Assigned by Ministry of Agriculture, Forestry and Fisheries

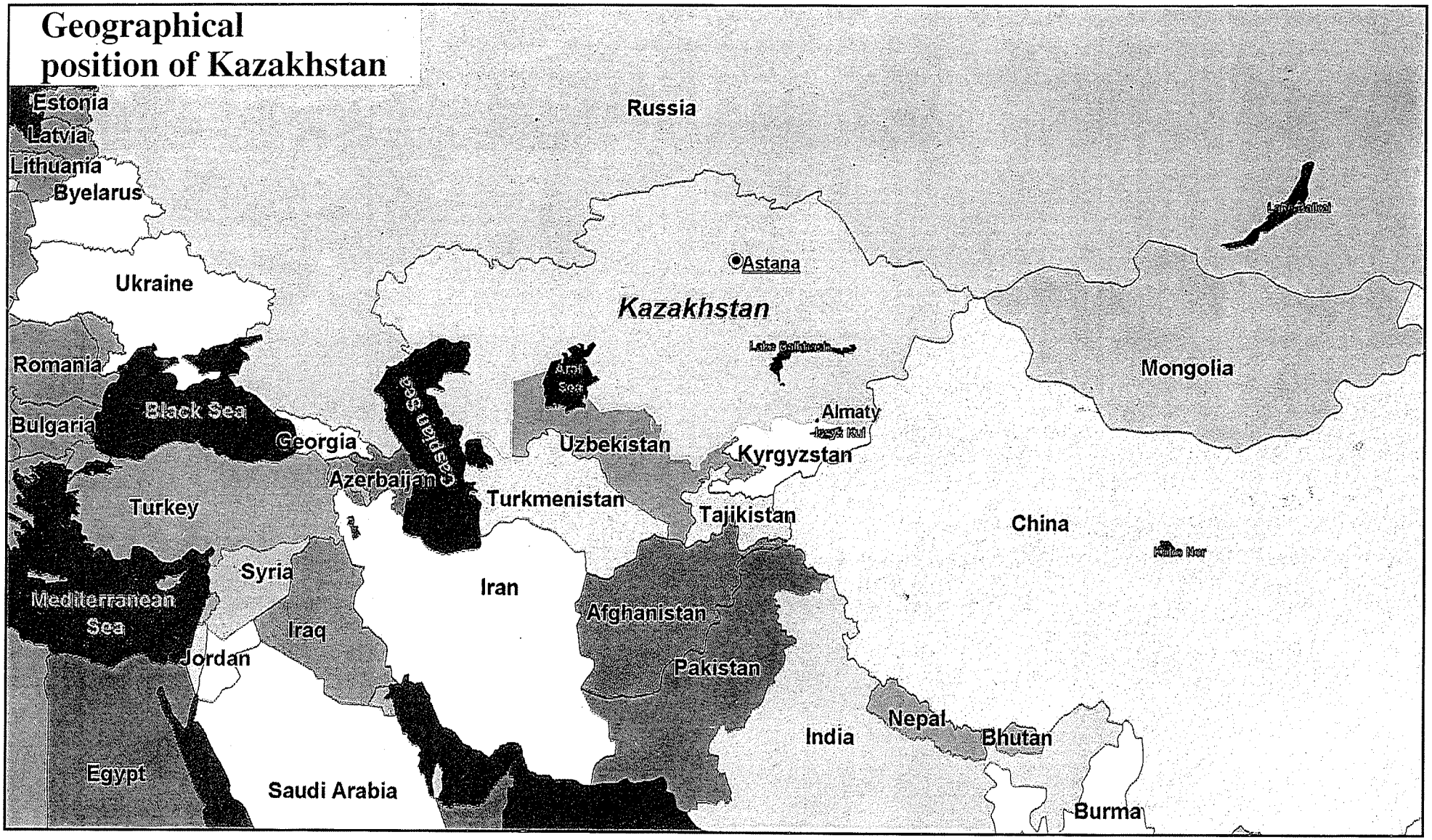
Survey on Agricultural and Rural Development based on Population Issues

— The Republic of Kazakhstan —

Focus on
Almaty and Astana Oblast

MARCH 2002

The Asian Population and Development Association


Geographical position of Kazakhstan
Estonia
Latvia
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Ukraine
Astana
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Romania
Black Sea
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Caspian Sea
Aral Sea
Lake Balkhash
Mongolia
Almaty
Issyk Kul
Uzbekistan
Kyrgyzstan
Azerbaijan
Turkmenistan
Tajikistan
China
Turkey
Syria
Iran
Mediterranean Sea
Iraq
Afghanistan
Jordan
Pakistan
Nepal
India
Bhutan
Egypt
Saudi Arabia
Burma

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Dr. Ispolov, Rector

At Krasnoyarskoye LTD
Center
Mr. Alnabaev Abilkakim, president,
conduct hearing survey

Bakbakthi Private farm
conduct hearing survey

Wheat production field at Shortangi

Private Farm at Karasai
conduct hearing survey

Foreword

This report presents the results of the "Survey on Agricultural and Rural Development based on Population Issues", a project implemented in Republic of Kazakhstan by the Asian Population and Development Association (APDA) under the consignment from Ministry of Agriculture, Forestry and Fishery in 2001. The survey and compilation of the results were mainly carried out by the members of the APDA Survey Committee (Chairperson: Dr. Shigeto Kawano, Professor Emeritus, the University of Tokyo).

This survey was conducted under the concept that "Japan's cooperation in the field of agriculture, forestry and fisheries positions contribution to stability of global food supply and demand as its important measure whose further promotion is expected. Meanwhile, in implementing international cooperation, strong demand for efficient and effective implementation and transparency exists for ODA in view of the country's difficult economic and financial condition in the recent years. For this purpose, a study of subjects such as problems related to assistance in the major target countries of this survey, grasping of assistance needs, agricultural and rural development and the relationship between assistance and agricultural produce trade is indispensable. The study therefore must be performed from the viewpoint of changes in agricultural/rural population and employment structure in the developing countries."

The field survey in Kazakhstan was conducted with the guidance and cooperation of Dr. Edil Ergozhin, Vice Minister of Education and Science, Dr. Ispolov, Rector, Kazakh State University of Agriculture, Dr. Iskakov Ayup, Vice Rector for International Relations, Kazakh State University of Agriculture, Mr. Akira Tateyama, Charge'd Affairs The Embassy of Japan, Mr. Masyuki Hosaka, First Secretary, Mr. Fuminari Hashimoto, JICA Expert, and other cooperators.

In Japan, guidance regarding the content of the survey and assistance for the arrangement of field survey were offered by the International Cooperation Division, General Food Policy Bureau, the Ministry of Agriculture, Forestry and Fishery and Division of Newly Independent States, Ministry of Foreign Affairs. In addition, Dr. Serik Alybayev, Counsellor and Mr. Anurbek Akhmetov, Third Secretary, Embassy of the Republic of Kazakhstan in Japan had made all the arrangements for the field survey in Kazakhstan. I would like to take this opportunity to extend my deepest gratitude for their support.

I sincerely hope that this report will contribute to the advancement of the rural community and agricultural development programme in the Republic of Kazakhstan and support effective assistance by the Japanese Government in this country.

Lastly, I would like to note that this report has been complied under the sole responsibility of APDA and dose not necessary reflect the view or policies of the Ministry of Agriculture. Forestry and Fishery, or the Japanese Government.

March 2002

Dr. Taro Nakayama,
Chairman,
The Asian Population and Development Association

Contents

Chapter 1

Population and Agriculture in Kazakhstan

1. Agriculture

(1) Importance of agriculture in Kazakhstan

As widely known, Central Asia where Kazakhstan is located is a region where nomadic culture had been dominant. The region is believed to have been extremely suited for practicing nomadism from the viewpoint of ecosystem formed by relatively high latitudes and low precipitation. Large-scale agriculture was introduced to this region as a result of specialisation of production being implemented among the countries of the former Soviet Union, and Kazakhstan being positioned as the grain production base. Having been incorporated into the Soviet Union as a republic, "reclamation of virgin land" from the rim of the northern blackland to the Kazakh steppe where cultivation had not been performed was carried out as a policy from the 1950s to the 1960s by mobilizing a large number of Soviet nationals. Having initially attained a large production increase for grains including wheat, Kazakhstan held an important position as the breadbasket of the Soviet Union.

A large number of Russians and other Slav people settled in Kazakhstan after the mobilisation and changed the ethnic makeup as non-Kazakh population started to outnumber the Kazakhs. However, many of the former are compelled to migrate again after the independence.

The region where this "reclamation of virgin land" took place was not necessarily suited for cultivation but maintained its production through the input of large agricultural machinery and agricultural inputs based on policy. The Central Asian countries of the former Soviet Union including Kazakhstan are known for having extremely low population density per unit area. However, such sparse population does not signify existence of any leeway because population carrying capacity of arid and semi-arid regions in Central Asia are markedly lower compared to that in Southeast Asia.

Agriculture in Kazakhstan may be standing on the verge of downfall at present. Planted acreage of grains in Kazakhstan, the former food supply base for the CIS countries, has

declined dramatically from 188.77 million hectares in 1995 to 111.39 million hectares in 1999. This means that production has dropped by nearly half in only 5 years (Table 1-1).

Table 1-1 The main indices of Agriculture

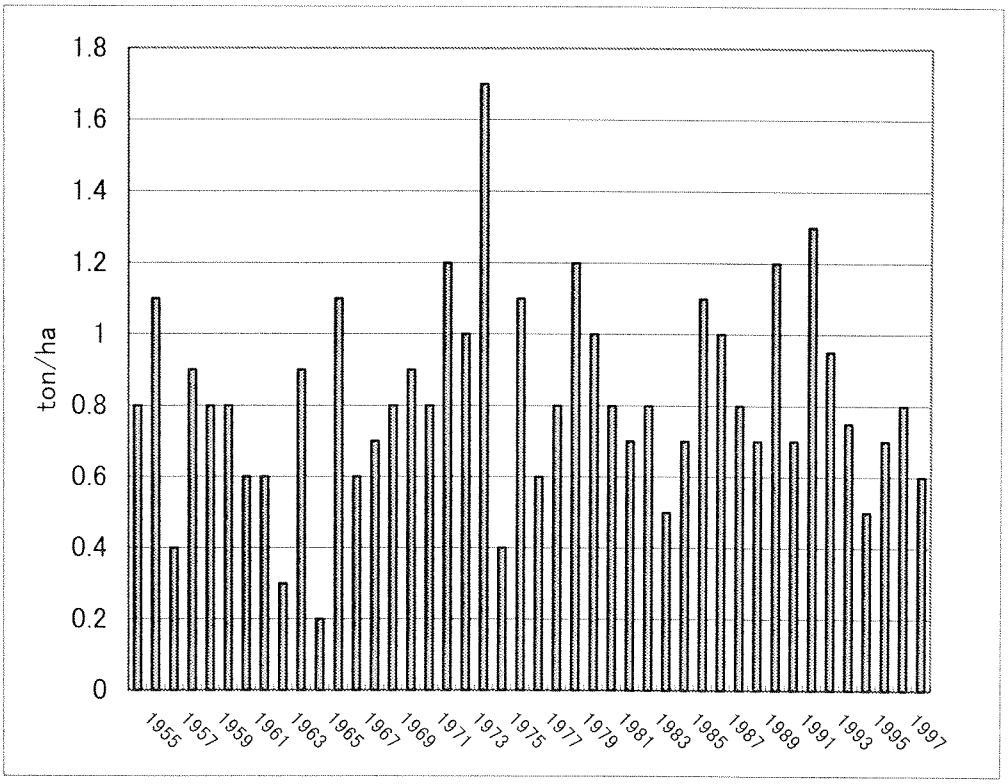
	1995	1996	1997	1998	1999
Gross agricultural output. at current prices (in farms of all types)					
bln. Tenge	191.6	270.6	297	246.6	329.6.
growth. %	75.6	95	99.2	81.1	128.9
of which:					
plant-growing	107.3	169	168.1	105.2	181.3
animal husbandry	84.3	101.6	128.9	141.4	148.3
Total sown areas. thsd. Ha	28679	25644.1	21843.7	18610.4	15285.3
of which:					
Grains	18877.7	17187.6	15651.4	13526.7	11392.5
forage crops	8788.7	7526	5445.6	4294.1	3050.8
Vegetables	76.1	79.8	87.1	96.5	96.1
Production of main types of agricultural products:					
meat (slaughter weight). thsd. Tons	985	854.5	717.6	641.5	626.1
milk. thsd. Tons	4619.1	3627.1	3334.5	3394.3	3507.8
eggs. mln. Pieces	1840.8	1262.4	1265.8	1388.4	1516.6
wool (physical weight. thsd. tons)	58.3	42.2	34.6	25.2	21.4
caracul. thsd. Pieces	1145.2	1033.4	361.2	214.3	192.9
grain. thsd. Tons	9505	11237.3	12378	6395.5	14264.3
raw cotton. thsd. Tons	223	182.8	197.8	161.6	249.4
sugar beet. thsd. Tons	371	340.7	127.9	224.9	293.9
sunflower. thsd. Tons	98.7	64.3	54.5	83.2	104.3
potatoes. thsd. Tons	1720	1656.5	1472.2	1262.8	1694.7
vegetables. thsd. Tons	780	778	880	1079	1287.1
Number of livestock and poultry:					
cattle. thsd. Heads	6859.9	5424.6	4307.1	3957.9	3936.6
poultry (mln. heads)	32.7	20.8	16	16.9	17.2

Source: Agency on Statistics of the Republic of Kazakhstan

The very system that had supported the agriculture of Kazakhstan has been destroyed and left to crumble in the process of transition since the independence of Kazakhstan, from planned economy to market economy. In this country where cultivation has traditionally not been practiced, agriculture meant mechanised agriculture using large machinery and other options would not come to the minds of the farmers. Lack of historical tradition and a practical reason of using large machinery to perform farm work such as sowing and harvest all at once during the short frost-free period being the only way to harvest exist at the backdrop. In countries of the extreme opposite condition such as Malaysia where impact of climate is minimum, timing of planting and harvest can be changed at one's discretion and large farm machineries can be rented instead of having to own them. In Kazakhstan, however, one has to own large farm machineries in proportion to the area of the farm if that person wishes to increase harvest, which, in turn, will require considerable cost burden. Furthermore, the harsh climate only

permits yield of 3 tons/hectare for wheat in regions with relatively favourable soil and climate conditions and 1 to 1.5 tons/hectare in other regions. In particular, the northern blackbelt region of the country belongs to a part of the Siberian taiga where it is not rare that hardly any harvest can be made when frost-free period is shortened by the southward advancement of arctic cold air mass due to climatic fluctuations (Figure 1-1). This figure shows average yield of wheat from 1955 to 1998 and indicates the magnitude of fluctuation in which average yield drops from 1.7 tons/hectare in one year to 0.4 tons/hectare in the following year.

Figure 1-1 Changes of Average Yield in ton/ha 1995-1998



Source: Investment Guide to Agriculture of the Republic of Kazakhstan

Under these conditions, one can see that introducing large agricultural machineries and growing wheat in large farms were a reasonable choice in its own way for securing certain amount of harvest from low unit yield.

In planned economy, the farmers of kolkhoz and sovkhoz never had to worry about purchasing agricultural machineries on their own because they were being supplied according to the plans made by the central government and were allotted with priority to undertakings that were given strategic priority such as grain agriculture in Kazakhstan.

However, the needs and reason under the planned economy collapsed completely while making the transition towards market economy. The government abandoned its responsibility to supply and maintain agricultural machineries on the basis of free economy, although the mentality of agricultural production organizations has hardly changed after losing such system of supply and maintenance. They continue to believe that the government will solve the problem for them and are unable to understand that they have to purchase, maintain and renew

those machineries through their production. In this sense, offering aid to Kazakhstan in the only a form of agricultural machineries would not lead to self-sustaining development of the country because all that accomplishes is replacement of the former Soviet Union by the Western developed countries. The farmers of Kazakhstan would gaze up to the sky and wait for someone to offer them new machineries when the ones they own become old and stop working. The problem cannot be solved without fostering the basic approach towards agriculture and generating the "commitment" to working as entrepreneurs among the farmers. However, there is difficulty in telling them to compete solely on the basis of market economy when infrastructure for market (including marketing outlet) and transportation is not available. Moreover, it is very difficult for people who were born and raised in communism that lasted for more than 70 years to change their way of thinking.

On the other hand, economic activities that ignore the preconditions for existence of capitalist economy and only go after short-term profit is holding the field. A climate in which one would "do anything for profit" is becoming prevalent to the extent that the experts at the World Bank who are strongly urging the conditionality for structural reform to each country refer to this as "crazy capitalism." Under these circumstances, those with foresight are securing their interests and generating enormous profit from them, while rural farmers are reduced to poverty and are having difficulty securing the food for that day. Average monthly income of agricultural workers is less than one-seventh of those working in finance (Table 1-2) and may well become a destabilizing factor for Kazakhstan in the future.

Table 1-2 Average nominal wage and salaries by selected types of economic activity in 1999

	Income (Tenge/month)
Agriculture, Hunting, Forestry	4,365
Health and Social Work	6,472
Education	7,730
Public Administrator	10,730
Communication and Transportation	13,944
Construction	15,095
Industry	15,530
Finance	31,652

Source: Statistical Year Book 2000

The people who were once built into a colossal planned economy of Soviet Union and engaged in production activities according to the instructions given by that plan are now forced into a situation where they have to make the plan on their own which they thought they would never have to do. Moreover, the assets of kolkhoz and sovkhoz were divided among their members as a result of liberalization. When kolkhoz and sovkhoz that average 20 to 30 thousand hectares in area and cultivated by machinery are divided, the division of labour within the kolkhoz and sovkhoz organization is also lost. For instance, a person that worked as an operator of agricultural machinery would be lost with the land he is allotted because he does

not know how to sow, use agricultural inputs or sell the harvest. The same should be true in the case where a farmer obtains as his share based on civil law agricultural machinery that he cannot manage. It is under these circumstances that cultivated acreage is rapidly decreasing with hardly any working agricultural machinery left after 5 years if things remain the way they are now. If a certain degree of large-scale agriculture is required in this country because of her natural conditions, such obliteration of agricultural machinery would directly signify obliteration of agriculture (Table 1-3).

Table 1-3 Trends of main agricultural machinery Unit: 1000

	1996	1997	1998	1999
Tractors	142.4	108.1	64.2	54.2
Tractor ploughs	31.6	24.3	15.0	11.6
Sowing machines	113.5	89.1	52.0	45.1
Tractor cultivators	29.0	21.0	12.6	11.2

Source: Statistical Year Book 2000

From a long-term viewpoint, this decline in acreage under cultivation may have a large effect on the issue of food security for not only Kazakhstan but the entire region. In fact, the food assistance from Japan to Mongolia in 1999 consisted of wheat purchased by the Japanese government from Kazakhstan. Kazakhstan is also located in the centre of Central Asia and has unique situation of population as well in that she is demonstrating a East European demographic trend similar to that of Russia and positioned at the boundary between the countries experiencing population decline and countries where population is increasing with significant difference in population increase trends among different ethnic groups in the country (Table 1-4). Population continues to increase in many countries neighbouring Kazakhstan. They include Iran, already a major wheat importing country, that Kazakhstan borders with the Caspian Sea in between. Kazakhstan is also in a geopolitically important location in terms of food supply to Central Asia (including western China) and West Asia. The issue of Kazakhstan's agriculture is therefore directly related to the stability of the region.

Table 1-4 Population Trend CIS and other countries 1950-2050

Country	*Population (000)*				
	1950	*2000*	*2015*	*2025*	*2050*
Afghanistan	8,151	21,765	35,577	45,193	72,267
Azerbaijan	2,896	8,041	8,725	9,076	8,897
Georgia	3,527	5,262	4,775	4,377	3,219
Iran Islamic Republic	16,913	70,330	87,103	99,343	121,424
Kyrgyzstan	1,740	4,921	5,836	6,460	7,538
Pakistan	39,659	141,256	204,267	250,981	344,170
Tajikistan	1,532	6,087	7,097	8,066	9,763
Turkmenistan	1,211	4,737	6,059	6,844	8,401
Ukraine	37,298	49,568	43,335	39,569	29,959
Uzbekistan	6,314	24,881	30,554	34,203	40,513
Regional Total	125,943	353,021	449,285	520,202	661,452

Source: United Nations, World Population Prospect 2001 Revision

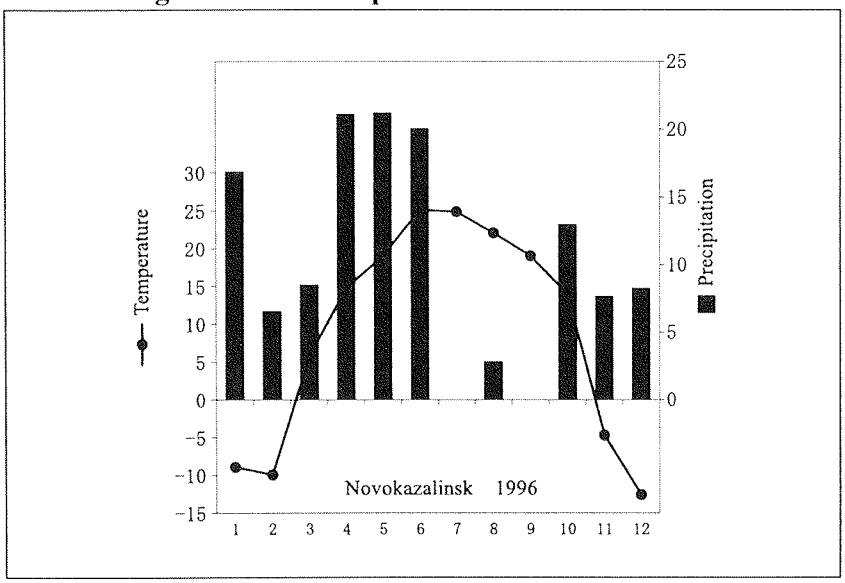
(2) Agriculture and environment of Kazakhstan

① Climate

The country's topography contains the high peaks of Altai and Tian Shan in the east and the south, although the majority of the land consists of deserts and plains with several plateaus here and there. The majority of the country is therefore flat. The nation's land can roughly be divided equally into three parts: the north is a semi-arid steppe comprising a part of Siberia; the centre is a desert region; and from the south to the east lies a region with influence from the alpine region that has a relatively mild climate for Kazakhstan.

Annual precipitation is limited, ranging from 500 to 1,000 millimetres in the southern mountainous region and its foothills, 50 to 200 millimetres in the centre and 300 to 400 millimetres in the north. Precipitation is generally concentrated in winter (in the form of snow) and spring (March through May) and hardly occurs in other seasons. Precipitation in Novokazalinsk near the Aral Sea is shown in Figure 1-2.

Figure 1-2 Precipitation in Novokazalinsk



Temperature shows characteristics unique to continental climate. Large seasonal differences and daily ranges make this climate very difficult to live for biota including humans. For instance, in the city of Balkhash located by Lake Balkhash, the majority of the months having average monthly temperature exceeding 5℃ in which plant growth can be expected belong to the dry season with very little rainfall. Agriculture in Kazakhstan is therefore practiced under very difficult conditions.

The existence of inland waters is very important in Kazakhstan because of limited precipitation. The Caspian Sea, the Aral Sea, Lake Balkhash and Lake Zaisan are lined up in east-west direction at the central part of the country. In addition, there is the Volga having its source in Siberia and flowing into the Caspian Sea, the Amu Darya flowing down from Pamir Plateau, the Syr Darya having its source in Tian Shan, the Ili flowing down from China and the Irtysh flowing northward. All of these are extremely important when studying the geographic features and industries of this country.

② Soil

Regarding the soil that forms the foundation of agriculture in Kazakhstan, two characteristic soils exist, the details of which will be omitted in this paper. The breadbasket in the north has chernozem (black soil), which is distributed continuously from Ukraine, and solonchak, which is mainly distributed in the desert. Chernozem is the foundation of grain production in the former Soviet Union because of the rich nutrients it contains. Solonchak is salt accumulation soil containing a large amount of salts. Because of its high salt content, implementation of irrigated agriculture in this region will cause the salts in the ground to elute and shift, resulting in appearance of salt accumulation and give rise to the so-called salinisation. Further advancement of this situation will result in impoverishment of vegetation and desertification.

③ Biota

Deserts are often referred to as the dead soil but are not necessarily so. The desert region in central Kazakhstan is not a sand desert or a rock desert and presents a landscape that can appropriately be referred to as "wilderness desert." Regions in which open forests of *saksaul(Haloxylon persicum, Haloxylon aphyllum)* and *Tamarix*, which are bushes between 0.5 and 1.5 metres in height, are developed over a broad area, and wilderness deserts that are home to saltworts about 0.3 metre in height (mainly chenopods) also take up a large area. Such distribution of vegetation is largely dependent on the quantity of precipitation, although it is also strongly affected by soil properties, particularly salt content and depth of groundwater.

Under these vegetations live a large number of animals, although lacking in diversity. They include arthropods such as ants and spiders, reptiles such as lizards and snakes, terrestrial turtles, rodents such as mice, and mammals such as rabbits, foxes and wolves. Birds that feed on these animals, particularly raptors, are a symbol of Kazakhstan.

The rivers that flow through the desert and lakes to which these rivers reach comprise a very important environment for the flora and fauna of the desert. Kazakhstan is an inland country without any coastline with an ocean but has large rivers flowing through the interior of the continent that foster a wide variety of biota. Typical rivers include the Syr Darya, which has its source in Tian Shan and flows down from Kyrgyzstan to Kazakhstan and flows into the Aral Sea, the Ili which originates in China and flows into Lake Balkhash, and the Irtysh which flows in the north. Riverain forests comprised of willow and goumi develop on the banks of these rivers.

The estuaries of Syr Darya on the Aral Sea and the Ili on Lake Balkhash are vast marshes (flood plain) serving as rich repository of fishes and birds. These regions have importance in the world not only as habitat of resident birds but also as stopover for many varieties of migratory birds. While one can occasionally spot a large flock of pelicans in the Ili estuary where the marshland still exists, it is almost impossible to find them in the Syr Darya estuary where the marshland has been reduced.

④ Conditions of agricultural production

Agriculture in Kazakhstan can be roughly divided into three categories. One is the wheat cropping extending in the chernozem (black soil) zone of the northern steppe, and pasture grass and wheat cropping on the slopes of Alatau Mountains is another. These two agricultural regions receive annual precipitation of 300 to 400 millimetres, which is not sufficient for agriculture relying solely on rainwater. Wheat cropping is made possible by increasing the water-retaining capacity of the soil by preventing scattering and evaporation of winter snow coverage in the northern steppe while cultivation of pasture grass, wheat and vegetables is realised by using snowmelt from Alatau as irrigation water in the southern mountain slope region. Aside from these two categories of agriculture centred around wheat cropping, large-scale irrigation agriculture is practiced in the Syr Darya basin with very little precipitation (of about 100 millimetres a year) with cotton and lowland rice as main crops. Thus, securing agricultural water is the top priority matter in all of the agricultural regions mentioned above.

Considering the existence of sufficient cumulative temperature and hours of sunlight needed for crop cultivation, and the availability of plenty of plains that could be converted into agricultural land (setting aside the question of soil quality), the policy of the former Soviet Union that needed grain production and cotton cultivation to develop this country as a farming region was reasonable. This required settling of the Kazakh people who had depended on nomadism for livelihood and massive migration of Russians with agricultural experience. Koreans were also relocated forcefully from Far East Siberia to the Central Asian countries. Agriculture in Kazakhstan was therefore created by utilising the nature and climate and by investing human resources. Such agricultural policy brought about expansion of farmland and increase of production in the initial stage of policy implementation. At present, however, the agriculture of Kazakhstan is facing the risk of collapse owing to the occurrence of environmental problems such as advancement of salt accumulation at farmland, shortage of agricultural materials following the disintegration of the Soviet Union and drying of the Aral Sea by excessive water utilisation

2. Population of Kazakhstan

When examining the population of Kazakhstan, one can see that the relationship between population and agriculture is considerably different from that in Southeast and South Asia. The problem of population and agriculture in Southeast and South Asia is that of supplying food and employment for the ever-increasing population. The most fundamental framework lies in devising a form of agricultural development utilising the potential of the environment that would solve the problem in a sustainable manner. Meanwhile, population of Kazakhstan is decreasing and therefore the foregoing problem does not appear to exist.

