich natural environment. Second, it is natural with no additives. Third, is present method of the production. Normally, when cream separated from milk is churned to produce butter in many countries, including Japan, buttermilk is produced as a by-product. On the other hand, a special butter-producing machine is used in North Kazakhstan Oblast that does not turn out the butter milk, thus retaining the fat and small quantities of milk protein, lactose, and minerals contained in the butter itself. What is worthy of mention is that the initial cream is further separated, the fat content of the cream is condensed more than 80%, it's thermally processed, strongly churned, and lastly, kneaded at 1°C. All of these operations are performed by one special machine. In the final stage, butter milk is completely kneaded into butter, resulting in a whitish, delicious, and spreadable product.

4.3.6 Present situations of the Processed Meat Industry

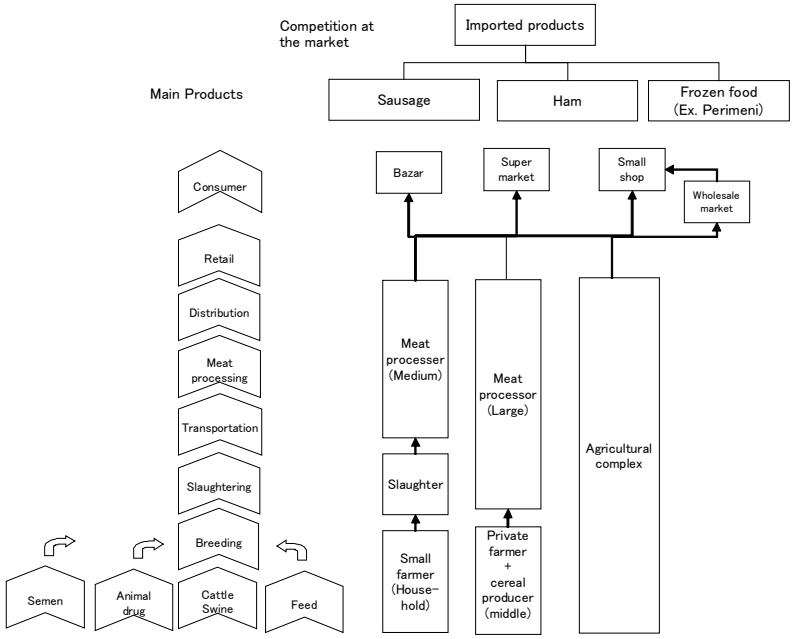
Sausages and semi-finished products (i.e., frozen foods such as "pelmeni") are the main processed meat products produced in North Kazakhstan Oblast. The output of canned and prepared foods is limited.

Food processing enterprises situated within North Kazakhstan Oblast are of small- to medium-size, and large-size plants are but a few. Production lines making frequent switchovers from one product to another are most common and can be referred to as being "multi-product, small-lot production."

At a time when domestic demand for meat and processed products is on the rise, showcases in supermarkets and other retailers display homemade products, as well as products from neighboring countries. A large volume of processed meat products are being sold, but in spite of the large variety, differentiated products with special features seem to be lacking.

Enterprises introducing vacuum packaging have increased, and some have begun production of sliced produce packages for major supermarkets; however, a large part of them are still reliant on traditional production technology.

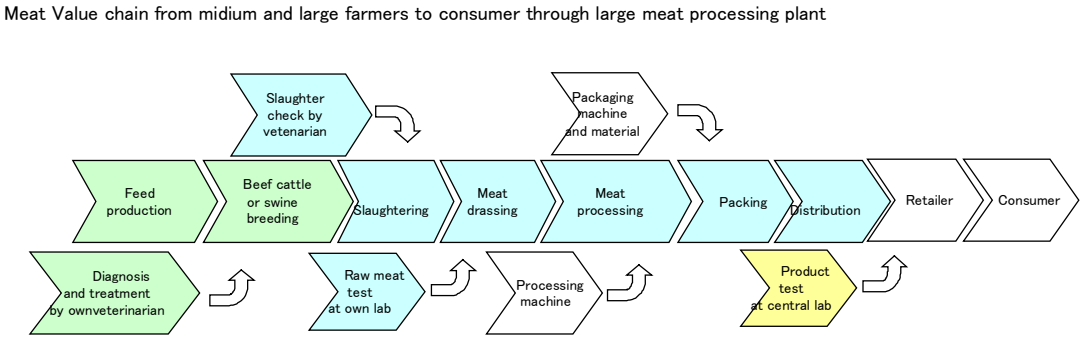
The following diagram provides an overview of the whole chain for processed meat products in North Kazakhstan Oblast.



Source: Prepared by JICA Study Team

Figure 4-10 Overview of whole chain for processed meat product in North Kazakhstan Oblast

The following diagram illustrates the whole chain for processed meat products from medium-scale farmers to consumers via large-scale processing companies.



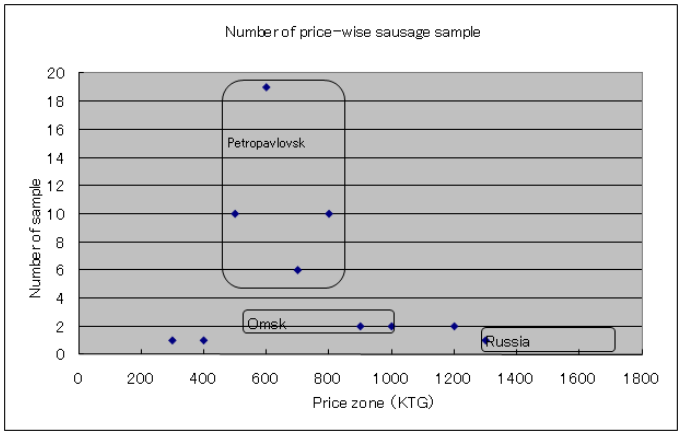
Source: Prepared by JICA Study Team

Figure 4-11 Flow of processed meat products from medium-scale farmers to consumers via large-scale processing companies

The large meat processing facilities have their own facilities for slaughtering and for carcass refrigeration and storage. They also have their own in-house veterinary staff to perform veterinary tests on animals prior to slaughter and obtain meat samples for laboratory testing. Given the scale of the operation, large processors source nearly all their meat from large-scale farmers, who use their own veterinary staff to monitor livestock health and provide a more consistent standard of quality.

4.3.7 Market prices for sausages and ham

The study team conducted market price survey for sausages and ham in Petropavlovsk. Prices for sausages and ham generally fell within the 500 to 800 Tenge range, with the most common price being around 600 Tenge. Russian products tended to be more expensive, at around 1,200 Tenge.



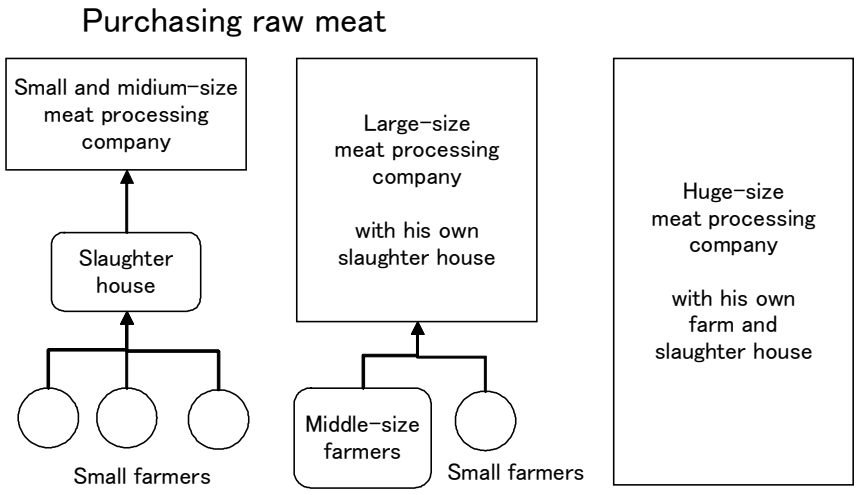
Source: Prepared by JICA Study Team

Figure 4-12 Market Praice for Sausagees

Although some processors in Petropavlovsk supply products in the higher price bracket (1,200 KTG and above), such as small sliced meat packs, most Petropavlovsk products are competing in the lower price bracket with products from regions such as Omsk. Given the purchasing power of Russian sausage products in the higher price bracket, a two-pronged approach is recommended, involving promotion of products in the lower price bracket while also developing products for the higher price bracket that capitalize on the unique regional characteristics of North Kazakhstan Oblast.

4.3.8 Procuring Basic Ingredients for Meat Processing

Procurement of basic ingredients for the production of meat products and processed products can be summarized as per the diagram below from the scale of processing plants concerned.



