Highlights on four livestock sub-sectors in Kazakhstan

The meat sub-sector

THE MEAT SUB-SECTOR CONTENTS

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These "Highlights on four Livestock sub-sectors in Kazakhstan" have been prepared by the FAO Investment Centre Division in collaboration with the Analytical Centre of Economic Policy for the Agricultural Sector (ACEPAS); a company belonging to Kaz-agroinnovation of the Ministry of Agriculture (MoA) of Kazakhstan. The work has been financed entirely by FAO. The purpose of these reports is to help potential investors acquire basic knowledge about the technical features of the meat, dairy and wool sub-sectors in Kazakhstan as well of their domestic and international market positions.

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CONTENTS

A. MARKET ANALYSIS 7
International meat production and trade 7
Potential markets and comparative production costs for Kazakhstan meat 10
Quality and safety standards. 17

B. ANALYSIS OF MEAT PROCESSING AND THE CONSUMER GOODS INDUSTRY 18
Overview of processing enterprises and their current situation. . . 18
Value chains. 19
Raw material and dynamics of processing. 22
Dynamics of meat processing and consumption 24
Analysis of meat prices 26
Perspectives and barriers 29

C. PROFIT AND LOSS ACCOUNT AND FINANCIAL/RISK ANALYSIS OF MAIN PRODUCTION MODELS. 38

D. DEVELOPMENT OPTIONS: MAIN INVESTMENT DIRECTIONS AND IMPLEMENTATION MECHANISMS. 45
Sub-sector strengths, weaknesses, opportunities and threats (SWOT) analysis. 45
Opportunities 45
Strengths 45
Threats 46
Weaknesses 47
Overall development strategy, programme components and implementation approach 49
Component 1: Pasture-based production and rural services 52
Component 2: Pork development 57
Component 3: Feed milling development 58
Component 4: Development of slaughter, processing and trade . . 60
Component 5: Government support services and financing facilities . . 64

ANNEX 1: Reference Tables 69

ANNEX 2: Summary of Technical Regulation Requirements for Safety of Meat and Meat Products 111

ACRONYMS

ACC	Agro Credit Corporation
ACEPAS	Analytical Centre of Economic Policy for the Agricultural Sector
ACP	Agricultural Competitiveness Project
ADG	average daily gain
AE	agricultural enterprise
AI	artificial insemination
AWEX	Australian Wool Exchange
CIP	carriage and insurance paid
CIS	Commonwealth of Independent States
CKD	centre for knowledge dissemination
CPI	Consumer Price Index
CU	Customs Union
DOC	day-old chick
DP	duty paid
ELISA	enzyme linked immunosorbent assay
EMI	AWEX Eastern Market Indicator
EU	European Union
FAS	Foreign Agriculture Service
FCC	Food Contract Corporation
FCR	feed conversion ratio
FMD	foot-and-mouth disease
FOB	free on board
GAIN	Global Alliance for Improved Nutrition
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GEF	Global Environment Facility
GlobalGAP	Global Partnership for Good Agricultural Practice
GMP	good management practice
GPS	Global Positioning System
HACCP	Hazard Analysis and Critical Control Points
HHF	household farm
HPAI	highly pathogenic avian influenza
ICT	information and communication technology
IFI	international financial institution
ISO	International Organization for Standardization
ISTC	International Science and Technology Center
IWTO	International Wool Textile Organization
JSC	joint stock company

KAF	Kaz-Agro-Finance
KAI	Kaz-Agro-Innovation
KAM	Kaz-Agro-Marketing
KPI	key performance indicator
Kaz-Memst	Committee for Technical Regulation and Metrology
LEI	Agricultural Economic Institute at Wageningen University in the Neterrlands
LLP	limited liability partnership
LSU	livestock unit
LW	live weight
M&E	monitoring and evaluation
MDF	modern dairy farm
MDP	milk and dairy product
MoA	Ministry of Agriculture
MOC	Mal Onimderi State Company
MPE	milk processing enterprise
NWA/C	national wool association/ council
OECD	Organisation for Economic Co-operation and Development
OIE	World Organisation for Animal Health
PF	peasant farmer
R&D	research and development
SBM	soybean meal
SFM	sunflower meal
SPS	sanitary and phytosanitary standards
SZTS	service-purchasing centre
SW	slaughter weight
SWOT	strengths, weaknesses, opportunities and threats
T	tenge
TB	tuberculosis
TBT	technical barriers to trade
TCP	Technical Cooperation Programme
TRQ	tariff rate quota
UHT	ultra-high temperature-treated
UKPF	Ust-Komenogorsk Poultry Farm
USDA	United States Department of Agriculture
VAT	value-added tax
WAHID	World Animal Health Information Database
WAHIS	World Animal Health Information System
WHO	World Health Organization
WME	whole-milk equivalent
WPT	wool primary treatment
WTO	World Trade Organization

A MARKET ANALYSIS

International meat production and trade[1]

Geography of meat production: A summary of global production and trade of meat is presented in Table 1.[2] World demand for meat is steadily increasing, mainly as a result of the growing demand in China and other emerging countries. The share of world trade in meat is less than 10 percent, meaning that most meat is consumed in the country where it is produced. Were the European Union (EU) to be considered as a single trade block in the statistics – as in fact it is – world trade in meat would be even smaller. Kazakhstan's shares in world meat production are 0.6 percent of beef, 0.9 percent of mutton, and 0.2 percent of pork. Thus, export activities from Kazakhstan do not have an influential impact on world prices.

Worldwide, meat production is correlated with the availability of pastures, grains or logistics and seaports for easy import of grains. Examples of countries for which trade statistics are shown in Table 2 include:

- United States of America: cheap grains, but insufficient pastures;
- Australia: sufficient pastures and grains;
- Brazil: pastures, soybeans and insufficient maize;
- Netherlands: seaports and a large consumer base across the border with Germany.

In addition to these resources, these countries have fully developed agricultural research networks, good farmer education, service infrastructure for the farming sector, and advanced meat processing sectors.

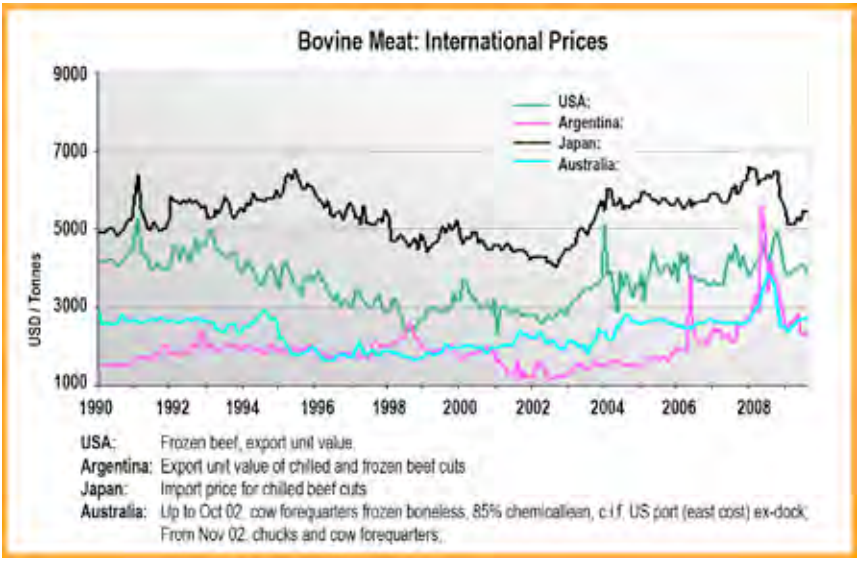
Kazakhstan has both pastures and a grain surplus, but it is landlocked. This is of lesser importance for regional exports (the Russia Federation and, possibly, China and Egypt).

1.- FAO provides global market analysis at www.fao.org/docrep/011/ai482e/ai482e08.htm.

2.- Here and elsewhere, the tables that are not incorporated in the text are provided in Annex 1. Those in the text are prefixed by a letter – Table A.1, etc.

World market prices and trends: International price trends for beef are presented in Figure 1, which has some interesting features. First, although prices have fluctuated in the range of 20 to 30 percent, there has been very little increase in prices over the last 20 years, not even in nominal terms or during the period of higher prices due to the grain crisis of late 2007. This means that in real terms, the prices of beef have decreased. This most likely reflects the steady improvement of labour productivity in the agriculture sector of leading producer countries. Therefore, competing in the world market for beef requires continuous innovation and restructuring. A second feature is the large price differences among different cattle meat sources and kinds. These are not related to transportation costs, but to product specifications and trade opportunities. Japan is selective regarding meat exporting countries, in view of the sanitary conditions it imposes. The Japanese market pays high prices for chilled (fresh) meat of premium quality. At the other side of the spectrum, Argentina sells its meat with difficulty. The Russian Federation is an important market for Argentina, but imposes restrictions.

Figure 1: International price trends for beef



Import quotas are often "rented",[3] adding to the differences in prices at export harbours and ports of destination. Furthermore, most Argentinean exported beef is frozen, which is cheaper than chilled meat. Only rarely, in the case of international shortages, does the market in Argentina appear to become a sellers' market. For Australia, Figure 1 shows the landed costs in the United States of America of mainly frozen second-quality beef (forequarters). The landed price is overall higher than the export price from Argentina; this can be explained by transportation. For the United States (dark-green line), export values of frozen beef are shown. This is presumably beef of good quality, but still about USD2.0/kg below the price of chilled imported beef in Japan. The United States is a net importer of beef (Table 2).

It is therefore likely that the international markets are principally interested in high-quality products. It should also be noted that an effective presence in the world market requires the satisfaction of domestic demand for high-quality meat and should not be interfered with by long-term export projects.

Expected trends for the future: The Organisation for Economic Co-operation and Development (OECD) and FAO conducted a forecast study in response to the grain crisis of 2007. The study is based on projections of population and income growth, consumption, oil prices, agricultural productivity, etc. According to these estimates,[4] future prices will be better than those of the previous decade. Growth from the 1998 to 2007 average to the 2008 to 2017 average, in real price terms, might be 18 percent for wheat, 30 percent for coarse grains, and minus 2 percent for beef and pigmeat.[5] The nominal producer price for beef in the EU would increase from EUR 2.56 to 3.06/kg slaughter weight (SW), whereas that in Argentina would increase from USD1.21 to 1.47/kg SW. However, risk analysis scenarios indicate that there is also a down risk (and an upside chance). World trade might increase by between 15 percent for wheat and 40 percent for beef.

3.- Term used by the United States Department of Agriculture (USDA) Foreign Agriculture Service (FAS) in Global Alliance for Improved Nutrition (GAIN) Report No. RS9081.

4.- OECD-FAO. 2007. Agricultural Outlook 2008 to 2017 contains valuable tables (e.g., Table A2 Prices and Table A6 Meat projections), highlights at www.fao.org/es/esc/common/ecg/550/en/agout2017e.pdf.

5.- Approximate figures, from Figure 1.1 in OECD-FAO, 2007.