Population of Kazakhstan has an interesting aspect of population growth rate gradually turning to positive value as shown in Table 1-5. The negative trend that continued from 1995 to 1999 had turned to positive in 2000. As can be seen in Table 1-6, natural increase rate in Kazakhstan remained positive throughout this period. Population increase is continuing if the impact of migration is not taken into consideration, indicating that out-migration in excess of natural population increase had been taking place until 1999 and gave rise to population increase with the decline in out-migration.

Table 1-5 Major Index of Kazakhstan Population

	1995	1996	1997	1998	1999	2000
Population (end of each year, 1000 persons)	15,675.8	15,480.6	15,188.2	14,957.8	14,896.1	14,841.9
Urban	8,730.3	8,635.2	8,499.4	8,368.8	8,322.2	8,283.2
Rural	6,945.5	6,845.4	6,688.8	6,589.0	6,573.9	6,558.7
Population Growth Rate	-1.245%	-1.889%	-1.517%	-0.412%	-0.364%	0.365%
Urban	-1.089%	-1.573%	-1.537%	-0.557%	-0.469%	0.471%
Rural	-1.441%	-2.288%	-1.492%	-0.229%	-0.231%	0.232%
Population/Age*						
Under able bodied age	5,024.5	4,898.4	4,737.4	4,592.0	4,473.6	4,355.5
Of able bodied age	8,706.6	8,646.4	8,656.3	8,583.4	8,563.1	8,650.4
Over able bodied age	1,944.7	1,935.8	1,794.5	1,782.4	1,859.4	1,836.0
Average Life Expectancy at Birth						
Total	63.5	63.6	64.0	64.5	65.5	65.4
Male	58.0	58.0	58.5	59.0	60.3	59.8
Female	69.4	69.7	69.9	70.4	71.0	71.3
Per Thousand						
Birth	17.5	16.3	15.2	14.8	14.2	14.6
Death	10.7	10.7	10.4	10.2	9.8	10.0
Infant Death (Live birth per 1000)	27.0	25.4	24.9	21.6	20.7	19.2
Natural Increase Rate (‰)	6.8	5.6	4.8	4.6	4.4	4.6
Marriage	7.3	6.6	6.6	6.4	5.8	6.1
Divorce	2.4	2.6	2.3	2.4	1.7	1.8
Migration	-24.6	-11.3	-17	-13.5	-8.5	-8.3

Source: Agency on Statistics of the Republic Kazakhstan 2000

*From the 1st of July 1996, males at the age of 16-59 and 6month and females at the age 16-54 and 6month.

From the 1st of July 1997, males at the age of 16-60 and females at the age 16-55.

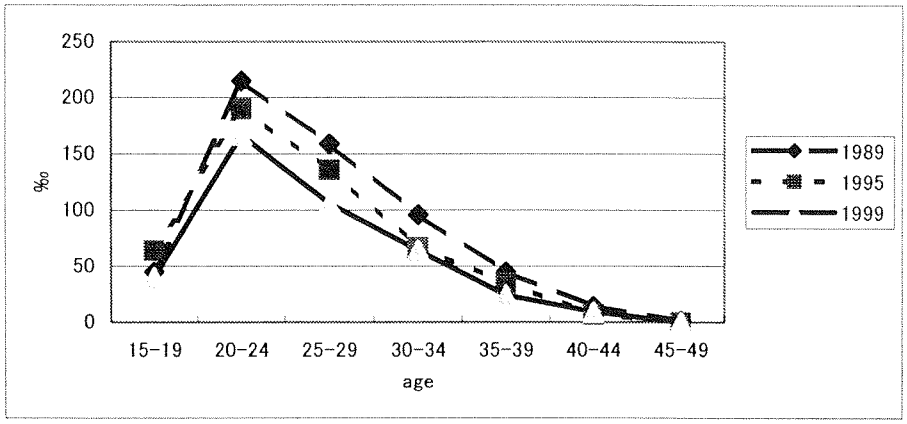
From the 1st of July 1998, males at the age of 16-60 and 6month and females at the age 16-55 and 6months.

From the 1st of July 1999, males at the age of 16-61 and 6month and females at the age 16-56.

A transition of economic system occurred in Russia and East Europe amidst the advancement of social development. This has given rise to decline in population as birth rate declined while death rate increased owing to the ensuing economic difficulties. Shrinkage of income in an environment where social development is insufficient often triggers an increase of population with the hope of gaining new earning opportunities as well as meagre income and labour. However, East Europe, former CIS countries and Mongolia reacted differently by lowering their population as mentioned earlier.

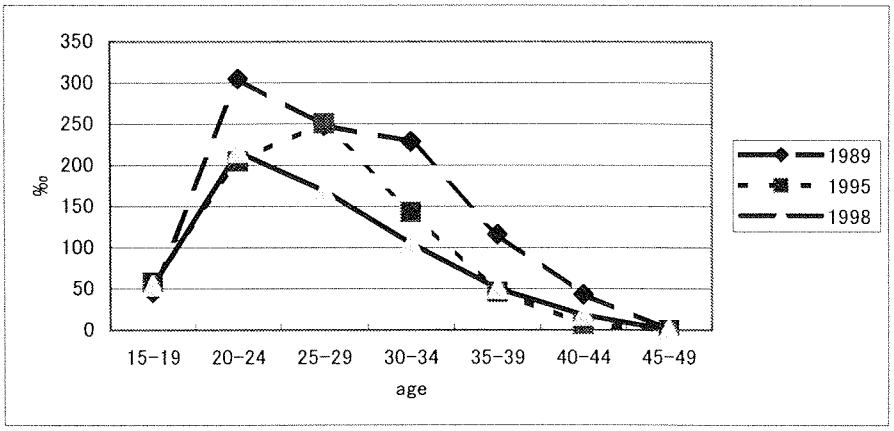
Kazakhstan, the subject of this study, demonstrated an extremely unique dimension in which East European/Russian dynamics and West Asian dynamics coexist. Population trends and estimations for the surrounding countries are shown in Table 4. What is clear there is that population continued to increase in counties located south of Kazakhstan while it started to decrease in those located to the north. Sandwiched between the two, hardly any change can be observed in the birth rate of Kazakhstan which had been low to begin with. The difference is obvious when compared to the example of Mongolia (Figure 1-2). In Mongolia, birth rate declined when birth trends changed while the rate declined in Kazakhstan with birth trends remaining the same.

Figure 1-3 Trends of Age Specific Fertility Rate in Kazakhstan1989-1999



Source: Prepared from Kazakhstan Demographic and Health Survey for 1989. Prepared from Statistic Yearbook 2000 for years 1999,1995 and 1999.

Figure 1-4 Trends of Age Specific Fertility Rate in Mongolia1989-1995



Source: Data of 1989 and 1995: Mongolian National University, Population Changes in Mongolia 1989-2030. Data of 1998: Mongolia Reproductive Health Survey 1998

However, what is unique about Kazakhstan is that birth rate differs among ethnic groups. In terms of TFR (total fertility rate), for example, the figure is 2.5 for Kazakhs, 1.38 for Russians and 1.38 for others.

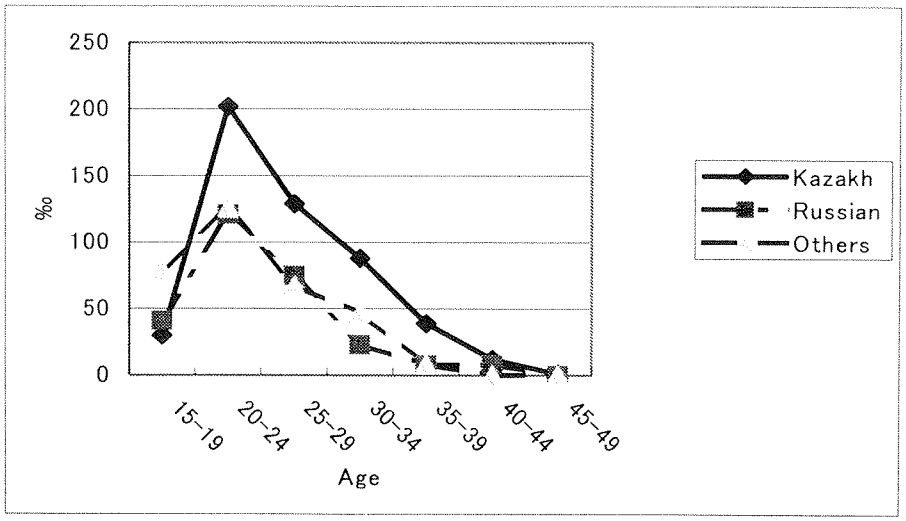
Table 6 Trends of TFR by ethnicity

	1989	1995	1999r
Kazakh	3.58	3.11	2.5
Russia	2.24	1.69	1.38
Others	2.88	2.49	2.05

Source: Kazakhstan Demographic and Health Survey

Age-specific fertility rate for respective ethnic groups are as shown below. As can be seen, Kazakhs have extremely an outstandingly high rate.

Figure 5 Trends of Age Specific Fertility Rate of Kazakhstan by Ethnicity



Source: Prepared from Kazakhstan Demographic and Health Survey

In addition, Kazakhstan's population as seen from the difference between births and deaths (natural increase rate) is as shown in Table 7. Natural increase rate in Kazakhstan was 4.4‰ in 1999 and. The increase for rural population was7.7‰.

Table 7 Birth, Death, Natural Increase Rate

	Birth*	Death*	Natural Increase *	Birth(‰)	Death(‰)	Natural Increase Rate(‰)
Total						
1996	253.2	166.0	87.2	16.3	10.7	5.6
1997	232.4	160.1	72.3	15.2	10.4	4.8
1998	222.4	154.3	68.1	14.8	10.2	4.6
1999	211.8	145.9	65.9	14.2	9.8	4.4
Urban						
1996	119.0	102.9	16.1	13.7	11.9	1.8
1997	112.4	99.6	12.8	13.1	11.6	1.5
1998	112.0	96.9	15.1	13.3	11.5	1.8
1999	106.5	91.2	15.3	12.8	10.9	1.9
Rural						
1996	134.2	63.1	71.1	19.5	9.1	10.4
1997	120.0	60.5	59.5	17.7	8.9	8.8
1998	110.4	57.4	53.0	16.6	8.7	7.9
1999	105.3	54.7	50.6	16.0	8.3	7.7

*1000person

Source: Statistical Yearbook 2000

This difference between natural increase rate and population growth rate signifies that population will increase in Kazakhstan had it not been for the decrease due to migration. The main reasons for migration include encouragement by the Russian government, alarmed by the decline of her population, to bring the former Russians living in CIS to return to Russia, and the repatriation of East European descendents (mostly of German origin) that were brought to Kazakhstan to engage in agriculture during World War II to their home countries.

Such migration accompanying the changes in national structure will naturally calm down with elapse of time. In other words, people that leave would leave anyway and people that come in come in anyway. In fact, out-migration of the population has been decreasing in the last several years alone (Table 8).

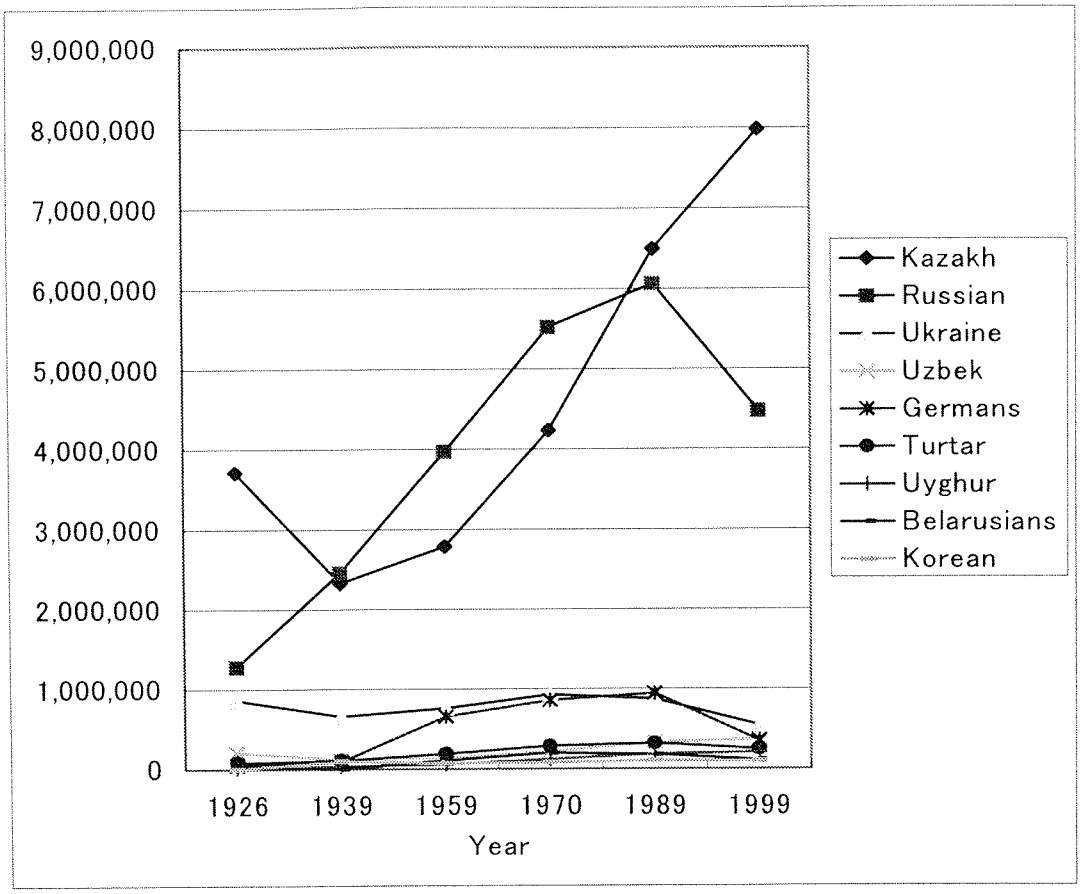
Table 8 Out Migration in Kazakhstan 1997—1999

1997	1998	1999
299,455	243,663	162,064

Source: Statistical Yearbook 2000

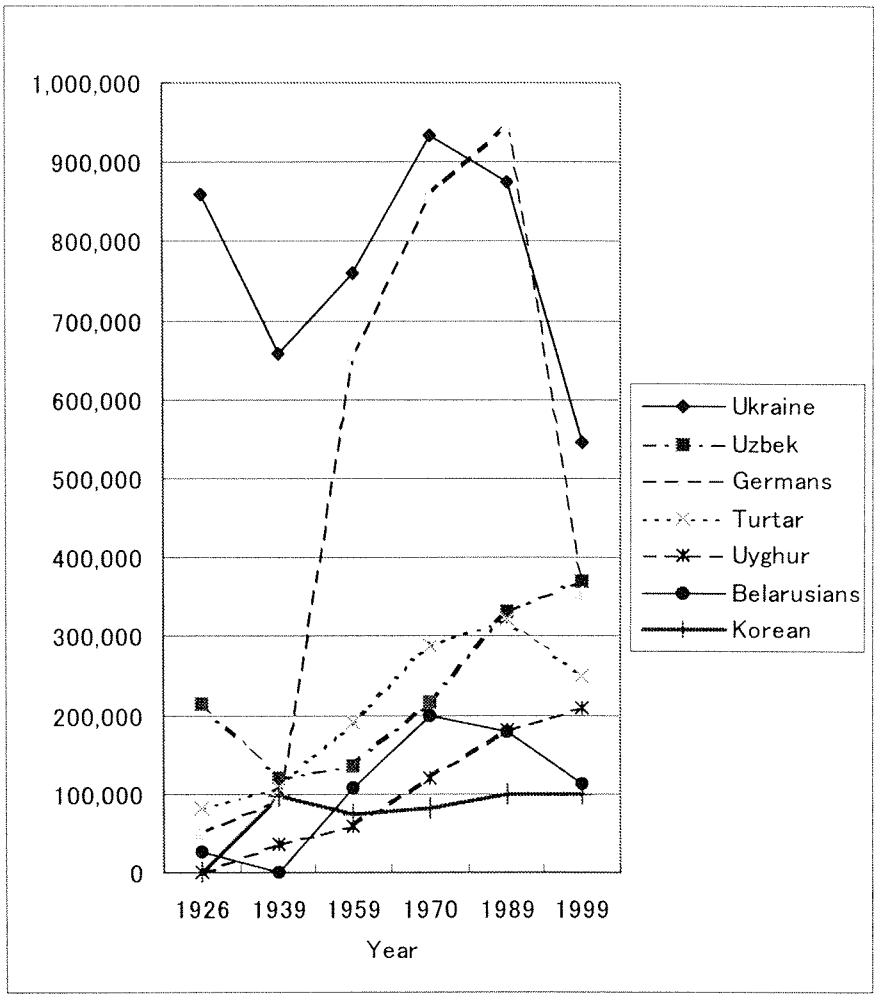
In terms of ethnic groups, migration is most commonly seen among Russians and Germans. This migration is exerting significant impact on agriculture as well. This is because it was the Russians, Ukrainians and Germans that were responsible for technical aspects and had secured high productivity under the severe climate conditions. The decline in their population would therefore have immeasurable impact.

Fig. 6-1 Trends of Major Ethnic Population



Source: Statistical Yearbook 2000

Fig. 6-2 Trends of Major Ethnicity 1926-1999



Source: Same as Figure6-1

An orientation towards ethnicity appears to be emerging in Kazakhstan at present, although it is partly rooted in objection towards the former Soviet Union days. An effort is being made to build Kazakhstan as a country of the Kazakh people and is likely to have considerable impact.

3. Social Development Index in Kazakhstan

Countries that were members of the Soviet Union as well as East European countries and Mongolia had generally attained a high level of literacy. Social development related indices are shown in the following.

Table 9 Major Index of Social Development in Kazakhstan

	1994	1995	1996	1997	1998	1999
Average Life Expectancy at Birth	64.9	63.5	63.6	64.0	64.5	65.7
Literacy of adult population (%)	98.5	98.7	98.9	99.1	99.3	99.5
Infant Mortality Rate (‰)	27.1	27.0	25.4	24.9	21.6	20.7
Aggregated share of student aged 6-24	65.8	65.6	65.9	65.9	66.9	67.9
Official unemployment rate (%)	1.1	2.1	4.1	3.8	3.7	3.9
Hidden unemployment rate (%)	-	-	4.5	3.4	3.2	2.5
GDP (billion USD)	11.84	16.64	21.04	22.17	22.14	16.85
Agriculture (% of GDP)	14.9	12.3	12.1	11.5	8.6	9.9
Industry (% of GDP)	29.1	23.5	21.2	21.4	24.4	28.2
Service (% of GDP)	42.9	52.5	56.4	57.5	56.1	51.5
Human Development Index (HDI)	0.738	0.726	0.732	0.738	0.743	0.755

According to UNDP's "Human Development Report 2000," Human Development Index (HDI) of Kazakhstan is 0.755, ranking 73rd among 174 countries of the world. Short life expectancy may be lowering the index in contrast to high literacy rate. However, these indices have started to increase after bottoming out in 1995. The table shows the rapid decline of percentage held by agriculture.

4. Ethnicity

The Republic of Kazakhstan is said to have 131 ethnic groups living in the country. Population statistics by ethnicity in the population survey conducted in 1999 is listed as Table 10. Total population amounted to 14,953,126, of which 7,985,000 were Kazakh and 4,479,000 were Russian. The two groups combined account for 77.5% of the total population. Other main ethnic groups in the order of their size are Ukrainian, Uzbek, German, Tartar, Uyghur, Belarusian and Korean. In the 1989 survey prior to independence, Kazakh and Russian populations were roughly equal in number, followed by Germans, Ukrainians, Uzbeks, Tartars, Uyghurs, Belarusians and Koreans. In other words, 1.5 million Russians and 600 thousand Germans migrated outside of Kazakhstan in the 10-year period after independence. In addition to the feature of Kazakhs accounting for more than 50% of the population, it is noteworthy in that the decrease in Russian and German population, which signifies decrease in number of scientists/engineers and competent farmers, respectively, is negatively affecting various sectors of Kazakhstan.

Table 10 Migrants by Nationality

Unit : 1000person

Nationality	In Migration	Out Migration	Balance	In Migration	Out Migration
International Migration	200,910	327,549	-126,639	100.0%	100.0%
Kazakh	125,320	124,240	1,080	62.4%	37.9%
Russian	48,327	120,662	-72,335	24.1%	36.8%
Ukraine	7,723	20,455	-12,732	3.8%	6.2%
Belarusians	1,351	4,434	-3,083	0.7%	1.4%
Germans	4,822	35,762	-30,940	2.4%	10.9%
Korean	1,684	1,910	-226	0.8%	0.6%
Others	11,683	20,086	-8,403	5.8%	6.1%
Inter-oblast Migration	165,485	165,485	0	100.0%	100.0%
Kazakh	116,342	116,342	0	70.3%	70.3%
Russian	30,664	30,664	0	18.5%	18.5%
Ukraine	5,422	5,422	0	3.3%	3.3%
Belarusians	992	992	0	0.6%	0.6%
Germans	3,491	3,491	0	2.1%	2.1%
Korean	1,181	1,181	0	0.7%	0.7%
Others	7,393	7,393	0	4.5%	4.5%

Table 11 KazakhstanRepublics Population Trends by Nationality 1926 - 1999

	Population						Ratio (%)					
Nationality	1926	1939	1959	1970	1989	1999	1926	1939	1959	1970	1989	1999
Population	6,503,006	6,082,000	9,294,741	13,008,726	16,199,154	14,953,126	96.7	95.9	94.5	95.3	100.0	100.0
Kazakh	3,713,394	2,327,625	2,787,609	4,234,166	6,496,858	7,985,039	57.1	37.8	30.0	32.6	40.1	53.4
Russian	1,279,979	2,458,687	3,972,042	5,521,917	6,062,019	4,479,620	19.7	40.0	42.7	42.4	37.4	30.0
Ukraine	860,822	658,319	761,432	933,461	875,691	547,054	13.2	10.7	8.2	7.2	5.4	3.7
Uzbek	213,498	120,655	135,932	216,340	331,042	370,663	3.3	2.0	1.5	1.7	2.0	2.5
Germans	51,102	92,571	658,698	858,077	946,855	353,441	0.8	1.5	7.1	6.6	5.8	2.4
Turtar	80,642	108,127	191,680	287,712	320,747	248,954	1.2	1.7	2.1	2.2	2.0	1.7
Uyghur	-	35,409	59,840	120,881	181,526	210,365	0.2	0.6	0.6	0.9	1.1	1.4
Belarusians	25,614	nd	107,348	198,275	177,938	111,927	0.4	-	1.5	1.1	1.1	0.7
Korean	-	96,453	74,019	81,598	100,739	99,665	0.8	1.6	0.8	0.6	0.6	0.7

Figures for 1926-1970 from: Kimura, Hideyoshi, "Contemporary History of Russia and Central Asia" Table7, p. 117

Figures for 1989 and 1999 from Agency on Statistics of the Republic of Kazakhstan.

Chapter 2

Economy and Agriculture of Kazakhstan

1. Historical Remarks

Kazakhstan is one of the larger economies of Central Asia, which is more economically diversified than Uzbekistan, for example. With only 16 million people living on over 2.7 million square kilometers of territory, Kazakhstan was the second-largest republic of the Soviet Union and had the fourth-largest population and the third-largest economy (after Russia and Ukraine).

The Republic's delicate ethnic balance of roughly two-fifths Kazakhs and two-fifths Russians led Kazakhstan to play a key role in the final year of the republics of the Soviet Union, as an intermediary between the Slavic and the Asian republics of USSR, and the agreement replacing the Soviet Union by the Commonwealth of Independent States (CIS) was signed in Almaty, ex-capital of Kazakhstan, in December 1991.

During the 1950s and 1960s, Soviet citizens were urged to help settle the "New Virgin Lands" of the Kazakh Soviet Socialist Republic. The influx of immigrants (mostly Russians, but including some deported minority nationalities) skewed the ethnic mixture and enabled non-Kazakhs to outnumber natives. Independence has caused many of these newcomers to emigrate.

Kazakhstan, the second largest of the former Soviet republics in territory, possesses enormous untapped fossil fuel reserves as well as plentiful supplies of other minerals and metals. It also has considerable agricultural potential with its vast steppe lands accommodating both livestock and grain production. Kazakhstan's industrial sector rests on the extraction and processing of these natural resources and also on a relatively large machine-building sector specialising in construction equipment, tractors, agricultural machinery, and some defense items, which are technologically very old and are not able to compete in the age of market economy.

During the 1950s and 1960s, Kazakhstan became the most diversified economy in Central Asia. Over 60% of the republic's arable land (about 25 million hectares) was brought under

cultivation during the Virgin Lands campaign initiated by Khrushchev in the late 1950s, as a means of reducing the USSR's dependence upon cereal imports from America and of settling nomadic herders. The Virgin Lands campaign turned northern Kazakhstan into a major grain-growing area (the third–largest producer and second-largest net exporter among the ex-Soviet republics), but the forceful expansion of the area under crop led to serious ecological problems that still exist.

Hi-tech activities included the Baikonur space centre, from which Yuri Gagarin became the first man in space, and the USSR's major nuclear testing area, huge industrial sites, such as that centred on the Karaganda coal mines were developed in the north and east of Kazakhstan. All of these activities attracted large numbers of Slavic immigrants, and the ethnic Russians' share of the population increased from less than a fifth in 1926 to 43% in 1959.

(1) Economic and agricultural structure of Kazakhstan shortly after Independence

Agriculture is an important sector of the Kazakhstan economy. In 1991, over 1.7 million people (18% of the labour force) were employed in agricultural sector, compared with 1.5 million employed in industry (including mining). The relative importance of agriculture and industry in Kazakhstan's total output is difficult to measure. In 1990, agricultural output was valued at double that of industry, but in the next year industrial output was valued higher than agricultural output (Table 2-1). The explanation for this reversal is twofold: relative prices were drastically changed (in particular, the artificial very low oil and mineral prices moved closer to world prices), and 1991 saw the worst harvest in over a decade.

With a bumper harvest in 1992, employment in agriculture increased, while employment in industry declined. Both sectors' share of output increased in 1992 at the expenses of construction. But gradually importance of industry increased as the crude oil production became the centre of economy and oil output is valued at world price.

The structure of agriculture in Kazakhstan differs significantly from that in the other CIS. Cereals (especially wheat) and livestock farming are the dominant activities; cotton is of lesser importance, although it is geographically concentrated in the Chimkent region (Table 2-2).[1]

[1] In the late 1980s Kazakhstan produced 12% of grain, 23% of wool, 8% of meat, and 4% of cotton in the USSR(1986-1989 averages, from IMF et al.[1991,1:218]).

Table 1 Sectoral Distribution of Employment and Output in Kazakhstan, 1990 and 1991

	1990	1991
Employment (thousands)		
Total labour resources	9,262	9,331
Full-time employment	7,563	7,494
Employment in the state sector	6,775	6,712
Industry	1,539	1,533
Agriculture	1,713	1,740
Forestry	14	14
Transport and communication	510	508
Construction	908	771
Trade	561	554
Other material sphere	161	195
Nonmaterial sphere	1,370	1,405
Output (millions of rubles)		
Net material product	33,358	68,603
Industry	7,003	24,764
Agriculture	13,937	22,810
Forestry	25	52
Construction	5,338	9,022
Transport and communication	3,257	7,435
Trade	1,602	2,683
Other material sphere	2,198	1,837

Source: Kazakhstan State Economic Committee, reported in World Bank, *Kazakhstan: Country Economic Memorandum* no.10976-KK (Washington, D.C.: World Bank, November 1992), Vol.2, Statistical appendix.

Note: The output data correspond to the material sphere of employment.

Table 2 Agricultural Land Use in Kazakhstan, 1990

Agricultural Land Use	millions of hectares
Grazing, pasture, and rangeland	180
Arable	40
Cereals	23.4
(wheat)	(14.1)
Fodder crops	11.1
Fallow	4.4
Cotton	0.1
Sugar beet	0.1
Sunflowers	0.1
Vegetable	0.3
Total	220

Source: Government of Kazakhstan.