Source: Prepared by JICA Study Team

Figure 4-13 Flow of basic ingredient to meat processing company

(1) Basic Ingredient Procurement by Small- and Medium-size Meat Processing Companies

As small- and medium-sized meat processing companies often do not have slaughterhouses of their own, slaughtering takes place locally by contracted small-scale farmers, and basic meat ingredients are procured from the farmer concerned. Company-owned refrigerated vans haul meat ingredients and store them in a company refrigerator (at 10°C.) Meanwhile, small- and medium-size meat processing companies procure periodically from specific farmers, knowing that some of these farmers do not use growth hormones or other types of performance additives, and that their livestock is raised on natural pasture land. They recognize that the quality and safety of meat ingredients is most important.

From information attained at time of the site survey, as diagnosis of any disease and inherent safety is confirmed by a veterinarian when slaughter takes place, even with small-scale farmers; thus, meat ingredients are considered to be safe from livestock diseases.

(2) Basic Ingredient Procurement by Large-size Meat Processing Companies

Large-size meat processing companies have their own slaughterhouses and refrigerators/ freezers in buildings separate from the processing plant. They also retain a house veterinarian to perform tests for diseases when slaughter takes place. According to what one large-size meat processing company had to say, 20% of meat ingredients are procured from small-scale farmers, while 80% is procured from large-scale farmers. The main reasons given as to why procurements from large-size farmers were predominant were: inspections by veterinarians are properly performed; quality meat ingredients can be selected; the fat content is good; and the meat quality is stable.

Furthermore, the ratio of livestock procurement consists of 60% cattle and 40% hog, while autumn is the season when the largest volume (100–200 heads are sometimes slaughtered in a day) is procured, and procurements from large-scale farmers are predominant because a large number of livestock has to be procured.

(3) Ingredient Procurement by Extremely Large Agricultural Corporations

The large agricultural corporation visited during the survey was a state enterprise from the days of the former Soviet Union, disorganized thereafter, and is currently managed as a corporation by its current owner.

It was said to have been managed as a vertically integrated cluster in the days of the Soviet Union, where every stage, from fodder production and the raising of livestock to meat processing and marketing, was executed.

Here, the operation is extremely large-scale, raising 6,000 hogs, and processing plant production capacity for ham and sausage is 100 tons monthly, currently producing in accordance with market demand. In comparison to production capacity, its operating rate seemed to be rather low.

4.3.9 Meat processing and its certification system

(1) Safety Requirement Standards for Meat Processing

In regard to processed meat products (sausage and ham, etc.) in Kazakhstan, as described in the clause that touched on dairy products, each company prepares its own technical conditions based on governmental safety requirements, and after attaining governmental approval, production and marketing becomes possible.

Such safety requirements are applicable to domestic and imported livestock meat, semi-finished products, sausages, processed blood products, and other foods, including meat.

The main items, regarding the safety requirements of meat products, are conditions related to livestock slaughtering, temperature control from slaughter to production of the final product, items subject to inspection at the time of acceptance, and the product itself, etc.

* Main items regarding the slaughtering of livestock:

Securing a veterinarian's certificate is indispensable for livestock slaughter.

Maximum storage period required after slaughter: cattle, sheep, and horse: 24 hours; hogs: 12 hours; fowl and calves: six hours (from the difference in softening time subsequent to cadaveric stiffening.)

* Temperature and humidity control from slaughter to production of the final product

Table 4-11 Safety Requirements for temperature and humidity in meat processing facilities

Facilities	Temperature	Humidity
Defrosting temperature for raw meat	16-20	90-95
Storage temperature after defrosting	4	90
Cutting and packaging room for raw meat	12	70
Brine for ham	4	85
Drying for sausage	12	75
Cooling for sausage	2-8	90-95
Storage for sausage (Boiled)	0-8	85-90
Storage for sausage (Smoked and boiled)	12-15	75-78

Source: Prepared by JICA Study Team from the technical requirement ofProcessed meat products

* Test items on deliveries at the time of acceptance and on products themselves

The acceptable criteria for nitrosoamine, benzopyrene, toxic substances, antibiotics, agricultural chemicals, and radionuclides, etc., within basic ingredients and in processed meat products themselves, are as follows:

Table 4-12 The acceptance criteria for meat processing

Categories	Items	Standards
Carcinogenic materials	NDMA and NDEA(mg/kg)	0.04
	Benzopyrene mg/kg	0.001
Toxic materials mg/kg	Lead	0.50
	Arsenic	0.10
	Mercury	0.05
	Cupper	5.00
	Zinc	70.0
Antibiotics mg/kg	Chloramphenocol	ND
	Tetracycline group	ND
	Glygine	ND
	Basitran	ND
Pesticides mg/kg	Hexacyclocyclohexane	0.1
	its isomers	0.1
	DDT and metabolites	0.1
Nucleotides Bk/kg	Cesium 137	160.0
	Strontium 90	50.0

Source: Prepared by JICA Study Team from the technical requirement of Processed meat products

4.3.10 Meat Products and Processed Foods Produced in Kazakhstan

Representative processed meat products produced in Kazakhstan are given in the table below.

Table 4-13 Representative processed meat products in Kazakhstan

Category	Sausages	Semi-finished products	National food	Delicacies
Main Products	Boiled sausages Ham Salami boiled Small sausages Frankfurter sausage Semi-smoked sausages	Dumpling (ex. Perimeni) Meatballs Fried sausage	Horse meat etc.	Smoked chicken Smoked pork Smoked meat Pressed liver

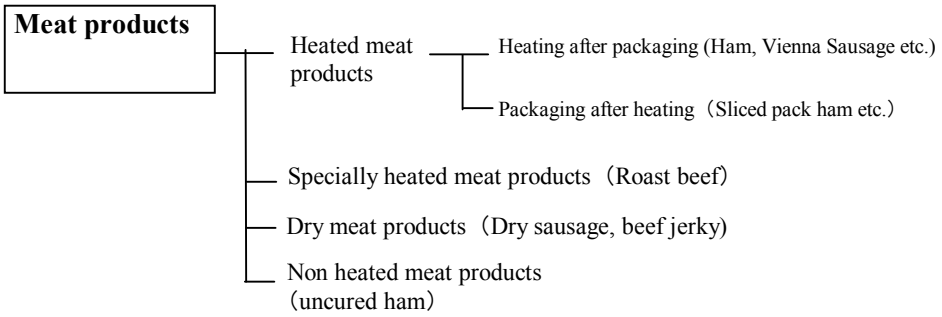
Source: Prepared by JICA Study Team

In consideration of the present situations of processed meat products in Kazakhstan, processed meat products subjected to the recent survey were not limited to sausage and ham only, and included semi-finished products, as well as other meat products.

* Sausages: Sausage, ham, and salami sausage, etc.
* Semi-finished products: Frozen foods, such as “pelmeni” (a Kazakh-type gyoza dumpling,) meatballs, etc.
* Others: Horse meat and other unique Kazakhstan meat, smoked chicken, etc., and other meat products.

Column: Classification of Meat Products in Japan

The classification of meat products in Japan is as follows:。

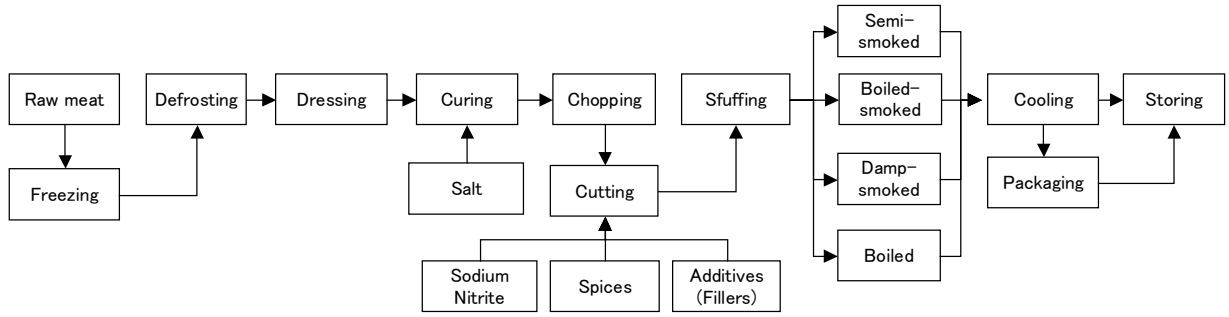


Meat products distributed on the market in Kazakhstan are, when the abovementioned description is applied, mostly heating after packaging products and dried meat products. Non-cooked meat products, such as uncured ham, are not available.

(1) The Production Process of Meat Products at Meat Processing Plants

The production process of sausages at meat processing plants is illustrated below, as an example.