More likely, the above global price forecasts entail that the price ratio for feed to beef would worsen. This would be a comparative advantage for producers that can rely on the availability of pasture grass.

Potential markets and comparative production costs for Kazakhstan meat

Current levels of production and consumption in Kazakhstan are shown in Table A.1.

Table A.1: Production, exports, imports and consumption of meat and meat products, 2

Product	Herd numbers	Production	Imports	Exports	Used for products[a]	Consumption	Consumption per capita	Production per animal
	('000)	('000 tonnes)					(kg/year)	
Total, excluding poultry		867	57.6	0.4	45.6	878.5	56.4	kg
Cattle/beef	6 008	400	11.7	0.4	16.9	394.5	25.3	66.6
Horsemeat	1 366	66	2.1		2.1	66.3	4.3	48.5
Sheep/mutton and goats	16 938	131	0.3		0.3	130.8	8.4	7.7
Pork	1 384	206	9.1		13.7	201.6	12.9	149.0
Other		6	0.6			6.1	0.4	
Processed offal[b]		12.5			12.5	0	0.0	
Sausages	40.5	41	28.4			68.9	4.4	
Canned meat	5	5	5.4			10.4	0.7	
Poultry	30 687	65	132.6	2.5		195.4	12.5	2.1
Total, all meat		932	190.2	2.9	45.6	1073.9	69.0	

[a] Breakdown of meats used in the processing estimate.
[b] Offal used for direct consumption is not included in the data.
Source: Statistics Agency of the Republic of Kazakhstan, Custom Control Committee under the Ministry of Finance of the Republic of Kazakhstan.

Markets: Important surplus and deficit countries for meat are listed in Table 2. Those in the vicinity of Kazakhstan are the Russian Federation, China, Ukraine, Egypt and the United Arab Emirates. However, the main consumption centres of China are a great distance from Kazakhstan. The

Chinese market for pork will undoubtedly be difficult because Chinese farmers are traditionally skilled pork producers and have adopted new technologies using breeding material from EU countries. A FAO report[6] states that the market for beef in China is depressed owing to strong competition from pork, so Chinese producers are leaving the market. It is thus unlikely that Kazakhstan will gain from this market. Ukraine is a net importer of meat, particularly poultry and pork, but exports beef to the Russian Federation. It should have ample potential to recover its livestock sector based on its large surplus of grains. Ukraine is not likely to be of interest as an export market for Kazakhstan in the long term. Egypt and the United Arab Emirates are structurally deficit countries, because they lack soil and water resources for expanding agriculture. Kazakhstan should certainly integrate these countries into its long-term strategies for agricultural exports. The Russian Federation is obviously the first market to consider: it has a large deficit for meat, is nearby, uses the same business language, and is a member of the recently established (1 January 2010) Customs Union (CU) with Kazakhstan and Belarus. Through participation in the CU, Kazakhstan will be shielded from international competition, because imports are subject to a quota system under which prohibitive tariffs are levied on quantities above the quota. High-level contacts between the Russian Federation and Kazakhstan underscore the intention to develop an export line.[7]

Comparison of production costs: Whether Kazakhstan can be competitive in export markets depends on the internal market demand. If local demand exceeds production and domestic prices are too high, it will not be possible to export. On the other hand, where there is surplus production, the bottom line is determined by the costs of production.

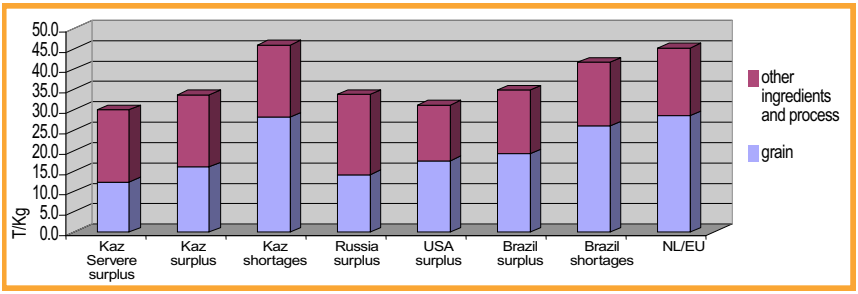
6.- FAO. 2009. Food Outlook, June 2009. Rome.

7.- KAZINFORM 14 December 2009/20:35 reports: "Russian beef market attractive for Kazakhstan suppliers". The Prime Minister had discussed this issue during his visit to St. Petersburg the previous week. The Russian side agreed to let Kazakhstan supply agricultural products that comply with all sanitary norms.

(a) Feed grains and feed

The cost of feedgrains is the main key to comparing the production costs of meats. Table 3 compares the costs of grains for feed users in Kazakhstan, the Russian Federation, Brazil and the United States of America. When protection levies do not exist, or are not considered, differences in costs result from transportation costs to or from the market, depending on whether there is a shortage of grains or an oversupply. For Kazakhstan three situations are considered: i) severe oversupply of grains, such that long storage time is needed or railway capacity has to be hired at above-normal costs; ii) moderate oversupply; and iii) shortage. The next step is to convert the grains into complete feed. The results are shown in Figure 2. The values should be interpreted as indicative estimates.

Figure 2: Comparative prices (potential) of pork feed, depending on grain supply situation



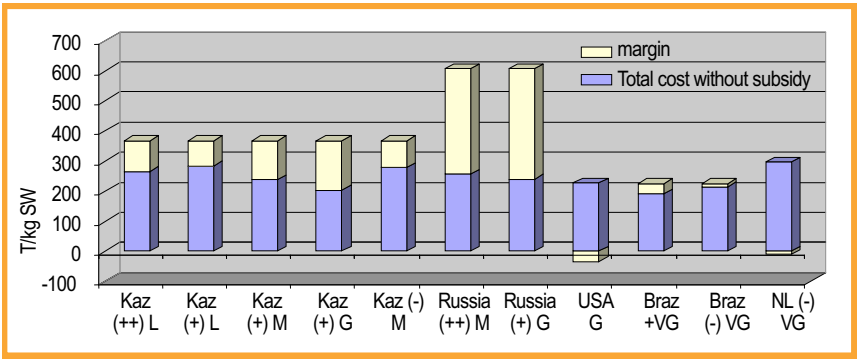
(b) Pork

A worldwide comparison of pork production costs was recently undertaken by the Agricultural Economics Institute (LEI) at Wageningen University in the Netherlands.[8] The results are incorporated in Table 4 and Figure 3. Table 4 uses the feed costs arrived at in Figure 2, observations from field visits, and rough estimates of costs in the Russian Federation. Recent (December 2009) market price information was assembled from various

8.- Hoste, R. & Puister, L. 2009. *Production cost of pork and international comparison.* LEI Report No. 2008-82. Wageningen, Netherlands.

sources.[9] Figure 2 shows that the United States pig industry is currently registering losses (margin below zero). The Russian Federation's recent announcement of import restrictions on pork is depressing United States prices. Losses are also being registered in the Netherlands. The opposite is the case in Kazakhstan, where profits are substantial even when subsidies are not taken into account. When Kazakh producers improve their technology, Kazakhstan's pork could become competitive at the international level (Figure 3, column Kaz [+] G). In the case of a shortage of grains (-) with fair technology (M), the industry might withstand foreign imports for some time if the transportation costs of meat are taken into account (column Kaz (-) M). In the Russian Federation, the profitably of pork production is even higher.

Figure 3: Production costs and margins for pork in Kazakhstan and other countries, depending on grain supply situation



Columns: Kaz (++) L = (Kazakhstan) severe surplus (of grains) and low (current) technology of production; Kaz (+) L = surplus and low technology; Kaz (+) M = surplus and moderate technology; Kaz (-) M = deficit and moderate technology; Russia (++) M = (Russian Federation) severe surplus and moderate technology; Russia (+) G = surplus and advanced technology; USA-G = (United States of America) surplus and advanced technology; Braz (+) VG = (Brazil) surplus and advanced technology; Braz (-) VG = deficit and advanced technology; NL (-) VG = (Netherlands) neutral and advanced technology.

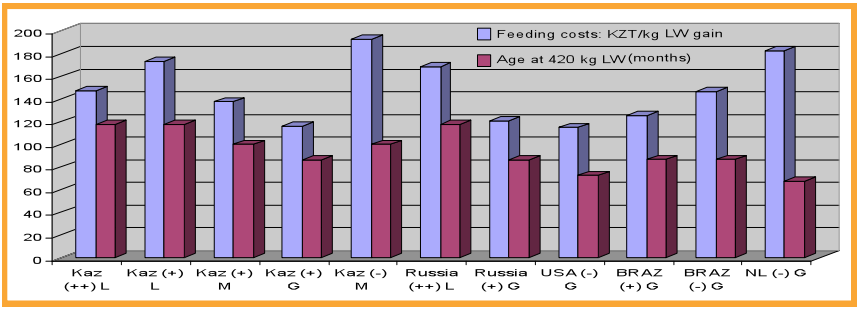
(c) Beef

The results of comparisons of (potential) feeding costs in Kazakhstan and elsewhere are shown in Figure 4. Table 5 (on

9.- Including magazines (*Pig progress, DeBoerderij, USDA news*, etc.).

which Figure 4 is based) assumes the same grain costs as for pigs, and also the same complete feed costs, based on a data series for added costs in the Netherlands.10 For periods of grazing, Table 5 also includes estimates of pasture costs together with those for supplementary feeding in the pasture. The different technology levels are expressed in terms of daily gain rates.11 Table 5 considers the feeding of weaned dairy or dual-purpose bulls, which are currently the most common meat cattle in Kazakhstan and the Russian Federation. The current situation in Kazakhstan is shown in the two first columns of Figure 4. An estimated feeding cost of about T 140 to 170/kg live weight (LW) compares with a market price for live animals of T 210 to 220/kg LW. The production cost in Kazakhstan (L = low technology level) is slightly lower than that on similar farms in the Russian Federation because of lower grain prices resulting from the land-locked position of Kazakhstan. With improved animal production practices, the feeding costs for beef in Kazakhstan could be competitive at the global level.

Figure 4: Feeding costs for beef in Kazakhstan and other countries



Columns: Kaz (++) L = (Kazakhstan) severe surplus (of grains) and low (current) technology of production; Kaz (+) L = surplus and low technology; Kaz (+) M = surplus and moderate technology; Kaz (-) M = deficit and moderate technology; Russia (++) L = (Russian Federation) severe surplus and low technology; Russia (+) G = surplus and advanced technology; USA-G = (United States of America) surplus and advanced technology; Braz (+) VG = (Brazil) surplus and advance technology; Braz (-) VG – deficit and advanced technology; NL (-) VG = (Netherlands) neutral and advanced technology.

10.- Added costs are lower for beef than for swine.

11.- In the underlying calculation model, the daily feed ration is adjusted to the daily gain, until the final finishing period, when it is adjusted to the weight of the animal. Thus, when animals are growing fast, the costs are slightly underestimated.