Nevertheless, in the south of Kazakhstan, the reliance on irrigation systems, which are overstraining the capacity of the feeder rivers, is typical of the rest of the region. The grain farming in the north is rain fed, but the low rainfall and short growing season make output highly variable. Regarding agricultural output in Kazakhstan, short-term variable makes it difficult to identify any long-term trend from recent years' harvest. But in addition to the serious problem of land ownership, agricultural production organisations, and lake of appropriate agricultural policy in the country as a whole, the situation may be deteriorating if desiccation of the Aral Sea is creating more extreme climatic conditions.

Apart from suffering from the ecological consequences of the desiccation of the Aral Sea, Kazakhstan's agriculture is contributing to the environmental problems. Inefficient irrigation techniques are contributing to the desiccation of the Aral Sea and Lake Balkhash, although Kazakhstan is not the major culprit in the former case.

Although Kazakhstan was, in most years a net exporter of grain, this does not reflect the republic's comparative advantage: the Virgin Lands campaign expanded onto land that cannot support gain farming, and for ecological reasons, the grain sector should be contracted rather than expanded.[2] The replacement of extensive livestock farming by intensive (dependent on fodder production) livestock production fails to best utilise natural endowments.

Agriculture is a foreign-exchange earner for Kazakhstan. The full potential is, however, being wasted by the lack of adequate processing, storage and distribution facilities. When Kazakhstan enjoyed a bumper 30 million tone wheat harvest in1992, as much as a third was likely to be lost.[3] Not only output of industrial products but also, almost all food processing activities have experienced severe output decline in the early years of independence (Table 2-3).

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[2] The World Bank considers about 30% of the land brought into cultivation during the Virgin Land s campaign unsuitable for cultivation and maintains that its use contribute to soil degradation. World Bank, **Kazakstan: Country Economic Memorandum** no.10976-KK (Washington, D.C.: World Bank, November 1992), 129
(Almata, 1992) 23-9.

[3] Estimated by Serik Akhanov, deputy director of the Supreme Economic Council, quoted in **Far Eastern Economic Review**, December3, 1992, 26.

Table 2-3 Output of Selected Industrial Products in Kazakhstan, 1989-1992

Number of Units

	Unit★	1989	1990	1991	1992
Coal	2	138	131	130	127
Brown coal	2	3.1	3.4	3.9	4.5
Natural gas	3	6.7	7.1	7.9	8.1
Crude oil	2	22.0	21.7	22	21.7
Iron ore	2	23.8	23.8	22.0	17.7
Electricity	4	89,657	87,379	85,984	81,293
Cotton yarn	1	41.7	39.9	36.9	38.6
Cotton fabrics	5	150	151	134	135
Tires	6	2,450	2,633	3,029	2,904
Paper	7	2,909	1,510	1,029	700
Cement	1	8,650	8,301	7,575	6,436
Meat	1	946	899	846	519
Milk products	1	1,491	1,470	1,377	952
Butter	1	83	85	76	61
Oil	1	92	95	101	56
Wheat flour	1	1,968	1,962	2,014	1,932
Sugar	1	377	319	307	153

Source: Kazakhstan State Economic Committee, reported in World Bank, *Kazakhstan: Country Economic Memorandum* no.10976-KK (Washington, D.C.: World Bank, November 1992), Vol.2, Statistical appendix.

★ 1=thousands of metric tons, 2=millions of metric tons, 3=millions of cubic meters, 4=millions of kilowatt/hours, 5=millions of square meters, 6=thousands, 7=metric tons.

(2) Economic Performances immediate after Independence

From the 1970s on, Kazakhstan shared in the general economic stagnation of the USSR, and in the 1980s growth in output per head was close to zero. As in all of the former Soviet republics, high inflation and falling output levels characterized the early 1990s. Kazakhstan's inflation followed fairly closely with that of Russia. Inflation in 1992 was in the four-digit range. Official figure for the increase in consumer prices in 1992 was 2,567% (compared to 2,323% in Russia), with a large increase in January followed by monthly rates of 6-15% over the next four months and higher rates for the rest of the year (Table 2-4). Wholesale prices increased by much greater margin of 12,490% in 1992. The big differences arose primarily because the largest increase in wholesale price affected exports.[4]

In1991, fall in output was larger in Kazakhstan than in the rest of Central Asia、but the 1992 percentage drop was smaller than in other Central Asian republics. The welfare implications of falling output were alleviated by improved terms of trade, due to moving from Soviet to world prices, and by continuing credit from Russia.

In part, Kazakhstan's fall in output in the early years of independence reflected a severe drought that led to a very poor grain harvest. The recovery in grain production, which was

[4] See, for discussion, IMF et al.1991, 1:216-17, table 16.

three times higher in 1992 than in 1991, alleviated the percentage decline in output in 1992, which was 14.2percent.

Table 2-4 Monthly Percentage Changes in Consumer Prices in Kazakhstan, 1992

	%
January	256.4
February	8.8
March	11.9
April	15.3
May	14.9
June	24.2
July	30.0
August	14.0
September	13.7
October	20.4
November	22.4
December	18.8

Source: IMF, Economic Review 5: Kazakhsatn, June 1993, 63.

The impact of the fall in output was exacerbated by the reduction of inter-republic transfers. In this respect, however, Kazakhstan was less adversely affected than the other CIS, because Russia chose for political reasons to maintain significant credits flows to Kazakhstan. Kazakhstan also enjoyed a substantial improvement in terms of trade as a result of shift from Soviet to world price. In sum, although Kazakhstan suffered from a fairly typical output loss during the first two years of its transition process, in comparison to other countries suffering from the disintegration of the Soviet economic system, the impact on economic welfare was alleviated by favourable terms of trade effects and by continuing privileged economic relations with Russia.

In 1992-1993, the social effects of economic disruption became more apparent. Income inequality was more blatant—luxury cars became more common, while poverty was on the rise. Crime was increasing, and there were complaints of private initiative by the policy in collecting tolls and protection money. In general, corruption was perceived as a large and growing problem especially regarding oil deals with foreign capital. "It's about the fact that corruption in the former Soviet Union is endemic and pervasive."[5] Diseases that had been absent for decades reappeared; on several occasions in 1993, the government closed the borders in response to outbreaks of cholera.

In the short run Kazakhstan's trade profile enabled the country to switch its exports to hard currency markets and to switch imports to intra-CIS (subsidized) sources. Export to countries out side the former USSR dropped from $1,402 million in 1990 to $928 million in 1991, but then recovered to 1,489 million in 1992.[6] It is an important issue to mention that the figures by itself hide substantial changes in trade patterns between 1990 and 1992, with both

[5] **The Times of Central Asia**, "Struggle and Corruption in the Caspian Basin", July 26, 2001, p. 3.
[6] Figures from State Committee on Statistics and Analysis of Republic of Kazakhstan, Statistical Bulletin no 2 (1992), 41044; and IMF, Economic Review5: Kazakhstan (June 1993), 91.

exports to and import from Eastern Europe and Cuba dropping sharply. Imports from developing countries in Latin America and in East Asia (except China) fell from about a tenth of the total to almost zero, while imports from China soared from 3.7% to 43.7% of all imports. These changes in trade patterns reflect adjustment from political obligations to market conditions, with export going increasingly to the high income countries of Western Europe, North America, West Asia such as Iran and East Asia, and import of consumer goods coming increasingly from China.

Despite the change of trade pattern and improvement in the external trade balance, Kazakhstan ran an overall trade deficit in 1992 of $1,670 million, due to a large deficit on intra-CIS trade. Trade with former Soviet republics has become increasingly trade with Russia (at the expense of trade with the Baltic states and Central Asian republics), and was largely financed by correspondent account credits (overwhelmingly with Russia).

In the early years of independence it was supposed that the country would immediately benefit from huge amount of foreign direct investment (DFI). But actual DFI inflows had not been large, amounting to about $100 million in 1992 and have mostly involved small-scale joint ventures. However, oil fields, as in the other oil exporting countries of the region, may attract foreign investment if the political tension eased and the legal problem of Caspian Sea and war in Afghanistan are resolved immediately[7]. Under a contract negotiated in the final years of the USSR and signed in May 1992, Chevron intended to invest $1.5 billion in developing the Tenghiz oil field northeast of the Caspian Sea.[8] British Gas and AGIP are involved in a potentially even larger project to exploit the Karachaganak oil and gas field in the Urals of western Kazakhstan, and Elf Acquitaine has singed a contract to explore a large area in central Kazakhstan. Whatever oil and gas reserves are found, their full exploitation will await construction of new pipeline to the Black Sea or the Mediterranean Sea, or to the Persian Gulf via Iran, which require huge amount of the international cooperation (as well as large found) and needs the political tension to be eased, specially regarding legal formwork of Caspian Sea[9].

Chevron began pumping sixty thousand barrels a day from the Tenghiz field in May 1993, with a promise to double output by the year's end. The sole outlet for the oil is a leaky pipe across Russia to the Black Sea, and by the end of 1993 only thirty thousand barrels a day were passing through it as the Russian authorities cited environmental and other reasons for limiting access which later was solved.[10] Meanwhile Russia was raising fees and demanding an equity share in future oil deal, while pressing Azarbaijan and Turkmenistan not to participate in new pipeline schemes terminating in the Mediterranean or the Persian Gulf. Although Kazakhstan was a net exporter of the crude oil in the USSR, it was a net importer of oil products. Therefore, a project for expanding three existing refineries at Guryev, Pavalodar, and Chimkent, and to construct new refineries, for which bids were made in 1993 by Mitsui, Mitsubishi, and

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[7] It is not exaggeration to mention that behind the scene cause of recent war in Afghanistan is linked with exploration of oil and gas of Central Asia and the diversification of its route.

[8] But in total Chevron has invested, roughly $7 billion in the Kazakhstan oil sector. **The Times of Central Asia**, July 26, 2001, p. 3. But Chevron had already announced in Almaty that the company has a plan to invest more than 20 billion dollars in Kazakhstan within next forty years, Nihon Keizai Shinbun , June 6,1997.

[9] Pipeline from Tenghiz field to Russian, Noroshisuku in Black Sea with the 1500 Km of length and total cost of 2.6 Billion U.S.$ start to work from October 15,2001. Russia, Kazakhstan and Chevron are the main partner of the project. This is the first route enable Kazakhstan to export Caspian See oil directly to out side world, Nihon Keizai Shinbun, Oct 16, 2001.

[10] Ibid.

Foster Wheeler.

There was also non-energy related DFI. In autumn 1993, Philip Morris paid $24 million for 49% of the shares of the Almaty tobacco factory. The U.S. firm had planed to invest $200 million in modernising the plant over three years, after which it became the sole owner.

2. Straggling Agricultural Sector of Kazakhstan

(1) General Condition of Agriculture

Kazakhstan has the second largest landmass of the former Soviet Union, an area of 2,717,300 square Km, which is as much as western Europe, slightly less than 4 times that of Texas, and almost m7.5 times that of Japan.

Kazakhstan lies between the Siberia Taiga in the north and central Asia deserts in the south, The Caspian Sea in the west and mountain range of the Tien-Shan and Alty in the east. The west is dominated by the Caspian depression (the lowest point being the Karagie, -132m). The Kazakh ridge forms the central part of Kazakhstan. The north is part of the West-Siberia lowland and the south is part of the Kizilkum (red sand desert). The east and southeastern borders are formed by the Altay, Tarbagatay and Tain Shan mountains.

Kazakhstan is predominantly low plateau with a continental climate. The average length of the growing season is only 125 days in the north, rising to 175 in the south. The average temperature in January is −19℃ in the north and gradually shifts to −2℃ in the south. Summers are generally dry and the average temperature in July increase gradually from 19℃ in the north to 28-30℃ in the south. Precipitation in plain areas is generally low, from 400 mm in the north to 150 mm in the south-west. In the mountainous regions, precipitation ranges from 400 to 1600 mm.

Kazakhstan is totally landlocked that poses a threat to further development. All rivers, except the Irtysh, are inland bound and flow into lakes like the Caspian, Aral, Balkhash and Tengiz. Many smaller rivers located in the heart of the country are fed by snow water and dry out in summer. Altogether there are more than 48,000 lakes with a total area of 45,000km^2. In many regions there are stocks of fresh and slightly salted sub-soil waters which are partly used by industrial and agricultural enterprises and their volume is estimated at 7000 km^3.

Regarding agricultural soil, the zone of black fertile lands covers the northern part. More to the south, there is a belt of brown soils. In the south we find gray soils with sandy areas.

The main agro-ecological zones are: the dominant steppe land of northern Kazakhstan, a natural grassland which is location for most wheat production; the east and south-east have a higher and more reliable rainfall and, mostly, good soils. These former woodlands support the most diverse and intensive farming systems in the country. Access to irrigation extended the cropping options in most regions, but especially in the south-east with its longer growing season.

(2) General Structure of Agriculture

At the beginning of the century (1913) and before Soviet collectivisation in the early thirties, animal husbandry through essentially nomadic and semi-nomadic farming had been the main agricultural activity due to natural landscape and climatic conditions. Therefore, animal

production was already impressive even compared with today's production figures: breeding of 4,350 thousand horses, 5000 thousand sheep, 18400 thousand goats, and 730 thousand camels. The arable land, mainly cereal production, was around 4000 thousand hector.

The agricultural policy together with the diversification of the republic's economy under Soviet rule had two important consequences. First, it is clear that the Soviet agricultural policy changed the nomadic lifestyle and agricultural production structure in a drastic way and replaced it by a predominantly sedentary culture. Animal production became secondary sub-sector as the best land was ploughed and crop areas constantly expanded in favor of food crops and to the detriment of fodder crops. Second, by reducing the number of Kazakhs and increasing the numbers of other ethic groups, they made the Kazakhs a minority in the republic.

Therefore, the structure of farming in Kazakhstan is of relatively recent origin, especially in the northern wheat belt. Under the Virgin Land policies of the 1960s during the Korochov regime, huge tracts of land were opened up to wheat farming centred on large state farms (and a few collective farms). This policy, which was aimed at maximising the output of wheat for export within the Soviet Union, extended the production of wheat into extremely marginal areas with thin soil and low and unpredictable rainfall (down to 200 mm). Much of the current farm debate in Kazakhstan centres not only on the farms' debt, types of agricultural organisation production, and government agricultural policy, but on the question of the viability of economic farming in these extreme conditions.

(3) Agricultural Land Used in Kazakhstan

As is shown in Table 5, the total agricultural plough-land under agricultural crops in Kazakhstan decreased drastically from 28.730 million hectares in 1996 to 19.692 million hectares in 1999 (-30%) and again to 16.195 hectares (-18%) in a single year of 2000. It should be remembered that the immediately after the independence, there was around 35 million hectares of agricultural land under cultivation. In addition, hayfield and pasture land also decreased from 129.190 million of hectares in 1996 to 73.479 millions in 1999. The rate of its decrease amount to 43%.

Table 2-5 Total Land Area and Distribution of Agricultural Lands by Land users

Unit: (000 hectares)

Agricultural land classification/ Years	Lands used by land users*	of which				
		Agricultural enterprises and organisations	Peasant (private) farms	In personal use of households	among which	
					personal subsidiary plots	collective and personal gardens and kitchen-gardens
Total agricultural area						
1996	181121.1	160637.8	20032.1	451.2	251.2	200.0
1997	149405.4	121224.8	27763.0	417.6	230.5	187.1
1998	130382.4	101012.5	28947.9	422.0	233.6	188.4
1999	106997.6	77278.3	29315.3	404.0	223.4	180.6
All agricultural lands						
1996	161560.2	141684.1	19484.9	391.2	206.1	185.1
1997	137588.7	110321.3	26902.8	364.6	189.3	175.3
1998	120092.7	91654.5	28072.7	365.5	190.0	175.5
1999	98347.2	69556.1	28444.0	347.1	179.8	167.3
Plough-land						
1996	28730.9	26223.8	2237.2	269.9	145.2	124.7
1997	25889.2	21721.8	3903.9	263.5	142.5	127.0
1998	22768.5	17801.2	4706.4	260.9	141.8	119.1
1999	19692.8	14394.2	5050.5	248.1	132.8	115.3
Hayfield and pasture						
1996	129190.7	112425.2	16712.9	52.6	38.0	14.6
1997	107117.6	85224.9	21859.8	32.9	23.1	9.9
1998	92404.5	70463.1	21905.9	35.7	22.9	12.8
1999	73479.4	51835.6	21609.4	34.4	28.4	6.0

Those engaged in agricultural production

Source: Republic of Kazakhstan, Statistical Yearbook 2000, p.258.

(4) Development of Agricultural Production Organisations in the post-Soviet Period

As mentioned earlier, after the break-up of the USSR and gaining independence in 1991, Kazakhstan started to transform the economy from a centrally planned one toward a market mechanism system by the privatisation of state property and private business development in a very hastily manner. This is comparable with that of USSR, which led it to a ruined economy in that country. As a result of this hastily approach, government withdrew its full support to agricultural after 70 years of full protection of the sector.

Industry workers were given shares of an enterprise and rural inhabitants were given a right to possess a certain share of land or machinery in collective (kolkhoz) or state-managed (sovkhoz) farms. The allocation of the shares was based on principles such as farmers' position in ex-production organisations, length of work at farm, their especial contribution to the development of the farm and, undeclared but very important factor such as politically

motivated influences. That is why the directors of all kind of recent large-scale agricultural enterprises (large scale farm managements) in Kazakhstan are those who had been the directors of ex-kolkhoz or ex-sovkhoz and their shares are greater than any other members of the farm unit. Therefore from the start, the collective farms' reform procedure became a tool of an uneven distribution of asset (including land and machineries) between farmers.

Through the time limited ownership system, the owners of the shares and the land had the legal right to establish their own business of any types. This initiated the process of uneven splitting and distribution of big state and collective farms into a large number of different kinds of new types of farm management.

Between 1991 up to 1995 there were different laws passed through diet and orders from the President regarding privatisation of state-managed and collective farms which was planned by the special committee of government (Ministry of Agriculture and National Academic Centre for Agricultural Research) and approved by academic committee of the diet. Those laws and regulations were ordered to the prefectures for implementation. But as the each order or regulation was strongly influenced by the political and ethical situation of each prefecture, there appeared different and very complicated types of farm management under the same order and regulation. On the other hand, all these farms types were adopted according to the blue prints and bureaucratic procedures designed by the government and not according to the needs of market mechanism and participation of farmers.

The following Table 6 shows the different types of agricultural production organisations and its trend within the last decades.

Table 2-6 Types and trends of the Agricultural Production organisations

Years	Total Farm Organisation	Different types of farm Organisation							
		Sovkhoz	Kolkhoz	State Farms	Production Cooperatives	Partnership (Limited Liability)	Partnership (Collective)	Peasant Farms	Others Farms
1991	7,264	2,120	417	1,394	0	0	0	3,333	0
1992	14,920	1,648	461	1,685	837	0	405	9,262	622
1993	23,296	1,518	454	1,831	756	50	425	16,283	1,979
1994	30,168	764	434	2,105	487	443	1,083	22,521	2,331
1995	36,285	186	420	1,747	306	585	1,209	30,785	1,047
1996	48,060	0	0	157	1,526	1,473	587	44,317	0
1997	68,428	0	0	68	3,270	1,124	0	63,966	0
1998	83,856	0	0	63	2,290	2,375	0	79,130	0
1999	96,198	0	0	60	1,781	2,886	0	91,471	0
2000	106,336	0	0	57	1,663	2,818	0	101,798	0
2001/7	117,965	0	0	55	1,596	2,914	0	113,400	0

Source: Data provided by Ministry of Agriculture of Kazakhstan to mission, July, 2001.

According to Table 6, by July 2001, there are only 117,965 agricultural managements of different types that are functioning in this landmass country; among which 1596 production cooperatives, 2914 various kinds of partnerships, and 113400 peasant farms and remaining 55 state organisations (not production units) are included.

On the other hand, according to the Statistical Yearbook 2000 of Kazakhstan, the following are the definitions of "agricultural enterprises" as production organisation and other "types of farm management" or "production organisations" currently existing in the country:

"**Agricultural enterprises** include production enterprises created on the basis of former collective and state farms and other state enterprises (collective agricultural enterprises, joint stock companies, partnership), subsidiary holding of enterprises and organisations. **Households farms** include personal subsidiary plots, collectively-owned gardens and kitchen gardens, as well as summer (dachas) plots. **Personal subsidiary plots**: are given to households in permanent or temporary ownership to grow crops or raise livestock. **Collective orchards and vegetable gardens** represent such type of use, which allows citizen to grow fruit and vegetable for their needs. **Peasant (private) farms** covers a group of persons joined together as a family or on the basis of labour who use agricultural lands for production of agricultural products as well as make processing and sales of these products."[11]

The above-mentioned concepts may not reflect clearly the actual situation of agricultural production organisations in Kazakhstan, However, among those; 1) different kind of agricultural enterprises, 2) peasant (private) farms, and 3) household farms are the main typical agricultural production organisations in Kazakhstan. All agricultural data regarding lands used by land user, main indicators of the performance of main agricultural organisations, structure of gross agricultural output by branches of production, production of main animal husbandry products, etc., are referred to these three type of agricultural organisations.

Therefore, according to the recent data, for example, the cultivated land under peasants (private) farms has increased (Table 7). It is interesting to mention that most of the decreasing trend of agricultural land in Kazakhstan occurred in large scale agricultural enterprises organisations (-46%), while those of peasant (private) farms have increased and almost doubled from 2.2 million hectares in 1996 to 5.0 in 1999 (Table 7). However, as the agricultural sector of Kazakhstan is a struggling sector for adoption toward the market economic, various types of agricultural management and production organisations are for time being in transformation period.

[11] **Statistical Yearbook 2000**, p.256, Almaty: Agency on Statistics of the Republic of Kazakhstan.

Table 2-7 Sown areas under agricultural crops (total and by types of organisations)

Unit:000hectars

	All types of farms			Agricultural enterprises			Peasant (private) farms			Households		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
Total sown area	18610.4	15285.3	16195.3	14443.4	10927.8	10855.4	3784.1	3974.8	4847.8	382.9	382.7	492.1
1-Grains and legumes - total	13526.7	11392.5	12438.2	10481.9	8251.5	8618.6	2980.8	3086	3722.5	64	55	97.1
of which:												
Wheat	10668.1	9037	10113.3	8180.6	6600.2	7061.4	2437.3	2397.1	2986.9	50.2	39.7	65
Rye	68.6	20.2	27	60.3	13	12.9	8.3	7.2	14.1	-	-	-
Barely	2222.5	1796	1710.7	1803.4	1276.1	1170.7	413.8	513.4	522.5	5.3	6.5	17.5
Maize for grain	65.8	66.5	79.4	34.2	23.1	23.6	24.6	36.3	45	7	7.1	10.8
Oats	214.7	145.8	192.9	187	115.2	149.8	27.7	30.6	43.1	-	-	-
Millet	94.5	128.1	137.9	80.1	101	88.8	13.4	26.4	46.3	1	0.7	2.8
Buckwheat	68.9	45	52	50.3	22.5	23.2	18.6	22.5	28.6	-	-	0.2
Rice	76.7	71.6	77.6	56.4	53.1	55.4	20.3	17.9	21.7	0	0.6	0.5
Legumes	22.2	17.5	21	14.4	10.2	12.4	7.4	7.1	8.3	0.4	0.2	0.3
2-Industrial crops – total	481.2	550.5	631.1	279.3	233.3	225.4	181.1	285.9	347.5	20.8	31.3	58.2
of which:												
Cotton	118	141.3	151.8	66.7	43.9	33.3	51	95.7	113.4	0.3	1.7	5.1
Sugar beet (factory)	17.6	19	22.5	10.9	10.5	8.9	5.7	7.5	11.7	1	1	1.9
3-Oil-bearing plants – total	338.6	384.2	448.2	199.3	177.8	181.8	121.3	179.1	216.3	18	27.3	50.1
of which:												
Sunflower for seeds	224.7	262.6	313.9	108.9	91.8	96.6	105.4	153.4	192.3	10.4	17.4	25
4-Potetoes	169.9	156.3	160.3	16.7	8.1	8.7	10.6	12.5	12.2	142.6	135.7	134.4
5-Vegetables	96.5	96.1	102.6	14.8	14.4	10.7	15.6	21.1	22.8	66.1	60.6	69.1
6-Food melons	41.5	38.8	38.8	11.5	6	4.4	15.9	20	18.6	14.1	12.8	15.8
7-Forage crops	4294.1	3050.8	2823.7	3638.8	2414.2	1987.2	580	549.3	719	75.3	87.3	117.5

Source: Agency of the Republic of Kazakhstan on Statistics, Statistical Bulletin No1, 2001, p.21～24

(5) Some Economic Indicators of Agricultural Sector

① **GDP and Rural Population**: Agriculture used to be the second largest sector in the economy, contributing more than 30% of GDP (Table 2-8). The subsequent decline saw its share fall to 11% of GDP in 1997, and to 8.6% in 2000 (224.3 billion tenge against 2595.9 billion tenge of GDP in current prices).[12] This statistic may be understated as a result of under coverage of household farm activities. However, there is no doubt that agricultural production activities in Kazakhstan are drastically declining. The process of structural changes and declining of agricultural contribution that took, for example, more than 50 years in Japan, is taking place within a decade in Kazakhstan, while still more than 44% of the population leaves in rural area(Table 2-9).

Table 2-8 Growth Rate and Sectoral Distribution of GDP

	90	91	92	93	94	95	96	97	98	99
GDP Real growth(%)	n.a	-9.8	-2.9	-10.4	-12.6	-8.2	0.5	2.0	-2.5	1.7
Nominal growth(bln.tenge)	n.a	A	n.a	n.a	423.5	1014.2	1415.7	1672.1	1747.7	1893.5
Structure of GDP .Total(%).	100	100	100	100	100	100	100	100	100	100
Agriculture	34.0	29.5	23.1	16.5	14.9	12.7	12.2	11.4	8.5	9.9
Industry Manufacturing/Mining	20.5	27.2	30.9	28.7	29.1	24.2	21.2	21.4	24.4	25.6
Commercial	8.2	8.1	8.5	10.4	12.1	17.7	17.3	15.6	15.2	15.0
Construction	12.0	9.2	8.7	8.3	9.6	6.7	4.4	4.2	4.9	4.8
Transportation/ Communication	9.4	7.4	7.5	10.0	11.1	10.9	11.3	11.7	13.8	12.9
Others	5.9	8.6	1.3	6.1	3.2	7.8	3.6	5.6	3.2	1.8

Source: Ibid. Statistical Yearbook1996,1997,1998,1999, 2000 and Statistical Bulletin 2001 No1.

Table 2-9 Distribution of population, Urban/Rural

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total	**16.38**	**16.52**	**16.52**	**16.44**	**16.51**	**15.68**	**15.48**	**15.19**	**14.96**	**14.90**
Urban	9.4(57%)	9.4(57%)	9.3(56%)	9.1(55%)	8.9(58%)	8.7(55%)	8.6(55%)	8.5(56%)	8.4(56%)	8.3(56%)
Rural	**7.1(43%)**	**7.1(43%)**	**7.2(44%)**	**7.3(44%)**	**7.2(44%)**	**6.9(44%)**	**6.8(44%)**	**6.7(44%)**	**6.8(45%)**	**6.6(44%)**

Source: Ibid.

② **Employment**: Agriculture was an important sector of the Kazakhstan economy. In 1991, over 1.7 million people (18% of the labour force) were employed in agricultural sector, compared with 1.5 million employed in industry (including mining). However, a recent data of number of employees by types of activity (excluding those employed at small enterprises and self-employed population) shows that the total number of employees are 2,459,300 of which 259,800 (10.6% of total) are engaged in agricultural sector (including hunting, forestry, fishing and fishing breeding) in 2000.[13]

[12] Source: Agency of the Republic of Kazakhstan on Statistics, Statistical Bulletin No1, 2001, p.8.

[13] Ibild, p. 67. The total labour resources of Kazakhstan is 8.4 million; of which 7.1 million are accounted economically active population. The total number in the economy are accounted for 6.1 million of which 2.7 millions

③ **Main products in term of value**: As was mentioned earlier, in 1990 agricultural output was valued at double that of industry but drastically decreased to 38% in 1996, 37% in 1997, 37% in 1998, and 29% of industry in 1999.[14] The structure of agriculture in Kazakhstan, also differs significantly from that in the other CIS. Plant growing (mostly cereals especially wheat) and livestock farming are the dominant activities in term of value (Table 2-10) and quantity (Table 2-11). In terms of value, almost half of the gross agricultural output in all types of farms belongs to plant crops and half to the livestock production for 1999 and 2000. However, large scale agricultural enterprises and peasant farms produce more than 80% of agricultural crop, while household plots produce 70% of livestock production in the country.