Sausage production



Source: Prepared by JICA Study Team

Figure 4-14 Process of sausage production (sample)

Raw meat frozen after being slaughtered is defrosted and each part required for sausage is dressed, and cured with sodium nitrite and salt. Next, while chopping and cutting takes place, sausage ingredients are adjusted with spices and sodium phosphate, then stuffed in casing, smoked, cooked, and after being cooled, cryopreserved.

Column: Packing for Longer Storage Periods and Food Additives

The history of processed foods can be considered to be synonymous with the history of technological development designed to extend the shelf life of food. The specifications of one certain company are stipulated as follows: "Casing only without packaging; Expiration date: within three days. If vacuum-packed, six days is ok, and if combined with food additives (preservatives), 40 days is fine."

Expiration date of boiled ham product

	Temperature	Relative humidity	Packaging	Food additives	Expiration date	Remarks
1	0 – 8 C	75±5%			not more than 72 hours (3 days)	
2	0 – 8 C	75±5%	in vapor and gas proof casings		not more than 10 days	
3	5 – 8 C		Vacuum-packed		not more than 5 days	
4	5 – 8 C		Vacuum-packed		not more than 6 days	cut for portions of No.3
5	0 – 6 C	75±5%	Vacuum-packed	Food additives	not more than 20 days	BK Giulini (Germany)
6	0 – 6 C	75±5%	Vacuum-packed	Food additives	not more than 25 days	cut for portions of No.5
7	0 – 6 C	75±5%	Vacuum-packed	Food additives	not more than 40 days	in a whole of No.5

(2) In-house inspection of processed meat and factory audit

As already referred to under dairy products, inspections carried out by processing companies for the sake of quality control, in accordance with in-house standards, and in order to meet safety requirements laid down by the government, consist of two types: an in-house voluntary inspection within the company, and externally commissioned inspections. In addition, external plant inspections are also performed.

In-house Slaughter

a) Voluntary in-house inspections

* In-house and slaughterhouse animal inspections cover identifying internal organ anomalies by visual observation, identifying the fat characteristics, and an overall quality inspection of the meat itself.
  Finally, sensory tests (flavor, taste, and color, etc.) are performed on all final products.

b) Externally commissioned inspections (monthly reports for all products submitted to the National Institute of Hygiene and Epidemiology)

* Veterinary inspection (sampling performed in the presence of a veterinary inspector)
  Cost: KZT 186 per sample
* Cost of microbial inspection: KZT 800 per sample
  Covers coliform groups, salmonella, clostridium, and staphylococcus aureus strains, etc.
* Cost of physico-chemistry test: KZT 1,500 per sample
  Test items include: a component analysis of sodium nitrite, phosphate, and the salt content, etc., and trace analysis of benzopyrene, nitrosoamine, antibiotics, radionuclides, and agricultural chemical residue, etc.

c) Plant audit by certification bodies

To ensure that processing plants comply with governmental regulations, annual inspection and certification is compulsory. In cases where private sector ISO9001 has been acquired, another yearly inspection is conducted.

4.3.11 Certification and inspection system for raw materials and finished products

(1) Government certification systems for food manufacturing and retailing

In Kazakhstan, all companies engaged in the production, processing, storage and/or retail of food products are required to undergo certification in relation to technical regulations on food safety (i.e., safety requirements). The safety regulations apply to manufacturing processes as well as finished products. This section describes the organizations responsible for administration and implementation of the certification system; the certification process; the scope of the certification system; and legal measures for infringements of the regulations.

1) Quality and safety standards for food products and manufacturing processes

Quality and safety standards for food products and manufacturing processes are broadly divided into three groups as follows.

i) Technical regulations, prescribing the minimum safety requirements in each food category in Kazakhstan. These cover all areas from input of raw materials to manufacturing, production and storage facilities, distribution and retail. (Example: Technical Regulations on Milk and Dairy Products)

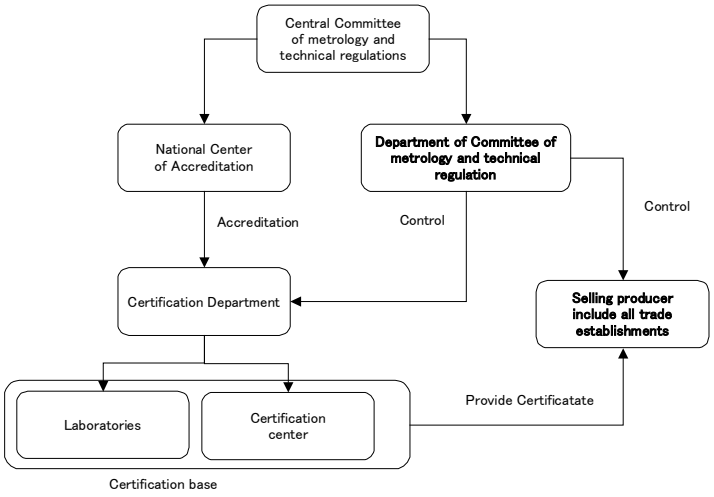
ii) Technical requirements for products and manufacturing processes, specific to each food type in Kazakhstan. (Example: Technical Requirements for Cheese)

iii) Technical conditions for products and manufacturing processes pertaining to specific manufacturer products, setting out specifications and standards for each product. All manufacturers are required to submit a set of Technical Conditions to the Committee of Metrology and Technical Regulations for approval, together with ingredients lists and the relevant food safety data.

2) Certification organisations

The Central Committee of Metrology and Technical Regulations has departments in each state which are responsible for granting authorization to approved laboratories and certification organizations as well as overseeing manufacturers and retailers.

Certification of food products (conformity with safety requirements) is carried out by approved laboratories, while certification of manufacturing processes (conformity with manufacturing standards) is carried out by certification centers. These bodies operate as a certification base and are authorized to issue certification documents. The certification base themselves are authorized by the National Center of Accreditation, which checks the manufacturing standards against the government safety requirements once per year.



Resource: Prepared by JICA Study Team from the Central Committee of Methodology and Technical Regulations

Figure 4-15 Food certification bodies

3) Certification process

Certification of food companies encompasses the entire range of processes, from inspection of manufacturing equipment at production plants (including analysis of conformance with technical standards) through to the production and retailing of new products.

i) Production and retailing of new products
Certification from the Committee of Metrology and Technical Regulations is required in order to develop and manufacture new food products. The manufacturer is required to present a set of manufacturing and product standards in accordance with the government technical regulations, and to maintain technical data (for application purposes) describing the composition of new products and compliance with government safety requirements.

ii) Production line inspections
Factories are subject to hygiene inspections every three months by the National Institute of Hygiene and Epidemiology (Ministry of Health) and the Scientific Veterinary Research Institute (Ministry of Agriculture). Every six months, the National Certification Center checks internal compliance data at factories. (In addition, samples of all products must be forwarded regularly to the National Institute of Hygiene and Epidemiology and the Scientific Veterinary Research Institute for testing, as described below. Certificates are issued.)

iii) Conformance with government technical regulations/safety requirements
Every food product is tested annually by the Committee of Metrology and Technical Regulations for conformance to technical and/or safety requirements for specific food types.

4) Scope of certification

The scope of the certification system extends to all food products manufactured within and outside Kazakhstan, and covers the stages from production to processing, storage and retail. Distribution is excluded since it is subject to a different domestic certification scheme. Medical food products and products prepared for consumption in the home are also excluded.

Certification is valid for one year, or three years if the processing plant has ISO9001 accreditation. The certification scheme is recognized on exports to ten countries with which Kazakhstan has agreements in place, including Tadzhikistan, Russia, Belarus and Armenia.

5) Legal measures for infringements

The penalty for an infringement of the regulations is equivalent to 22 - 80 days of the minimum wage. In the event of a second infringement within the same calendar year, certification is withdrawn and the company is suspended from trading. Over the past 10 months some five million KTG of penalties have been issued, though nearly all the problems were subsequently resolved. To date there have been no problems in relation to dairy products or processed meat products. Apparently the majority of the problems that did occur were to do with imported foods.

6) Other

The organisation is responsible for overseeing production and retail facilities and also provides infringement reports and information about regulations in other countries, generally via monthly briefing sessions (first Wednesday of the month).

Technical regulations for standardization and certification: These were newly promulgated in 2004 in a bid to bring domestic standards for product quality and safety into line with global standards. At present, the revised 97 standards are still in force. Most companies have developed their own proprietary standards, often based on specifications from Russia. The government is working to standardize the various systems.

(2) Inspection systems for raw materials and finished products

Each state of Kazakhstan has a major central laboratory that networks with local laboratories in the state. Together the laboratories are responsible for food safety testing of raw materials and processed products.