(d) Mutton

The current low prices for mutton hardly cover the production costs. Therefore, unless existing sheep production systems are improved, mutton has low potential for competing in international markets. Mutton is not analysed in depth here because beef and mutton could, to a large extent, substitute each other in both production and consumption. If exporters were to find that there is higher demand for mutton than beef, they could shift to exporting mutton with only minor modifications in the supply line (even cattle feedlots could be adapted to fattening lambs). It is also difficult to obtain quantitative information on mutton markets. If the production efficiency of mutton were improved, the Russian Federation could become a potential market, particularly because it has reportedly been experiencing a substantial shortage. However, Russian mutton is (currently) not protected from Australian and New Zealand lamb quotas, so the prices might not be attractive. The sheep industry in these two exporter countries has being facing difficulties.

The meat market in the Russian Federation: The Russian Federation has considerable shortages of meat. These are projected to last for some time. The volume of imported meat reportedly covers about 30 to 35 percent of market demand. However, import restrictions or quotas are currently applied to meet the objectives of the Food Security Doctrine approved by the National Security Council on 4 December 2009. The doctrine sets an 85 percent self-sufficiency target, but Commonwealth of Independent States (CIS) countries are exempted.[12] The restrictions create artificial shortages, which drive prices up. This is first affecting pork. The quota tariff for beef (30 percent at a minimum of EUR 03.0/kg, Table 11) is not yet prohibitive.

Table 6 specifies imports and import prices in the Russian Federation. The following Table 7 shows the wholesale prices of domestic and imported meat for 2003 to 2009. Table 8 gives an example of current wholesale supply offers on the Internet.

12.- Government of the Russian Federation Resolution 1021 of 12 December 2009, quoted in USDA FAS Report No. RS9028.

The steep increase of food prices in the Russian Federation is expected to depress consumption.[13] At the same time, although live pig production is growing, the production of processed meat is falling. One source reports that the share of processing does not exceed 11 percent of total output at the moment.[14] Swine production is expected to increase by 7 percent in 2009 and 4 percent thereafter (USDA, see footnote 13). The increase is based on genetic material from Europe and Canada, and investments. It has been reported that investors are building piggeries with capacity for 100 000 pigs (Agro-Investor). This wave of investment is supported by not only the very high prices but also a government investment programme.[15] Thus, it is possible that it will lead to a classical "pig cycle", particularly if the Russian processing sector is suffering heavy blows from which it will be difficult to recover.

An increase in Russian beef production is not foreseen, and the cattle herd is contracting. USDA estimates beef production declines of 3 percent in 2009 and 2 percent in 2010. Therefore, the Russian beef market should be more stable than the pork market.

Table 7 refers to wholesale prices. It appears from Web sites that frozen beef is a retail commodity in the Russian Federation, where meat is sold as frozen cuts. This should limit the price difference between chilled and frozen meat, but Table 7 indicates that this difference is still about USD0.60 to 1.50/kg, or about T 80 to 200/kg. If the flow of this cheap frozen meat from imported sources were to dry up, consumers may move sideways and reduce beef purchases, rather than increasing the market for more expensive types of beef. Another issue to note is that, according to USDA, the Russian market does not differentiate among different qualities of beef. Meat from a cow sells at the same price as meat from a beef steer. This is another indication that the volume of demand for expensive meat might remain low.

It is therefore concluded that the market in the Russian Federation has two segments: a cheap sector that is supplied by South American frozen

13.- USDA FAS GAIN Report No. RS 0959 of 21 September 2009.

14.- www.agroinvestor.ru/issue70/3240.

15.- Agro-Investor quotes better access to government support as one of the advantages of large-scale operations.

beef (which is likely to be of excellent quality); and a more expensive and smaller sector for chilled meat, constituting less then 10 percent of the total market. Prices in the first of these sectors are currently too low for Kazakhstan to compete, but it has a chance in the second sector. In Kostanai, the ex-factory price after deboning is T 603/kg (Table 9), compared with an import price for similar meat in the Russian Federation of T 702/kg (Table 6). This difference of about 15 percent is sufficient to entice exports, provided the process is well organized. Entry into the Russian market could also contribute to stabilizing prices in Kazakhstan, and reduce the risks of price deterioration undermining investment projects.

Quality and safety standards

The Russian Federation requires strict adherence to safety standards, including monitoring of residues.[16] Through support from the Agricultural Competitiveness Project (ACP), Kazakhstan has recently adopted technical regulations for food quality and safety standards that are aligned to Codex Alimentarius, the International Organization for Standardization (ISO) and European standards.[17]

Much work remains to be done in securing disease-free zones, probably in northern *oblasts*, and in establishing traceability and residue control systems, including for nuclear contamination. The food safety regulatory framework of the recently established CU is not yet clear, and further discussions are required among all stakeholders to identify optimum options for Kazakhstan.

Leading investors are making good advances towards the certification of slaughter and processing facilities. The Apple City Food company is reported to have obtained Russian approval for exporting to the Russian Federation, subject to approval of the meat itself.

16.- For instance, on 19 December 2009, a trading Web site – http://dalteks.ru – reported a ban on products from Argentina, Brazil, Lithuania and Germany in connection with the detection of banned and harmful substances.

17.- See Annex 2 and FAO. 2010. *Highlights on four livestock sub-sectors in Kazakhstan: Sub-sectoral cross-cutting features and issues*. Rome .

B

ANALYSIS OF MEAT PROCESSING AND THE CONSUMER GOODS INDUSTRY

Overview of processing enterprises and their current situation

Volume of processing and capacity utilization: Although most animals are slaughtered at home or in unknown places, there is a wide array of facilities for slaughter and meat processing; for example, the association of processors in Kostanai has about 50 members. The Ministry of Agriculture (MoA) accounts for 304 processing enterprises of all kinds, 258 of which are functioning. The total capacity is, or rather was, 296 000 tonnes, or about 37 percent of total meat production (excluding poultry).

The actual volume of processing (excluding poultry) has been increasing significantly over recent years, and in 2008 reached 124 000 tonnes, or 48 percent of capacity. When only functioning facilities are considered, capacity utilization increases[18] to about 70 percent.

Types of factories: There are a number of modern factories. The April factory in Karaganda (number 65 on the list of 83 processing enterprises presented in Annex 1, Table 18) was under construction during the transition, and was completed by Kazakh investors. There are also a few good factories in Almaty, and Bekker has some high-class meat outlet shops. The Apple City Food factory in Astana (number 1 in Table 18) is a very new factory, built according to the highest standards with German equipment and a total investment of USD32 million. It produces sausages and fresh meat packed under protective gas, which is an innovation for

18.- The 83 processing companies listed in Table 18 represent a total capacity of 195 000 tonnes/year. Two (with capacity of 32 000 tonnes) are for poultry, and another very large company in western Kazakhstan accounts for a further 67 500 tonnes. Western Kazakhstan now processes only 3 500 to 4 500 tonnes/year, so this factory is not functioning. In eastern Kazakhstan, a large factory (in Semey) that produced canned meat for the Soviet army is also no longer used.

Kazakhstan. The factory obtains carcasses from another high-class facility, the slaughterhouse/feedlot of the Karaman Company in Kostanai.

Overall, the processing industry can be characterized by a number of sub-groups:

- now defunct mega-plants for the export of canned and frozen products;
- primitive slaughter units supplying individuals and bazaars with fresh meat;
- reasonable slaughter facilities supplying bazaars and shops with fresh meat;
- artisan small-scale sausage and fresh meat factories;
- medium-scale sausage and fresh meat factories;
- class A slaughterhouses supplying high-quality carcasses to the processing industry;
- class A factories supplying packed fresh meat and sausages to market retail shops.

The group 1 mega-plants were dependent on supply from State farms and marketed through the central planning system. Group 2 is now the very large informal sector. Groups 3 to 7 are market-oriented enterprises with growing turnover and – recently – improving technology. However, most of the processing industry (groups 4 and 5) still faces such problems as obsolete technologies, raw material shortages and incompatibility with international veterinary and hygiene standards. Most sausages have a shelf-life of no more than about a week.

Value chains

Figure 5 shows the different quality segments in the market. At the end of one chain there is the "economy consumer" and at the end of another the "high-income urban consumer". The latter obtains meat from a production chain in which all stages are subject to sanitary controls. Young stock from unknown provenance can be absorbed into this chain via feedlots. Economy consumers obtain meat of unknown origin directly from small

butchers without facilities. In an intermediate chain, consumers buy meat at a bazaar. Generally, this meat is subject to veterinary inspection, but there is the risk that bazaar traders also sell cheaper uninspected meat. The nature of these different processes has an impact on prices. Table B.1 shows that there are reasonable margins in both the high and intermediate bazaar meat value chains.

Table B.1: Prices at various stages of meat value chains in Astana, calculated from purchases of livestock in Kostanai (T/kg SW)

A/formal chain (class I supermarket)

Stage	Beef	Mutton	Pork	Horsemeat
Farm-gate price (KAM)	446	483	442	577
Wholesale purchase price (after slaughter)	470	551	481	607
Processor/packer purchase price	482	582	493	640
Processor purchase price (deboned)	603	659	617	800
Retailer purchase price (deboned, packed)	645	701	659	842
Sales price with value-added tax (VAT)	831	903	849	1084
Observed market prices, class 1 supermarket (deboned)	800–1 000	900	900	1 100–1 200

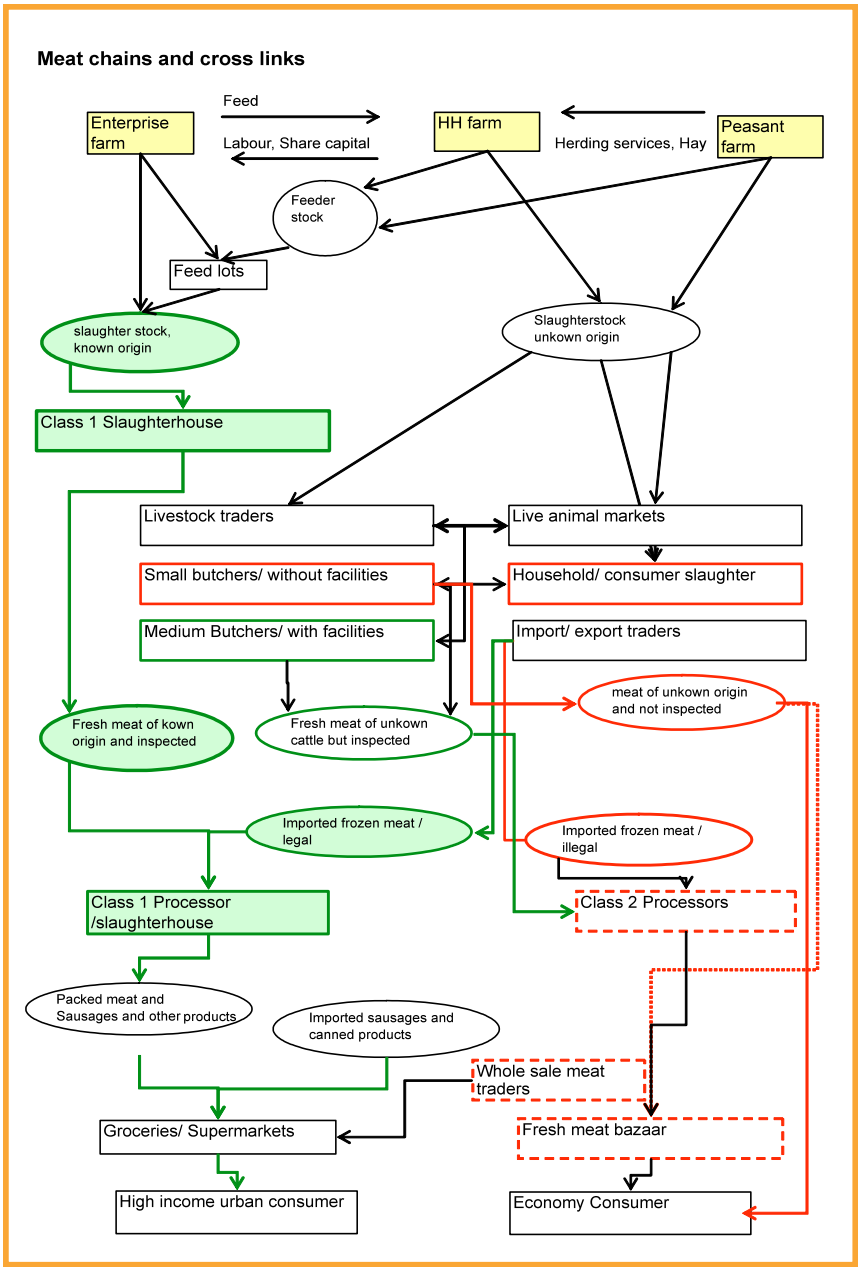
B/semi-informal chain (bazaar)