Table 2-10 Gross agricultural output (at constant prices, million Tenge)

Period	Total			of which					
				plant growing			animal husbandry		
	%	Million tenge	%	%	Million tenge	%	%	Million tenge	%
All types of farms									
1999	100.0	315010.3	100.0	100.0	169340.8	53.8	100.0	145669.5	46.2
2000	100.0	324080.4	100.0	100.0	164695.4	51.0	100.0	159385.0	49.0
2001-I-III		32730.9			655.0			32075.9	
Agricultural enterprises									
1999	28.2	88772.6	100.0	44	74466.9	83.9	9.8	14305.6	16.1
2000	21.5	69677.3	100.0	34.4	56607.7	81.2	8.2	13069.6	18.8
2001-I-III		3530.9			372.6			3158.3	
Peasant (private)farms									
1999	15.9	50144.5	100.0	25.4	43071.1	85.9	4.8	7073.4	14.1
2000	18.4	59630.8	100.0	3105	51820.9	87.0	4.9	7809.9	13
2001-I-III		1456.6						1446.6	
Households★★									
1999	55.9	176093.2	100.0	30.6	51802.8	29.4	85.3	124290.5	70.6
2000	60.1	194772.3	100.0	34.2	56266.7	29.0	86.9	138505.6	71
2001-I-III		27743.4			272.4			27471.0	

Source: Agency of the Republic of Kazakhstan on Statistics, **Statistical Bulletin No1, 2001**, p.21.

★★As was mentioned earlier this form of agricultural production organisation is divided to 1) personal subsidiary plots, 2) collective personal gardens, and kitchen-garden as well as summer(dachas) plots; Republic of Kazakhstan, Statistical Yearbook 2000, p.256,258.)

④ Main products in term of quantity: In term of total production of main agricultural crop, grain and legumes account for 71.5% in average for last 3 years (1998-2000). In average, wheat production alone account for almost 77.1% of grain and legumes for the same period. Barley is the second commodity after wheat and accounts for 15.8% of grain and legumes for the same period (Table 2-11). Potato and vegetable account for third and forth commodities in total crops production of Kazakhstan, accounting for 12.3% and 9.2% in average respectively for the same period. In contrast, rice only account for not more than 2% of the grain production in this country.

[14] Ibid. Statistical Yearbook 2000, p.11.

Table 2-11 Production of main agricultural crops

(by types of organisations)

Crop	All types of farms			Agricultural enterprises			Peasant (private) farms			Households plots		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
1-Grains and legumes – total	6,396	14,242	11,565	4,526	10,182	7,153	1,790	3,973	4,280	80	109	132
of which:												
Wheat	4,746	11,242	9,074	3,418	8,196	5,716	1,280	2,982	3,288	48	64	70
Rye	14	17	48	9	8	22	5	9	26	-	-	-
Barely	1,093	2,265	1,664	775	1,544	1,016	311	709	633	7	12	15
Maize for grain	167	198	249	67	53	42	76	118	165	24	27	42
Oats	73	194	182	55	159	134	18	35	48	-	-	-
Millet	20	44	62	14	32	35	5	10	23	1	2	4
Buckwheat	12	16	29	5	8	8	7	8	21	-	-	-
Rice	236	199	214	168	140	155	68	54	58	-	5	1
Legumes	16	16	26	5	10	10	11	6	16	-	-	-
2-Raw cotton	162	250	287	84	70	41	78	177	227	-	3	19
3-Sugar beet (factory)	225	294	273	132	150	92	77	122	153	16	22	28
4-Sunflower for seeds	83	104	105	21	22	22	56	74	74	6	8	9
5-Potetoes	1,263	1,695	1,693	108	96	71	87	130	191	1,068	1,479	1,431
6-Vegetables	1,079	1,287	1,544	121	146	92	212	261	344	746	880	1,108
7-Food melons	306	370	722	50	32	26	119	190	202	137	148	194
8-Fruit and berries	59	97	202	13	17	22	2	10	34	44	70	146
9-Grape	10	27	62	6	16	33	-	3	10	4	8	19
Total	**9,564**	**18,315**	**16,436**	**5,051**	**10,699**	**7,537**	**2,412**	**4,898**	**5,513**	**9,583**	**18,388**	**16,453**

Source: Agency of the Republic of Kazakhstan on Statistics, Statistical Bulletin No1, 2001, p.24～26

the potentiality for export.

⑤ Per capita Production of Agricultural Products and Consumption of Main Food Stuffs: The following tables (Table 2-12, 13) show that most domestic food supply in Kazakhstan except animal products in recent years, can be met from domestic production, and grain production has the potentiality for export

Table 2-12 Production of agricultural products per capita

Production of agricultural products per capita

Unit: Kg.

	1996	1997	1998	1999
Meat (and meat products)	53	45	41	43
Milk	220	210	219	237
Bakery products (bread and macaroni in flour equivalent, flour, cereal, pulses)	706	786	412	956
Potato	103	92	81	114
Vegetable	48	55	70	86
Eggs (pieces)	76	80	90	102

Source: Statistical Yearbook 2000, p.281.

Table 2-13 Consumption of main foodstuffs per capita

Unit: Kg.

	1996	1997	1998	1999
Meat (and meat products)	50	50	45	44
Milk	211	196	206	211
Bakery products (bread and macaroni in flour equivalent, flour, cereal, pulses)	185	200	137	101
Potato	67	68	60	60
Vegetable	52	55	70	76
Eggs (pieces)	70	69	79	90

Source: Statistical Yearbook 2000, p.281.

⑥ **Agricultural foreign trade**: In 1997 the country exported 5.5million MT of grain, mostly to Russia, down from 12 million MT in 1991. The recent trend shows that, while agricultural export contributes roughly to the 10% of total export of Kazakhstan, drastic decrease in number of livestock has caused the importation of animal husbandry products to this country (Table 2-14, 15, 16, 17).

Table 2-14 Amount of export and import of Agricultural productions and Animal productions and their share in total export/import of Kazakhstan

Unit: $ mln., (%)

	Export		Import		Balance	
	Agricultural Production	Animal Production	Agricultural Production	Animal Production	Agricultural Production	Animal Production
1995	383.3 (7.3)	89.3 (1.7)	64.7(1.7)	26.7(0.7)	318.6	62.6
1996	526.1(8.9)	70.9 (1.2)	55.1(1.3)	63.6(1.5)	471.0	7.3
1997	611.2 (9.6)	82.8 (1.3)	42.8 (1.0)	85.5 (2.0)	568.4	-2.7
1998	369.6 (6.8)	32.6 (0.6)	59.8 (1.1)	87.0 (1.6)	309.8	-54.4
1999	380.3 (6.8)	22.4 (0.4)	83.9 (1.5)	67.1 (1.2)	296.4	-44.7

Source: Ibid. Statistical Yearbook1996,1997, 1998,1999, 2000 and Statistical Bulletin 2001 No1.

Table 2-15 Number of livestock and poultry

Unit:000 heads

	1996	1997	1998	1999	2000*	2001-III*
All types of farms						
Cattle:	6859.9	5424.6	4307.1	3957.9	4106.6	4518.4
Of which cow	3045.0	2546.6	2109.6	1952.8	2014.7	2040.4
Sheep and goats	19583.9	13679.0	10384.3	9526.5	9981.0	11053
Pigs	1622.7	1036.5	879.0	891.8	1076.0	1158.4
Horses	1556.9	1310.0	1082.7	986.3	976.0	959.6
Camel	130.5	111.2	97.1	95.8	96.1	----
Poultry (Mln. Heads)	20.8	15.4	16.0	17.0	19.7	18.7
Agricultural enterprises of all kind						
Cattle:	3241.1	1893.8	921.8	501.5	344.4	345.9
Of which cow	1079.0	6655.0	310.5	173.9	118.0	118.4
Sheep and goats	11432.6	5799.5	2698.0	1483.7	949.8	899.5
Pigs	761.8	298.4	174.9	130.1	103.0	99.0
Horses	718.8	438.2	235.9	128.1	72.7	68.6
Camel	69.1	44.8	25.8	18.8	16.2	----
Poultry (Mln. Heads)	13.3	8.5	9.1	9.6	19.7	18.7
Households' plots						
Cattle:	3461.3	3304.4	3141.4	3214.4	3552.7	3931.3
Of which cow	1892.2	1789.9	1689.0	1669.9	1802.8	1825.4
Sheep and goats	7031.3	6930.1	6815.8	7181.9	8190.9	9254.0
Pigs	845.2	718.3	675.5	733.4	941.3	1024.7
Horses	760.0	777.5	750.1	759.2	824.5	813.4
Camel	58.5	60.6	63.6	69.2	71.6	----
Poultry (Mln. Heads)	7.4	6.7	6.7	7.2	9.9	9.4
Peasant(private) farms						
Cattle:	157.5	226.4	243.9	242.0	209.5	22.6
Of which cow	73.8	101.7	110.1	109.0	93.9	95.5
Sheep and goats	1120.0	949.4	870.5	860.9	840.3	899.7
Pigs	15.7	19.8	28.6	28.3	31.7	34.7
Horses	78.1	94.3	96.7	99.0	78.8	77.6
Camel	2.9	5.7	7.7	7.8		----
Poultry (Mln. Heads)	0.1	0.2	0.2	0.2	0.2	0.2

Source: Ibid., Statistical yearbook 2000,277-8,Statistical Bulletin, p.29

Table 2-16 Production of Main animal husbandry products (total and by types of management)

Unit: meat & milk = 000 tons、 Eggs = mln. Pieces

Years	All types of farms			Agricultural enterprises			Peasant (private) farms			Households' Plots		
	Meat*	Milk	Eggs	Meat*	Milk	Eggs	Meat*	Milk	Eggs	Meat*	Milk	Eggs
1996	836.6	3,627.1	1,262.4	249.4	792.6	683.9	33.6	81.1	8.4	553.6	2,753.4	570.1
1997	717.4	3,334.5	1,265.8	165.8	429.4	668.2	41.0	157.4	12.8	510.6	2,747.7	584.8
1998	636.3	3,364.3	1,388.4	79.6	262.8	756.4	36.4	151.9	13.1	520.3	2,949.6	618.9
1999	634.9	3,535.2	1,512.4	51.7	185.5	793.1	36.8	152.4	13.8	546.4	3,197.3	705.5
2000	622.7	3,730.2	1,692.2	40.3	186.0	850.0	39.3	155.0	11.9	543.1	3,389.2	830.3
2001(I -III)	121.6	570.4	374.7	7.8	34.1	227.2	6.1	24.7	2.0	107.7	511.6	145.5

Source: 1996-1999 I ,Ibid, Statistical Yearbook 2000 p276-277; 2000-2001 (I ～ II)Ibid, Statistical Bulletin No1, 2001,p.27-28

* slaughter weight

⑦ Volume Indices of Agricultural Output: Plant growing and animal husbandry produce at constant price shows that while it has declined drastically between 1993 ~1999 for all types of farms and especially for large scale agricultural enterprises, those of households plots and peasant private farms have increased (Table 17).

Table 2-17 Volume indices of agricultural output by types of farms

(at constant prices)

years	of which			
	Farms of all types	Agricultural enterprises	Households plots	Peasant (private farms)
1990=100				
1992	99.6	81.3	106.7	2160.5
1993	92.7	72.2	115.2	2320.4
1994	73.3	52.3	113.2	1888.8
1995	55.4	33.6	111.2	2517.8
1996	52.6	29.7	103.4	4569.8
1997	52.2	27.1	100.7	8458.7
1998	42.3	13.7	104.4	9372.2
1999	54.2	21.4	115.7	15445.4
Plant growing produce 1990=100				
1992	103.8	98.4	120.9	4478.7
1993	93.0	77.0	148.7	5410.3
1994	72.1	55.5	151.4	3760.2
1995	54.1	35.8	172.3	5504.9
1996	55.3	34.5	133.2	9765.7
1997	58.4	30.7	197.1	20136.9
1998	40.8	14.5	192.0	24889.2
1999	67.8	28.8	242.7	45920.7
Animal husbandry produce1990=100				
1992	97.0	79.6	118.0	1914.5
1993	96.6	68.1	124.7	1843.7
1994	83.0	49.9	119.7	2418.9
1995	62.9	31.6	99.5	2522.9
1996	51.1	19.5	95.3	2666.7
1997	46.0	16.8	85.8	4304.1
1998	44.2	10.5	89.7	4037.2
1999	44.6	7.8	94.5	4025.1

Source: Ibid., Statistical Yearbook 2000 p.264

3. Institutional and Policy Reforms in a Struggling Agricultural Sector

(1) Policy Approach toward agricultural problems in Kazakhstan

Faced with the persistent decline in agricultural production that was discussed above, and lowering of living standard of the farmers, the government during most of the 1990s tried to

adopt different kinds of policy reforms from since 1994 covering some aspect of the sector.

The most important institutional reforms in agricultural sector have been undertaken are as follow:

- **Land reform:** the most fundamental reforms involve the provision for individual control over land use. From explicit recognition in early 1994 of the rights of inheritance, transfer, and lease of agricultural lands, the government's land reform policy progressed to grant the right of land ownership to private individuals by the end of 1995. There are still, however, many questions over the nature of the land reform and extent to which these new right apply to different types of agricultural land. Moreover, there is a lack of clear procedures regarding agriculture land-used rights with the need of further reform concerning the registration procedures, dispute settlement, government repossession process, and the use of land for loan collateral.
- **Farm privatisation:** the other important of the reform concerns privatisation of state farm. This reform has progressed in a formal manner with almost all former state agricultural assets including farms, transferred to private hands by the beginning of August 1996. However, the transfer has not resulted in substantial restructuring. Generally, a cooperative ownership type of production organisation has been adopted and existing concepts, manner of management and customary operating procedures remained unchanged. The process is complicated because huge farms cannot be divided simply among the workers as many of them have no agricultural background and worked in the large social and the farms' logistical support system. Moreover, skills and know-how related to the new market environment are often lacking: for example, newly privatised farms often lack marketing staff. In addition, not only are the infrastructure and equipment mostly designed for large-scale operation and centralized decision-making but also are completely out of order.[15]
- **Trade liberalisation:** as part of the program to encourage the development of competitive supply and output market, the external trade regime was liberalized substantially by eliminating all direct control and reducing the tax on grain. These reforms supported the general liberalisation of domestic trading established with the freeing of most prices and the phasing out of the state order and state needs system involving the appropriation of agricultural output at non-market prices.
- **Agro-enterprise privatisation:** uneven progress has been achieved in developing competitive markets for agro-processing enterprises. Assets were transferred to private entities on a large scale through the national privatisation program mostly under political influences. However, a number of holding companies was given monopoly control over their market. Some of the formerly vertically monopoly holding companies have been dismantled, but still there are some companies which often continue to wield substantial monopoly power in agricultural input and output markets. Those farms that are under contacting farming with such a kind of companies, often suffer heavily from the existence of monopoly. Therefore, while reforms represent considerable movement away from the Soviet command economy, there are many problems in implementation. Most particularly, local official continue to interfere with privatisation operation and farms' management

[15] We observed huge amount of various type of large scale agriculture machineries which were completely braked and stationed at the farm without any occasion of utilisation

decisions. Local official often act to protect local producers. In some instance, restrictions on management decision-making have been incorporated—Implicitly or explicitly—into privatisation agreement such as those for grain handling enterprises.

- **Rural finance:** the development of viable agricultural credit system may require considerable time. The rural credit system had virtually collapsed by 1994. Previously, credit had been obtained under government-directed lending programs. The Agroprombank (APB), which dominated rural finance institutions, was used as a conduit for extending heavily subsidized loan to state farms and state-owned agro-processing industries. These programs did not focus on loan repayment and, partly as a result, APB's loan arrears were estimated at $225million in June 1995.[16]

However, the development of a rural credit sector is hampered by a large number of institutional problems, including (i) the possibility that existing farms may undergo further restructuring; (ii) farms are often heavily in debt; (iv) the use of land or equipment as collateral rests on an uncertain legal framework; and (v) limited farm experience with commercial lending practices.

(2) The Root of Crisis in Agricultural Sector and Declining Output

Our mission faced with different kinds of agricultural problems in Kazakhstan of which institutional aspects are of highly importance to be mentioned. These institutional issues are concerned with the type of agricultural production organisations, government policy, farms debts and its restructuring policy that do not provide any concrete solution to the agricultural crisis in Kazakhstan. Therefore this part of the report tries to find the causes and suggest some policy and institutional alternative for the problems.

Generally speaking, the majority of farms, whether peasant farming or large-scale agricultural enterprises, are mostly insolvent and production has fallen to the lowest level in 30 years. Initial restructuring efforts yielded disappointing results and mostly failed to lead to a concrete and new patterns of ownership or market-oriented agricultural production organisation.

Agricultural production fell by 55% overall between 1991 and 1998 and grain production declined from a peak of 30 million MT to around 12 million MT over the same period. Above all, the vast majority of the farming organisations are insolvent and face a doubtful future. Government farm policy has passed through several stages, including decrees issued by the President, by which the original state and collective farms were transferred initially into collective organisation and later into production cooperatives with little change in the actual operations and management at farm level. The tope managers of the all type of the collective entities are those who were the presidents of the ex-soviet sovkhoz with the same mentality and attitude toward the market-oriented agricultural management.

Partial liberalisation of the input market, which led to rapidly increasing input prices beginning 1993, combined with unchanged official procurement prices for the monopoly state trading channels to drive most farming organisations into insolvency. Therefore the sector came to rely increasingly on barter with input suppliers who led to accumulated indebtedness and some time exploitative relations in nature.

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[16] Asian Development Bank, "Kazakhstan Country Operational Strategy", Programs Department (East) Division III, December 1996, P.30.

(3) Causes of vicious circle of farm debt and burden on the national economy

Accumulation of debt in farm managements in Kazakhstan and all other CIS is regarded as the major obstacle to successful restructuring of the agricultural sector in these countries.

Generally speaking, farm debt appears and grows continuously because of inadequate farm profit. But in a circumstance like CIS, however, the accumulation of farm debt is attributed to loose financial discipline made possible by the persistence of soft budget constraints during Soviet period.

Farms as all other business enterprises in market economies operate under hard budget constraints: if they are unable to generate sufficient profit to repay their financial obligations, they go out of business. In socialist economies, on the other hand, farms operated under soft budget constraints because they always relied on flows of fund from the state to cover their losses and repay their debts. The state also in the long term cannot afford to deal with the problem. It is no exaggerated to say that Soviet as a state collapsed not because of ideological causes. The accumulation of 70 years of financial debt was the main cause that led to the total and decisive bankruptcy of the Soviet as a mammoth financial unit.

Soft budget constraints prevail when economic agents believe that they can negotiate adverse outcome, such as lack of profitability. The feasibility of this negotiation process stems from the paternalistic attitude of the government toward the some kink of economic agents, such as farms or it is as a result of budget dependency on selling of natural resources such as crude oil)[17].

The mentality of soft budget constraints continues to persist in Kazakhstan and other CIS countries during the transition. There are no self-limiting risk mechanisms on the amount of accumulated debt, as there is no exact concept for "depreciation of assets" or expenses. They are allowed and able to continue borrowing from input suppliers and commercial banks because they believe that government will not let the large-scale farm enterprises go bankrupt and will continue to arrange for new loan. In some cases, suppliers are happy with the accumulation trend of the debt; because they knew that in no far distanced future the farm would be in their hand.[18]

Without profits farms do not generate enough funds to finance their management and resort to borrowing. Therefore, persistence of soft budget constraints makes debt accumulation possible, while lack of profitability makes debt accumulation necessary. Lack of profitability in CIS farms can be attributed to several broad factors such as : general conceptual factors, government policy–related factors and farm-level or organisational factors.

1) General conceptual factors relate to historical persistence of socialistic economic thought which actually did not permit any bankruptcy or have not any exact concept for "depreciation of assets" or expenses as those concepts were considered as a "social cost" necessary to maintain minimum standard of material life of the farmers. We were shocked by the observation of huge amount of completely ruined agricultural machineries (all kinds, from tractors to combine and harvesters etc.) in all type of farms (peasants and large scale production cooperatives as well) in Kazakhstan during our survey.

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[17] Crude oil and other natural resources should be perceived as a "social assets" for productive activities and creating job opportunities for the workers and "not as a source of income".

[18] Interview with farmer in Almaty.

2) Government related factors are attributed to the agricultural policies. These policies, for example, eliminated direct producer support, especially to peasants small farms, and extended control of food prices which exacerbating the deterioration of terms of trade for agriculture that certainly have very negative impact on farm profitability and thus lead to accumulation of debt.
3) The most fundamental factors, however, are the farm-level factors related to the traditional collective farm organisation, which basically has not changed during the decade of farms reorganisation or so called privatisation in Kazakhstan. For example: (1) in spite of the lack of enough production inputs such as active agricultural machineries or fertilizer or even water supply, the farms size are extremely large and have not reduced to more manageable size; 2) farm managers, especially those of production cooperatives, joint stock enterprises or limited liability partnership, are those who managed the production unit during Soviet as the director of kolkhoz with the almost the same mentality; 3) these mentalities have leaded the managers to act as a production maximiser rather than profit maximiser under soft budget non-constraints soft budget; 4) as the right of ownership, regarding land or machinery cannot be strictly called private, member-worker continue to function in a much worse condition of kolkhoz–like environment.[19] Some of these small shareholders in the production units have derived from their original function as a farmer to the new type of worker or proletarian exploited by the bigger shareholder or by the input supplier; and 5) in some cases it was observed that some farm enterprises are obliged to maintain the social infrastructure in the village, including the traditional free support to household plots.[20]

(4) Characteristics of farm debt structure: recent debt (not debt inherited from the Soviet era)

The most significant feature of farm debt in Kazakhstan is its steady growth in real terms in recent years. The real debt per farm in the five CIS countries increased by more than 45% between 1994-1998, from US$13.54 billion in 1994 to US$19.92 billion in 1998.[21] On a per-farm basis, the average debt in CIS-5 increased from about $200,000 in 1994 to a peak of $500,000 in 1997, thereafter deckling to $400,000 in 1998 as a result of the currency devaluation.[22]

The second significant feature of the farm debt in CIS-5 is the shift of the term structure of debt since 1990 toward short-term and current liabilities. The old long–term debt, never a major component of farm liabilities during the Soviet period, was completely wiped out by the hyper-inflation of the early 1990 that was mentioned in the earlier part of this report. Thus, the growing farm debt in these countries is generally fairly recent debt, and not debt inherited from the Soviet period.

The third significant feature in the development of the sources of the farm debt is the

[19] Because, not only they are not secured by the social institution during the Soviet, but also are exposed to the economic shock.
[20] Interview with farm management in Almaty, August 2001.
[21] Csaba Csaki, Zvi I, erman, Sergey Sotnikov, "Fram Debt in The CIS-A Multi- Country Study of the Major Causes and Proposed Solutions", World Bank Discussion Paper No. 424, May 2001, p.ix.
[22] Iibd.

substantial increase in the share of suppliers' (agricultural input suppliers) credit, which nearly doubled from about 20% of total debt in the early 1990 to 35% in the recent year. While that of institutional credit (commercial banks and government) decreased from 57% to 50%; (commercial banks from 39% to 7%).[23] While this may be explains as a result of progress toward commercial normalisation of the transaction in the agriculture, a dramatic decrease of credit facilities from government exposed all kind of farms, especially peasant and household farms to the exploitation of credit supplied by input suppliers.

(5) Farms' debt burden at farm and national level

Regarding the burden of the farms' debt at farm level it is possible to measure the burden of debt (capacity of farms to repay their debt) by three basic ratios: (i) the ratio of debt to seals; (ii) the ratio of debt to current assets (including inventories); and (iii) the ratio of debt to liquid current assets (excluding all inventories). All three ratios increase over time, which is a definite sign of rising indebtedness.

A survey conducted by the World Bank shows the debt ratio to sales rose from 0.16% in 1990 to 1.20% in 1998, debt ratio to current assets increased from 0.28% to 0.89% in 1998, and debt ratio to liquid current assets from 0.58% to 4.27% in 1998. While the values of the first two ratios are not particularly alarming by the world standards, the ratio of debt to liquid current assets rise to extreme levels of 4.27% in 1998. This means that the liquid assets, when converted into cash at their full book value, will cover less than 25% of current farm debt.[24]

The proportion of farms reporting losses has increased markedly since 1994, and well over 50% of farm enterprises are unprofitable in recent years. Sales revenue is entirely absorbed by wage and other production costs, which up to 140% of sales. In other words, farms losing in average almost 40% on each unit of sales revenue[25].

Regarding the burden of farms' debt on the national economy, it should be remembered that traditionally accumulation of the farm debt has been through periodic rescheduling and forgiveness of overdue obligation during the Soviet period. However, this is no longer possible for Kazakhstan where farm debt has risen to the level that are not negligible compared with budget revenue and even GDP. Even if this ratio is decreased since 1994, but it is 6%of GDP for Kazakhstan in the 1998, while it was 14 % in 1994, or farm debt as a percentage of budget revenue is still 40% that is quite high[26].

During most of the 1990s the government tried to deal with outstanding farm debts by rescheduling and write-offs. In 1994, a number of major reforms such as farm restructuring policy, covering virtually the entire sector, was undertaken.

In 1995, the Council of Ministers decided to convert farm debt to state Financial Support of Agricultural Producers. By this decision, the government actually accepted de facto at least part of their outstanding farm debt that could not be recovered. Between 1994-97, a total of 53 billion tenge (half the outstanding farm debt) was transferred to the State Fund and 29 billion tenge was written off. Allocation of government credit to agriculture virtually ceased in 1998-99, and bankruptcy began to be enforced as the major method of dealing with farm debt.

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[23] libd., p. xi.
[24] libd.
[25] libd.
[26] libd. P.xii.

The Law on Bankruptcy was adopted in January 1997. At the end of the year, in December 1997, the government issued a set of specific recommendations concerning the implementation of bankruptcy procedure in agriculture. Given that 80% of farm enterprises in Kazakhstan were unprofitable, with high levels of debt, reorganisation and liquidation of insolvent enterprises was declared as a major goal of national agricultural policy.

Toward the implementation of this policy, the agricultural enterprises in the country were divided into three groups according to their financial situation. The first group included those farms with stable financial situation, i.e.19% of all farm enterprises as of December 1997. The second group included loss-making farms with overdue payable, which nevertheless had sufficient liquid assets and could probably recover if proper measure for financial stabilisation were implementing by attracting new investors (48% of farm enterprises). The third group included the insolvent farms with debt exceeding total assets (33% of farm enterprises). Farms from third group were to be declared bankrupt and liquidated. Farms from second group that failed to recover despite appropriate support measure (including injection of investment funds by new owners) would eventually be reclassified to the third group.

(6) National Restructuring Program for Insolvent Farms and Implication of Civil Code

The national program for insolvent farms in Kazakhstan was launched in 1998. The liquidation of insolvent farm enterprises may take different forms: the farm may be sold in its entirety to a single buyer, the farm may be sold to the workers' collective, or the farm may be split among several outside investors.

The Civil Code in Kazakhstan impose a serious asymmetry on member-shareholders in agricultural production cooperatives, which comprise half the farm enterprises in the country, and other legal forms, such as limited liability partnerships and joint stock companies. Cooperative members in Kazakhstan do not enjoy the protection of limited liability: first, their land shares (individual land use rights) are treated as part of the asset pool available for satisfying the claims of the creditors; second, if the assets of the cooperative (including the asset shares of the individual members) are insufficient to repay the creditors, the member bear subsidiary responsibility for the proportion to their share in the cooperative. Therefore, in case when the subsidiary responsibility of the member is invoked, only the house, one cow, and a limited list of household items are protected from the bankruptcy.