Table 4-14 Laboratories for food quality and safety inspection

	Veterinary Research Institute	Agricultural Laboratory	National Institute of Hygiene and Epidemiology
Purpose	Animal disease diagnosis and food safety inspection	Quality inspection and food safety analysis of agricultural products	Food hygiene inspection
Main control	Subordinate agency of Ministry of Agriculture	Joint Stock company under Ministry of Agriculture	Subordinate agency of Ministry of Health
Main function	Animal disease diagnosis (Immunological test) Food safety analysis	Quality inspection for agricultural products and crop, Issuing quality passport for export, Issuing food safety certificate for agricultural products.	Hygiene inspection for food and human
Main equipment	＜Animal disease＞ Autoclave, Immunoassay etc. ＜Food safety＞ Atomic absorption, GC, HPLC ＜Microbiology＞ Microscope, colony counter, medium preparation equipment ＜Virus＞ PCR, Laminar flow, Autoclave ＜Radioactive＞ Testing for Sr,Cs	＜Crop inspection＞ Near infrared ＜Component analysis＞ Feed content analysis ＜food safety＞ Radioactive, Heavy metal, Spectrophotometer, GC	＜Radioactive＞ Spectroscopic、Radiation ＜Hygiene and chemistry＞ Food hygiene, pesticides, toxic materials, food additives, water quality, high polymers ＜Bacteria＞ Pathogenic microorganisms, parasites

Source: Prepared by JICA Study Team

Each facility fulfils an important role in ensuring the quality and safety of dairy products and processed meat products.

• Veterinary Research Institute
Monitors the health of milk and beef cattle, pigs and other livestock used to produce raw materials to check for illness and disease. Conducts tests on raw milk and raw meat to check for contamination in the form of toxic substances, microorganisms and radioactive materials.

• Agricultural Laboratory
Checks the safety and quality levels of agricultural produce used as livestock feed, and issues export clearance certificates for key export crops such as wheat.

• National Institute of Hygiene and Epidemiology
Checks the safety and quality of dairy and processed meat products through a variety of tests for chemical substances, toxic substances, radioactive materials, microorganisms and parasites.

4.3.12 Educational institutions, related to agricultural food production, based on North Kazakhstan oblast

(1) The North Kazakhstan Research Institute of Livestock production and Plant Biology

The Institute is located in Bishkul town, 50 km away from Petropavlovsk. The Institute's main area of work is to conduct a research and provide guidance for PhD course students of the North Kazakhstan State University. Moreover, the Institute has its own experimental fields for cultivating forage crops for milking cows, horse, camel, pigs etc.

(2) North Kazakhstan State University

With 10,000 full-time students, North Kazakhstan State University is considered the biggest university in North Kazakhstan oblast. In 2007, the University celebrated 70 years since foundation. Classes last 100 minutes with a five minutes break. Experiments and laboratory works are conducted in rather small groups of 5 students. University introduced the integrated automated management system, which connects all the departments and other services operating the teaching process. All lecture halls are equipped with the computers, connected to the electronic white board.

University encourages students with excellent grades by annually offering a tuition fee exemption to top five students. After graduating general secondary school, students take a universal preliminary examination, similar to that of Japan. They may choose different faculties and including mathematics, 3 various courses of study. After successfully passing the examination, they enter university.

1) Faculty of geography and natural science

According to the University brochure, published in 2007, faculty of geography and natural science consists of 4 departments: department of General biology, department of Geography and Ecology, department of Agriculture and department of Organic chemistry and macromolecular chemistry. The following courses are taught: the Science of agriculture, Biology, Geography, Forestry management, Chemistry and Ecology. Main fields of research are Chemistry of biologically active components (pharmaceutical ingredients), Chemistry and technique of surface activity, Air pollution management, Ecology of wild birds, Vegetation monitoring, Introduction of new forage crops, etc.

2) Summary of subjects of Agricultural department

Students are offered the following courses of study: Horticultural and Agricultural chemistry, Agricultural machinery engineering, Biotechnology, Vegetation cultivation engineering, Vegetation protection from disease and insect pests, Geological foundation and soil science, Cultivation of crops, Agrobusiness, Biometrics (biological survey), Phytopathology, Standardization, Vegetation protection from weeds, Zoning of lands suitable for farming, Vegetation feeding system, Horticulture, Zoning of lands suitable for livestock-farming, Soil improvement, Support system of farm land soil, The owing circles of North Kazakhstan oblast, Production system of organic and chemical fertilizers, Livestock forage production, Agricultural cultivation of selected seeds, Production technology and storage of garden produce, Small animals (rodents) harmful to agricultural plants, Farmland soil improvement. There are no subjects related to food products.

3) Experimental facilities at Agricultural department

- The organic chemistry experimental laboratory, equipped with a rotary evaporator, manufactured in Russia, a spectrophotometer, a centrifuge , carries out the extraction of medicinal components from the flowering plants. The precise analysis of the components is completed in the research institute in Almaty. Companies show great interest in these components for pharmaceutical purposes.
- The chemistry laboratory is provided with the test tubes and pipettes for conducting non-organic ion analysis, glass containers and tools, chemical reagents (prepared in advance, time of preparation is unknown), a desiccator, a muffle, shaking apparatus, etc. There is no colorimeter.
- The microbiology laboratory has two optical microscopes with attached video-monitors. There are some other optical microscopes for students' use which we could not verify. For there is no food microbiology study course at University, students must attend practical training directly at the companies. This, in turn, serves as a first positive step towards their future employment by the same companies (according to the source).
- The biochemistry laboratory: installment of a new lab for soil analysis is projected in 2010.
- Agricultural Biostation (similar to Japan's agricultural experimental stations): University is planning to establish a station on the 9 hectare of land 5 km away. At the moment, preparatory works are carried out (obtaining necessary funds, equipment and materials).

4) Quality management system

University has obtained ISO9000:2001. In the past, University conducted courses on quality management. University does not have a consulting service, for such a service is provided by private companies.

(3) The Yessil Agricultural College (named after Mr.J.Kazatov)

The Yessil Agricultural College, a junior college, has a long history. It was established in 1885 as an agricultural school with only 25 students attending it in the beginning. In 1923 it was renamed the Yessil Agricultural College and started training of agricultural specialists, establishing stockbreeding and veterinary courses. In 1941, the number of faculties was raised to nine: Veterinary, Ecology and protection of agricultural brands, Agricultural economics, Agricultural machinery, Physical training, Forestry and Park Management, Accounting and Auditing, Law, Architecture and construction.

- Number of students: number of full-time students – 686; number of external students – 200
- Student life: dormitory does not provide free food, meals cost about 250 tenge per portion, 2 portions a day.
- School period: education period is three years and one month. Compared to general secondary school period it is one year longer. At present, there is a possibility of adjusting the college term to Western system and reducing it to 2 years system.
- Qualifications: absent
- Post-graduation activity: 50% of graduates enter university. 30% find employment as researchers, assistant aids in some other universities. There is no clear data about the rest 20% of graduates.
- Educational system of Kazakhstan is 11 years of school education (primary, basic, general secondary) plus two years of professional or vocational school, or nine years of school education (primary and basic) plus 4 years of professional college. Students graduated professional schools can continue education at university. If the continue studying the same

specialty, they can be exempt from obtaining grades for the first year and directly start second year of university. Total educational period of students graduating this college amounts to 14 years and one month (11 years of school education plus three years and one month of university). There is some disparity in the college school system. According to children, some students enter this college after 9 years of school education. Also, 610 students receive a yearly school expense subsidy, while 76 students pay for their education. Part-time workers and full-time workers earn between 40, 000 and 75,000 tenge a year. The academic term breaks, teaching schedules and assignments, compensations and other administrative matters are decided on the basis of complex calculation standards. Unfortunately, despite expectations, we got no certain explanation about the present college conducting practical training or apprenticeship in order to acquire high-level technique of food processing. In the past, an attempt to produce dairy products was made by the college. However, after six years, despite having finished the necessary facilities, a more cautious approach was taken.

4.3.13 Issues in Food Processing

(1) Shortage of human resources

There is shortage of educational institutions for food processing in whole Kazakhstan, not exclusively North Kazakhstan Oblast. To improve the management of small and medium-sized enterprise, it is desirable to reduce labor cost by sharing the common knowledge from raw material procurement and production to sales strategy within all staff, but there is shortage of human resources with wide knowledge because of sectionalist from former Soviet era.

Additionally, it is necessary to provide the staff continuous training and information in the company, but adult education system has not yet consolidated to update the information on commodity management and food safety regulations for new product and market development.

Major company can have own human resource development system, but small and medium-sized enterprise has some difficulty to train his staff without low cost practical training intuitions.

(2) Development of profitable products

In terms of the competitiveness of food processing industry in North Kazakhstan Oblast, it is necessary to consider how much value-added from raw material to final products, in other words, what product is most profitable. The following table shows the estimation of added value to the dairy products from the market price in Petropavlovsk. Most value-added product is Yogurt, by contrast, cheese and butter is low added-value product because of requiring a lot of care and time for processing with a large amount of raw milk.