Stage	Beef	Mutton	Pork	Horsemeat
Farm-gate price (KAM)	446	483	442	577
Wholesale purchase price (after slaughter)	438	485	435	560
Bazaar purchase price	466	514	463	592
Bazaar purchase price (partly deboned)	548	551	545	697
Sales price with VAT	637	641	634	806
Observed market prices, bazaar (confirmed by KAM)	600–650	600	600	700–800

KAM = Kaz-Agro-Marketing.
Source: Data for December 2009. See Table 9 for details.

Processed meat value chains can only be elaborated on the basis of detailed knowledge of the recipes for products, including the addition of water (or ice).

Figure 5: Meat value chains



Raw material and dynamics of processing

Competitive production of processed products depends on having access to low-cost raw materials, such as by-products and offal from the production of fresh meat for retailing, stocks of surplus frozen meat from seasons with excess meat, and imported low-cost offal and surplus meat.

Currently, meat products such as sausages use 48 percent imported meat and 52 percent local raw material. The latter accounts for about 17 to 18 percent of SW and includes much of the edible offal and some non-meat ingredients. The quantities used in 2008 are shown in Table B.2. The specifications of imported raw material for meat processing are given in Tables B.3 and B.4.

Table B.2: Material use for meat products, 2008

2008, reconciliation	'000 tonnes
SW input in processing plants (data)	124.0
Meat for processing into products	9.3
Carcass parts remaining as fresh meat	114.7
Bones removed (e.g. 1%)[a]	1.1
Net retail meat (data)	113.6
Meat for processing into products	9.3
Offal added for processing	12.5
Imported meat and offal, industrial quality (data)	21.7
Illegally imported meat	-
Added non-meat ingredients (meal, moisture, etc.)	2.0
Total for processed products (data)	45.5

[a] Most meat is sold with the bones in. - *Source:* Statistics Agency data.

Table B.3: Specifications and prices of imported meat, 2008

Parameter	Quantity ('000 tonnes)	Price CIP (USD/kg)	Value CIP ('000 USD)	Duties 25% > EUR 0.35/ kg (USD/kg)	Price DP (T/kg)
Consumption meat (presumed)					
Meat > USD3.00/kg	2.1	3.87	7 945	0.97	715
Industrial meat (presumed)					
Other bovine meat, frozen	9.7	1.27	12 379	0.50	262
Other pigmeat	9.0	1.05	9 424	0.50	230
Horsemeat etc., chilled or frozen	2.1	1.98	4 156	0.50	367
Mutton	0.3	1.64	493	0.50	317
Other	0.6	1.60	958	0.50	310
Subtotal industrial	21.7		27 410		
Total (all imports)	23.8		35 355		
USD1.43 = EUR 1.00.					

CIP = carriage and insurance paid at border; DP = duty paid at border.
Source: based on Statistics Agency import data and tariff rates from Table 10.

A small portion of imported meat – 2 100 tonnes of mainly beef – is quite expensive and is not used for processing. The remaining 21 700 tonnes is cheap, about half the price of the meat that is available locally. This consists of frozen meat. In the case of beef, it is mostly frozen trimmings, which are pieces of meat that are removed during the preparation of retail cuts and traded as industrial raw material.[19] Given that imported raw materials account for nearly half of the inputs for meat product processing, the ingredient costs for sausages and canned meat would increase by nearly 25 percent in the absence of imports.

For 2010, the members of the CU have announced a tariff rate quota (TRQ) for imported meat, under which meat imports up to the quota amount are subject to a relatively modest import duty, and those above it are charged at a much higher rate. The above-quota rates are shown in Table 11.

The quota system will have little impact on beef, but prices of above-quota imported pork will increase to about T 475/kg. This is similar to the current domestic wholesale price of pork, which is very high by international standards. Kazakhstan's processing industry may thus return to frozen beef as a primary low-cost input (Table B.4).

19.- Industrial categories of meat are "Bovine cuts bone in, frozen", "Bovine cuts boneless, frozen", "Swine carcasses and half carcasses, frozen". Generally, frozen meat is not used for retail purposes because it is liable to lose moisture (to drip) when thawed. The shelf-life of thawed meat is short.

Table B.4: Imports of raw material for processing, 2003 to 2008

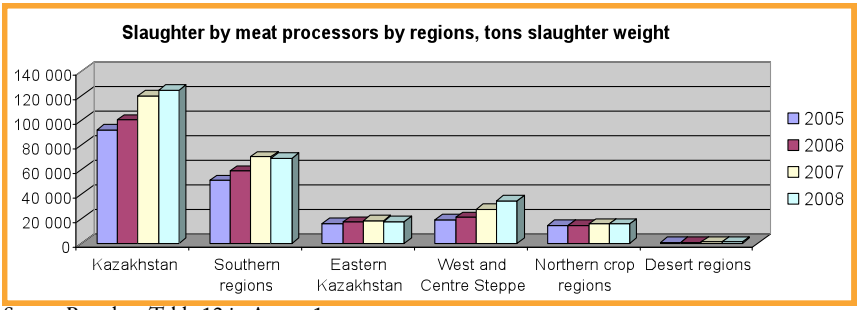
Parameter	2003	2004	2005	2006	2007	2008
Beef industrial, '000 tonnes	3.7	4.3	5.8	12.7	17.6	9.8
Industrial price, USD/kg	0.99	1.04	1.12	1.01	1.05	1.27
Pork industrial, '000 tonnes	0.2	0.1	1.5	2.8	4.1	9.0
Industrial price, USD/kg	0.89	1.97	1.09	1.09	1.04	1.05
Offal (all), '000 tonnes	0.1	0.0	0.6	0.4	0.0	0.6
Price, USD/kg	0.55	0.00	0.67	0.78	0.00	1.48
Total imported raw material, '000 tonnes	4	4	8	16	22	19
Average price, USD/kg	0.98	1.05	1.08	1.01	1.05	1.17
Pork, %	4%	2%	19%	18%	19%	46%

Source: Estimates, based on Statistics Agency import data.

Dynamics of meat processing and consumption

Volumes and kinds of production: Table 12 and Figure 6 show how the volume of meat processing increased by 35 percent between 2005 and 2008. The total volume reached 124 000 tonnes, or about 14 percent of total meat production in 2008. However, after deduction of the imported meat handled by processors, this declines to 13 percent. The increases took place mainly in or near the main cities. In the northern crop production-based region, the increase in Pavlodar was offset by decreases in the other *oblasts*. In the south, the processing volume was stable in southern Kazakhstan, but increased in Almaty and to a lesser extent in Zhambyl. In 2008, the volume of processing appears to have been negatively affected by the economic crisis, especially in Almaty.

Figure 6: Volumes of meat processing, by group of regions, 2005 to 2008



Source: Based on Table 12 in Annex 1.

As noted, the output of meat factories consists mainly of ordinary butchers' meat, and only a smaller part is processed products. However, there are regional differences in this. In the northern cropping zone and the central (steppe) zone, where pork production is relatively important, a larger part of raw material (about 50 percent) is processed into products, mainly sausages. In the other regions this figure is only about 25 to 30 percent.[20] The total consumption of processed products is shown in Table B.5.

Table B.5: Consumption of processed products, 20

Product	Production ('000 tonnes)	Import ('000 tonnes)	Export ('000 tonnes)	Consumption ('000 tonnes)	Consumption per capita (kg/year)
Sausages	40.5	28.4	0	68.9	4.4
Canned meat	5	5.4	0	10.4	0.7

Source: Statistics Agency.

Consumer preferences: Tastes for meat show considerable variation. In rural areas, animal fat is traditionally highly appreciated and is an important commodity. However, this does not apply to all kinds of fat. In the south, the local custom is to store large portions of mutton or horsemeat in November or December for consumption as a staple food in winter. Traditionally, a natural deepfreeze is used. In summer, other foods are used, such as vegetables where they are available. In the north, closer to the Russian Federation, pork is an important commodity. Sausages and salted and dried sides can be produced at home. The modern urban consumer is gradually turning away from these practices and looking for leaner meat. However, sausages remain in high demand.

Outlets: The principal outlets for meat and meat products in towns are bazaars, supermarkets and delicatessen shops. Supermarkets are gaining strength and have become the principal outlet for most products, but not yet for fresh meat and vegetables, which are still mainly purchased from bazaars.[21] The price differential between bazaar meat and supermarket meat explains this. However, when supermarkets are able to prolong shelf-life with products that are packed under protective gas, they should

20.- Based on Statistics Agency data.

21.- Quoted from a supermarket manager in a recent Nielsen market study.

substantially increase their market share for fresh meat. This will increase the demand for meat from factories that can offer high-quality processing.

In rural areas, there will be increased legal pressure for formal slaughter and meat inspection. This is justified from a public health point of view, considering the risks of Brucellosis, tuberculosis (TB) and other zoonotic diseases. Once reliable rural slaughterhouses are established, they may play a role in supplying the processing industry with carcasses and approved offal. This will require investment in a cold chain.

Analysis of meat prices

Medium-term trends: Table 13 and Figure 8 show a selection of wholesale beef prices. Figure 8 shows that from January 2006 to June 2009, the average price increased from T 336 to 510/kg. Prices for mutton and pork also increased considerably. Table B.6 compares these increases with the consumer price index (CPI) and the rate of increase of average per capita incomes.