These legal provisions may clearly lead to total ruin of large segment of the rural population, leaving them destitute without any land or assets. Agricultural economists in Kazakhstan therefore recommend speedy conversion of agricultural production cooperatives into limited liability partnerships and encourage the members to lease their land shares to the managers of the limited liability partnership, as leased land in limited liability partnership is apparently not subjected to bankruptcy sale.[27] While this approach creates a shelter against loss of individual assets in case of bankruptcy, it clearly puts the weak individuals at the mercy of the strong and experienced lessor, who is typically a former manager of the collective farms during Soviet regime with considerable intimidating influence on the residents of the village. These harmful implication of the Civil Code in Kazakhstan and the bankruptcy law highlight social deficiency of the present legal framework, which must be amended to prevent further

[27] Interview with Professor Vladimir V. Grigoruk, National Academic Centre for Agricultural Research, August 8, 2001.

damage to the rural sector of the economy. Classification of Farms by Solvency Status (April 1999) indicates the magnitude of indebtedness of all the farms classified. Total debt stood at US$929 million as of April 1999. The absolute terms of debts are strongly regionally concentrated, with the 3 northern oblasts of Akmola, Kostania, and Northern Kazakhstan accounting for 70 % of the total indebtedness.[28]

(7) Social impact of farm debt

The impact of farm debt on rural population can be considered from different prospective among which the following aspects are of highly importance. First, there is the ability of indebted farm enterprises to fulfil their obligation toward the employees and the rest of the rural population. This kind of obligation include payment of salaries, as well as provision of social services and maintenance of social infrastructure which traditional has been the responsibility of the farm enterprises during the Soviet era in all CIS countries including Kazakhstan. The second aspect is concerned with the rights of rural population in any procedure that attempts to liquidate and restructure the indebted farms (formal court bankruptcy or out-of court debt settlement).

Wage arrears are a relatively minor component of farm debt in Kazakhstan, decreasing from 11% in 1994 to 10% in 1998 of total short-term liabilities of farm enterprises.[29] In Kazakhstan, farm employees go unpaid for 2 months, it mean the number of days that wages were in arrears in Kazakhstan decreasing from 147 days in 1994 to 64 days in 1998.[30] In this regard, the situation in Kazakhstan is relatively better than, for example, Ukraine, which wages arrears, has reached alarming levels of 234 days.[31]

The real increases in wage arrears have been accompanied by an increase in arrears to social funds, which include deductions on behave of employees to social security, medical insurance, and the unemployment fund. The efficiency of collection of taxes and social deductions from farm enterprises in very low in Kazakhstan, which reached only 53% in 1998 (50% in 1994).[32] The low compliance with the legally required social deductions also explains the increase in the level of social funds in Kazakhstan. High level of wage arrears and low compliance with social deductions are just one symptom of a generally decreasing attention to the social aspect of the farm debt in Kazakhstan. While farm enterprises in Kazakhstan are fighting for physical survival against declining production, lack of profits, and accumulation of debt, they are forced to reduce the level of social benefits and services to their employees and the rest of the rural population. The decline in resources available for social services and benefits on the farm level has naturally led to a decrease in the number of workers employed by the farm enterprises in social service. As a result, the number of farm workers served by one social worker increased sharply between 1990-1998. Of course, this is a positive effect from the point of labour productivity in farm enterprises, which has been always advocated by the supporter of market-oriented experts. But we have to realize that at present, the rural population in Kazakhstan like the other CIS countries, have a much more lower level of social

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[28] "Review of Farm Restructuring", A report prepared for the FAO/World Bank Cooperative Program on Behalf of the Government of Kazakhstan: ,by Emerging Market Economics LTD, London, June 1999, Appendix II, p.11.
[29] libd.,World Bank Discussion Paper No. 424, p.12.
[30] libd., p.27.
[31] libd.
[32] libd. p.28

services and benefits than in the past during Soviet Regime.

Regarding the legal rights of rural population in any procedure that attempts to liquidate and restructure the indebted farms, the case of Kazakhstan provides an illustration of the dangers to which rural population is exposed by the indebtedness of farm enterprises in the absence of clear property rights in land and assets. In Kazakhstan, the land and asset shares distributed to individuals become part of the asset pool available for liquidation when a farm enterprise goes into bankruptcy. Moreover, as it was mentioned earlier in this report, the members of a production cooperative (a former collective farm) bear unlimited liability for their debts of the farm enterprises. The list of personal property protected from bankruptcy proceeding in farm enterprises include only the house, one cow, one horse, and a limited list of essential personal belongings. To avoid being stripped of all property in farm bankruptcy proceeding, individuals can take their land and assets shares out of the production cooperative and lease them to a limited liability partnership, where leased assets are not subject to bankruptcy sale. However, it seems that this kind of option has been abused by some farm manger in Kazakhstan, who register a limited liability partnership, entice cooperative members to lease their land and asset shares to new entity (which effectively means to the manager personally), and then exploit and cheat them out of their legal rights and dispossess them of all property by a combination of real and imaginary threats.[33]

This and other aspects of farms' debt problem is an example of how the rural population can be affected by farms' debt and impending bankruptcy proceeding as long as the property rights of the members in farm enterprises are not explicitly protected.

This kind of institutional problem strongly suggests that any debt settlement program must ensure the basic rights of the farmers to land and other assets in agricultural production organisations. The farm assets were accumulated over the years by the hardship of farmers and efforts of the members while the farm debt, in turn, was accumulated due to the incompetence of the management and the irresponsible policies of the government and managers. Farmers' entitlement to a share of land and productive assets must remain inviolate and outside of any bankruptcy proceeding. Neglecting this fundament principle will enviably lead to a social disaster, which will probably prove to be much more expensive than any alternative debt settlement program.

4. Evaluation of the Farm Reforms Policy

In spite of the several initiatives by the government of Kazakhstan to create different forms of ownership and agricultural production organisation conducive to growth in a market context had a very limited and sometimes negative effects. Initial attempts at reform, which saw the state and collective farms converted first into Collective Farm Entities (CFEs) and subsequently into Producer Cooperatives (PCs), involved little real change in pattern of ownership and mentality of management. The reason for this limited progress is plain: throughout the period up to 1998, the former state and collective farms were treated as during Soviet, privileged by soft budget, while small peasant farms were subjected to hard budget

[33] Ibid., Interview with Professor Vladimir V. Grigoruk.

constraint and exploitation. The system for delivery of credit to farms went through several stages involving successively the Agroprom Bank, the Agricultural Support Fund and, most recently the oblast administration budgets, but without any threat of bankruptcy for large-scale ex-collective farms. Therefore, there was little incentive for farm managers who are actually the old kolkhoz managers, either to reduce their indebtedness or to reform their internal management based on domestic and international demand.

Kazakhstan laid the framework for farms reform through the simple bankruptcy method. This procedure was implemented through the passage of Bankruptcy Law (revised version January 1997), approval of the Order of December 1998 which defined the practical application of bankruptcy to the farm sector, and through administrative instructions issued in October 1998 which instructed the oblast administrations to proceed with farm reform, including the liquidation of insolvent unviable farms.

(1) Main effects of farm reforms policy

① A significant number of farms have been liquidated already. The bankruptcy process itself is well-known to all stakeholders and liquidation sale have become commonplace in most oblasts.

② In most cases of bankruptcy initiated by the authorities, farms have taken first through a pre bankruptcy procedure. This procedure has been adopted for two reasons: (i) to protect moveable assets from being sold to the buyers of the outside community; and (ii) to put in place a single owner-manager to improve management. Under this procedure, members of the Producer Cooperative (the commonest legal form prior to restructuring) are encouraged and assisted by the local authority to create one or more limited liability partnerships and to transfer remaining assets (principally non-land productive assets into the name of the director of the limited liability partnership. As a result of Civil Code in Kazakhstan, if such a procedure is not adopted, cooperative assets will be seized through liquidation for debts of individual cooperative members.

③ Even though pre-bankruptcy restructuring relives cooperative members of their debt liability, it raises several concerns:

1) Negative distributional consequence and creating new proletarian landless labourers: It concentrates non-land asset ownership in the hands of a few strong and influential individuals and reduces the status of the farm workers from shareholders to wage labourers. In particular, workers are often encouraged to transfer their land entitlements to the new owners rendering them little more than landless labourers.
2) Concentration of the farm assets at the time of formation of the partnership tends to reduce the options for subsequent farms restructuring into more smaller production group or into family farm.
3) The form of farm organisations favoured by the authority, the partnership with limited liability, typically of significant size (3-5 partnership created from a single producer cooperative) is currently untested in Kazakhstan. Observation shows that there are no strong grounds for believing that the partnership will form an enduring and effective from of farm production organisation in this country.
4) Several aspects of the pre-bankruptcy restructuring involve non-transparency, both in

decisions to give ownership to the current farm director (former kolkhoz director) or in other cases in the selection of outside investors. Therefore, political influences all over the country had exposed the farmers with very critical and disadvantaged future. This and kinds of highly politically – influenced and motivated procedures are the basis of the agricultural crisis in Kazakhstan.

5) The outcome of the bankruptcy-led restructuring process depends critically on viability of the farm and the agro-climatic zone. The pattern of acquisition of ownership and management of former state and collective farms by large investing grain and food industry companies is limited to the most favourable zone for wheat growing area. In other less favoured areas within the same oblasts, farms are unable to attract investors and the prospect for set-up production organisation, whether in the form of the partnership favoured by the authorities or as smaller individual/household farms, appear poor. According to some reports, in some unfavourable areas, bankruptcy is essentially leaving farms without any equipment for the production, which is sold at throw-away prices in liquidation auctions and typically removed from the area.[34]

5. A brief Introduction to the Recent Agricultural Policies in Kazakhstan

The Ministry of agriculture of Kazakhstan is implementing the program of "The Development of Agriculture for 2000-2002" which was decided on 21 December 1999. The program presupposes the provision of economic growth in compatible spheres of agricultural production by undertaking effective means of government support and other special means.

(1) Adoption of agricultural crops to the regions

According to this program, wheat in the north, olive plants in the eastern part, cotton and rice in the south are considered to be the most productive crops. Besides, the improvement of milk production in suburbs can be also included into prioritised phenomena.

(2) Infrastructure of agricultural sector.

These policies convey the idea that the government is responsible for most general infrastructure issue in agricultural sector-fight against the animal diseases, plant protection from diseases and massive distracters, technical renewal, long-term financing of agricultural technical improvement and irrigation systems as well as post–privatisation support and subsidies for improvement of stock-breeding

The government of Kazakhstan believes that these measure will promote the development of crops farming and pedigree stock-breeding that will instantly reflect on crop rise, the quality of grain production, the improvement of qualified products and increase the agricultural and livestock productivities.

[34] "Review of Farm Restructuring", A report prepared for the FAO/World Bank on behalf of the Government of Kazakhstan, Emerging Market Economics LTD, London, June 1999, P.3.

(3) Agricultural machineries

As was mentioned earlier in this report the agricultural machineries in Kazakhstan is in a critical conditions. For example 90% of tractors, 86% of grain-harvesting combines, 93 % of trucks, 88% of reapers, and 92 % of seeding –machines are manufactured before independence. Therefore, there is an intensive physical depreciation and deterioration of equipment that needs solution to find a way out from this deep crisis.

(4) Financial resources

In order to provide a flexible access to financial resources and seasonal crediting for agricultural producers, " Agrarian Credit Corporation" is founded with 100% shares belonging to the state-organisation to hold loan operations "Pilot project" will be established in 9 regions to provide credit for agricultural production by creating 18 rural enterprises.

(5) Informative marketing system

This system is already formed and launched, allowing mutual exchange of analytical and marketing information among agricultural producers, state bodies and other participants of agricultural organisation.

(6) Agricultural trade

According to the government policy, agricultural trade is expected to create 165000 work places (in 2000; 28000 work places, in 2001, 55000, in 2002; 82000). Additional 348 work places have been created with a purpose to develop the infrastructure of the villages. Implementation of organisational measures on establishing new artificial seeding field, enlargement of private veterinary and other services, enabled release of1,380 new work places. By means of support and creation of condition for development of enterprises and self-employment through credits as well as professional training of rural workers, 2,311 work places are provided.

(7) Programme against poverty

As a result of the social crisis of the rural population the government announced a programme on June 3, 2000 against poverty and unemployment for 2000-2002.

Chapter 3

Outline of Animal Husbandry in Kazakhstan

1. Animal husbandry

Kazakhstan is a vast inland country with an area of 2.71 million square kilometres (about 7 times larger than Japan), extending 3,000 kilometres in east-west direction and 1,600 kilometres in north-south direction. Northern part of the country is a dry steppe region with annual precipitation of about 300 millimetres while the southern part is a dry region with annual precipitation of only 100 to 200 millimetres. The mountainous region has annual precipitation ranging between 500 and 1,500 millimetres but covers an only small portion of the land. Kazakhstan's continental climate gives rise to large temperature difference between summer and winter and between day and night. While there is sufficient sunlight for plant growth, climax falls under grassland because of short precipitation. The dry steppe and desert covering the majority of Kazakhstan account for about 70% of the country's land area. This vast area is used as grazing land and meadow for livestock. Meanwhile, cultivated acreage accounts for only about 10% of the land.

Amidst these natural conditions, nomadic grazing has traditionally been practiced in Kazakhstan. However, field husbandry (plant growing) was incorporated and intensive animal production including feed production was started owing to influence of Russia. Although a pastoral aspect of herders called chaban sending out herds of cattle and sheep to grass still remains, modern animal husbandry similar to that of Russia is prevalent.

Table 3-1 Recent History of Kazakhstan

Year	Events
Mid-18th Century	Comes under the rule of China's Qing dynasty while Russians also start their colonisation.
1860s	A large number of Russian farmers colonise under the rule of the Russian Empire.
1920	Becomes an autonomous republic in the Russian Republic after the Russian Revolution and civil war.
1929	Forms Kazakh Soviet Socialist Republic and becomes a member of Union of Soviet Socialist Republics.
1954	Expansion of cultivated acreage through opening of virgin soil.
End of 1991	Declaration of independence. Shifting of system from planned economy to market economy.
1996	Completion of disbandment of sovkhoz and kolkhoz.

(1) Until the first half of the 20th Century

As explained above, Kazakhstan is a country with severe climate located in an extremely dry region. Animal husbandry has been the most-suited form of production as the majority of the land consisted of dry steppe or desert—a natural condition in which stable crop cultivation is difficult to maintain. The vast land was mainly used for nomadic grazing, and people were making their living by raising sheep, horse and camels since the old days. While it is said that nomadic grazing has been lost for some time, it had been the prevalent form of food production in this country until the beginning of the 20th Century.

Some Kazakhs had already started producing forage around 1830. The memory of mass death of livestock caused by natural disaster called zud (caused by drought in summer and snow damage in winter) that struck the neighbouring country of Mongolia in the winter months of 1999-2000 and 2000-2001 is still fresh. Kazakhstan is also hit by severe snow damage every several decades. The one that occurred in 1890-1891 is called the "Great Jute" and allegedly became a turning point for increasing the inclination towards practicing plant growing for forage production. Engagement in field husbandry agriculture became a catalyst for settlement. Availability of fresh animal products year-round by feeding the animals in sheds during the winter was also attractive for the people.

The socialization of Kazakhstan started around 1920 after the Russian Revolution when the country merged with the Soviet Union. The nomadic people were forced to settle down in groups of 500 to 2,000 and their numbers rapidly decreased as these settlements turned into collective farms. Russia's land policy and acceptance of farm migrants brought full-scale field husbandry to Kazakhstan and had a large impact on the nomadic management of the Kazakh people. Increase in field husbandry agriculture meant reduction in grazing land and gradually made it difficult to raise livestock through complete reliance on nomadism.

(2) Mid-20th Century through 1990

Kazakhstan was a traditional stock-raising country whose grain production achieved large-scale growth particularly in the northern region during the Soviet era. The catalyst for this development was the opening of virgin soil that started in 1954. Aimed at increasing grain production in a short period of time, it built the foundation for today's grain production. The subsequent creation of irrigation system in the south using rivers Syr-Dar'ya and Ili also

contributed to the development of plant growing. Since field husbandry required fertile land, nomadic people that were raising sheep and camels, as well as stock-raising sovkhoz and kolkhoz were driven out to wasteland and desert. This is how the regional differences in agricultural production observed in present-day Kazakhstan was born.

Efforts were poured into the development of Kazakhstan's agriculture under the production allotment system within the Soviet Union and Kazakhstan was positioned as the supply base for meat and wool. Agriculture accounted for a large percentage of the Kazakh economy and accounted for 25% of GDP in 1990. However, little produce was consumed within the country as the majority was exported to other republics comprising the Soviet Union. In other words, Kazakhstan possessed agricultural productive capacity that far exceeded the domestic demand.

Animal husbandry was characterised by the central role played by sovkhoz and kolkhoz. Expansion of scale and mechanization were put forward through construction of large farms to increase the weight of efficient management. Each labourer was engaged in extremely specialised line of work. Meanwhile, as the entire process of work related to cultivation or livestock was never assigned to particular individual under such collective farm system, labourers lost their attachment to their work and tended to become irresponsible.

Although productivity was low, relatively advanced animal production had been attained by increasing the number of livestock raised. The livestock count in 1990 included 9.8 million cattle (of which 3.3 million were cows), 36 million sheep and goats, 3.3 million pigs, 1.6 million horses, 140 thousand camels and 60 million poultry.

(3) From the 1991 democratisation onward

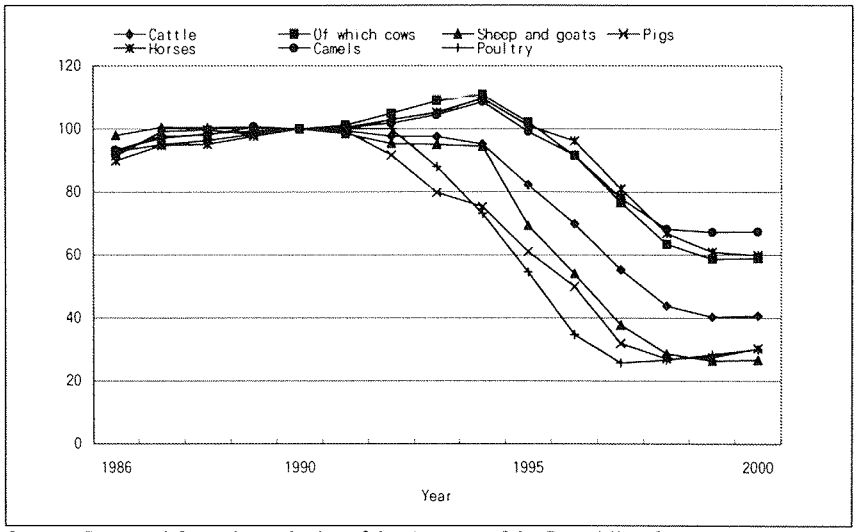
The 15 member republics of the Soviet Union went off on their own paths as independent states following the collapse of the Union at the end of 1991. Attempts for shifting the system to market economy were made at each country, and land reform and reorganisation/disbandment of sovkhoz and kolkhoz were initiated in the field of agriculture. In land reform, the right of individuals to use farmland was approved on a long-term basis (49 years) with an option to transfer the lease rights to a successor. The purpose of reorganising and disbanding sovkhoz and kolkhoz was to privatise the two to release them from planned economy and turn them into independent business entities that are adapted to market economy. The disbandment was completed in 1996 with the exception of certain laboratories and breeding stations. This gave rise to relatively large-scale agricultural enterprises such as productive societies, comrade societies and joint-stock companies as well as private farms that are run by families. Restrictions on the number of livestock raised by private subsidiary management(households' farm)were also removed. Use of livestock as means of distributing property to individuals became prevalent and considerably increased the number of livestock raised as a sideline.

Grains and animal products that had been exported to the Soviet Union Republics up to that time remained inside the country and gave rise to the need to adjust agricultural production in accordance with domestic demand. However, cultivated acreage and livestock numbers decreased without any plan owing to confusion in socio-economic structure that was triggered by rapid privatisation and introduction of market economy. One witnesses in a visit to a rural village, sheds, forage stores and feeding facilities from the former Soviet Union days that are

reminiscent of large-scale management in the past, although majority of them are nearly unusable due to superannuation or abandonment. As a former site of animal husbandry sovkhoz vividly shows, the number of animals raised took a sharp drop and facilities deteriorated. These changes were drastic to the extent that animal husbandry production was reduced by more than half.

According to a statistics from the year 2000, 4 million cattle (of which 1.95 million are cows), 9.65 million sheep and goats, 980 thousand pigs, 970 thousand horses, 96 thousand camels and 18 million poultry are being raised. Compared to the 1990 level, these figures correspond to 40% for cattle, 30% for sheep and goats, 30% for pigs, 60% for horses, 70% for camels and 30% for poultry (Figure 1). Animal husbandry is gradually reviving as this declining trend has bottomed out in the recent years. Animal husbandry still is an important industry in Kazakhstan.

Figure 1 Changes in Livestock Number (1990=100)



Source: Prepared from the web site of the Agency of the Republic of Kazakhstan on Statistics

2. Present Situation of Agriculture

(1) Animal husbandry

In 1999, the percentage of agriculture in Kazakhstan's GDP reached 16.6% and animal husbandry accounted for 46.9% of total agricultural production. In the past 3 years, the percentage of animal husbandry fluctuated sharply amidst the confusion in socio-economic structure from 37.5% (1996) to 43.4% (1997) and 58.6% (1998). As can be inferred from the fact that it accounted for 60% of GDP in 1990, animal husbandry continues to be an important industry of Kazakhstan.

While nomadism based on extensive grazing is the main form of animal husbandry in another Central Asian country such as Mongolia, a combination of large-scale and mechanised intensive animal production accompanied by forage production and extensive grazing that takes advantage of the vast natural pasture are practiced in Kazakhstan.

During the Soviet Union days, the majority of livestock was owned by sovkhoz or

kolkhoz. Individual ownership was restricted and very few animals were being raised under this arrangement. All sovkhozes were disbanded through privatisation with the exception of certain laboratories and breeding stations. Livestock was divided among individuals as easy means of distributing property in the process of privatisation. The livestock numbers plunged as many individuals were hard pressed for money and cashed in, bartered or consumed the livestock they received. According to data from the year 2000, 4 million cattle (of which 1.95 million were cows), 9.65 million sheep and goats, 980 thousand pigs, 970 thousand horses, 96 thousand camels and 18 million poultry are being raised. Compared to the 1990 level, these figures correspond to 40% for cattle, 30% for sheep and goats, 30% for pigs, 60% for horses, 70% for camels and 30% for poultry. The number of small- and medium-sized livestock such as pigs, sheep, goats and chickens decreased rapidly in particular because they were easy to sell. Furthermore, pigs and chickens were highly dependent on concentrated feed such as maize, wheat bran and barleycorn. However, grain production had declined considerably in addition to sharp drop in grain import owing to fund shortage resulting from economic slump. Production of pigs and chickens fell sharply owing to the consequential shortage of concentrated feed.

Despite the plunge in the number of livestock, the current production level can easily support the people of Kazakhstan since chances of rapid population increase occurring in this country is very unlikely. Kazakhstan plans to focus on productivity and carry out livestock improvement to increase the number of high-grade animals, although the effort has not made itself up to the national level and has not been implemented in a very thorough manner. No state plan has been prepared in particular with regard to quantitative indications of livestock and the decision is left to the intentions of respective farm management entities. Quantities are expected to increase naturally once foreign demand from Europe, for example, increases in addition to demand at home.

Breeding management has not been performed properly after the democratisation, as livestock delivering rate at agricultural enterprises (number of delivering female animals/number of mated female animals X 100) remained at 60-70% for cattle and about 80% for sheep and goats. However, childbearing rate is slightly improving as more adequate management has become possible with the decline in the number of animals raised. Meanwhile, delivering rate is assumed to be low for livestock raised by households' plots that own the majority of livestock due to lack of expertise and shortage of nutrition.

Although productivity can be improved by increasing the feeding volume per head to compensate for the reduced number of livestock, the volume of forage production also decreased greatly. Purchase of large agricultural machinery and chemical fertilisers as well as implementation of new investments have become difficult and agricultural production is continued barely using aged agricultural machinery that breaks down often and with limited application of fertilizers. Extensive agricultural production is expanding concurrently with reduction of cultivated acreage. Contraction of cultivated acreage is particularly significant for forage crops.

More than 80% of total production for meat, dairy products, potatoes and vegetables are produced by private sideline managements (approximately 1.7 million households). The percentage is as high as 90% for dairy products. Present figures are abnormal as the private sideline managements output accounted for about 30% of entire production prior to

privatisation. However, it is difficult to maintain the present situation by relying on totally unmechanised management because of the high labour requirement including forage production for winter even when it is run as side business. On the other hand, agricultural enterprises and private farmers are making steady progress as they fight for survival in the rough sea. For instance, many private farmers have emerged and accumulated knowledge and skills on animal husbandry and market compared to the time of independence. The situation in which private sideline managements accounts for the majority of production is temporary and will be replaced by agricultural enterprises and private farmers in the future. Moreover, livestock raised by private sideline managements will most likely be integrated into these agricultural enterprises and private farmers and the country is currently in the transition period of this process.

While privatisation of sovkhoz and kolkhoz advanced, the government carried out a drastic cutback on agricultural support including abolishment of government purchase and discontinuation of subsidy. It is interpreted that the more cutback in agricultural support advances, the more transition towards market has advanced.

Integration involving trading firms and agribusinesses acquiring the lease rights of farms and ownership of agricultural machinery from agricultural enterprises and private farmers has been taking place rapidly since 1996, mostly in connection with grain production. Whether it is good or bad, we expect to see this trend in the field of animal husbandry as a result of business expansion and new entry by these companies.

Public breeding stock stations are located in every state and veterinarians tour each jurisdiction to perform vaccinations for contagious diseases and artificial insemination. This system was operated efficiently during the socialist days. Today, however, these services are offered to only a handful of agricultural enterprises with good management practices owing to deterioration of facilities and shortage of vaccines. In view of the present situation where foot-and-mouth disease and anthrax are frequently occurring (as well as from the viewpoint of epidemic prevention and selective breeding), veterinary services have become a national issue that require government support. While agricultural enterprises are employing several veterinarians, private farms are hardly taking any measures in this area.

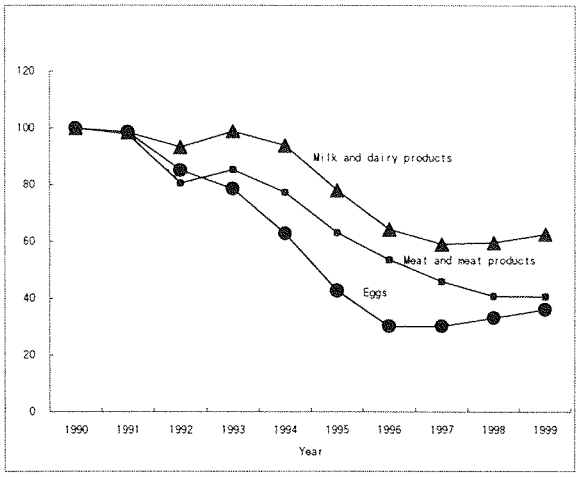
Animal husbandry in Kazakhstan is often practiced on land located far from cities and requires large cost for transporting agricultural products and input goods. As a result, remote rural villages are placed in extremely difficult economic condition where grazing land is being abandoned to save fuel cost and water source maintenance cost. Moreover, the majority of privately-owned animals for households are mainly raised in the outskirts of rural villages. For this reason, overgrazing exists in these areas despite the striking reduction in number of livestock and existence of vast grazing land, and is giving rise to soil erosion in every nook and corner.

As mentioned above, animal husbandry in Kazakhstan is in a state of chaos. After more than 5 years since privatisation, clear differences can be observed among agricultural enterprises and private farms in terms of those that have adapted successfully to the market economy and those that have not. As animal husbandry in Kazakhstan passed the production contraction phase and moves on to reproduction phase, it will be important to have a clear view of the optimum level of production.

(2) Stock farm products

Sharp decline in production is more conspicuous in stock farm products than in other farm produce. Kazakhstan produces 1.2 million tons of meat (live weight), 3.5 million tons of milk, 1.5 billion pieces of eggs and 22 thousand tons of wool. Production of meat and eggs has dropped to about 40% of the level attained in 1990. (Figure 2)

Figure 2 Changes in Production of Animal products



Source: Prepared from the web site of the Agency of the Republic of Kazakhstan on Statistics

Table 2 Production Volume of Animal products

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Meat and meat products	1560	1524	1258	1332	1207	985	837	717	636	635
Milk and dairy products	5642	5555	5265	5577	5296	4406	3627	3335	3364	3535
Eggs	4185	4129	3565	3288	2629	1788	1262	1266	1388	1512
Wool	108	104	97	95	75	58	42	35	25	22

Source: Prepared from the web site of the Agency of the Republic of Kazakhstan on Statistics

To look at the changes in import-export balance of animal products, export decreased and import increased in all animal products to shift the import-export balance from positive in the early '90s to negative. In particular, import of milk and eggs gradually increased in the recent years despite the slight increase in domestic production. Dairy farms among others have not been able to make profit owing to low domestic market prices and high production cost. Rapid decline in domestic production has resulted in increase of imports from the neighbouring countries, particularly from Russia. Animal husbandry continues to suffer from decline in consumer purchasing power and competition from animal products imported from other countries. Not a glimpse of the historical role Kazakhstan played in the meat sector remains. Animal husbandry in Kazakhstan is under pressure to introduce more efficient production techniques including display and production of high added-value products.