Generally, the added-value of milk is low in the world. But the added-value of milk of North Kazakhstan Oblast is not so low, because the price of raw milk is also low. The low competitiveness of the products in North Kazakhstan Oblast attributes to the dependency on the sales of milk.

Table 4-15 Added-value of dairy products in Kazakhstan

Product	Price (US$)	Unit price (US$/1kg) A	Used raw milk (kg/1kg) B	Added value A/Bx0.31
Milk (3.2% fat)	0.44-0.51/500ml	0.85-0.99	1kg	2.7-3.2
Milk (1L)	0.94-1.25/L	0.91-1.21	1kg	2.9-3.9
Yogurt (Hard-type)	0.61/200g	3.1	1.8kg	5.6
Yogurt (Dring-type)	0.82-1.25/0.5L	1.59-2.42	1.8kg	2.8-4.3
Smetana (15% fat)	0.61/200g	3.05	4kg	2.5
Butter (72.5%)	1.25/200g	6.25	20kg	1.0
Chedder cheese	7.93/Kg	7.93	20kg	1.3
Raw milk = 0.31 US$ (46KTG)				

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Butter (72.5%)	1.25/200g	6.25	20kg	1.0
Chedder cheese	7.93/Kg	7.93	20kg	1.3
Raw milk = 0.31 US$ (46KTG)				

Source: Prepared by JICA Study Team

Column: What dairy products are profitable in Japan?

Below table shows that what dairy products are value-added among Japanese products in Japan. The added-value is calculated to divide Unit price /kg by Used raw milk.kg/1kg.

Product	Price ($)	Unit price $ /1kg A	Used raw milk (kg/1kg)B	Added value A/B
Milk	1.9-2.6$/L	1.7-2.6$	1kg	1.9-2.9
Yogurt (Hard)	2.8-3.3$/500g	5.6-6.7$	1.8kg(SNF:15%)	3.4-4.2
Yogurt (Drink)	2.8-3.9$/L	2.8-3.9$	1.8kg(SNF:15%)	2.2-3.1
Cream(40%fat)	4.2$/200g	21.1$	10kg	2.4
Butter (85%fat)	3.9$/200g	19.4$	21kg	1.0
Cheddar cheese	1.9-2.8$/100g	18.9-27.8$	10kg	2.1-3.1
Cream cheese	4.0$/200g	20.0$	10kg	2.3
Camembert cheese	3.9$/200g	19.4$	9kg	2.4
Emmental cheese	8.9$/100g	88.9$	10kg	10.0
Rock fall cheese	8.9$/100g	88.9$	10kg	10.0
raw milk price = 0.9 $				

In Japan, milk is generally low value-added product, the profit is also low even in large scale companies. Most profitable product is cheese and Emmental cheese has highest value with 10, and Chedder cheese is 2-3. The added value is proportional to the difficulty level of production. The added-value of Camembert is high because of using small scale facility with short aging period. Some cheese are not so profitable even though high added-value since it takes long time to commercialize them.

Fermented milk such as Yogurt is more value-added and profitable product than cheese, since the yogurt can be fermented from only milk and sugar as raw material with short aging period such as 3days.

The added-value of butter is low in Japan, and it causes by low consumption in Japanese consumers.

The range of added-value in cream is very wide by controlling mixture of fat content with vegetable oil to make ice cream and cream cheese with high profitability and short production period.

(3) Improvement of packaging

Agroprodukt, dairy company in Almaty, has established new brand, Odary, and developed new cottage cheese to expand sales to 30% with reclosable packaging technology, and this is a sample for enforcement of competitiveness combined with improvement of packaging.
（http://www.ceepackaging.com/2010/03/22/reclosable-product-set-to-attack-russian-cheese-market/）

・Reclosable packaging technology and expanding shelf-life

The package can reclose 10 times with special film, And expand shelf-life from three days to three weeks. The shelf-life expansion has made 30% sales increase with market expansion to whole Kazakhstan.

・New brand building and design of new product

Agroproduct has other cheese brand, but established new dairy product brand, Odary, with the name of oriental lady and Kazakhstan like design.

・Marketing strategy for export promotion

At First stage, the company has penetrated domestic market by comparative selling with other cottage cheese at the shop. And secondly, he opened local sales office in Russia for the Russian market.

Agroprodukt is one of the big dairy processing companies[29] in Kazakhstan for selling cheese. The company can introduce new packaging technology and build new brand because of large scale and big amount of sales and production. Following points are good hints for North Kazakhstan Oblast to enforce the competitiveness;

- To remove the bottle neck of short shelf-life by improving packaging
- To expand cottage cheese market by building new brand not compete with own existing brand
- To develop new product that can compete with foreign product in foreign countries

When the small and medium-sized enterprises in North Kazakhstan Oblast develop new products, they need a lot of knowledge and technology on information dissemination, technical development, human resource development, design development, and marketing. But they have no assistance system and organization for regional food industry, and it causes widening the regional difference.

[29] Top seven cheese selling companies in Kazakhstan: FoodMaster International, Kovel-Moloko, DEP, Wimm-Bill-Dann, Hochland, Agroprodukt, Lactalis （Dairy Products in Kazakhstan, Euromonitor International, February 2010）

4.4 Distribution Sector

4.4.1 Distribution Structure of Kazakhstan and Russia

The distribution structure for the grocery market of the Republic of Kazakhstan and the Russian Federation, includes Hypermarkets, Cash and Carry（Cash only system）, Supermarkets and other small scale stores such as kiosks.After the collapse of the Soviet Union, and as a result of a lack of products being available from state run stores many road side stores flourished selling vegetables and fruits grown at a Dacha (a country house), homemade jams and tomato paste etc. Since that time, the market scale has gradually expanded and'markets' have operated in a more systematized way. Initially, sales were concentrated to outdoor stalls however with the introduction of the state regulations in relation to hygiene, the number of businesses moving into covered commercial facilities increased.

Meanwhile, foreign capital hypermarkets and supermarkets are also using domestic and foreign distribution networks and many are starting to develop further.

Categorizing the present distribution structure of each country, there would be three main categories and they include i) Markets, ii) Supermarkets, and iii) Hypermarkets. The features of these three categories are described below.

Table 4-16 Features of the distribution structure

	Market	Supermarket	Hypermarket
Location	・Places where there is a large movement of people ・Within commercial premises	・city/town centre	・Suburbs（There are free bus services available）
Scale	・Many small stalls of about 3.3 ㎡ in size are grouped together	・Small to medium scale	・Large scale
Sales method	・Face to face sales（Cash is paid direct to the seller）	・Cash registers	・Cash registers
Price	・Cheap to normal	・Normal to expensive	・Cheap to normal
Customer base	・A large number of elderly customers (A generation which is used to queues, Pensioners, etc）	・All levels	・Car owners, young generation
Items	・Groceries, daily commodities, clothing（Fruit & Vegetables and high quality fresh meat ）	・Mainly groceries and daily commodities	・Groceries clothes, Electrical appliances etc
Others	・Produce from individual farmers are also sold here. ・Antenna shops for manufacturers are also used. ・ Many laborers from central Asia.	・Focused on items that are stocked by large manufacturers ・There are many items which have a long shelf life. ・In high-end stores the value is displayed in units of 100g（Similar to Moscow） ・Long business hours such as 24 hours a day	・Bulk stocks ・Card issuing for member benefits） ・Long business hours

Source: Prepared by JICA Study Team

4.4.2 The current conditions of the market

A market survey in relation to livestock products and dairy products from the state of North Kazakhstan was carried out in the following areas.

- Petropavlovsk city
- Astana city
- Omsk city（Russian federation）

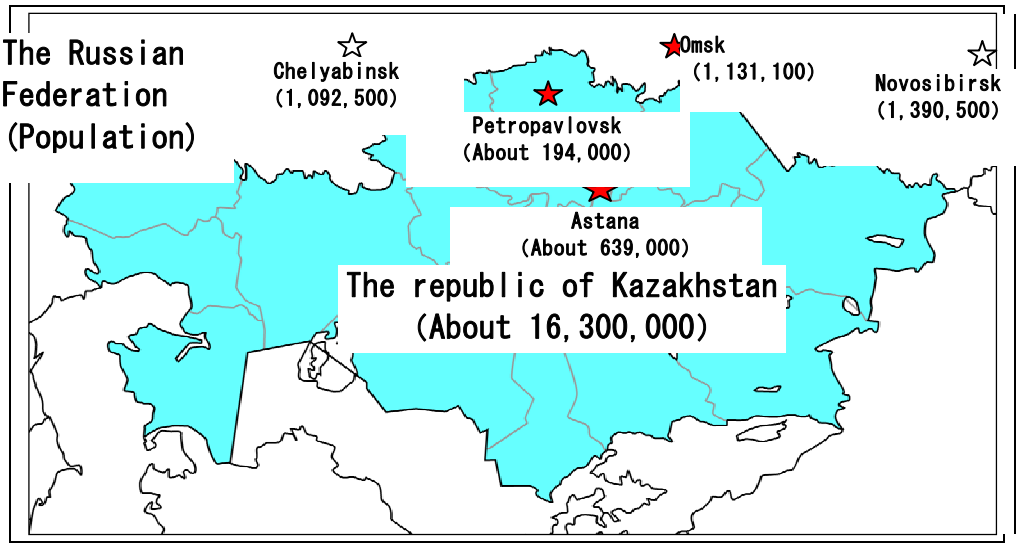


Figure 4-16 Map Marketing region[30]

(1) Petropavlovsk

About 30% of the population North Kazakhstan live in the city of Petropavlovsk which is located in the North of the state, where many livestock and dairy product factories are located and many of the cities local products areis widely distributed in the grocery store the city centre.