Table B.6: Increases in meat prices compared with CPI and increases in incomes

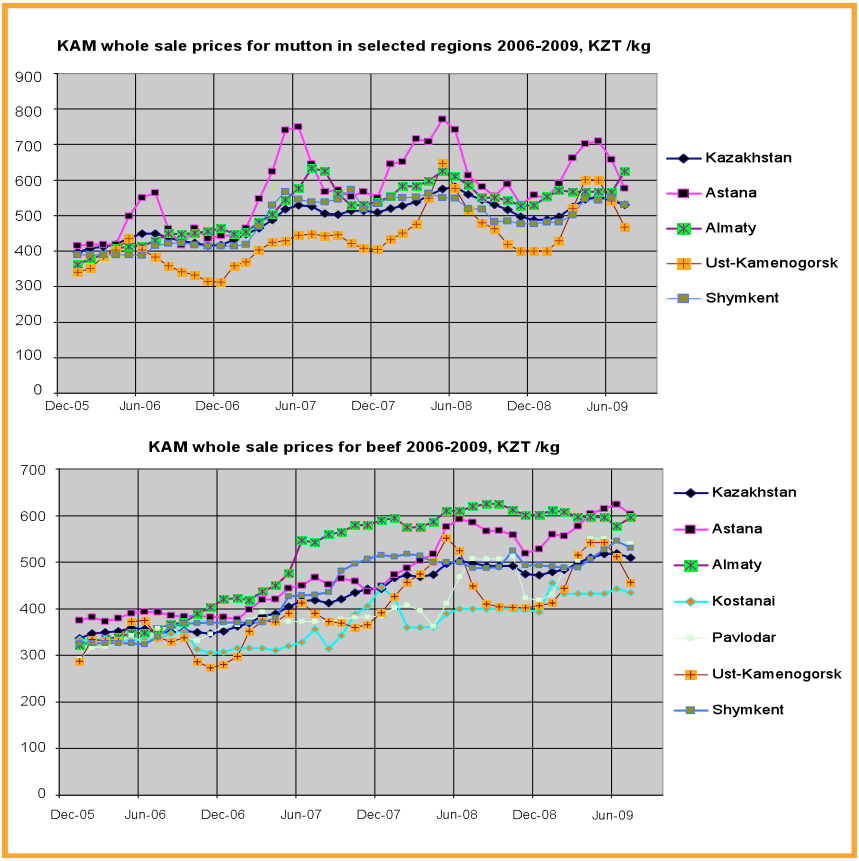
Parameter	2005	2006	2007	2008	2009 ½
CPI to 2005	100%	107.4%	138%	153%	
Per capita income, T/year*	17 889	20 899	28 255	32 153	
Income index to previous year *	100%	117%	135%	114%	
Cumulative index to 2005 *	100%	117%	158%	180%	
Wholesale beef KAM year to year	100%	105%	126%	106%	108%
Cumulative	100%	105%	132%	140%	152%
Wholesale mutton KAM year to year	100%	105%	122%	96%	109%
Cumulative to 2005	100%	105%	128%	123%	133%
Wholesale pork KAM year to year	100%	88%	116%	135%	101%
Cumulative to 2005	100%	88%	102%	137%	139%

Sources: Based on KAM data (Kazakhstan average); * based on Statistics Agency data.

Table B.6 shows that despite formidable increases, meat prices lag behind the CPI and, even more, behind the increase in incomes. Thus, the price increases are clearly the result of strong demand rather than high production costs and declining production. It is notable that mutton producers have benefited least from the price increases.

Seasonal effects: The seasonal effects on prices differ by region. For grazing animals, there is typically an increase in prices in May and June in eastern Kazakhstan (Ust-Kamenogorsk) when farmers retain their animals for spring and summer grazing. Prices in Astana (a major consumption area) follow a similar pattern, but for beef the reaction seems delayed: beef prices do not decline as much in autumn as mutton prices do. The effect of retention is also confirmed by statistical (regression) analysis, which shows a significant negative correlation between the average price of beef and the production volume of previous months (Table 14).

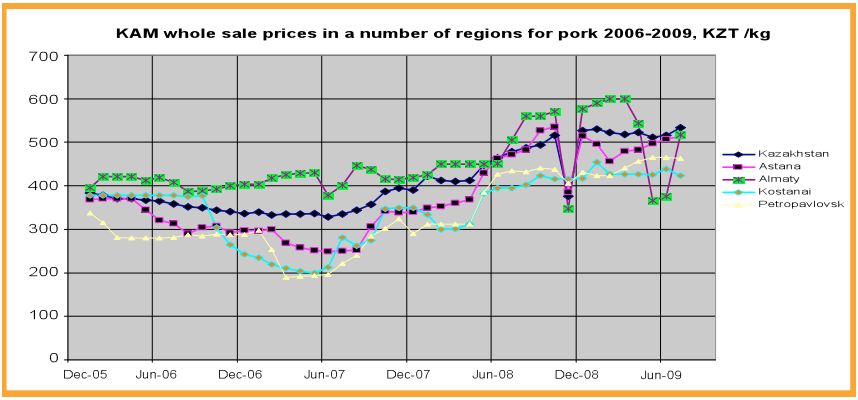
Figure 7: Wholesale prices for beef and mutton, selected regions, 2006 to 2009



In the south – Almaty and Shymkent – a similar pattern for sheep is distinguishable, but less pronounced than in eastern Kazakhstan. This may well result from the milder winters, ample availability of crop by-products for feeding, and strong demand for fat sheep in the rural south. Thus, not only the long-term trend but also the seasonal price movements indicate that there is less of a shortage for mutton. Only in some seasons does demand outstrip supply.

The prices of pork (Figure 8) do not follow a seasonal pattern. Instead, the pork market appears to be unstable and very sensitive to temporary oversupplies and shortages. This is understandable because a large portion of pork is destined for the processing industry. The shelf-life of the products of processing factories is short, so the factories cannot produce in advance.

Figure 8: Wholesale prices for pork in selected regions, 2006 to 2009



Differences among regions: There are substantial differences in wholesale prices among regions. These reflect the long travel distances within the country and the underdeveloped trading and cold chain transport sector. Transportation costs for a full 20-tonne one-way only load are about USD0.15/tonne/km.[22] This is about T 23/kg per 1 000 km. Thus, differences between regions should not exceed T 50/kg. A truck such as that shown in Figure 9 costs about EUR 160 000, and is equipped with compartments under different temperature regimes, temperature recorders and a Global Positioning System (GPS) for tracking.

22.- Data from Kazakhstan and Europe.

For long distance transportation, another option is to hire cooling freezer rail wagons. These have a gross capacity of 60 tonnes each. Quotations[23] indicate transportation costs of about T 10/kg per 1 000 km, but a single rail wagon, as opposed to an entire train, covers only 200 to 300 km/day. The reliability of these wagons for the transportation of chilled meat under very accurate temperature control has not been tested.

Figure 9: Long-distance meat truck (20 to 22 tonnes net load)

Perspectives and barriers

Kazakhstan has long-standing and widespread traditions and skills in dealing with animals and slaughter. These have reduced the space for professional abattoirs. However, for reasons of public health, the veterinary law now requires that slaughter be carried out in an abattoir. This new law completely changes the situation. The quantity of formal slaughter has to increase sevenfold and existing processing factories will need to redefine their roles.

Development of demand: Kazakhstan's population shows a current increase of about 1.1 percent per year (Table B.7).

23.- Inform Trade, www.inforom-trade.ru.

Table B.7: Population numbers in Kaza

Parameter	2003	2004	2005	2006	2007	2008
Total	14 866 837	14 951 200	15 074 767	15 219 291	15 396 878	15 571 506
Natural increase	92 669	120 778	121 856	144 546	163 666	
% natural increase	0.62%	0.81%	0.81%	0.95%	1.06%	
Immigration balance	-8 306	2 789	22 668	33 041	10 962	
% immigration balance	-0.06%	0.02%	0.15%	0.22%	0.07%	
% increase total	0.57%	0.83%	0.96%	1.17%	1.13%	

Source: Statistics Agency data.

The average annual income is equivalent to USD2 500, and has increased by an average of 12 percent per annum over recent years. In the large cities of Almaty and Astana, per capita incomes are almost double the national average, at about USD4 700 per year (Table 15). At these income levels, the percentage of food expenditure in total expenditure remains high. As assessed from OECD-FAO (2008),[24] the expected shares of food expenditure in the CPI would be 40 percent for an annual income of USD2 500 and about 35 percent at USD4 700, dropping to 27 percent as incomes increase to USD10 000. Based on this and observed actual consumption expenditure on meat, a scenario of future demand is elaborated in Tables 16 and 17. In Table 16, two types of consumer are considered: an economy consumer buying "base meat", and a high-end consumer buying "high meat". It appears that with the present prices both spend about 26 percent of their OECD-FAO food budgets on meat.

In Table 17 these data are elaborated to account for population growth and increased production from the livestock herd. An increase in income provokes a gradual shift from base meat to high meat. Assuming income growth of 9 percent per year, the share of high meat in total meat output would shift from 8 to 43 percent in the eight-year period. This estimate is based on the size of the total meat budget combined with an assumption that the volume of consumption, measured in kg of meat, would not increase much from the already high level of 69 kg per capita. In this scenario, an increase in annual income of 9 percent would increase meat

24.- OECD-FAO. 2007. *Agricultural Outlook 2008 to 2017*, highlights at www.fao.org/es/esc/common/ecg/550/en/agout2017e.pdf

consumption by only 3.6 kg over the eight-year period, from 69 to 72.6 kg per capita. The remainder of the budget for meat would be diverted to a higher-priced, better-quality meat. Another assumption is that real prices of both base meat and high meat would increase by 1 percent per year, owing to more stringent sanitary requirements.

To meet this demand for well-packed meat, considerable investments in slaughter and processing capacity are required, in addition to the additional requirements that may exist from a public health point of view. The required capacity is specified in Table 17. If a two-tier structure is chosen, the number of small abattoirs (with capacity of 500 tonnes/year) would need to expand from 300 to 1 600, and that of meat processing plants (with 6 000 tonnes/year capacity) to 135.

Depending on the development of herd productivity, a surplus of good-quality meat for export can be expected. In scenario 1, all export efforts are concentrated on beef, and the increased availability of horsemeat, poultry and pork is used to create more space for exporting beef. After eight years, there would be about 114 000 tonnes of beef, while imports of low-priced industry meat (trimmings, offal and frozen pork sides) would continue in the early years. This would support the processing industry and avoid the need to use prime cuts of meat for sausages. Later (after 2016), surplus trimmings would be available locally.

Different assumptions obtain different results. A number of possible scenarios are presented Table B.8. The most critical variable is the extent to which an increase in purchasing power will increase consumption in terms of volume rather than value of meat. Traditionally meat is a staple food in Kazakhstan, so future consumption patterns may differ from those observed in other countries. A detailed consumer study is warranted.