3. Agricultural Policy of Kazakhstan

(1) Animal husbandry

Agriculture including animal husbandry is one of the important industrial areas of Kazakhstan. However, only 1.4% of the budget is allocated for agriculture (1.6% in 1998). Agriculture has been completely privatised and everything has been entrusted to the private sector without implementation of any particular agricultural policy. Under the planned economy, agriculture was receiving certain amount of support such as government purchase of agricultural and stock farm products, and subsidisation for meat, milk and egg production. Following democratisation, however, tight financial conditions as well as stringent monetary tightening based on IMF recommendations did not permit the continuation of those support measures. The planned volume for government purchase was gradually decreased and was eventually eliminated in 1994. Government support for agriculture has been practically phased out since 1994. The period of struggling production is the time when strong government leadership and support is needed the most. However, the Ministry of Agriculture holds the view that disbandment of sovkhoz and kolkhoz has been completed and privatisation has succeeded with the birth of many agricultural enterprises and private farms. The Ministry follows a let-alone policy under the assumption that these entities will continue to grow in the market economy. The government has been unable to execute proper policy with its incomplete understanding of the reality amidst the rapid swirl of fluctuations in the socio-economic structure that occurred in the privatisation process.

Animal husbandry has developed extensively up to now by increasing the number of livestock and expanding the cultivation area of forage crop. It achieved a relatively advanced level of animal production, even though little attention has been paid to the productivity of livestock. It is believed that low productivity of livestock, which is often viewed as problematic, is caused mainly by insufficient feeding and low level of animal improvement. Emphasis has therefore been placed on improving the productivity of livestock based on the considerations for maintaining a number of animals proportionate to the volume of feed available.

In order for animal husbandry to grow in the future, it is necessary to increase the amount of feed given to animals through increased feed production. Productivity of forage crops must be improved through development of high-quality varieties and supply of their seeds in addition to planned seed production and expansion of planted area for forage crop. In reality, however, grains, vegetables and fruits are being studied at agricultural experimental stations but little work is under way with regard to pasture and forage crop.

The government has been implementing animal improvement projects for improvement of animal productivity. For instance, there is a plan to build a new national breeding stock laboratory in Taldygorgan with the aim to supply high-quality breeds throughout the country. This is based on a proposal made by the Agriculture Academy towards the policy for years 2001-2005. During the socialist period, each state had breeding stock stations that were engaged in utilisation of high-quality breeds through artificial insemination. It will be necessary to seek substantiation of veterinary operation including preparation of vaccines against contagious diseases in addition to improvement of these facilities and their functions.

No particular policy is being implemented at present with the exception of livestock

improvement project. Be it increased forage production or livestock improvement, it is difficult for these policies to bring into view the households' farm undertakings performed by individuals. It is therefore necessary for the government to indicate some policy and offer guidance if it were to designate agricultural enterprises and private farms as the key players in animal husbandry.

Forage Base in Animal Husbandry

Kazakhstan receives little rainfall because of its inland location. The country's climatic climax falls under steppe, and the majority of land covered by steppe and desert. Despite the extremely small annual precipitation, there are sufficient hours of sunlight during the period when plant growth is possible. As the important position held by oasis agriculture alongside nomadism suggests, agricultural productive capacity will become very high if there is access to river water and irrigation water. In reality, however, Kazakhstan's agriculture is influenced heavily by climatic conditions because of its high dependence on rainfall, resulting in unstable production output and low yield.

The soil in steppe region belongs to chestnut soil and brown soil great soil group. Its humic substance content is small and topsoil layer is shallow. Moreover, productive capacity is extremely low because of limited precipitation. The land is primarily used for extensive grazing as it only permits practice of unstable agriculture. This soil is closely related to desert soil and will lose its water content when cultivated excessively, which means that the area will turn into desert. In addition, there is a tendency for salinisation in areas where salts are accumulated due to topography and other reasons.

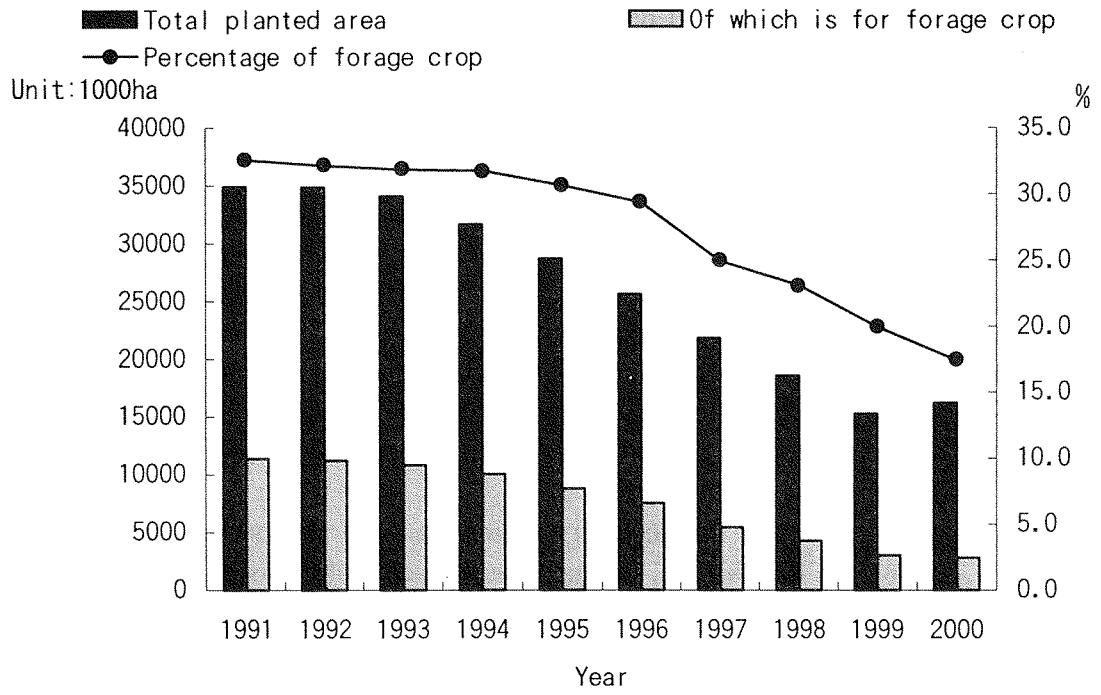
Desert soil is saline soil in which soil formation has generally not advanced with very little humic substance and halomorphic accumulation. Deserts are also quite similar to short-grass plains to the extent that they can be categorised under plains, although agricultural production very limited owing to lack of water.

Since forage base is generally fragile in dry regions, animal production often takes the form of extensive grazing. In Kazakhstan, forage crops are grown for raising animals in sheds during the long and harsh winter season in addition to grazing in summer that uses natural pastureland. Although regional differences exist, large livestock such as cattle and horses are raised in this manner and are kept inside the shed year-round if forage production is sufficient. Camels, sheep and goats are suited for grazing and are put to grass throughout the year and are hardly kept in sheds. At any rate, forage must be secured by coming to terms with the harsh climate. Pigs and chickens are raised entirely in sheds.

Total farm area including meadow land and grazing land in 1999 amounted to 98 million hectares and accounted for about 36% of total national land. Cultivated acreage totaled 16 million hectares and accounted for only 6% of total land area. Cultivated acreage has been decreasing since independence with the reduction of planted area for forage crop being most conspicuous. Compared to 1991, cultivated acreage and forage crop planted acreage have been reduced to one-half and one-quarter, respectively (Figure 3). In the last 4 years alone, there has been a striking decline of production in maize for silage and hay while production of pasture grass and hay from natural pastures increased with the increase in abandoned arable land (Table 3). Incidentally, cultivated acreage increased particularly for grains such as wheat while planted area for forage crop decreased at other Central Asian countries where policies aimed at

food self-sufficiency was introduced. It may be the course of nature for planted acreage of grains to decrease after the role of being the food supplier no longer exists. It is also natural for forage crop production to decrease as a result of huge decline in the number of livestock raised. However, the decline in cultivated acreage is largely attributable to shortage of agricultural machinery and input goods such as chemical fertilisers. As shortage of forage is particularly serious in small farms that are run by private farms and households' farms, growing area of forage crop should have been maintained. In the case of cattle, milk production corresponds to about half of those that have been fed with adequate amount of forage. While low feed efficiency owing to delay in animal improvement has been pointed out, it is necessary to feed an adequate amount of forage before getting into the topic of animal improvement.

Figure 3 Changes in Cultivated Acreage



Source: Prepared from the web site of the Agency of the Republic of Kazakhstan on Statistics

Table 3 Recent Forage Production Volume (thousand tons)

	1996	1997	1998	1999
Maize for silage and green feed	5077	1728	1078	965
Hay and green forage	10687	8624	7540	8359
Breakdown				
Perennial grasses'hay	3268	2363	1760	2004
Annual grasses' hay	655	246	130	69
Natural pastures' hay	3436	5338	5286	5839

Source: Prepared from the Statistical Year Book Of Kazakhstan 2000

(1) Grazing in natural pastureland

The use of pastureland for grazing continues from April to November. Grazing land is used as much as possible because animals can feed on pasture grass even with snow cover as long as they can rake snow with their feet. Grazing is also performed at sites where grains and vegetables have been harvested by utilising crop residues.

The volume of fresh forage in grassland fluctuates with changes in climate. As can be seen in the example of zud (combination of drought and snow damage) in Mongolia, a devastating situation may occur after the forage for feeding the animals is eaten up. Since the feed for keeping the animals during the winter is prepared in Kazakhstan, the situation may not become as critical as in Mongolia although sufficient feeding volume cannot be secured in reality. This makes the amount of energy accumulated in livestock during the summer grazing season all the more important. Young grass in early spring has high nutrition and good taste. In addition, it is small in quantity but grows fast. For this reason, it is better to start grazing at an earliest possible time. In order to secure the grass that is edible in late autumn, it is necessary to create an autumn saved pasture and store the grass that grew from late summer to early autumn in the state of piloerection and use it for feeding in late autumn. Moreover, raising grazing utilisation rate to a high level in late autumn will have little effect on recovery of grass in spring. Thus grazing on the pasture for maximum amount of time is desirable from the viewpoint of its effective utilisation.

An average private farmer raises 5 to 6 cattle, 300 to 500 sheep and goats, and 3 to 4 horses. Raising 300 sheep requires 15 to 20 hectares of high-quality pasture. It is also necessary to prepare hay comparable in volume to the fresh grass eaten in summer for use as winter forage.

In private sideline management, animals (mostly cattle, sheep and goats) are farmed out to herders called chaban except in the winter for single-day grazing. Chabans use natural pastures and harvested grain fields.

Sheep, goats and camels are often grazed year-round. Supplementary forage for winter is fed to weak animals, infants and expectant females. Although emergency feeding of forage is limited to cases where pasture is covered by snow or ice, a certain amount of forage must be secured to pass the winter safely.

(2) Forage crop

Agricultural enterprises such as productive societies have several large trench silos near the shed that are used for performing silage preparation of hay oats and maize. In addition, pasture hay and straw are piled in the shape of a mountain about 10 meters high. Four to five rows of these mountains that are about 100 meters long could be observed. Forage production is completely mechanised and performed efficiently. Since almost all cultivated acreage for forage crop is owned by large agricultural enterprises, it would be desirable to maintain this mode of management for efficient production of forage crops.

The problem with forage production in Kazakhstan is low productivity of natural pastures and forage crop in addition to shortage of seeds, which suggests a low development level of seed production for forage crop. For instance, there are no regional varieties that combine high production capacity and fast growth. The majority of forage crop has been introduced 40 to 50 years before. In the case of Japan, pasture production is unstable owing to climatic conditions

and the country is dependent primarily for imported seeds of varieties of foreign origin because domestic cultivation of pasture for seed production purposes is not viable. In addition, seed production of varieties that were developed domestically by public institutions follows the procedure in which the original strain and the strain prior to that are produced by public institutions, sent overseas for consignment production and returned to Japan. The system is more or less the same when seeds are produced by private institutions. Public institutions and private nursery companies are selling new varieties with constantly-improved productivity, disease resistance and low-temperature resistance every year, and old varieties disappear one after another. In Kazakhstan, national grain laboratories, agricultural experimental stations and seed production organizations are currently responsible for production and supply of seeds although they only supply only a small volume. Seeds are also purchased from overseas, from countries such as Yugoslavia in some cases. In many cases, however, a portion of the produce is being used for seeds (particularly in pasture). This is particularly important in the northern breadbasket where vast land is used for feed production because of the short plant-growing period, which is not affected by frost damage. Hence many problems need to be addressed including the development of very early maturing varieties.

Alfalfa grown as forage crop on fallow land is also regarded as precious source of forage. Some fallow land is raked several times a year for water retention while others are planted with legumes such as alfalfa for nitrogen fixation. Legume can not only be used as livestock forage resource with high protein content but contributes to maintenance and improvement of soil fertility through its nitrogen fixation property. This will lead to reduction of nitrogen fertilizer application. Alfalfa grown on fallow land in the northern breadbasket is transported to livestock farms in various regions and used as forage. However, production of legume is currently limited to very small area. It is necessary to grow more legume for its high nutritional value and nitrogen fixation property, including mixed sowing of grass and legume plants. Among legume, esparchet (generic name Onobrychis), which is indigenous to Central Asia, has been grown in this region since the old days and has resistance to low temperature and drought. Along with alfalfa, esparchet is a very important source of protein for livestock. Indigenous plants also have an advantage of not being affected by climate compared to foreign species.

As most pasture grass varieties are suited to cold climate, surviving the summer becomes a challenge in regions like Kazakhstan where summer heat is strong. It is also desirable to incorporate perennial plants for securing yield and several varieties of annual plants for risk distribution against annual climate changes.

Yield of maize for silage ranged between 1.0 to 1.4 tons/hectare in the early '90s. Meanwhile, the yield for dry pasture grass production was 0.7 to 1.9 tons/hectare of perennial grass, 0.7 to 1.6 tons/hectare of annual grass and 0.3 to 0.6 tons/hectare of natural grass. Yield of forage crop and pasture grass will decrease to a greater degree in the future should soil compaction loaded by large agricultural machinery and lack of chemical fertilisers continues. These figures have decreased to a greater degree at present due to shortage of chemical fertilisers.

Feed production in stock husbandry had expanded extensively. It was not accompanied by increase in yield per unit area and simply sought expansion of cultivated acreage. In the future, it is necessary to aim for setting of yield goals and establishment of agricultural

technology in view of long-term utilisation of land resources. Certain decline in yield is inevitable for long-term maintenance of land productivity.

Winter forage will have to be secured individually in private sideline management. In such case, hay is prepared from natural pasture in addition to procuring straw and bran at low price from the societies to which they belong. However, the quantity of forage that can be prepared by individuals is not sufficient owing to constraints in terms of labour and storage.

Production energy in excess of maintenance energy will have to be consumed to obtain produce such as meat and milk. Concentrated feed such as maize grain, bran and barley curn have high energy value and are efficient. However, sufficient volume has not been fed owing to further decline in production and import that occurred recently on top of insufficient production that has continued since the old days.

Breed and Distribution of Livestock

Kazakhstan is a vast country with large differences in climatic conditions from cold region to hot and dry region. For this reason, Kazakhstan was active in introducing superior breed from abroad for breed improvement of indigenous livestock during the former Soviet Union period. The country made efforts to create breed suited to each region with the aim of improving performance of meat production, strength, wool quality and wool production.

Cattle

Cattle relatively has resistance to cold temperature and vulnerable to high temperature and humidity. For this reason, new breed was created between the end of the 19th Century and the beginning of the 20th Century by introducing quality foreign species to indigenous species that are well adapted to the environment of Kazakhstan. Species such as Aulie-Ata in south Kazakhstan, Kalmyk in west Kazakhstan and Kazakh White headed in north Kazakhstan are mainly bred in addition to Kazakhskaya and indigenous Kazakh breeds are being raised mainly for both meat and milk. States where they are raised in large numbers include Almaty, East Kazakhstan and Kustanai. Cattle requires large volume of forage and are mostly raised in large scale in regions adjacent to farmland in the breadbasket of the north and in the suburbs for supplying dairy products to cities. Meanwhile, beef cattle management is commonly seen in the south.

Pigs

Major breeding regions of pigs are Astana, Almaty, Kustanai and North Kazakhstan. Number of animals raised has more or less been following an increasing trend with occasional decline in between. As in the case of cattle, large farms for pork production were built in a systematic manner with such farms being concentrated in the north and in the suburbs. Breeds such as Askai Black Pied and Semirechensk that were created around 1950 are in existence.

Camels

Camels are mainly raised in regions such as Atylau, Mangistau, Kzyl-Orda and South Kazakhstan. Camels are produced for their meat and particularly valuable is wool and medicinal drink made of their milk-shubat. Camels have high resistance to rough feeding conditions and are grazed year-round for this reason. As durability and softness of camel wool

reach their height before it falls out naturally, hair harvested during such period is said to be most suited for weaving rugs and capes. A camel produces about 7 to 8 kilograms of wool, which means that a thousand camels produce 7 to 8 tons of hair. Although it offers a precious source of income, recent market prices have been showing a downward trend.

Bactrian camels of Kalmyk, Kazakh and Mongolian breed as well as Dromedary camels of Arvana-Kazakh and Turkmen-Arvana breed are being raised in small numbers. Some crossbreeds between Bactrian and Dromedary camels have also been created through heterosis to obtain high production capacity.

Sheep

Sheep are raised in large numbers in the states of Almaty, Zhambyl and South Kazakhstan. Wool breeds with priority on wool quality and wool production (various crossbreeds of Merino, Kazakh fine wool breed), meat breeds that have been improved for the purpose of meat yield, fat-rumped and growth speed (Kazakh Fat-Rumped, Sari Ja breed) and dual purpose breeds Akutyubinsk breed, Kazakh/Corriedale breed, Kargalin Fat-Rumped breed) have been created. More than 10 breeds still exist today and are distributed in various parts of the country. A large number is raised from the central region to southern region. Astrakan leather, which comes from Astrakan lambs raised in the vicinity of the Caspian Sea is famous. There has been a tendency to back away from wool production in the recent years because it does not generate sufficient income worthy of the work required in processing after shearing.

Goats

Goats are not given much importance in Kazakhstan compared to cashmere goats in Inner Mongolia and Mongolia. Breeds such as Kazakh, Soviet-Mohair and Central Asian Local Coase-Haired are observed. As often noted, having several goats makes it easier to manage a herd.

Horses and donkeys

Horses not only provide means of transportation but is the source of meat and kumyss (health drink made of mare's milk). Mostly raised in southern Kazakhstan. Breeds include Adaev, Akal Teke (Turkmen breed), Jabe, Kazakh, Kushum and Kustanai. Donkey breeds include Chigetai, Kazakh and Kulan are used mainly for labour such as transportation.

Poultry

Large number of poultry is raised in the suburbs such as Astana, Almaty, Kustanai and North Kazakhstan. Because of its high feed efficiency, expansion of production can be sought if priority allocation of feed can be arranged. Large-scale breeding at poultry farms is being practiced. A dozen or so chickens, ducks and geese are raised at each household.

Regional characteristics of livestock

From agricultural and environmentological viewpoint, Kazakhstan can be classified into respective regions according to the natural conditions that exert enormous influence on crop production. The combination of livestock will differ depending on the degree to which the feed base has been substantiated in that region. For instance, sheep raising is mainly based in

pastures and are more dependent on natural conditions compared to other areas of animal production. Owing to weak connection with feed production, it was distributed in the central region that are drier and not suitable for farming.

Crop cultivation/cattle raising region

The states in the northern Kazakhstan region, namely North Kazakhstan, Astana, northern part of West Kazakhstan, Kustanai, Aktyubinsk and Karaganda correspond to this region. Crop production mostly dependent on rainwater is practiced and tends to be affected to a large extent by climatic conditions. Characterised by availability of infrastructure suited for consignment and storage of grains, intensive cultivation and availability of large plots of arable land. This region is equipped with very favourable conditions for growing hard first-class wheat. Certain amount of feed base is available to enable raising of cattle and pig.

Cattle raising/crop cultivation region

Consists of states such as Aktyubinsk, northern part of East Kazakhstan, central part of Kustanai, central and southern part of West Kazakhstan, and western and southwestern part of Astana. A combination of beef and mutton production and crop production is practice in this region.

Wool sheep raising region

Area near Balkhash Lake in Almaty, southwestern part of East Kazakhstan, central and southern parts of East Kazakhstan. Suited for raising sheep.

Dual purpose sheep (milk and meat) raising region

Occupies the semi-desert and desert regions of central Kazakhstan. Crop production is not possible and sufficient feed for raising cattle cannot be secured in this region.

Astrakan sheep raising region

Located in the lowlands near the Caspian Sea and includes the agricultural region in Atylau and Mangistau as well as the desert region in Zhambyl and South Kazakhstan. Intensively specialised in raising of Astrakan sheep.

Cattle raising/fruit cultivation region

Covers the majority of Almaty and also include the hill region in South Kazakhstan. Vast pasture in this region is suited for raising sheep and cattle.

Rice cropping region

Occupies the lowlands in the valley region of Syr-Dar'ya River which flows into Aral Sea and located in the state of Kzyl-Orda. Rice cropping is combined with sheep or cow raising.

Raw cotton growing region

A part of South Kazakhstan where raw cotton is grown by using irrigation.

Chapter 4

Field Study Report

We were not able to obtain effective information in our questionnaire survey at the backdrop of the fact that the concept used as the premise for the survey is hardly shared among the local experts. In addition, the size of farms in Kazakhstan is astoundingly large compared to those in Southeast Asia and East Asia to the extent that a 20,000 hectare farm is not among the large. Distances of 100 kilometres or 200 kilometres are also not regarded as far in Kazakhstan. Applying the conventional concept of agricultural development that Japan has been conducting in East Asia is very difficult owing to the difference in sense of farm size and distance. This field study will therefore be presented in the form of describing the instances visited by the research team during the study under limited conditions.

1. Targal District Cooperative

Targal District in the suburbs of Almaty. The colony consists of 3 villages (Belbulak, Birlik, Taldybulak) and has a population of 14,000. Among them, 600 persons have joined the cooperative (of which 450 are men and 150 are women—30% of women are pensioners but are working). The members were not forced to join the cooperative and have become its member by their own will. Each member owns 2 hectares of land in average. The cooperative owns 60,000 hectares of farmland including 3,000 hectares of arable land and 8,000 hectares of pasture area. Arable land is used for growing grains, beet, soybeans, potatoes and maize for feed. Animals raised include 1,000 cattle (of which 500 are cows), 150 horses, 5,600 sheep and 60 camels. The cooperative owns 60 tractors, 72 trucks and 12 combine harvesters. Last year's cultivated area and production volume were 800 hectares and 3 tons/hectare for wheat, 40 hectares and 16 tons/hectare for potatoes, 50 hectares and 40 tons/hectare for beet, 50 hectares and 3 tons/hectare for soybeans, 165 hectares and 10 tons/hectare for alfalfa and 180 hectares and 40 tons/hectare for maize, respectively. Five kilograms of wool can be sheared from one sheep and there are 5,600 head of sheep, although it can only be sold at low price of

100 tenge per kilogram. The cooperative leaves 3,000 head as ewe and consumes 1,000 head within the cooperative. It is considering to liquidate the sheep department because it does not generate any profit. There is a leather processing factory in the village. Cow shed was closed off to unauthorized entry due to outbreak of foot-and-mouth disease and anthrax. There were 5 veterinarians and vaccines were purchased from the market. Members were receiving their salary in the form of vegetables, wheat and grain. Wheat was being sold for 6 tenge per kilogram to members and 14 tenge per kilogram to non-members. In addition, 2 tons of hay was being sold for 500 tenge per ton to members and 3,000 tenge per ton to non-members. According to the cooperative representative, he had never experienced an unstable condition such as this in the 35 years of working in this village. He expressed his complaint in the following manner. "During the former Soviet Union days, we did not have to worry about tomorrow because technical assistance was available in abundance. Roads and cultural facilities were also developing at the same time. But now we can't even afford to buy a tractor. Fuel is expensive and wheat prices are low. Agriculture will die out if things continued as they are. People at the government speak as if agriculture is being practiced smoothly as a result of privatisation, but situation is quite difficult in reality."

2. Limited responsibility cooperative in Rojdestbenka (TOO)

Rojdestbenka Village is located about 30 kilometres south of Astana and has a population of about 5,000. The village was incorporated into a sovkhoz in the past but now consists of 2 cooperatives and 5 private farm households. The following is an explanation about the a limited responsibility cooperative named "nura." Following the disbandment of sovkhoz "Okuchaburi(October)," friends got together in 1992 to form a limited responsibility cooperative "nura." Cultivated acreage is 12,150 hectares, of which 3,000 hectares are fallow land where three-field system farming is practiced. However, the instruction from the government to practice four-field system makes three-field system illegal. Fallow land is not used for grazing and only raked 4 times a year. Grain cultivation area amounts to 10,950 hectares, consisting of 1,200 hectares planted with oats, 500 hectares planted with maize and the remainder planted with wheat. Oats and corn are used as silage for animal fodder. There are 20,000 hectares of grazing land as well as 300 hectares of meadow where alfalfa and Dutch grass (alias quackgrass, pasture grass name couch grass) are harvested for hay. Livestock raised include 1,850 cattle and 120 horses. Cattle is of Holstein breed and produces 2,300 litres of milk in a year. The small milk output for a Holstein, which is a high milk yields breed, may be attributable to summer heat or not being fed with enough feed. Last year's milk production amounted to 1,060 tons and 15% of the production was consumed within the cooperative. The remaining 900 tons were transported to and sold in Astana. Although it is possible to sell the milk for 35 to 37 tenge/litre to hospitals, sanatoriums and schools, the majority is sold for much lower price of 10 tenge/litre to milk collecting stations because milk is a fresh product that will turn bad quickly. For this reason, the cooperative is hoping to build a processing station for dairy products inside the cooperative. Of 2,200 tons of oats harvested, 160 tons are reserved for seeds and the remainder is used as silage. All of the 2,500 tons of maize harvested is used for silage. In northern Kazakhstan, maize has to be harvested before it

reaches the yellow ripe stage suited for harvest because of the cool climate and early arrival of frost. For this reason, seeds will have to be purchased entirely. Three and a half tons of wheat is required to purchase a ton of maize seeds and 15 tons of seeds were purchased last year. Although we were not able to find out the amount of pasture grass harvest, we were told that 0.5 ton of alfalfa was secured for seeds in addition to 2 tons of other grass. There is a plan to increase the meadow because production volume of pasture grass is small. Artificial insemination of cattle is not practiced and effort is made to keep the stud bull that produces cows with high performance. There is one stud bull for every 50 cows. No guidance is provided from the government with regard to livestock breeding. About 200 head are increased every year. The plan is to increase the number to about 2,000 head, which is considered to be the proper scale of breeding for the cooperative.