The distribution structure of Petropavlovsk can be divided into, i) The market （ Locals call the market “the Bazaar”) and ii) Small to Middle scale supermarkets. There are no hypermarkets or large retail stores in down town Petropavlovsk (As of our survey December 2009). In Petropavlovsk, there are new commercial facilities and an increasing number of people establish shops in the Bazaar which is a collective point for many small retailers, and as such this market (Bazaar) plays an important role as a base for the provision of food for the citizens of the city.

1) Bazar (Market)

In down town Petropavlovsk, there are outdoor bazzar and indoor bazzar which are located in commercial facilities. Even in Petropavlovsk there is a tendency to move from the outdoor bazar to indoor facilities.

[30]The information regarding population was sourced from The Russian Statistics 2008（The Russian Department of Statistics）and the 2008 information （Kazakhstan Dept of statistics）.

The **"Central wholesale market"** is an outdoor market and is surrounded by a fence. The sales area at the outdoor market is such that the shops are lined and are equally spaced and there are also shops that operate from tents and bulk cargos. Apart from groceries, daily commodities and clothing are sold.

Dairy products and meat processing products are displayed and sold from refrigerated cases. There are some shops that display the temperature for the consumer to view by placing a thermometer in the show case, but there were also cases where cheese just placed into a cardboard box open to the air was displayed and being sold at these shops. Our overall impression was that the product management was not sufficient.

In relation to milk, apart from domestic products (Petropavlovsk, Almaty) there are a lot of products from Russia. In relation to cheese, the market is largely occupied by German, Ukrainian and Russian cheese with very little domestic cheese. According to a sales clerk, imported cheese occupies about 70% of the market. In relation to livestock products, many local products are readily available with many Russian products (Omsk) also available.

The middle aged to the elderly customer base is largely tended to be price sensitive.

Russian yogurt is popular. In many cases there is no indication of where the item is produced only a seal showing the price. One Fruit Yogurt is between 40 to 50 tenge.

Milk from Almaty （1% is 150 tenge per litter、2.5% is 160 tenge per litter）

Smoked cheese from Omsk that was being sold in a cardboard box from the side of the road. The price is 340 tenge per kg.

A thermometer set up in a show window.

The **Central market** is located on the first floor of a commercial building and face to face sales are conducted from a booth where is about 3.3 ㎡. The products sold include vegetables, fruit, flowers, livestock products, dairy products, bread and sweets.

In relation to dairy products, products from Omsk were seen but the overall percentage of locally produced products was high. In relation to dairy products, a large share of the market is made up of local products for items such as milk, drinking yoghurt and other products which have a short life, while a large share of the market is made up of imported products from Russia for yogurt and cheese.

The majority of cheese is from Russia and Germany.

Most sausages are mainly sold by weight. There are a great variety of sausages. The sticker of the local producer is attached.

Every Saturday, the **Saturday market** is held and fresh meat, livestock and dairy products which are produced in the various regions are sent directly from the farms to this same market for sale. This is projected in the co-ordination of the North Kazakhstan Agriculture Department for Agricultural and Processed Goods as well as the marketing department. With this project, prices are low and fresh meat can also be purchased, and as such it is bustling full of shoppers. The prices are set at 10～12% lower than that of the standard market prices and consumption tax is not charged. The customer base is made up largely of the elderly. The types of meat that is cut and sold at the market includes sheep (fat-tailed sheep), pork (liver), chickens, horse (stuffed internal organs), beef (some internal organs) and rabbit (with kidneys attached). The meat is officially stamped according to whether it is a medium sized or a large sized domestic animal. All sales staff wear a red and blue uniform. Direct sales by food processing and dairy product makers occurs causing long queues. The State Governments plan to arrange for direct sales from meat processors has a flow on effect to other booths in the market.

A booth from a regional producer（Saturday market）.

The sausage sales space（Saturday market）.

"Tiger"is a market which has a face to face selling market located in the first floor of modern commercial building. Within the commercial facilities there are not only grocery stores but also a multitude of small stores that sell clothing, electrical appliances, miscellaneous goods, toys & games, stationary items and music CD's. Families and couples can be seen shopping here.Groceries are located on the first floor of the commercial building, and the latest refrigerators can be seen in the various booths. Cattle livestock and dairy products are also sold directly by the makers, and long queues can be seen from their booths. Not only with new equipment, but a wide range of products from expensive to low price products are available. The business hours are from 09:00 to 20:00.

An antenna shop for meat processing products

An antenna shop for dairy products

2)Supermarket

There is a small to medium size supermarket in central Petropavlovsk. In the entrance to the supermarket, there is a locker for hand carry baggage and they also have shoplifting prevention measures in place. Also, there is a security guard positioned close to the cash register and they have also taken measures against robbery.

Within the supermarket, customers are free to choose items and put them in their shopping cart,but in relation to items that are in the 'weighing corners' such as cheese and ham, a seal displaying the price is placed on the goods after they are weighed and payment is made at the cash register. There are some supermarkets which opens 24 hours which are convenient.

"None plus**"**is a bread factory owned by chain supermarkets. Groceries and daily commodities are sold there. Salad, ham, etc. are sold by weight. It is popular among the cities residents as you can purchase fresh bread. The business hours are from 08:00 to 24:00.

There is a wide variety of dairy products available that are produced in Petropavlovsk. At the weighing booths, prices are displayed allowing consumers to understand the price of both in the production areas of Omsk (Russian federation) and Petropavlovsk. The price of Omsk produce is about 20 to 30% higher.

"Zum**"**is an established central supermarket, which has various tenants which include restaurants, clothing stores, and stores that sell miscellaneous items. Commercial facilities like the supermarket are located on the first floor. There is a wide range of items sold in the booths including alcohol, bread and sweets, cheese and livestock products. The space between the shelves is very narrow and as such it would seem a little crowded when shopping with a cart.

In relation to meat processing products, there is a wide range of items that are in packs. There are expensive items and the price is set higher. This supermarket is open 24 hours a day.

(2) Astana

Astana city is the capital of the republic of Kazakhstan. After the relocation of the capital in 1997 there has been an increase in population and the population reached about 630,000 as of the 1st of January 2009. With the Governments 'New capital plan', expecting that the population will reach 1,000,000 by the year 2030, and as for domestic neighboring cities it has a promising market.

The distribution structure of Astana is made up of i) Market, ii) Supermarket and iii) a Hypermarket as of which was opened in the end of October 2009. It is a large city in North Kazakhstan and is a promising market with a possibility of market entry. A survey was also

conducted in relation to the distribution conditions of meat processing products and dairy products from Petropavlovsk.

1) Bazzar

In Astana, due to hygiene problems, the outdoor markets have been closed and there has been a shift from outdoor markets to indoor facilities.

Eurasia Bazaar is the largest market in the city centre of Astana. Meat processing products and dairy products are displayed in show cases (Chilled), dairy products are displayed and according to the clients demands the products are taken out of the cases and sold. It would seem that hot selling items are stocked in each of the booths but there is a similar variety of both livestock and dairy products.

As for products that are produced in North Kazakhstan, sausages are sold. Items that are sold in Petropavlovsk for 780 tenge are sold for 950 tenge. According to the sales staff, there are makers in the city centre of Petropavlovsk that have pulled out due to high transport costs. Cheese from North Kazakhstan was also being sold but according to sales staff, Russian cheese is softer and was better received. Butter from North Kazakhstan is popular and is sold in many small stores.

(2) Supermarket

In Astana, small to middle sized chain supermarkets are expanding and are penetrating as places where general grocery items and commodity procurement can be made.