Table B.8: Scenarios for development of demand and suppl

Scenario	One	Two	Three	Four	Four B
Changed variables					
Annual growth of per capita income	9%	9%	9%	5%	5%
Volume increase of meat consumption per % income growth, kg/capita/year	0.05	0.10	0.10	0.20	0.20
Growth rates of meat production					
Beef	2.5%	2.5%	1.5%	1.5%	2.5%
Horse (and camel)	5.0%	5.0%	5.0%	5.0%	5.0%
Mutton	3.0%	3.0%	1.5%	1.5%	3.0%
Pork	3.0%	3.0%	2.0%	2.0%	3.0%
Poultry and poultry imports	3.0%	3.0%	3.0%	3.0%	3.0%
Outcome for 2016					
Total volume processing red meat, '000 tonnes	798	690	690	332	332
Consumption meat for export, '000 tonnes	114	55	-18	-35	38
Sausage and luxury meat imports/exports, '000 tonnes	-14	-14	-14	-14	-14
Industry meat imports (-)/exports (+), '000 tonnes	6	-8	-8	-43	-43
Total imports/exports, '000 tonnes	106	33	-40	-92	-19

Future structure of primary slaughter: A first question that arises is how the slaughter and meat processing sector is likely to develop and who will be the entrepreneurs to invest in new or improved slaughter facilities? Second, what form of guidance or support would be provided by professional associations and the government or its agencies?

Potential investors include:

- existing informal backyard butchers;
- restaurant and shop owners with their own butcheries;
- new investors at the village level, such as veterinarians seeking to change profession;
- local government agencies;
- registered factories expanding slaughter facilities;
- major companies developing networks of new slaughterhouses.

A principal issue is how to balance the use of existing entrepreneurial resources in small businesses and the requirements for hygiene and efficiency. In Western countries, until the mid-1970s this was resolved by the creation of municipal abattoirs, which were constructed in response

to public health considerations and to facilitate meat inspection. These abattoirs did not engage in the commerce of meat; instead they provided slaughter service to butchers at a fee. In villages, however, butchers were permitted to carry out their own slaughter under veterinary supervision, usually involving only two or three animals per week. Nowadays, village butchers, where they still exist, obtain carcasses from meat factories elsewhere. These factories also replaced the municipal town abattoirs.

Municipal (*akimat*) service abattoirs could also play a role In Kazakhstan, especially in small towns and large villages with no meat factory within a reasonable distance, or where private investors are not engaging in such business or are bidding for the building plots available for a slaughterhouse. Once established, the municipal abattoirs could be open for privatization, provided enough competition for slaughter services is assured. Where there is already a meat factory that has to serve a wide area, it should be encouraged (including through incentives) to use part of its capacity for providing slaughter services for butchers in the region. It would be counterproductive to force existing butchers out of business by denying them access to slaughter facilities. This would only drive the informal economy deeper underground.

When recommending sizes for abattoirs, a number of scenarios (Table B.9) were considered. The smallest (A), serves a local population of 2 500 people, and exports 75 percent of its meat capacity outside the region. If it slaughtered ten animals per day, it would need to draw these from an area of 23 km in radius, and would take 13.3 days to assemble a load of 20 tonnes for trucking. This is too long for chilled meat. For meat marketing, this abattoir would therefore need to collaborate with at least three similar units to be able to fill trucks for long-distance transport.

On the other hand, a radius of 23 km provides a good transport distance for the animals. Being short, it reduces the risk of bruises and transport stress that negatively affect meat quality. With patience and resting time, this distance could even be covered on the hoof. It also gives farmers direct access to the market, while allowing livestock owners and their families to obtain slaughtered carcasses or pieces of them for home consumption.

Given existing habits and traditions, it is therefore suggested that a fine

network of small-scale abattoirs would be the best for making the transition from informal slaughter to full-scale industrial processing. Dis-economies of the small scale can largely be resolved by developing adequate logistics and trading systems that integrate these small abattoirs. This concept of small abattoirs is in line with the approach recommended by the Agro Credit Corporation (ACC) and Kaz-Agro.[25] In their vision, the basic slaughter units would have a minimum business volume of only four head of cattle per day.

Table B.9: Scenarios for abattoir capacity

Parameter		A	B	C	D	E
Number of farms		167	667	833	1 333	2 000
Livestock units (LSUs)/farm		100	100	100	100	100
Herd, cattle equivalent		16 667	66 667	83 333	133 333	200 000
Slaughter, cattle equivalent/ year	15%	2 500	10 000	12 500	20 000	30 000
Slaughter volume, cattle equivalent/day		10	40	50	80	120
Slaughter volume, kg/day		2 000	8 000	10 000	16 000	24 000
Slaughter volume, kg/year		500 000	200 0000	2 500 000	4 000 000	6 000 000
Local consumption, kg/ person/year		50	50	50	50	50
% of capacity for local consumption		25%	40%	50%	50%	70%
Local consumer population		**2 500**	**16 000**	**25 000**	**40 000**	**84 000**
Long-distance truck capacity, kg meat		20 000	20 000	20 000	20 000	20 000
Days to fill truck		13.3	4.2	4.0	2.5	2.8
ha/LSU		10	10	10	10	10
Ha		166 667	666 667	833 333	1 333 333	2 000 000
Km^2		1 667	6 667	8 333	13 333	20 000
Radius, with 100% monopoly		23	46	52	65	80
Chilling capacity, minimum		5 tonnes	10 tonnes	10 tonnes	20 tonnes	20 tonnes
Number of abattoirs collaborating for filling trucks		4	2	2	1	1

It is suggested that in each *rayon*, a working group (consisting of representatives of the local administrations and the private sector, and sector specialists) should elaborate and recommend a plan for their area.

25.- See the section on Feedlots in FAO. 2010. *Highlights on four livestock sub-sectors in Kazakhstan: Sub-sectoral cross-cutting features and issues*. Rome.

The working groups should take account of and report the views of all stakeholders. They also should integrate proposals from existing meat factories. Prior to this, working groups members could receive training through seminars and study tours.

Future structure of processing: Although many processing factories will continue to slaughter, it is not necessary for them to do so. Processing is therefore discussed separately from slaughter. A large part of the processors are medium-scale entrepreneurs with capacity for only a few hundred tonnes per year (Table 18), or even less among the many processors that are not included in Table 18. Smaller companies will have increasing difficulties in competing because of:

- the new regulatory requirements for hygienic food processing;
- the short shelf-life of their products, and their inability to adopt new methods that prolong shelf-life;
- lack of easy access to low-cost imported raw material, because of their small volumes;
- lack of marketing power with the increasingly important supermarkets;
- inability to canvass export markets and arrange export documentation.

The future of small sausage factories may therefore be mainly as suppliers of local clienteles through bazaars, kiosks, etc., with short communication lines and fast turnover.

As a survival strategy, sausage factories would be advised to consider merging and building new high-quality plants. Their old factories could be restructured to function as local abattoirs, but given their spirit of independence, it seems unlikely that many small factories will heed this recommendation. It is more likely that a few well-organized factories will expand, or that new investors will emerge, pushing the small factories out of business. This trend would be facilitated by making properly slaughtered raw meat widely available through public abattoirs.

As well as sausages, long-shelf-life packed meat is likely to become the

mainstay of meat processing companies. Meat could be packed in retail packs, or so-called "primal cuts", of about 5 kg, to be cut up at fresh meat butcheries according to clients' demand. Primal cuts could also be exported as fresh chilled meat.[26]

As already noted, ACC and Kaz-Agro foresee a model based on a factory oriented to packing primal cuts for export, processing 118 carcasses per day. This is equivalent to about 5 000 tonnes/year.

The following is the range of investment costs for such factories:

Apple City Food multifunctional processing plant of 5 000 tonnes/year, all in	USD32 million
ACC and Kaz-Agro model packing plant of 5 000 tonnes/year, including working capital	USD10.5 million
Other investors planning packing plants of 5 000 to 6 000 tonnes/year	USD5 to 10 million
Sketch in this report with five trucks, and 5 000 tonnes/year, hardware only	USD3.5 million

Obviously, following enactment of the new regulations on food safety for meat,[27] and given the desire to conform with the highest standards, there is a risk that investors will not distinguish adequately between investments that are critical for accommodating the standards and those that are unnecessary, at least when a good working routine and staff discipline are maintained.

The financing arrangements proposed by ACC and Kaz-Agro assume credit insurance from the supplier. This will drive up the costs of equipment. If enough capital is available in Kazakhstan, earlier payment should be possible and would significantly reduce equipment costs. Reputable suppliers provide adequate service in any case.

Barriers and limitations: Barriers and limitations concern:

(a) *VAT*: It is suggested that during the period of restructuring the meat processing sector, the VAT on meat would be reduced to about 4 to 6 percent. This would encourage the public to

26.- www.nofima.no/mat/en/researcharea/gas-packaging-of-meat; www.mintrac.com.au/files/.../2008.../shelf%20life%20mintrac%202008.pdf; and www.meatinternational.com/article-database/effect-of-gas-packaging-and-lactate-enhancement-on-colour-id384.html.

27.- See Annex 2 and FAO. 2010. *Highlights on four livestock sub-sectors in Kazakhstan: Sub-sectoral cross-cutting features and issues*. Rome .

purchase meat that has been slaughtered under veterinary control. Total tax revenue would not decrease, because revenue is currently collected only on a small portion of the meat sold.

(b) *Uncertainty about detailed specifications:* The Technical Regulation on Requirements for the Safety of Meat and Meat Products (Annex 2) provides a good starting point. It is recommended that a specialist engineering team be formed to assess the building specifications and to recommend equipment that meets the criteria cost-effectively. Additional specifications would be optional. However, for the limited number of plants that will focus primarily on exports, an expensive outlay may be justified, partially as a marketing tool for impressing the potential customers and authorities in importing countries.

(c) *Investment resources:* Investment in better slaughterhouses will be repaid through: i) reduction in the difference between meat prices in rural areas and main cities, through the combination of chilling and transport; and ii) the added value for which increasing numbers of consumers will be willing to pay. Concerning transport, as shown in Figure 6, the difference is now often in the range of T 100/kg. This easily covers the costs of improved slaughter and transportation of meat. Securities are required for credit. If strong investors are lacking and akimats are not seeking to exploit the abattoirs themselves, the akimat could still construct the abattoir building and lease it to an operator. This would provide banks with security for their loans.

(d) *Human resources:* It is recommended that a small entity for practical training in meat processing and meat trading be established.

C

PROFIT AND LOSS ACCOUNT AND FINANCIAL/RISK ANALYSIS OF MAIN PRODUCTION MODELS

Production parameters for the existing models have been estimated on the basis of observations and alignment, as far as possible, with production estimates from the Statistics Agency. For fair comparison of the different systems, the estimates consider family labour as a cost. However, in the bottom line this cost is returned as an element of income. Feed costs are estimated on the basis of nutritional calculations[28] and confirmed with field observations. VAT is not included as a cost, because farms that pay VAT operate in the formal channel, meaning that they are not end-producers (so the professional buyer can deduct the prepaid VAT from its dues to the State). Thus, product prices ex-VAT have been taken into account.