3. Joint stock company Kurasnoyarskoe

We visited a joint stock company in Jangiz-Kuduk, a village located 60 kilometres from Astana. Three thousand people comprised of 800 households live in the village. Every household is taking part in this joint stock company and 800 persons comprise its workforce. Out of 800 employees, 300 are shareholders cum workers that own their shares in the form of land, tractors and livestock. The village has 900 students and infants. Five hundred households live in the centre and another 300 households live at some distance from the village centre. The village used to be sovkhoz "Kurasnoyarskoe" until 1990. Agriculture is based on grain production. There are 50,000 hectares of farmland and 25,000 hectares of this is arable land is used for growing spring wheat (18% of which is fallow land). Twenty-five hundred cattle (of which 800 are cows), 1,000 pigs and 300 horses are being raised. There is a milk processing station producing butter and a meat processing station producing sausage and ham. There is also a place for making alcoholic beverage from horse milk. The village is self-sufficient on the majority of animal products and selling the surplus. There is sufficient manpower available to perform the work and no workers are hired from outside the village. A milk processing machine was purchased from France. Feed crop under cultivation include 100 hectares of maize, 40 hectares of sugar beet and 2,800 hectares of oats. In addition, the village is growing 20,000 tons of wheat, 2,000 hectares of potatoes, and small quantities of cabbage, tomato and cucumber. The company owns 85 Russian-made tractors, 60 combine harvesters, 50 trucks and several mowing machines (a special combine). The company purchased 10 tractors last year, and is planning to purchase 2 tractors in addition to 4 already purchased so far this year. Milk yields of a cow amounts to about 6,000 litres a year. A head of cattle is sold for 60,000 to 90,000 tenge. Good breeds are sometimes sold for 100,000 tenge/head. In addition, 40 tons are sold for rearing every year. Assuming that a cattle weighs 300 to 350 kilograms, it means that 120 or so cattle are sold. Dressed meat is sold to village residents, i.e. company members, at 300 tenge/kilogram. Herbicides are used but chemical fertilisers are hardly used in growing the crops. High-grade pasture grass seeds and livestock sperms can be purchased from national research institutions using subsidy from the government available at the time of purchase. The company receives offers from many institutions when making the purchase. Pigs are fed with wheat bran and grass in the summer. There is a plan to raise sheep

in the future.

4. National Academic Centre for Agrarian Research

One of the three major wheat research laboratories in the former Soviet Union studying the technical aspect of wheat production in cold regions. Also developing giant agricultural machineries and obtains its main income from selling high-grade seeds. The farming method of raking the soil after harvesting wheat to prevent evapotranspiration from Mongolian soil was considered to be a good method. However, this method may cause wind erosion of the soil and raking gave rise to concern over transpiration from the soil. The method developed by this research center can prevent transpiration of water absorbed from the root by cutting the root with farm machinery instead of turning the soil over while preventing transpiration from soil at the same time. In addition, stumps block the wind and retain the snow on the ground in winter to preserve moisture. Thus, retention of moisture had become the most important issue in regions with limited precipitation had become the most important issue.

This region is black belt continuing from Ukraine with depths to base rock reaching several hundred metres. Since topsoil alone is seven metres deep, enabling the wheat root to grow into the ground was the major challenge in harvesting from this soil. The cold climate of the northern Kazakhstan where this research centre is located prevents transpiration of moisture to permit agriculture relying on rainwater, although higher transpiration in the southern part of the country requires irrigation and measures against salinisation. Wheat is also the main crop in the north. The variety of this wheat is super-hard wheat called durum semolina. It has product value in the international market, although difficulty exists in selling it to the developed countries in the west owing to the problem of the marketing channel. Large fluctuations in yield caused by climatic change is also considered a major problem.

The laboratory offers breed selection test and high-grade seeds for feed crop such as pasture grass. However, it appeared that the laboratory was giving priority to grains and was not very active in feed crops. Pasture grass and feed crop displayed at the laboratory's display room where we were taken were several decades old. Northern Kazakhstan is specializing in grains, particularly in wheat. Wheat from the north has low yield but can compete in the international market because of its high gluten content and high quality. The laboratory's idea is that Kazakhstan should grow more marketable crops such as oil seeds and peas after sufficient volume of wheat can be secured for domestic supply and some export.

According to the laboratory, dairy farming is not popular owing to lack of cattle breed suited to the environment in the north and to poor feed base. Government laboratories are therefore trying to create livestock breeds that are suited for each region.

5. Private farm in Kokshetau

A private farm that happened to be at this grain laboratory for consultation. It used to belong to a sovkhoz and receive allotment at the time of disbandment. The family of five brothers and two sisters jointly own and cultivate 6,000 hectares of land including 1,600

hectares they purchased from people that gave up their farm and moved. Kazakh siblings have very strong ties and are cultivating the farm by dividing the responsibility and trust each other as members of the same family. They started cultivating another 8,000 hectares by renting public land this year. The land rent is free. Land tax is same at 30 to 100 tenge/hectare regardless of whether the land is owned by an individual or by the state. The difference in owning and renting land is as follows. Land with high productivity was divided among the members as "asset" at the time of sovkhoz disbandment. The land that they had purchased had been allotted to a member and was purchased for its high productivity. The land that remained became national land. Its productivity is low compared to allotted land and has no asset value.

The farm currently is not raising animals at present but is planning to expand the operation to stock raising in the future. The farm is selling wheat straw hay for 2,700 tenge/ton to acquaintances and workers that are raising livestock. A large demand exists for wheat straws because each household is raising 1 to 2 head of cattle as a sideline and have to secure the forage to feed them over the winter season.

Private farming is challenging in the north. A large portion of agricultural production is performed by large-scale farming managed by cooperatives owing to availability of vast tracts of land. Private farms can survive in the south where plots are smaller.

In the case of this farm, the brothers have direct connection with Russia and are selling the wheat directly to Russia. Having this marketing channel and the use of high-grade seeds and proper farming method by maintaining close relationship with the wheat research centre are generating handsome income for the farm. Although accurate amortised value is not included, production cost is $50/ton and selling price is $80/ton. The farm has yield of 3 ton/hectare compared to 0.9 ton/hectare average in the region. In addition, a combine harvester that the farm owns is a Russian-made Yenisey and costs $35,000. Labour requirement changes from season to season and the farm hires 20 persons X 20 days in spring to 15 persons X 27 days in summer, 25 to 30 persons in autumn and 5 to 6 persons in winter. These agricultural labourers receive 4,500 to 5,500 tenge/month.

6. Private farm in Telmanskoye

A stock farm co-owned by 4 families in a village located about 10 kilometres east of Astana. Formerly a "Telman kolkhoz that was raising about 2,000 cattle. Remains of cattle feeder suggest how things were in those days. Although we were not able to learn the details of disbandment and distribution, the stock farm currently owns 40 to 50 cattle and milking 10 cows every day. Women perform milking twice a day, once in the morning and once in the evening, but milk yield is very small. Around 10 litres/day is milked for each head, amounting to about 3,000 litres/year. The farm owns 40 to 50 hectares of land that is does not cultivate and uses as grazing land. The feeding in winter is limited to hay and no feed crop is grown for silage. Hay is harvested from a meadow that is not owned by anyone. A small amount of bran is fed as concentrated feed.

7. Bakbakty District Limited Responsibility Cooperative

Located in Bakbakty (meaning "dandelion" in Kazakh) along the Ili River, about 160 kilometres north of Almaty. Bakbakty is a village established in 1962. The cooperative was based in a different location and was raising sheep. It moved to the present location in 1966 and is mainly engaged in rice production, which it started for the first time after moving. The village population has increased from 1,500 in 1966 to 5,000, comprised of 1,100 households, at present. Ethnic composition of the village includes 400 Koreans, 800 Russians and Kazakhs accounting for the rest. A total of 21 ethnic groups live in the village. The village as a whole owns 3,845 cattle (of which 1,840 are cows), 6,600 sheep and goats, 1,100 pigs (raised by Russians and Germans), 700 horses and 2,000 poultry. There is 21,000 hectares of land of which 13,000 hectares is used as pasture. About 8,000 hectare arable land 3,000 hectares are used as rice paddy, 2,000 hectares for wheat and the remainder is used for growing alfalfa and vegetables. Shortage of labour never occurs and no one is unemployed. Four limited responsibility cooperatives (TOO) employ the entire village population. During the sovkhoz days, the organization was comprised of four brigades which turned into 4 four limited responsibility cooperatives at the time of disbandment. All four cooperatives mainly produce wheat and rice, and animals are raised in very small numbers for consumption by the workers themselves.

One of the limited responsibility cooperatives named "Tasmarin", has a trade name "Arkada" jointly with a private farm "Kyer-shguis-vendo." The company is allegedly a Korean-affiliated. This cooperative is not raising any animals but has a plan to raise 450 cattle, 1,500 pigs, 2,000 sheep and goats, and 6,000 poultry to produce 90 tons of pork and 80 tons of chicken meat. At present, hay, wheat straw and bran produced by Tasmarin are sold at low price to the employees or sold externally.

Arkada leases land and hires workers. Salary is paid by produce in spring and summer and in cash at the time of autumn harvest. Arkada becomes the sponsor in repairing machinery, purchasing parts and purchasing seeds and herbicides. Business is viable at this cooperative as a result. Although rather exploitative, the workers are appreciative because other three cooperatives are in devastated condition.

8. Private farm near Bakbakty

A private farm in the suburb of Bakbakty. The householder (66) and 7 sons are all married. The farm is growing wheat, alfalfa and vegetables on a 50 hectare irrigated land and using 80 hectares for grazing. As for livestock, the farm is raising 70 sheep and goats, 17 cattle and 5 horses, and feeds them with small quantities of barley every day. It owns a combine harvester and a tractor. The farm tries to use the pasture as much as possible but feeds hay and barley when it is not possible to do so.

9. Breed Factory Almaty Farm

A productive society located about 25 kilometres east of Almaty in Talgar Village. It has a trade name of Breed Factory Almaty Farm. Also visited by President Nazarbayev. Assets were allotted in the form of land and wages based on length of service, post and experience when the kolkhoz was disbanded in 1993. However, nothing changed in actuality except for the name and the organization changed over to a productive society in 1995. Machinery such as tractor was owned by the president of kolkhoz as a matter of form. This president was a hard-headed operator and appears to have made the transition to a production cooperation smoothly without any confusion. The president appears to have achieved popularity after being the leader of a kolkhoz for 25 years. The society has five branches and is comprised of a stock raising complex section (production of milk and horse breeding stock), a milk production section, a sheep raising section, an onion production section and a potato production section. The society hires 1,500 persons on the whole. The stock raising complex section has 230 workers from 105 households (480 persons in 105 households, including 123 children, 60 to 70 of which go to elementary and junior high schools). The management consists of 11 persons, milk production section has 123 workers, horse breeding stock section 23 workers and feed production section 73 persons (41 of whom are machine operators such as mechanics and drivers). There is no external labour such as day labourers and part-time workers. Sufficient labour is available at present.

Out of total arable land area of 1,500 hectares, 270 hectares is used for spring wheat, 200 hectares for winter wheat, 416 hectares for alfalfa (harvested 4 times a year), 69 hectares for soybeans, 350 hectares for maize (for silage) and 200 hectares for annual and perennial pasture grass (harvested 3 times a year). While there is no grazing land, fallow land is sometimes used for this purpose. Machinery has been allotted by the society president among the branches by taking into consideration their cultivated acreage and work load. The stock raising complex section owns 27 tractors (of which 6 are caterpillar) and 12 combine harvesters. Parts are purchased at low price from bankrupt agricultural enterprises and private farms (by obtaining information about those that received machinery at the time of disbandment but are sitting on the shelf due to lack of land to cultivate etc.).

The society has 2,000 cattle of which 800 are milking cows and the remainder is yearling/less than 2 year-old cows and bulls used for meat. There is no stud bull because of total reliance on artificial insemination. The breed was Aulie-Ata, which has an annual milk yield of a little over 3,000 litres and is well-adapted to southern Kazakhstan. Artificial insemination is performed by the state breeding station. A millilitre of sperm is used for each insemination. This is usually performed twice and costs $100 for 2 inseminations. The breeding station issues a proper certificate. Bulls are used for barter while they are calves. Last year, the society sold 150 head at an average of 60,000 tenge/head to generate 1 million tenge in income. Sales were made to individuals, productive societies and Kyrgyzstan. Useful life of cows is about 12 years (milking period is about 10 years), after which they lose their utility and are consumed at home or sold at low price to shops in the village. Incidentally, dairy cows in Japan are often disposed after 4 to 5 years.

This branch is also breeding racing horses and is raising 123 thoroughbred horses. It sold 15 horses last year for 5,000 to 15,000 tenge per head. Stallions are sold for higher prices.

Mothers give birth to a head of colt every year. Stallions are used in for breeding for about 17 years. Colts are sold between ages 1 and 5 mainly as racing horses.

The crop yield is 3.7 tons/hectare for spring wheat and 2.0 tons/hectare for winter wheat. Around 100 tons are reserved as seeds for the following year and 400 tons are consumed as flour. Bran and straw are used as livestock feed. The yield for soybeans is from 2.5 to 3.5 tons/hectare and used mainly for feed or bartered. The government was buying soybeans at high price for animal feed in the past. At present, however, customers have been lost with the decrease in number of poultry raised in addition to decline in prices (the price for a ton is one-third compared to wheat). The society is planning to discontinue the production because productivity is lower than wheat. Maize seeds are purchased from Yugoslavia for 147 tenge/kilogram.

Milk production averages at 9 tons/day (9 to 10 tons in summer and 7.5 to 8 tons in winter), of which 1 ton is consumed by calves. The society is selling about 8 tons of milk per day and the workers obtain their milk from cows that are raised at respective households. Milk is sold at 30,000 tenge/ton (i.e. 30 tenge/litre) to milk processing plants. It costs 16 tenge to produce 1 kilogram of milk which means that cost accounts for half of the milk price.

10. Private farm in Karadai

A private farm in the foothills located 32 kilometres from Almaty. Run by three brothers, although nominal responsible person is the other sister. Only one household is engaged in the actual work and other siblings come to help during busy farming season. April to July is the busy period for this farm household, because of the emphasis it places on feed production. The household received 16 hectares of land back in 1995 at the time of kolkhoz disbandment. Land tax imposed on this plot of land is 8,000 tenge/year. Leased a 16 hectare land from the government in 1997. Land tax imposed on this land is 1,500 tenge/year. Leased an additional 15 hectares from the government starting this year. Land tax of 5,000 tenge/year is imposed on this land. The difference in land tax is attributable to the difference in value of land. Esparchet is grown on 16 hectares of land. Harvested hay is partially used at home and the remainder is sold. The profit is divided equitably among the siblings. The farm owns a tractor, a truck and a plough, and rents a combine and a mower during the harvest season. Cost of rental is 1,500 and 1,000 tenge/hectare, respectively, and the machines are rented for about 4 days. The amount due at the time of receiving the tractor ($150) has been paid. Plough was allotted. The farm owned two cattle prior to 1994 and purchased two more in 1995 for 25,000 tenge/head. They have now propagated to 10 head, of which 4 are milked and 6 are calves. They have no bulls and borrow a breeding stock from a neighbourhood acquaintance. Owned 25 sheep and 5 goats in 1995. After selling 3 goats for 6,000 tenge/head thereafter, the farm currently owns 25 sheep and 5 goats in addition to 4 horses and about 30 chickens. Sold a horse to a nearby farm for 40,000 tenge when there was need for cash and also sold a calf for 35,000 tenge. Cows produce 8 litres of milk a day, amounting to 2,400 litres per year. Of 9,200 litres produced in a year, 1,200 litres are consumed at home and the remainder is sold to a middleman for 30 tenge/litre. This income amounts to $1,633. About 20 eggs are produced per day. The farm sold 5,840 eggs last year and consumed the rest at home. The farm also produced 100 tons of

hay and sold 60 tons at 150 tenge/20 kilogram to retailers and wholesalers. Also sold a truckload (probably about a ton) of cow manure for 2,000 tenge. The farm spent $4,000 and earned $12,000. Producing forage instead of wheat is the secret of being able to make a profit.

Summary of Hearing Results

The results from the hearing is summarised with regard to several points in the following to sort out the problems.

Agricultural enterprises (e.g. productive societies, limited responsibility cooperatives, joint stock companies)

Sovkhoz chairmen Akims also held the post of chieftain for the village or region and possessed considerable authority. It is assumed that the realities of disbandment and reconstruction differed significantly depending on the discretion of Akim when sovkhoz was disbanded and transition to agricultural enterprise was made. There must have been all kinds of Akims—such as those trying to take advantage of his authority to gain large profit after privatisation and those acting by taking into consideration the interests of all members. There has been reports about cases in which the process of allotment and ownership transfer lacked transparency owing to existence of authority and many rights and titles ending up in the hands of farm managers. It is also likely that reduction in number of livestock is caused by the existence of animals that are not included in the statistics.

A large gap exists between good-standing enterprises that are successfully managed and those that are close to bankruptcy. For instance, deterioration of agricultural machinery has become a problem for all agricultural enterprises, although good-standing enterprises are starting to have a leeway for purchasing new machinery. However, the problem still exists in the sense that number of agricultural machinery is still very limited and cultivated acreage remains in reduced condition. On the other hand, some agricultural enterprises are unable to purchase repair parts, let alone purchase the machine itself.

Fresh animal products cannot be transported in local areas because of many problems that exist including high cost of transportation. Agricultural enterprises that also own an animal product processing facility have the advantage of being able to transport their products after adding value to them. Having a processing facility in the village also offers job opportunities. Expansion of barter and material compensation to workers is also posing a problem.

Private farms

Many private farms emerged from privatisation and are gradually growing by acquiring knowledge and skills. However, it appeared that private farms could barely produce enough for themselves for now because the number of livestock raised by is very small. Farms that are placing emphasis on feed production seem to be making some profit through such effort. As for the future development of their management, farms will need to determine their areas of specialisation according to their locational conditions.

Single farm households do not own all the agricultural machinery needed for feed production and rent the machinery they need at the time of harvest. It is difficult for private

farms to purchase new machinery as they lack the capital to do so. It is therefore necessary to make agricultural machinery rental companies and contractor cooperatives in rural areas.

Private farms are not performing livestock improvement through artificial insemination. Instead, they borrow breeding stock from their acquaintance farms when there is a need for breeding. No public support of any kind including veterinary service is being offered to private farms.

Sideline management of individuals

Although we were not able to visit any private home for hearing survey, it is not possible to ignore the production carried out by individuals on the side in the agriculture, particularly stock raising, of Kazakhstan.

Houses with kitchen garden and animal shed become the norm of ordinary rural household once one leaves the city. Each household is raising a combination of poultry and livestock in small numbers. Raising small number of animals is a sideline in the sense that it does not require much effort beyond leaving the animals with the person in charge of grazing and feeding them with scraps from vegetables. Its productivity is extremely low and the production is confined to the level of self-sufficiency, although it is playing the role of hidden food storage in Kazakhstan. A concern exists over further decline in productivity owing to feed shortage following the slight increase in the number of animals.

Public laboratories

While we were not able to visit any animal husbandry-related laboratories in this study, agricultural experimental stations and breeding stock stations are located in every state. The opinion on public laboratories was divided into two in the hearing conducted on agricultural enterprises and private farms. Agricultural enterprises and private farms that are engaged in good managerial condition seem to be receiving various offers regarding artificial insemination and vaccination. Artificial insemination offered by breeding stock stations costs at least $100 and can go up to $1,000 for high-calibre breeds. The laboratories do not appear to be interested in farms that are poorly managed.

Feed production

Agricultural enterprises and private farms secure their own seeds for pasture grass and feed crop. In other words, a portion of annual harvest is used for sowing in the next season but this practice is resulting in poor productivity owing to the poor germination rate of these seeds.

Owing to large demand for feed within the country, private farms specialising in feed production have good income. The government is trying to lay stress on animal improvement. Although this is necessary from the viewpoint of improving productivity, feed production which these feed producing farms are succeeding may prove more beneficial for the animal husbandry of Kazakhstan. Some regions have no choice but to use reed which has little value as feed. Even agricultural enterprises having a certain degree of feed base must endure extensive periods with empty feed bunk in the shed. Feed shortage is a serious problem and the need was felt to increase feed production in order to increase the amount of feed fed to the animals.

Chapter 5

State of Agriculture in Kazakhstan and Its Problems

The agricultural sector of Kazakhstan has high potential but the out of agricultural production in this country fluctuates greatly. In 1999, a positive sign of economic recovery was seen thanks to climate conditions and rising oil prices. Agricultural production increased by a large margin and growing areas of all sorts were expanded. As a result, agricultural gross product nearly doubled from the 1998 level and put out 14.2 million tons of grain products. In 2000, however, production of key crops such as wheat and barley fell by 20% and 28%, respectively.

The issues in the agricultural sector of Kazakhstan can be divided into two major categories of technical issues and institutional issues.

Technical issues may be outside the range of this study, although there is a possibility for solving these issues over a long-term through what had been accumulated during the Soviet days. On the short-term, however, improving the performance of agricultural machineries with poor fuel efficiency, for instance, will become a powerful basis of argument for increasing the external orientation of the economy and lead to purchasing from the most appropriate supplier in the international market. On the other hand, in the medium-term, large volume of machineries produced in COMECON will become the motivation for maintaining the trade relations with these former-communist countries because of the fact that spare parts can only be procured from these countries.

According to our study, the problems that currently beset the agricultural sector of Kazakhstan can be divided into several categories. Let us take a look at this subject from four perspectives set forth below.

1. Tasks related to agricultural technology
2. Tasks of livestock sector
3. Tasks related to institutions
4. Tasks related to training of farmers

1. Tasks related to agricultural technology

(1) Problems of irrigation technology

The efficiency of irrigation in the rice paddy farming regions in the Syr Darya basin is between 30 and 40%, which is extremely low compared to 60% developing countries and over 80% of developed countries. The management of the entire service/waste water system must be inspected. For this purpose, facility improvement of trunk and feeder line channels (which are agricultural water canals) is needed in addition to facility improvement of terminal channels and planation of rice paddies.

(2) Occurrence of salinisation

Abandoned paddies are observed in the lowland rice growing regions of Kazakhstan in the recent years. While this is partly caused by reduction in cultivate acreage owing to shortage of agricultural machineries, most paddies have been abandoned due to salinisation and the resulting decline in production volume. In other words, inadequate management of irrigation water has brought about rising of the groundwater level and made, due to the high salt content of the soil, had made ascension and accumulation of salts to the arable land surface inevitable. For this reason, a system of cultivation incorporating paddy agriculture in rotation farming to reduce salt accumulation has been devised and implemented, although many farms were forced to abandon cultivation after salt accumulation was accelerated by deterioration of water management skills. Situation is particularly serious in Kazalinsk District in the lower Syr Darya basin with abandoned paddies outnumbering cultivated paddies by large margin. Moreover, growth disorder of farm crops occurring in this district by scattering of salt from new deserts that emerged as a result of drying of the Aral Sea cannot be overlooked. It is believed that vast amounts of salts that separated on the former lake bottom surface have been carried by tornadoes that occur during the high temperature season (from the small ones that occur regularly to large sand storms) carry these salts to the nearby areas and causing damage on the crops. One can say that the problem of soil salinisation is the consequence of "redistribution of water and salt in the environment" that was brought about by inadequate and extensive alteration of water circulation in the desert environment that had experienced minimum impact on water up to now. Needless to say, we cannot negate the fact that economic collapse of the present agriculture is accelerating the occurrence of salinisation. However, this problem had been anticipated since the initial stage of the agricultural land development relying on large-scale irrigation and agricultural technology of Soviet Union studied avoidance of salinisation as a priority issue and took measures to cope with the problem. Its technology can be seen in cultivation system, for instance.

The cultivation system followed in the paddy region of the Ili river system rotates crops by growing alfalfa for two to four years after growing lowland rice for two to three years. Relatively high groundwater level during the lowland rice period causes salt accumulation in the surface layer during the upland cropping period. However, salts that accumulated during the upland cropping period are eluviated outside of the farm system due to the effect of waterlogging during the lowland rice period. Salinisation had been prevented by such crop rotation system, although this preventive technology has its limits and permits salts to accumulate in large quantities in the lower soil layer during the lowland rice period if the water

quality of irrigation is poor. Use of large quantities of agricultural water for salt removal is impossible in the present age of economic slump, possibly resulting in collapse of such agricultural system. Rather, this has occurred in reality in the irrigated agricultural regions after a decade has elapsed since independence and is giving rise to increase in system collapse, fallow land and abandoned paddies year to year.

This is not to say that all farms are becoming uncultivatable. Cultivation will still be possible in farms equipped with good drainage system. Cultivation of crops as agricultural region should be continued un regions where such farm environment is available (in terms of both topography and system) while discontinuing the use of poor quality agricultural regions. In other words, zoning shall be implemented based on the detailed study of the entire agricultural regions currently in existence for carrying out drastic reorganisation.

Salt accumulation from agricultural causes is occurring not only in farms but in the neighbouring regions as well with massive salt accumulation already occurring at non-agricultural and unfarmed lands bordering irrigated farmland. This phenomenon can be explained as follows. In practising crop rotation on rice paddies, groundwater level becomes high at the entire farm after a large volume of water is introduced during the cropping season with salts accumulating in the surface layer due to severe evapotranspiration. In uncultivated land, however, accumulated salts are not eluviated to lower elevation through waterlogging as in the case of cultivated land, resulting in enormous amount of salts accumulating in the surface layer. An aerial observation reveals vast salt accumulations in uncultivated areas that are more serious than those found on cultivated areas. Some may not see salt accumulation in uncultivated land as damage because it does not cause any real damage. However, uncultivated land offers an important feeding ground for stock farming which has been the bread-and-butter industry in Kazakhstan. It is a region of production for plants that are fed to sheep and camels. Expansion of "regions where only grass that even camels do not eat" is a great loss for the residents and shall be regarded as "salt damage" for this reason. Salts that accumulate around farms takes a heavy toll of crops be spreading in the form of sandstorm. In this sense, quantity of salt accumulation in uncultivated land is an issue that requires much consideration when determining the viability of agriculture.

(3) Occurrence of wind erosion

In northern Kazakhstan, the damage from soil erosion requires attention in addition to that of dryness from low precipitation. Top soil is impoverished by cultivation that is repeated year after year, making it vulnerable to wind erosion. In particular, the reduction of humous layer rich in nutrients by the strong wind after the snow melting season hinders plant growth. In addition, scattering of fine top soil particles may damage seedlings after they have germinated. Non-turnover deep cultivation method and non-turnover shallow cultivation method were developed around 1950 and has been achieving certain effect to date through repeated improvements. This method is also believed to be effective for securing the winter snowfall in the ground as water resource in addition to preventing wind erosion.

2. Tasks and Measures of Agricultural Development

Animal husbandry in Kazakhstan had been developing steadily by increasing production through expansion of scale under the planned economy, although its low productivity had always been pointed out. The following two points can be raised as the cause of low productivity.

The first point is that proper breeding is not practiced sufficiently at farms. Cattle breed that was brought into Kazakhstan in the past had annual milking volume of 3,500 to 4,000 kilograms. However, genetic performance has declined as a result of not being conserved as pure breed at farms. The government of Kazakhstan is also aware of the need for animal improvement for increasing productivity. During the former Soviet Union days, breeding stock stations were located in each state to offer quality breeds. A mechanism for carrying out animal improvement in a very advantageous manner must have existed. Foot-and-mouth disease and anthrax have also occurred, turning Kazakhstan into what is referred to in Japan as a country contaminated with legal communicable diseases (official diseases) and overseas malignant communicable diseases. High incidence rate of communicable diseases caused by shortage of vaccines leads to lower productivity. Public institutions such as breeding stock stations and livestock hygiene stations must have played a large role in the socialist period. These facilities have become superannuated and are in conditions that are hardly usable. They need to be improved and expanded at an early point in time to cope with livestock improvement and livestock hygiene.

The other is the fact that sufficient volume of feed is not being fed to the animals. For instance, in the case of cattle, all it takes to obtain milk yields is to increase the volume of feed if one is not too particular about the milk composition. However, an insufficient feeding scheme of feeding only 70% of nutritionally required volume was pointed out in the past and continues be pointed out at present. This trend becomes more evident among animals that are raised by sideline management of individuals and is reducing the milk production to half of that from cow that are fed properly.

In certain mechanised system, it is possible to conserve energy and labour from a comprehensive viewpoint of management including cultivation, harvesting, storage and feeding. As large agricultural enterprises take up almost all crop growing area in reality, it is necessary to seek increase in feed production with emphasis on agricultural enterprises if Kazakhstan is to increase her feed production in an efficient manner.

Animal feed production is an area that requires attention in the future because of the large demand that exists for feed inside the country. In addition, we often hear about China promoting her animal husbandry in the recent years and switching from an exporting country to an import country of feed. It is fully possible for Kazakhstan to become the supplier of feed to China.

Deterioration and overgrazing of meadows and pasture area are also emerging as problems. In dry region, considerable time is needed to recover the vegetation once it is lost. Measures will have to be taken at an early point in time including partial revival of nomadic and migratory stock raising.

There are many other tasks to be addressed such as development of quality varieties and regionally-adapted varieties of pasture grass and green forage, offering of seeds and promotion

of agricultural machinery use in feed production.

While it is necessary to offer development support by placing emphasis on the two points mentioned above, priority must be given to maintain the balance between land, feed and livestock from a long-term perspective. In this sense, assistance through feed production would be effective.