"Lamb Stall**"**,is famous as a wealthy class supermarket. Groceries, alcohol, daily commodities and electrical appliances are available, and it has the appearance of a small scale hypermarket. With grocery items, as there are a number of items in the Lamb Stall packaging, there is the possibility of receiving OEM supply from a domestic maker.

Prices are at the higher end of the scale. Apart from Dairy products from the surrounding region (Russian federation and Kazakhstan), there are some items that are from Germany and Holland. There is a lot of cheese which comes from the Astana region and the price ranges from 1,060 ～ 1,240 tenge per kilogram. According to one of the sales clerks, product quality would see a ranking in the order of Germany first and then Russian and locally produced items. There are a lot of locally made sausages.

Products from North Kazakhstan were not on the shelves. There was a difference between the supermarkets in Astana and the supermarkets in Petropavlovsk, overall the scale of the shops and the variety of the products available was the main differences and in spite of the day time, very few customers in shops were little concerned.

"Astana"is a medium size supermarket and is located in the centre of the city. Groceries, alcohol and daily commodities etc. are available and the prices are relatively high. The vegetable, fruit, daily prepared dishes and meat corners are well developed.

The following Petropavlovskan products are sold.

- Butter : Small serving of butter and individually wrapped butter (200g, Christianscoa, ВИКОС,211 tenge)
- Milk : The producer is Masurajer, 7.1% concentrate milk
- Sausages : The producer is MEDINIKOV (гуцульская острая, 1,650 tenge/kg, etc)

(3)Hypermarket

"**Metro"** opened in the suburbs of Astana on the 29th of October 2009. When President Nazarbayev visited Germany a contract was concluded to allow Metro to enter the Kazakhstan market and the President also made an inspection during the private viewing held on the 27th of October.

"METRO Cash & Carry"（German capital）now has stores in 30 countries and with this opening its first Central Asian store. The first overseas expansion after the economic crisis was the store at Astana and the planned opening of the store in Egypt has been postponed until 2010. Prior to the economic crisis, the opinion of the METRO specialists was that between 10 ～ 15 stores could open in Kazakhstan.

The floor space of Metro is 6,900 ㎡ and the construction cost was three billion tenge, and employs 250 people. Its target customer base is wholesalers, restaurants, hotels and small to middle sized companies. It stocks about 25,000 grocery items, and purchases items from over 400 suppliers. 90% of the items are produced in Kazakhstan. Product quality and wrapping is based on European standards. They plan to open in Almaty and Kalaganda in 2010.

Metro introduced a membership system where identification is shown and a membership card needs to be issued. The cards are issued at no cost.

Similar to the interior of a giant warehouse, the product layout is very easy to understand . Milk, cheese and the sausages corner, are secluded from other areas by an air curtain, and as such are under temperature control. Near the entrance to the air curtain, a quilt vest for the consumer is available as a way of paying attention to consumer needs.

At the deli corner, there is a section where fresh meat is prepared, and the actual handling of the meat can be viewed from behind a glass window. In order to prevent oxidization of the meat nitrogen is added and the meat is packed. The temperature at the fresh meat corner is maintained between 1～2 degree centigrade.

As the population contains Muslims, the pork, beef and lamb/mutton is sold seperately and frozen meat is not in stock.

Periodically a quality control (QC) team from Metro visit their suppliers and carry out a product quality check based on the METRO management standards. At the time of delivery, all items undergo a temperature check at the time they are taken from the refrigerated truck into the loading bay.（In relation to the details of the product screening system there is curently no further details available. Details need to be obtained from the Almaty head office）.

In relation to products from North Kazakhstan, there are sausages produced by MEDINIKOV and a ham corner and a wide variety of items. Also, dairy products are not stocked. In relation to milk, there is milk from Masurajer but this is not produced in North Kazakhstan.

In relation to future expansion, they were investigating the distribution and export of horse meat. Also, they are positivly participate in coalition with EBRD and DAMU in relation to promotion of small and medium companies of the region. Regarding of the logistic systems, they are considering Omsk, Oliburg and Astana to be bases. There will be a possibilty to expand the market to Russia by using the distribution network of Metro.

The interior of Metro.


Products from Petropavlovsk（Top and middle shelf）.

(3) Omsk

The city of Omsk is situated 273 km to the north west of Petropavlovsk, and is the 7th largest city in the Russian federation. Omsk has developed using the oil pipeline infrastructure, petroleum processing and the petrochemical industry. On the other hand, using this fertile land, starting with wheat many grain crops are being produced, dairy farming is very popular, and meat as well as milk and butter are produced on a large scale domestically.

The distribution structure of Omsk is similar to that of Kazakhstan, that being i) Bazzar, ii) Supermarket, and iii) Hypermarket. From the viewpoint of North Kazakhstan, Omsk is the closest export market, and as the population is large it is an attractive market for considering the possibility of entering the market. In relation to sales conditions of meat processing products and dairy products from North Kazakshtan, a survey was conducted but we were not able to confirm the presence of any produce.

1) Market

In relation to markets in Omsk, there are many cases where they are adjoining hypermarkets and supermarkets. Within the grounds of the market, there are both shops that are open air and under cover, there are many instances where stores stock books, music CD's etc. At the bazzar that we visited, the fresh meat corner was very lively. The consumers seemed to split their shopping between the market and supermarket, for example, they purchased fresh meat, vegetables and fruit at the market and other items were purchased from the supermarket.


A market which is adjoining a Hypermarket "**Renter"**. Fruit and nuts etc seemed to be stocked by many of the out door stores. Business hours were from 9a.m. to 7p.m.


An undercover section of the market. Sampling is possible at the sausage store.

2) Supermarket

We visited both **Continent** and **Mayakku** which are located in the city centre of Omsk. In relation to milk and yogurt and other dairy products, a lot of products of local producers such as **Manros**, **Rubinski Maruchina Konseruvini**, **Lanbumizu** and others as well as the produce from Moscow and produce from large manufacturers from the Moscow state are good selling items. In relation to cheese, about half the cheese is import produce from Germany, Ukraine etc and the other half is made up of domestically produced items including that from Omsk. In relation to livestock products, more than half the products would be from the Omsk region. In relation to the price, it is a little more expensive compared to that of the hypermarket.

3) Hypermarket

There are a total of four hypermarkets in Omsk in December 2009.

Ashan, opened in early November 2009, was the fourth hypermarket and is located in suburban Omsk. Within the grounds of the hypermarket there is ample parking space and a free shuttle bus also operates. A tall Christmas tree decorated in the first floor, and a purpose built skate rink has also been constructed. There is a well developed food court and families seem to be enjoying themselves.

The grocery section is towards the back on the first floor with 50 cash registers set up near the entrance with the products displayed as though it is a warehouse.

Sales clerks wearing roller skates attend to the customers needs within the confines of this vast hypermarket. The prices are set cheaper that those of the cities supermarket, and for items that are under 50 rubles a yellow label indicating the price is displayed and is very noticeable. 50s ruble is a price which consumers have no hesitation in making a purchase (50 rubble is about 150 yen).

The skating rink which is built inside the hypermarket.

Items under 50 ruble are displayed as above.

Renter has introduced a system which always allows customers to purchase products with member price by purchasing a yearly card (200 ruble). There is ample parking space, and as prices are cheaper than supermarkets it is full of shoppers.

There are many items that are in packaging.

The main features of the display are very large.
The member price and the standard price are displayed together.

(4) Selct the target as the market feature

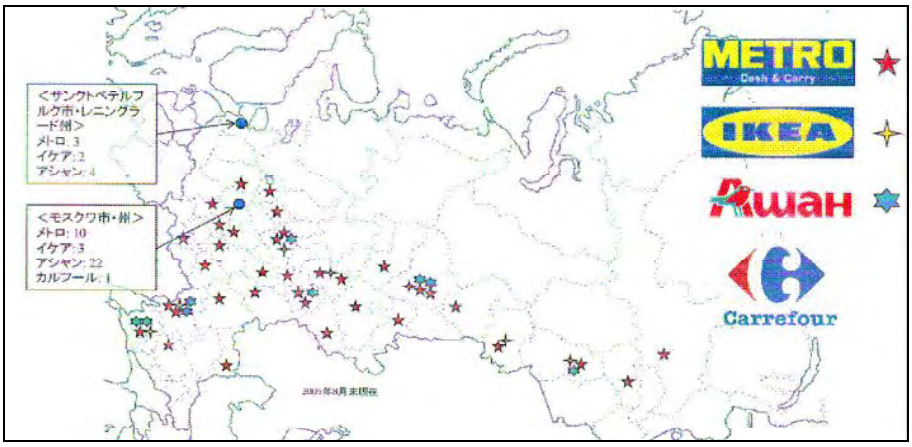
In those three regions, the market scale varied greatly and as such it was difficult to draw comparisons, however Petropavlovsk with a small population without having a hypermarket or a middle sized supermarket, the bazzar was full of activity. On the other hand, Omsk with a population of 1,000,000、the hypermarket equipped the recreation facilities, was very popular among weekend shoppers with a large number consisting of the younger generation. In Russia, there are already a number of foreign financed hypermarkets which have expanded widely. For example, in Moscow city, Moscow state, there are 22 stores of the French hypermarket Ashan, and 10 stores of the German hypermarket METRO. With the wave of Foreign funded hypermarkets, talks have started in Kazakhstan, with the opening of METRO in late October 2009, and also plans to aim at opening a store in Almaty in 2010. While taking a step in the real world in a market which changes from moment to moment, it is necessary to build a marketing strategy for each of the areas.