The results must be interpreted as indicative. Margins of error can only be narrowed on the basis of extensive survey work. The most critical factors are labour input and animal productivity. For the first of these there is only scanty information, while information on the latter is based on data from the Statistics Agency.

Sheep: Table 19 gives profit and loss estimates for different types of sheep operations. For comparison, the estimates are first shown per 100 ewes and then sized for realistic farm units. Four unit sizes are considered:

(a) intensive family sheep units with 50 ewes and two lambing seasons per year, as in the Almaty region;

(b) medium-scale fat-tail sheep farms with 200 ewes, as in southern Kazakhstan;

28.- Feed costs have been estimated on the basis of quoted prices and inputs, adjusted to 110 to 125 percent of minimal feed intake calculated for the (assumed) levels of production achieved.

(c) mixed sheep/goat units, as in the north and centre where winters are longer;

(d) large-scale farms with 10 000 ewes, as near Almaty.

Table C.1: Sheep farm models

Parameter	Sheep unit 1	Sheep unit 2	Sheep unit 3	Sheep unit 4
Number of females/ farm	50	200	40	10 000
Costs, T	497 924	1 396 288	314 126	182 455 100
Net profit (after tax), T	179 146	26 352	-26 410	17 332 525
Family labour input, T	187 500	600 000	150 000	0
Total family/owner income, T	366 646	626 352	123 590	17 332 525
Income per month, T	30 554	52 196	10 299	1 444 377
Profit, % of cost	36%	2%	-8%	9%
Return on capital, %	16%	1%	-3%	5%

Fat-tailed sheep are highly appreciated in southern Kazakhstan and command a high price. Differential prices have been taken into account (Table C.1).

Under these assumptions, the best income per 100 ewes is obtained from unit 1, with two lambing seasons. This intensive model is not supported by research staff, but is reported to be common practise. Unit 2 operates at a break-even level, but it is calculated that fat-tail sheep (fat-rump sheep) in this unit command a 15 percent higher price than ordinary sheep. The disadvantage of fat-tail sheep is their low fertility. The mixed sheep/goat unit 3 may not yield sufficient returns to labour because of longer winter feeding. Fewer sheep are kept in the north. The large-scale farm (unit 4) performs marginally, mainly owing to the high labour input (250 workers and a manager for 20 000 sheep). Subsidies for wool and the sale of breeding material constitute an essential lifeline for this farm.

Cattle: Four situations for cattle are analysed in Tables 20 and C.2:

(a) HHF cattle units with dual-purpose cows (dairy and beef);

and, as a prelude to discussion of the development options:

(b) HHFs with dual-purpose cattle, high inputs and winter feeding of young stock;

(c) household farms (HHFs) with beef cattle grazing outside the village;

(d) medium-scale peasant farms (PFs) with beef cattle (50 cows) in the north.

Table C.2: Cattle farm models

Parameter	Cattle unit 1	Cattle unit 2	Cattle unit 3	Cattle unit 4
Number of females/ farm	3	2	2	50
Costs, T	318 102	269 613	88 858	2 824 017
Net profit (after tax), T	105 131	126 030	68 458	1 308 985
Family labour input, T	180 000	120 000	18 000	518 750
Total family/owner income, T	285 131	246 030	86 458	1 827 735
Income per month, T	23 761	20 502	7 205	152 311
Profit, % of cost	33%	47%	77%	46%
Return on capital, %	15%	26%	15%	11%

For milk, a price of T 30/kg is assumed.[29] The output value of unit 1 is almost equally split between meat and milk. The family labour input constitutes more than half of total costs, making the unit resilient against changes in input prices. However, at a certain stage, the rewards on family labour may become too low to make it worthwhile to continue with the unit. Another threat is the deterioration of grazing around the village and the gradual breakdown of haymaking equipment.

Intensification through the provision of better feed, can lead to substantial improvement of yields per cow. This is expressed in unit 2. However, if the higher yield per cow can be obtained with fewer animals, given the limited grazing area near the village, total family income would decrease, despite increased profitability or a higher return per hour of labour. The decrease in income for dairy cows might be compensated for by placing additional beef cows with professional herders outside the village. These would have to be hardy beef cattle that can stay outside during most of the winter, when weaners and yearling young stock would be fed at home. This is shown in unit 3. After deduction of the cost of employing a herder, this unit remains quite profitable. However, the lower turnover per cow means that the family should own three or four of such beef cows – rather than two – to gain an attractive income.

29.- This is an average price, including milk used for calves and for home use.

Unit 4 describes a beef cattle farm owned by an advanced PF. Suckling cows can graze far from villages. Such operations can be organized at a large scale, but are equally effective and entail fewer risks at the medium scale. The model assumes a 50-cow unit owned by one family and operated mainly by family labour. A seasonal herder would be engaged to take care of yearlings. In winter, all stock are stall-fed. Costs for weekly transport to/from a remote station are included, along with some costs for facilities, such as a solar power unit. This unit is feasible, with a profit of about 46 percent over costs providing the family with an income of T 152 000/month. If the farm did not have facilities for fattening steers in winter, this income would decline to T 125 000/month, which is still an adequate family income.

Cattle feedlots: A feedlot can complement either of the previous two types of unit. It can buy yearlings from them and fatten these for slaughter. The calculations in Table 21 consider a medium-scale unit, possibly built with minimal investment in infrastructure by using existing yards, etc., where a single person feeds 100 animals, with minimal tools. This is hard work but possible. Two scenarios are shown: the first using relatively cheap feed resources, with wheat bran as the only protein source,[30] achieving an average daily gain (ADG) of 0.9 kg; and the second using more expensive ingredients and achieving an ADG of 1.3 kg. The profit margin of the first is 5 percent over the costs and of the second 15 percent. Owing to the large turnover, the operator still gains an income of T 0.5 million per batch of 100 animals in the first case and of 1.5 million T in the second case. Interest on working capital has not been taken into account. If it has to be paid it might amount to 3 to 4 percent of turnover for a period of three to four months.

A third type of feedlot for cattle is elaborated in Table 22. This feedlot is suitable for 2 400 steers or bulls, delivering 200 animals for slaughter per month. To save on fattening costs, the animals are grazed on pasture in the summer. Simulations show that the best financial result is obtained by keeping the animals on pasture until the growth rate from grazing and supplementary feeding drops to below 300 to 400 g/day.

30.- Wheat bran has a crude protein content of 15 to 16 percent but a low energy value.

The selected indicators of the considered feedlots are presented in Table C.3.

Table C.3: Feedlot models

Parameter	Feedlot 1	Feedlot 2	Feedlot 3
Fattening costs, T*	2 063 879	2 242 492	200 109 938
Volume gained, kg	6 878	10 359	713 720
Cost per kg gained, T	301	216	287

*Includes all costs: capital (depreciation and financing), and operational (inputs, labour and financing).

When examining the merits of these units, it appears that margins will be modest, and hence it is quite understandable that – for example, in Almaty – small livestock owners sell their young stock early when they lack pastureland near their homes and feeding is expensive.

This indicates that feedlots for fattening can be expected to function only in the following circumstances:

(a) Feed must be cheap (as it was in 2009).

(b) Feed rations must be formulated and administered with precision.

(c) Labour efficiency must be good, and installations adequate but of low cost.

(d) The producers of yearlings for fattening must accept a price per kg LW that is at least 10 to 15 percent less than the price that the feedlot can obtain for fattened animals.

The fourth condition is not unrealistic, as the rate of conversion of LW to meat is much better for fattened animals than for lean yearlings. However, in spring, when other farmers see an opportunity for fattening animals cheaply on pasture, the feedlot would be at a disadvantage in bidding for animals if it could not apply the same low-cost technique.

Pig farms: Tables 23 and C.4 provide financial estimates for pork production. Five situations are examined:

(a) small farm, actual;

(b) large farm, actual;

(c) large farm, estimated, with 50 percent higher feed prices;

(d) large farm, potential;

(e) large farm, potential, with 50 percent higher feed prices.

Table C.4: Pig farm models

Parameter	Pig unit 1	Pig unit 2	Pig unit 3	Pig unit 4	Pig unit 5
Number of females/ farm	2	1 000	1 000	1 000	1 000
Costs, T	519 635	438 547 250	576 425 410	390 241 300	497 378 910
Net profit (after tax), T	536 671	376 545 703	564 818 554	472 930 267	709 395 401
Family labour input, T	60 000	0	0	0	0
Total family/owner income, T	596 671	376 545 703	564 818 554	472 930 267	709 395 401
Income per month, T	49 723	31 378 809	47 068 213	39 410 856	59 116 283
Profit, % of cost	103%	86%	41%	121%	74%
Return on capital, %	64%	43%	21%	51%	39%

Unit 1 is self-explanatory. Unit 2 uses expensive feed mixture. Unit 3 shows that such a farm would still easily survive with 50 percent higher feed prices, at 2009 market prices for pork. Unit 4 shows the effect of the improvements that could be possible on this farm. These improvements concern the use of better breeding material and the reduction of feeding costs. Unit 5 presents the same model but with a 50 percent increase in feed prices. Table C.4 indicates that the pig sector has considerable potential.

Horse breeding: The breeding of horses for meat is a traditional practice. The local breed of horse is resilient and survives under harsh conditions. Horsemeat is in high demand, achieving a price about 27 percent higher than that of beef. These factors make it profitable to rear horses for meat, as shown in Table 24. The profit margin of the model in Table 24 is 61 percent over costs.

Minimum prices: The profit and loss accounts of main production models were used to asses the minimum prices at which producers could survive. The average farm minimum wage (T 25 000/month) recovery option was used as a criterion, due to its importance in the production segments of each commodity. The models include modest depreciations. The results given in Table C.5 apply to current feed prices, which are quite low.

Table C.5: Minimum prices for recovering costs of meat production on HHFs and PFs

Meat	Farm-gate price, T/kg SW			
	KAM[a]	Model[b]	Model minimum[c]	% at minimum
Mutton	483	440	484	110%
Mutton, choice	483	480	525	109%
Beef	446	422	241	57%
Horsemeat	577	507	269	53%
Pork	442	419	201	48%

Minimum= with profit margins in important production segments of >= 1 percent; labour rewarded according to minimum wage on an average efficient farm.

[a] KAM farm-gate prices, December 2009, Kostanai.

[b] KAM prices adjusted to allow for unreported transaction costs (Table 9). Pork prices from HHFs adjusted downwards by 10 percent.

[c] Costs include minor depreciation, such as expected in small-scale enterprises, and family labour. Interest not included.

For mutton, HHFs and PFs become uneconomic, if they are not already, if mutton prices decline from their present levels. Beef prices can drop by about 30 to 40 percent before these farms show negative results. However, farms in the agriculture enterprise (AE) sector that have to service significant debts need at least the current prices plus the subsidy of T 175/kg SW (Table 25). The price of horsemeat can decrease by 35 to 45 percent before producers make losses, and pork prices can drop by 40 to 50 percent.