3. Tasks Related to Institution

Based on our survey, the current institutional problems of agricultural sector in Kazakhstan can be divided into 10 main groups as follows.

(1) Basic Right of the Farmers to Land

Institutional (including policy-making and implementation) problems strongly suggest that any type of agricultural production organisations or debt settlement program must ensure the basic rights of the farmers to land and other assets in agricultural production organisations. The farm assets were accumulated over the years by the hardship of farmers and efforts of the members, and that farm debt, in turn, was accumulated due to the incompetence of the management and the irresponsible policies of the government and managers. Farmers' entitlement to a share of land and productive assets must remain inviolate and outside of any bankruptcy proceeding. Neglecting this fundamental principle will enviably lead to social disaster, which will probably prove to be much more expensive. As the right of ownership regarding land or machinery cannot be strictly called private in Kazakhstan, member-worker continue to function in a much worse condition of kolkhoz–like environment in the past.

The crucial point is that the value of any land to be privatised depends upon the availability of complementary inputs. For traded inputs this is related in return to the availability of credit and perhaps issues of monopoly pricing. For irrigated land, the land will be of much lower value if its privatisation is not accompanied by guarantees of continuing availability of water at a reasonable price. Ideally, the decisions should be based upon agronomically well-backed economic criteria, but in practice decisions about the future of the irrigation network are likely to be highly politicised

(2) Types of Viable Farms

All types of farms in Kazakhstan are adopted according to the blue prints and bureaucratic procedure designed by the government and not according to the needs of market mechanism and participation of farmers. These laws and regulations were ordered to the prefectures for implementation. But as each orders or regulations are strongly influenced by the political and ethical situation of each prefecture under the same order and regulations, there appeared different and very complicated types of farm management. On the other hand, in spite of the lack of enough production inputs such as active agricultural machineries, fertilisers or even water supply and market–oriented managers, the farms size are extremely large as those of the Soviet period and have not reduced to more manageable size.

Volume indices of agricultural output (plant growing and animal husbandry produce) at constant price shows that while it has declined drastically between 1993 and 1999 for all types of farms and specially for large scale agricultural enterprises, those of households plots and

peasant private farms have increased.

(3) Scarification of Animal Husbandry during Collectivisation and Privatisation Periods

In the process of the Soviet Farm Collectivisation the number of cattle in Soviet decreased from 4.8 million in 1930 to less than one third, 1.6 million in 1933. Same trend happened after the independency and privatisation program in Kazakhstan. The number of the dairy cattle, bull, sheep/goat, pigs, have decreased drastically from 9.8 ; 3.4 ; 35.6 ; 3.2 million in 1990 to 4.0 ; 1.9 ; 9.6 ; 0.9 million in 2000, respectively. Aggravation of the social life of farmers during the transition period have forced them to sacrifice their productive factors to protect their family by slaughtering or exchange for cash.

(4) Farm Managers Mentality and Economic Thought.

Farm managers, especially those of production cooperatives, joint stock enterprises or limited liability partnership, managed the production unit during Soviet as the director of kolkhoz with the almost the same mentality. This mentality has led the managers to act as a production maximiser rather than profit maximiser.

The form of farm organisations favoured by the authority, the partnership with limited liability, typically of significant size (3-5 partnership created from a single producer cooperative) is currently untested in Kazakhstan. Observation shows that there are no strong grounds for believing that the partnership type agricultural production organisation will form an enduring and effective from of farm production organisation in this country.

(5) Concentration of Productive Factors

The concentration of land and non-land asset ownership in the hands of a few individuals have reduced the status of the farm workers in the production unit from shareholders to the new type of worker or proletarian exploited by the bigger shareholder or by the input supplier. On the other hand, concentration of farm assets at the time of formation of the partnership tends to reduce the options for subsequent farms restructuring into more viable smaller production group or into farmer owned family farm.

(6) Access to Facilities

Despite the commercialisation process in the country, rural finance continues to be administered by the state and discriminates in favour of farms under former kolkhoz directors. When Kazakhstan offered cultivators with fifty-year land leases that could be passed on, most of the leaseholders discovered that they could not effectively manage their farms because they could not afford inputs and lacked access to credit. Conservatives used this episode in 1992-1993 as evidence of the unfeasibility of land privatisation and capitalism system.

(7) The Problems of Civil Code and Bankruptcy Law

The Civil Code in Kazakhstan imposes a serious asymmetry on member– shareholders in agricultural production cooperatives, which comprise half of the farm enterprises in the country, and other legal forms, such as limited liability partnerships and joint stock companies. Cooperative members in Kazakhstan do not enjoy the protection of limited liability: first, their land shares (individual land use rights) are treated as part of the asset pool available for

satisfying the claims of the creditors. These legal provisions may clearly lead to total ruin of large segment of the rural population, leaving them destitute without any land or assets.

Regarding the legal rights of rural population in any procedure that attempts to liquidate and restructure the indebted farms, the case of Kazakhstan provides an illustration of the dangers to which rural population is exposed by the indebtedness of farm enterprises in the absence of clear property rights in land and assets.

To avoid being stripped of all property in farm bankruptcy proceeding, individuals can take their land and assets shares out of the production cooperative and lease them to a limited liability partnership, where leased assets are not subject to bankruptcy sale.

But its seems that this kind of option has been abused by some farm managers in Kazakhstan, who register a limited liability partnership, entice cooperative members to lease their land and asset shares to new entity (which effectively means to the manager personally), and then exploit and cheat them out of their legal rights and dispossess them of all property by a combination of real and imaginary. According to some reports, in some unfavourable areas, bankruptcy is essentially leaving farms without any equipment for production, which is sold at throw-away prices in liquidation auctions and typically removed from the area.

These harmful implications of the Civil Code in Kazakhstan and the Bankruptcy Law highlight social deficiency of the present legal framework, which must be amended to prevent further damage to the rural sector of the economy.

(8) Government Support at the Entail Stage

It is true that Soviet as a state collapsed not because of ideological causes, but rather went bankrupt as a financial mammoth unit. However, it should be remembered that agricultural sector in Kazakhstan needs the government support through the appropriate policy. In addition to the legal deficiency mentioned above, allocation of government credit to agriculture virtually ceased in 1998-99, and bankruptcy began to be enforced as the major policy of dealing with farm reforms. A dramatic decrease of credit facilities from government exposed all kind of farms, especially peasants and household's type, to the exploitation of credit supplied by input suppliers. This policy should be changed to prevent further damage to the agricultural sector of the economy.

(9) Tendency Toward Oil-Dependent Economic System

It is a very critical point to mention that gradual tendency toward the oil-dependent economic system will not only contributes to the much more declining of viability of agricultural sector in Kazakhstan like Iran, but also will prevent the country from developing toward a viable and highly sophisticated agricultural and industrial structure in the future.

(10) Rural Social Crisis

Social crisis of the rural population and agricultural sector (crop producing and animal husbandry) in Kazakhstan forced the government announced a program on June 3, 2000 against poverty and unemployment for 2000-2002. However, that is not enough. Before independence, work-capable rural population in Kazakhstan has been employed in 411 collective farms and 2118 state farms with high social protection. The hasty transformation of economy onto market economy, sudden decline of agricultural sector, and measures related to

reformation of the rural economy have lead to social-life deterioration of rural people. All these phenomena have directed to sudden income shortening of the people. The vast majority of the population live below the poverty line. The sudden decline of agricultural sector, is therefore forcing rural people to immigrate from villages into the cities. The current critical social situation of rural population of Kazakhstan requires the immediate measures. Therefore, social and agricultural policies in Kazakhstan should firstly be directed into solution of problems by reviving the rural economy as a whole, especially the economy of farms, with the full support of the government at this stage of transition.

4. Tasks related to fostering of farmers

(1) Need for fostering farmers

Kazakhstan used to be a country of Kazakh people that made their living with nomadism as their bread-and-butter job. Around the time of the Russian Revolution, the country's population ratio was 57.1% Kazakh, 19.7% Russian and 13.2% Ukrainian. After the revolution, the Soviet Government relocated a large number of Russians to this area with the intent of cultivating the northern steppe region. Since large-scale agriculture required many engineers that could not be found among the nomadic Kazakh people, there was a need to bring such engineers from the agricultural regions of Russia and other countries. It is said that more than 640,000 people migrated into Kazakhstan between 1954 and 1956 alone. They included 390,000 agricultural machinists, 50,000 construction workers, more than 20,000 grain storage workers, 3,000 health care professionals and 1,500 teachers (cf. Nomura; *Kanso Chitai no Kaihatsu to Shakai: Sobieto Chuo Ajia*). Although there is shortage of statistical data on migration of agricultural engineers to the large-scale irrigation agriculture region in the southwestern Syr-Dar'ya basin that was subsequently developed, it appears that Koreans were relocated to the paddy-growing region (e.g. Kzylorda and Almaty Oblast).

Such settlement and collectivisation must have been an extremely painful policy for the nomadic Kazakh people. It is said that 1,130,000 Kazakhs migrated outside of the country during the period of collectivisation and 676,000 of them never returned to Kazakhstan. Labour at collective farms compelled the Kazakh people to convert from nomads to farmers. While it is certain that that this policy offered Kazakhstan the foundation for large-scale agriculture, the state of agriculture in the country today suggests that this policy—which was started not by the desire of the Kazakhs but by the demand from he Soviet Union, particularly Russia—is casting a shadow on the site of agricultural production after the collapse of the Soviet Union and independence of Kazakhstan.

As mentioned earlier, both wheat production and lowland rice production expanded and developed exponentially after Russian engineers and Koreans were sent to the northern region and the paddy region of the Syr-Dar'ya basin, respectively, of offer guidance. It was not the Kazakhs that supported this development; rather, it was the Koreans with farming skills in lowland rice and cotton cultivation and the Russians and Germans in wheat cultivation. For instance, in a lowland rice sovkhoz in the Ili River basin, Koreans worked as chairman and agricultural engineers in the early stage of settlement, although Koreans lost their posts to the Kazakhs and were sent off in many occasions after the organisation became viable as lowland

rice sovkhoz. However, it is not the intent of this report to elaborate on the sad history of the Koreans as ethnic minority.

Paddies of sovkhoz from which the Koreans were expelled have been affected by massive intrusion of weeds and reed to the extent that one cannot tell the crop that is being grown in some parts of the paddy. Sights such as this were never observed when Koreans, who are agricultural people, were involved. In farms growing vegetables in the suburbs that became popular after the independence, those managed by Koreans and those managed by Kazakhs appear totally different with the former appearing much better than the latter in every aspect from furrowing to weeding.

The Koreans and the Germans are the people capable of implementing such elaborate farm and cultivation management. One often encounters a situation where he cannot help but question whether the agriculture in Kazakhstan, which started as a mere part of the Soviet Union's specialised production system, has really taken root among the Kazakh people as skill or bread-and-butter job over the period of last 60 years.

Agricultural productivity of Kazakhstan as a whole has declined to an extremely low level amidst the tidal wave of shift to market economy and disbandment and privatisation of collective farms that followed the country's independence. While this is primarily caused by shortage of agricultural materials (fertilisers and agricultural chemicals) and superannuation and non-renewability of agricultural machinery, it appears that there are other reasons. As mentioned earlier, devastation of agricultural technology is one the significant causes. The devastation of agricultural technology in the context of this report can partially be explained as dropout of agricultural engineers from respective production organisations, although a more adequate cause can be traced down to the aptitude of the Kazakh people that are comprising the production organisations for farming. The entire process from raking of the farm to sowing, fertilisation, water management, harvesting, hulling and milling has been performed under complete division of labour since the sovkhoz days with well-seasoned farm labourers assigned to each process. Agriculture, however, needs the skills for connecting these different processes. Any defect in the previous process will have to be recovered in the following process and good raising management requires ingenuity according to the degree of crop's growth. Abilities and skills for observing and coping with these various stages are required. The capacity for addressing these requirements has been tentatively referred to as "aptitude for farming." Observing the agriculture and constituents of Kazakhstan from this viewpoint, one must ask the question whether farmers really exist in Kazakhstan. There is no question about the existence of many hired agricultural labour. However, do farmers really exist?

The government succeeded in settling and collectivising the pastoral people, reclaiming large-scale agriculture and attaining a certain level of production. They were also successful in maintaining consistency as far as agriculture for the Soviet Union as a whole is concerned. However, the agriculture of Kazakhstan has no choice but to follow a course of collapse now that assistance from the state has been disrupted. In other words, the policy that attempted to convert pastoral people to agricultural people has yet to succeed after 60 years of time. An important task for the Kazakh agriculture lies in fostering farmers that can devote themselves to agriculture as bread-and-butter job. Farmer education as a part of the state support system for agriculture is needed.

Conclusion: Direction of assistance

Transition of economic system brought about dramatic changes to Kazakhstan. It has dealt a devastating blow to agriculture by failing to lead to improvement of productivity. As mentioned in the introductory section, it is an outcome of simply making the transition to market economy without having the perspective on the prerequisite for realisation of capitalist market economy.

Needless to say, there is a need for a norm on credit and contract as a prerequisite. In this sense, "ethics" must exist as a prerequisite for the foundation of finance (credit) to function fully. Although details will be omitted here, the people that were born and raised in the socialist planned economy that was supposed to have been engaged in efficient production under "streamlined plan" must have found it totally unexpected to have to play the functions that had been played by the state.

The basic skill that characterised the capitalist market economy is double-account system. It is only after the introduction of double-account system that clear cost accounting and depreciation of movable property becomes possible. Without it, it is not possible to perform continuing farm management. Executing this requires clear understanding of concepts such as "profit" and "expenses." However, this is not easy as it sounds. Even some Japanese companies go bankrupt even when it is making profit. Although there are various reasons behind this, it is not rare that a company assumes it is making money but was in red in reality after deducting the amortised expense.

Farmers of Kazakhstan—although it is not certain whether farmers in the true sense of the term exists, but referring to those engaged in agriculture at kolkhoz and sovkhoz—were not able to cultivate if they were not provided with agricultural machineries, and was not particularly a problem for farmers in a communist society who were able to obtain a certain amount of rations even when they were not working. The people that got into trouble were those high up in the chain of command, drafted the plan and were ordered to achieve the target. It was them that had been procuring the agricultural machineries to achieve the targets that had been given to them. The farmers did not have to worry about the base of agricultural production for nearly 70 years. There will inevitably be shortages, but it was not taken so seriously because minimum life was guaranteed by the government under the principle of communism. However, as liberalism, capitalism and market economy were suddenly introduced with the collapse of the Soviet Union, they were told that the assets will be allotted but were on their own thereafter. That brought a near hopeless situation for the farmers who never had the opportunity to think about the overall management amidst the ever-deteriorating economic environment.

A society that did not have the concept of "profit" or "expenses" in the first place existed there. Even in societies where such concepts that are natural to us exist, it is not easy to grasp them in a strict manner. Furthermore, one cannot overemphasise the difficulty of telling people who were raised in an environment where such concept did not exist and only had to think of their quota in the context of specialisation to do everything by themselves.

As mentioned earlier, agriculture in Kazakhstan has an aspect of requiring large-scale cultivation with the use of large machineries because of her natural condition and historical background. While agricultural machineries are indispensable, they are ceasing to function owing to lack of repair parts and renewal.

Machineries had been supplied to Kazakhstan from the Soviet Government prior to independence. After the independence, a decision was made to renew on an agricultural productive society basis although renewal was not possible in the majority of organisations. For this reason, the number of large machineries in 1995 was down to 50% compared to that in 1991. The figure has now gone down to 20%. The machineries currently in possession are being barely operated by slapping together usable parts from disposed machines. Whether the supply of large machineries is possible will determine the future of agriculture in Kazakhstan. However, agricultural machineries will have to be imported from Russia and other countries because industry for manufacturing such machineries does not exist inside Kazakhstan.

However, as mentioned earlier, supplying machineries as aid will only mean that developed countries are supplying the machineries instead of Soviet Union to repeat the same mistake unless the mentality of the people using the machineries changes. Assistance for large agricultural machineries is needed to hold back the collapse of agriculture for the time being, although fostering of farmers as agricultural entrepreneurs and introduction of agricultural management techniques are more important in the long run. Moreover, there is a decisive need to offer education and training to researchers, university staff and agricultural extension workers for offering guidance to the leading farmers.

At the same time, the system is implemented in such a way that bankruptcy of agricultural enterprises can be advanced right and left. Farmers in some agricultural entities are becoming entities that simply offer labour to the capitalists without any means of protecting themselves. In some cases, they were being offered agricultural machineries and agricultural inputs in return for offering their land. They are also paid in cash when there is profit but are usually paid in kind by farm produce. What should we make of the present situation where these farmers feel that they are better off than their counterparts in other agricultural enterprises? Only the market-based principles are introduced in a situation where the preconditions for capitalism has been lost and creating a situation of agricultural exploitation and farmer exploitation. For this reason, the premise would be for Kazakh government to review the country's system with emphasis on intellectual support including legal framework incorporating such concept.

Chapter 6

Survey Member, Cooperator, Itinerary and Collected Material

1. Survey Committee

(1) National Committee

Dr. Kawano Shigeto	Emeritus Professor, The University of Tokyo
Dr. Hara Yonosuke	Director, Institute of Oriental Culture, The University of Tokyo
Dr. Isida Norio	Professor, Graduate School, Kyoto University
Dr. Naghizadeh Mohammad	Professor, Meiji Gakuin University
Dr. Fukui Seiichi	Professor, Graduate School, Kobe University
Mr. Takuya Wada	Researcher, Fukui Prefecture Livestock experiment
Mr. Hirose Tsuguo	Executive Director/ Secretary General APDA (Asian Population and Development Association)
Mr. Kusumoto Osamu	Assistant Secretary General/ Senior Researcher APDA
Ms. Hoshiai Chiharu	Manager, International Affairs, APDA
Ms. Kato Yuko	Manager, External Relations, APDA

(2) Survey Member (July 25, 2001-August 13, 2001)

Dr. Isida Norio	Survey Team Member
Dr. Naghizadeh Mohammad	Survey Team Member
Mr. Wada Takuya	Survey Team Member
Mr. Kusumoto Osamu	Survey Team Member

2. Cooperators

(1) The Embassy of Japan and JICA

Mr.Tateyama Akira	Charge'd affairs
Mr.Hosaka Masayuki	First Secretary
Mr.Hashimoto Fuminari	JICA Expert

(2) Government of Kazakhstan and Institute

- Dr. Edil E. Ergozhin, Vice-minister, Ministry of Education and Science
- Dr.Ispolov, Rector for International Relations, Kazkh State University of Agriculture, Ministry of Education and Science.
- Dr. Iskakov Ayup, Vice-rector for International Relations, Kazkh State University of Agriculture, Ministry of Education and Science.
- Dr, Moldashev Artinvek, Deputy Director, Research Institute on Economy and Organization of Agriculture, Ministry of Education and Science.
- Dr. Vladimir V. Grigoruk, Professor, National Academic Center for Agricultural Research.
- Dr. Argingazy A. Yegeubayev, Head of the Department for Agricultural Animals, Kazkh State University of Agriculture, Ministry of Education and Science.
- Dr.Mardan Zhumanov, Professor, Kazkh State University of Agriculture, Ministry of Education and Science.
- Mr. Lutpulla Omarbakiyev, manager, Farmer Higher School, Kazkh State University of Agriculture, Ministry of Education and Science.
- Golovanov Alexander, Director, Kazakhstan Farmer News paper, manager, Agro-Inform, Kazkh State University of Agriculture, Ministry of Education and Science.
- Dr. Kurishbayev Akhybek Kazhigulovich, Director, Barayev Kazak Research Institute of Grain Farming, Ministry of Education and Science.
- Ms. Anar Sheshmukhanova, Temputes Information Point in Kazakhstan, Ministry of Education and Science.
- Mr. Nurmagambetov Amantai, Al-Farabi State National University,
- Mr. Alikhan A. Smailov, Chairman, Agency on Statistics of the Republic of Kazakhstan

- Mr. Amangeldy Taskuzhin, External Relations Department, Ministry of Agriculture,
- Mr. Tauret Kawazobich, Strategic Department, Ministry of Agriculture,
- Mr. Dzhananov Gabdolla, External Relations Department, Ministry of Agriculture,
- Mr. Maulen Utegulov, Deputy Director of the State Budget Department, Ministry of Finance
- Ms. Aigul Abilbekova, Deputy Head of Division, Ministry of Finance
- Ms. Aiman Ospanova, Chief Economist, Ministry of Finance
- Ms. Khorlan Izmailova, eproductive Health Programme Coordinator, UNFPA
- Ms. Galiya Kurmangalieva, Programme Assistant, UNFPA
- Ms. Svetlana Islamova, National Programme Officer, Chief of Social Development Unit, UNDP
- Ms. Aida Karazhanova, Senior Programme Assistant for Environment and Sustainable Development Unit, UNDP
- Dr. Vladimir V Grigoruk, Professor, National Academic Center for Agricultural Research.
- Dr. Tulbasiyeva Lazet Ermekovna, Ministry of Education and Science, Republic of Kazakhstan.
- Mr. Hon Wang, Resident Representative in Kazakhstan, Asian Development Bank.(ADB)
- Ms. Tatiana Simonova, Project Implementation Officer, Kazakhstan Resident Mission, Asian Development Bank.(ADB)
- Ms. Rie Hiraoka, Poverty Reduction Specialist, Education, Health & Population Division, Asian Development Bank.(ADB)
- Mr. Bulat Utkelov, Economist, The World Bank
- Mr. Kali Satpev, Head of District, Bakbakthi District
- Mr. Serikaev Zhalgasbek, Chairman., Abdigulov Agricultural Cooperative
- Mr.Alnabaev Abilkakim, president, Krasnoyarskoye LTD, Tselinograd District, Akmola Region.

- Mr.Galy Zhunisbekov, Plem Zavod Almaty cooperative-milk production unit at Targar District

- Mr.Erzhan Ayapergenov, Plem Zavod Almaty cooperative-milk production unit at Targar District

Survey Schedule

- Kazakhstan-

July 25th Sat (Wed)

- 14:55 Depart from Narita 17:20 Arrive at Incheon (Korea) (Nagisadeh, Kusumoto)
- 15:20 Depart from Kansai 17:05 Arrive at Incheon (Korea)(Ishida, Wada)
- 19:00 Depart from Incheon by Asiana Air (OZ5775) 23:40 Arrive at Almaty

July 26th (Thu)

- Discuss about survey program with Dr. Iskakov Ayup, Vice Rector of Kazakh State University of Agriculture
- Visit to Kazakhstan Agricultural University. Briefing on Agriculture of Kazakhstan and sustainable development from Dr. Yespolov, Rector.

July 27th(Fri.)

- Visit to the Embassy of Japan. Briefing on Agriculture and Rural Development in Kazakhstan. Discuss about the survey program with Mr. Akira Tateyama Charge D'Affairs and Mr. Masayuki Hosaka, First Secretary.
- Visit to UN Office. Briefing on reproductive health programme from Ms. Imanbaeva, Director of the project on Reproductive Health. And briefing about social program from Ms. Isanova, Manager of Social program.
- Visit to Kazakhstan Agricultural University. Discuss about system of Agriculture in Kazakhstan with Professor Dr. Madiev Galizhan.
- Visit to Research Institute Economy and Organization of Agriculture. Briefing on Agricultural organization in Kazakhstan from Mr. Moldashev Artinvek, Deputy Director.
- Visit to Agency of the Republic of Kazakhstan on Statistics. Briefing on Statistical system in Kazakhstan from Mr. Samailov, Chairman.

July 28th(Sat)

- Conduct Hearing survey at Abdigulov Agricultural Cooperative. Briefing on agricultural production at Abdigulov Agricultural Cooperative by Mr. Serikaev Zhalgasbek, chairman.
- Visit to Central Market. Conduct hearing survey.

July 29th (Sun)

- depart from Almaty(9Y730) 14:30 arrive at Astana
- Discuss about survey program in Astana with Ms. Anar Sheshmukhanova, Ministry of

Education and Science.

July 30th (Mon)

- Visit to World Bank office. Meeting with Mr. Bolat Ukcelov, economist. Discuss about World Bank project in Kazakhstan and present situation of Agriculture in Kazakhstan.
- Visit to Ministry of Agriculture. Discuss about survey program in Astana Area with Mr. Taskujin Amangeldy, head of external Relation department.
- Meeting with Mr. Hashimoto Fuminari, JICA ODA Adviser. Briefing on Present situation of International cooperation to Kazakhstan.

July 31st (Tue)

- Visit to Ministry of Agriculture. Briefing on Agricultural Development Policy, Mr. Tauret Kawazobich, head of Strategic Department.
- Visit to Ministry of Economy and Trade. Briefing on National Development Plan and Policy with Mr. Sarsenbai, Director of Regional Policy and Programs Department..
- Visit to Ministry of Finance. Briefing on National budget and Tax system of Kazakhstan. Mr. Maulen Utegulov, Deputy Director of the State Budget Department.

August 1st (Wed)

- Visit to Agricultural University in Astana. Briefing on Agricultural extension service in Kazakhstan from vice rector.

August 2nd (Thu)

- Visit to ADB Office. Briefing on ADB related development program from Mr. Hong Wang, resident representative in Kazakhstan.
- Pay a courtesy call to Dr. Edil E. Ergozhin, Vice Minister of Education and Science. Briefing on outline of Agricultural research and research system in Kazakhstan.

August 3rd (Fri)

- Visit to Nura TOO (Co. LTD) at Rozhdestvenska District (40km from Astana). Conduct hearing survey from , Chairman of Cooperative.
- Rozhdestvenska District Office. Data collection.
- Visit to Krasnoyarskoye Ltd. at Krasnoyarska District (70km from Astana). Conduct hearing survey from Mr. Alnbaev Abilkakim, president.

August 4th(Sat)

- Move from Astana to Shortandy (50km from Astana). Visit to National Academic Center for Agrarian Research center of the Republic of the Kazakhstan Barayev Kazk Research Institute of Grain Framing. Briefing on issues of wheat production in Kazakhstan, Land degradation, and cropland decrease from Dr. Kurishbayev Akhylbek

Kazhigulovich, Director.

August 5th (Sun)

- Revising survey questionnaire.

August 6th (Mon)

- Visit to Ministry of Agriculture, Material Collection.
- Visit to ADB Astana Office, Material Collection
- 15:45 depart from Astana(9Y740) 17:30 arrive at Almaty.

August 7th (Tue)

- Visit to UNDP Aral Sea Project Office. Briefing on Aral Sea Project from Dr. Aida Karazhanova, senior Programme Assistant.
- Visit to Kazakh State Agrarian University. Briefing on Agricultural Extension system and Livestock farming from Dr. Argingazy A. Yegeubayev, Head of the Department for Agricultural Animals Feeding and Fodder Production.

August 8th (Wed)

- Visit to National Academic Center for Agricultural Research. Briefing on Privatarization, tax system and agricultural policy in Kazakhstan from Dr. Vladimir V. Grigoruk, professor.
- Visit to Pediatric Center of Kazakhstan. Material Collection.

August 9th(Thu)

- Visit to Bakbakthi District (180km from Almaty). Conduct hearing survey from Mr. Kali Satpev, Head of District.
- Visit to Arkada Co. Tasmyryn Too, Conduct hearing survey.

August 10th(Fri)

- Visit to Plem Zavod Almaty cooperative-milk production unit at Targar District (30km from Almaty). Conduct hearing survey.

August 11th(Sat)

- Visit to farm household (35km from Almaty). Conduct hearing survey.

August 12th(Sun)

- Day off

August 13th(Mon)

- 11:00 Visit to Al Fazabi University.

- 12:00 Visit to Embassy of Japan. Report the survey results.
- Discuss about survey result and follow up survey with Dr. Iskakov Vice rector of Kakzakhstan State University of Agriculture.
- 22:30 Depart from Almaty by (Kazakhstan AIR 9Y305).

August 14th(Tue)

- 06:50 Arrive at Incheon (Korea)
- 10:20 Depart form Incheon by NH6952 Arrive at Kansai 11:40(Ishida, Wada)
- 09:20 Depart form Incheon by KE70 Arrive at Narita 11:35(Nagizadeh, Kusumoto)

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17. World Bank, Review of Farm Restructuring (A Report Prepares for the FAO/World Bank Cooperative Programme on behalf of the Government of Kazakhstan), 1999

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26. Japan Research Association of Kazakhstan. JRAK Survey Report No.7, 2000(Japanese Version)

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