A price survey was conducted on the main markets and supermarkets in Petropavlovsk. As for the price range of items at the **"Central wholesale market"**, cheap items are stocked and on-sold. Even in the same market**"Central Market"** and**"Tiger"**, brand new refrigeration equipment has been installed and arrangements have been made for product management. A product range which covers a wide price range has been prepared and there seems to be little difference with that of a supermarket. In Russia, as bazzar is slowly fading out, it seems that for the citizens of Petropavlovsk the existence of bazzar is still very important. There were some cases using small booth in bazzar for an antenna shops. They were useful and possible to hear the consumers's voice directly, when one has promoting new products to sale or to have campaign on tasting or drinking new products.

Prices in Astana seemed to be a little high, one reason may be due to it being the capital of the Republic of Kazakhstan. On the other hand, with the hypermarket Metro, the prices seemed to be more expensive than at Metro stores in Russia, however, an increase in awareness will have an effect on prices. The closest hypermarket to Petropavlovsk is the Metro store in Astana and entering here is worth investigation. Should items be made available and placed on the shelves, items will need to meet world standards for quality and packaging.

There is a diverse variety of shops with development methods that would have potential. However, considering importing from Petropavlovsk, there may be the possibility of doubling up of items as fresh meat processind products and dairy products are also produced in Omsk. Products from Omsk would be available at the same price range as local products which would lead to the possibility of product participation in the markets of North Kazakhstan. North Kazakhstan Companies should prepare to differentiate between Omsk products, Omsk state and large Russian makers who have bases in Omsk. It is possiblet to competite with Russian products, if they will be able to produce and sale high quality products those are as well as

dependet on import in Russian market. Such products are for example, milk with high quality, or ham and sausage with producing area specified.



Source：Russia economic summary and trade investment environment
（JETRO Moscow office）November 2009

Figure 4-17　The situation of business expansion of foreign financed hypermarkets in the Russian domestic market

4.4.3　The marketing strategy for North Kazakhstan companies

After looking at the range of meat processing products and dairy products in both the supermarket and markets of Petropavlovsk, it was clear that the share of Russian dairy products was increasing. For example, a Danon Yogurt produced locally in the state of Moscow, had their own cubicle and a booth set up which was equipped with a refrigerator, and were able to differentiate effectively.

Russian dairy products have a comparatively big lead over the products from Kazakhstan by way of package design, a longer expiry date, more variety and more products and advertising. Large dairy producers which are based in Moscow have many factories in Russia and sends products　nationwide. Even in relation to the Omsk market, it is clear that the large producers increase market shares in daily products. In Petropavlovsk and even in Astana, we were able to confirm the presence of products from large Russian producers.

Kazakhstan's mareket situation has been changed every moment. Therefore, they should do the marketing research regularly and need to understand the positive impression to their own products. As a result of research, if they are able to make differentiation from Russian products or products of large-scale national companies, the processing products of North Kazakhstan have more chance to entry into the markets of other area and other countries.

4.4.4　Issues of marketing of North Kazakhstan processing products

(1) Improvements of product value due to distribution level

Compared to large Russian producers, the packaging of products from North Kazakhstan and the quality of printing and the paper used was inferior. In order for the consumers to pick up a product, it is necessary to have impact so that the message from the producer is somehow shown in the package. The package is seen as the message from the producer to the consumer. A desired design would be one that is able to convey an image of product quality and safety.

Comparing the best befor date of meat processing products and dairy product from North Kazakhstan and Russia, more of the North Kazakhstan made products is shorter than Russina products. To expand the target of the market, they should consider the time for transportation to make the best befor date longer.

Currently, the tastes of the consumers are diversifying. For example, even with the amount of butter fat in milk, large Russian producers have an assortment of products ranging between 0.5 ～6% butter fat and are making an effort to meet the demands of the consumer. Also, not only with regular products, but efforts are being put into development of a new series of products and development of new products etc. However, in relation to products in North Kazakhstan, there are only traditional products without any effort being put into development of new products.

(2) Lack of Sales Strategies

In relation to the sale of the products, without fully addressing market needs, there is the problem of insufficient marketing strategies for main city markets. The main cause and general counter measures are shown as bellow. From now it is necessary for corporate leaders to fully understand the actual state of their company as well as adjust to the environment in which they are making decisions in.

Table 4-17 Issues of North Kazakhstan processing food industry

Main Issues	Current situation	Main cause	Counter measures
Insufficinet measure to the change of market requirement	Week competitiveness to import products or products from other area. in local market	Lack of quality and amount to producing the processing food	Level up of the skill of Small-scal farmer
	Unable to produce the highly cost products or products which required long time to produce	Taking cost and time for certification and examination	Ease thebear of the certification systemof government
	Hard to improve or develop a new products	Less measures against to short of technical experts for food processing,and lack of market information	Training the experts for food technologies, teaching quality improvement
	Lack of packaging technique and desaigning which to appeal consumers	Lack of the knowledge for packaging technique and information	Offer the food packaging technique or new tecqunology information
Lack of Marketing Strategies for markets of main city	Withdraw from supermarket in main city because of difference of the commercial habit	Unable to measure against the requirement of store	Having market research and construct the marketing strategies for the supermarkets
	Hard to expand the market to other area than local area (include import)	Sphere of distribution is narrow because of the period of the time for the best of product is short, No expert company for transportation	Introduce the food preservation technology

(3) Lack of information output

The amount of advertising material for processed meat items and dairy products from North Kazakhstan is extremely small compared to those of large Russian makers. Recently, companies have been playing commercials on monitors placed near the cash registers in Supermarkets within Petropavlovsk city, however advertisements are hardly being used through mass media. Consideration of market expansion in other regions and other countries, an investigation of sales promotion methods that effectively use the internet and mass media should be considered for the future.

Colum A large Russian dairy producer.
The marketing strategy of a company called WIMM－BILL－DANN

WIMM-BILL-DANN is one of the leading Russian dairy companies which has 37 production sites throughout Russia and the CIS countries. It was established in 1992, currently has over 1,000 different dairy products and over 150 types of juices. It currently employs over 17,000 people.

The location of WIMM-BILL-DANN branches and factories throughout the Russian federation and Central Asia are indicated on the map below. In relation to central Asia, it has two factories in Toshkent (Uzbekistan) and one factory in Bishkek (Kyrgyzstan).

In 2006,WIMM-BILL-DANN was successful in taking over a local Omsk producer (MANROS). Another large Russian producer (Uni Milk) made moves in trying to take over MANROS, however it was WIMM-BILL-DANN that was finally successful[31]. As MANROS has now come under the control of WIMM-BILL-DANN, it was able to plan a strategy that would allow it to increase its market share in Siberia and the far east.

There are three dairy factories that are under the control of WIMM-BILL-DANN which are located in the city of Omsk which is close to North Kazakhstan. In Petropavlovsk and even in Astana the same companies are selling the same dairy products and there is a tendency of an increase in awareness of these products within the cities of Kazakhstan.

Source：WIMM-BILL-DANN HP http://www.wbd.ru/

Figure The location of WIMM-BILL-DANN branches and factories

Apart from WIMM-BILL-DANN, there are other Russian companies that have market deployment plans in place for the entire Russian market. Considering that,WIMM-BILL-DANNmade changes to its packaging in July of 2009 in order to be in a position to differntiate between other competing products and their own. Those changes are below.

[31] Novosibirsk city advertising federation 7th of Nov. 2006 http://www.gorn.ru/archive/2006/11/article3763.html

i) Changes to the package design
There were no real changed to the basic concept of a natural image, however the company made changes so that the natural image was highlighted.

ii) The printing of a catch copy was to create differentiation with that of competing products
On the front and two side locations, the terms "100% fresh milk, special taste"were incorporated. On the back, there were three terms (writen in green), 100% fresh milk, a special taste, and high quality which were incorporated into the design.

iii) Changes to the package container.
It was changed to a vertically long slim shape and a cap was attached in order to make it easier to pour.

Source：http://popsop.ru/30058
WIMM－BILL－DANN Comparison of new and old packaging