D

DEVELOPMENT OPTIONS: MAIN INVESTMENT DIRECTIONS AND IMPLEMENTATION MECHANISMS

Sub-sector strengths, weaknesses, opportunities and threats (SWOT) analysis

The meat sub-sector is an important element of the economy. In addition to its strictly economic role, the livestock industry is also an important factor in maintaining social infrastructure in rural areas, augmenting the income of pensioners, and contributing to food security.

Opportunities

(a) There is keen demand for products from the meat sub-sector, to the extent that some shortages of production volume exist at the moment.

(b) Demand is expected to increase further, not only in volume, but also in terms of value-added through processing.

(c) There are export opportunities.

(d) A collective demand for slaughter services is being created by the requirements of the veterinary law, which stipulates that all animals must be slaughtered under veterinary supervision.

Strengths

Resource base: Considerable added value, which could be further enhanced by processing and services, could be created by:

(a) improving the efficiencies of existing resource utilization;

(b) utilizing more rangelands;

(c) using excess grains and agricultural by-products.

Human capital and herds: Currently, PFs are the most dynamic force for development. This sector is increasing its herds and production rapidly. The basic assets of PFs are their skilled labour force, capital (often about 100 cattle or several hundred sheep) and willingness to take risks. Equally important groups of investors are AEs that return to livestock production, followed by meat processing companies.

Financial resources: The growing economy is providing resources for investments, but farmers' poor access to financial resources remains a critical issue.

Government is keenly interested in promoting development. It has functioning core services, but lacks experience of development programmes for small- and medium-scale farmers.

Threats

Threats that may prevent the sub-sector from developing include:

(a) failure to integrate PFs fully into the formal economy and engage them in the modernization process;

(b) low productivity of the livestock sector compared with a rapid rise of average incomes at the national level could discourage people from working in the sector, leading farmers to dispose of their herds; this risk is high because it is uncertain how long the household sector will remain stable – if and when HHFs start to dispose of their animals, PFs and AEs should have the capacity and interest to absorb or compensate for these lost herds;

(c) development of tension and lack of cooperation between veterinary departments and farmers, and with the public, regarding implementation of the veterinary law;

(d) recurrence of infectious diseases after premature ending of vaccination campaigns, or for other reasons;

(e) creation of a bad reputation on foreign markets due to premature entry, irregular supplies, lack of quality control and rejection of products.

Another possible threat is the risk of steep appreciation of the tenge, such that it invites imports and prevents exports. For the time being, within the CU, Kazakhstan is shielded by the protectionist policies of the Russian Federation and the shortages existing in the Russian market.

Weaknesses

(a) Inadequate technology and low productivity on farms.

(b) Inadequate farm services, particularly in accounting services, credit, applied research, advisory services and farmer training, haymaking and the compound feed industry.

(c) An investment gap for slaughter, processing and cooling transportation.

(d) Veterinary control and residue monitoring.

(e) Implementation capacity for quality control and export branding measures.

(f) A human resources gap.

(g) A VAT system that constrains the modernization of slaughter and processing.

Table D.1 confronts all of these elements in a SWOT analysis. It shows that all the weaknesses are important in certain contexts, and need to be addressed.

In meat production, the inherently low return on investment capital, through slowly maturing animals, adds to the weakness of low productivity. Even in the best circumstances, the annual output from beef cattle is only a fraction of the value of investment in the herd. When returns are low as a percentage of investment, it is difficult to finance expansion through loans, unless interest rates are very low.

Table D.1: SWOT analysis of meat sub-sector, in terms of augmenting value added

		Opportunities				Threats				
	Weighting of issues	Satisfy volume demand	Satisfy processed demand	Satisfy export demand	Satisfy regulatory demand	Failure to integrate PFs	Low productivity of livestock sector compared with rising incomes	Tensions over the veterinary law	Infectious diseases	Bad reputation in export markets
Strengths	Natural resource base	+		+						
	Human capital	+	+	+	+	+	+	+		
	Herd capital	+		+					+	
	Financial resources	+	+	+	+					
	Government	+	+	+	+	+		+		
Weaknesses	Low productivity	+	+	+		+	+			
	Insufficient services	+				+	+	+	+	
	Slaughter, processing		+	+	+					+
	Veterinary control			+	+	+	+		+	+
	Quality control		+	+						+
	Human resources: Farms	+	+	+		+	+	+	+	+
	Human resources: processing		+	+	+					+
	VAT system		+		+	+				

Overall development strategy, programme components and implementation approach

Principal strategy: The scenarios in Table B.8 show that increasing production from existing herds is necessary for keeping up with growing demand and creating a surplus for profitable exports.

Production can be increased in two ways: i) increasing productivity per animal; and ii) increasing the herd size. The recommended strategy is to focus on the first of these. Higher productivity per animal (nearly)[31] always translates into higher profitability for farms. Farmers who have made greater profits can then gradually increase their herd sizes without requiring credit for the purchase of livestock, as is currently occurring among PFs.

The currently high prices for meat have created a window of opportunity where, even with low levels of productivity, farm returns are satisfactory and the sector is moving forward. However, it is necessary to increase farms' profitability in anticipation of more difficult situations in the future.

Both AEs and PFs can rapidly increase productivity if they are given the right information, inputs and services. Advances are also possible for HHFs, through good information and supply networks at the village level. The continuation of HHFs is necessary because the other sectors cannot replace them. Household units are also of great social importance.

Components: It is recommended that the following major components of a livestock development programme be considered and discussed:

(a) Pasture-based production and rural services;

(b) pork development;

(c) feed milling;

(d) development of slaughter, processing and trade;

(e) central services, research and veterinary and financing facilities.

31.- If cheap pasture or forage resources are available, relatively moderate production per animal may produce better financial returns than increasing production.

These components are interlinked. Feed milling and pork development share much expertise. Forage production is part of pasture-based production.

Development policies: Ingredients that can contribute to progress in the agriculture sector are technology and human development, services, organization and a regulatory framework, savings and investment, credit, and targeted subsidies.

It is suggested that public support should focus principally on technology and human development and essential services (such as veterinary), and only in exceptional cases on direct support to productive activities. Public support to production should be limited to demonstrations and, possibly, guarantees/rebate schemes for loans for strategic investments. It is also suggested that subsidized credit be used cautiously, and only where strategic investments would otherwise not occur. Given the currently satisfactory herd growth, subsidized credit would generally not be necessary for financing herd expansion.

For services, it is assumed that private service provision will be encouraged in all situations where there is a reasonable chance of developing a paying market. The State might retain a role in situations where this is not the case, such as in providing information services for HHFs.

Both cooperatives and small-scale rural businesses can play roles in providing supplies to small farmers and in marketing. Whether cooperatives or rural businesses are the better option depends on the situation; for cooperatives, members' commitment and trust are essential. A programme that aims to improve services for farmers should leave both avenues open, and provide access to finance and technical advice to cooperatives and private entrepreneurs on equal terms. Waiting for cooperatives to be organized often proves fatal for a village-level programme. Later, if farmers start to feel exploited by private entrepreneurs, they can organize a cooperative then, when they may be more motivated to do so.

It is believed that giving major players, particularly PFs, access to public support measures would have the dual positive effect of broadening the tributary arena while narrowing the "grey", informal economy.

Integration with the existing subsidy system: The development programme described in previous paragraphs could be financed largely through a gradual transformation of the existing subsidy system for animal production. As already explained, the present system effectively serves only large farms, and not overall production. This does not mean that existing subsidies are not necessary; on the contrary, they are important to the present policy of supporting the expansion of large-scale farms. The simulations provided in Table 25 show that large farms established with credit need these subsidies, because of the current low return on capital in beef production. When directed towards the expansion of large farms based on credit, existing subsidies should be maintained.

However, as mentioned previously, there is currently no need to finance herd expansion with credit, so it is recommended that the subsidy system be restructured into a wider and more comprehensive programme. In the meantime, it would be appropriate to continue supporting farms that have already made major investment decisions based on the subsidy, at least for the duration of the payback period of the credit.

Organizational arrangements: Local governments may have roles in implementing field activities. These would include duties in planning and supervising the local programme. A good example local administration participation was demonstrated in the World Bank-supported Drylands Management Project[32], which was partly implemented through local administrations. Minor local programme activities could also be implemented with existing local government resources. However, when programme demands are substantial and temporary, they should be contracted to third parties. In all cases, local government officers should receive adequate training and briefing, including on participatory planning with stakeholders.

It is recommended that extension agents and farm advisers or trainers be contracted on a temporary basis for specific assignments. Efforts to set up permanent extension services often fail or are unnecessary, and create a heavy burden for future financing. International experience has

32.-The project that came to an end in 2010 was administered by the World Bank with the Global Environment Facility (GEF) financing.

demonstrated that when innovations are successful, they themselves lead the way to further developments and may need only support from a distance. Private veterinarians can often be good candidates for the contracted services.

The government should indicate programme management responsibilities at the central level, where existing government organizations should be entrusted with relevant tasks. It is assumed that additional consultant services will be contracted where necessary. Overall supervision should be by MOA.

Component 1: Pasture-based production and rural services

This component concerns grazing animals – cattle, sheep and goats, horses and camels. These may be kept jointly or separately. The development approaches for different types of animals are very similar in many respects. However, the following description does not apply to livestock kept in semi-desert zones.

Key objectives and policies: The proposed key objectives are:

(a) *ensuring the stability* of farms, by promoting adequate hay stocks/ drought reserves, rehabilitation of water supply, and judicious management of range resources;

(b) *promoting the profitability* of farming, through information and training, narrowly targeted demonstration incentives, including competitive/matching grants, an adequate regulatory framework and promotion of market-based services, supplies and markets.

The programme would give priority to farms that are already strongly committed to livestock production, particularly PFs, but it should also incorporate AEs and HHFs. In any case, HHFs would benefit indirectly from the proposed programme. The programme should use different means and channels for addressing each of type of farm. Experience should be obtained in a pilot phase. After assessment of the outcome of the pilot phase and the quality of programme implementation, the focus might change in the main phase.

Haymaking and forage equipment, firebreaks and water supplies should be primary targets for special financing arrangements (such as matching/

competitive grants, guarantee funds and/or rebate schemes for credit) because of their importance in reducing risks.

Credit for breeding cows/ewes. Generally, low-interest credit for herd expansion should not be necessary. An exception might be made for the AEs that previously had large herds but lost them during the transition. In these cases, it is suggested that the credit should constitute an encouragement for developing a nucleus unit of purebred cows/ewes, and be no more than about 20 percent of the herd investment that the farm has already undertaken on its own. PFs might qualify for loans for registered breeding cows/ewes.

Aims, activities and implementation methods. A number of possible farm models have been discussed. It was found that certain farm types offer useful perspectives, which are listed in Table D.2. The second column in the table indicates the proposed development directions, and the third the kind of support that is required.

Table D.2: Programme aims and activities, pasture-based production and rural services

Farm type	Aims	Support activities needed
1. HHF sheep unit, intensive feeding and lambing twice yearly, 50 ewes	Stability through safe hay supply Replication of this profitable model	Leasing arrangements for hay producers Extension and demonstration on hay quality Extension advice on feeding Farmer training course on details of feeding
2. PF with sheep, fertile breed, 200 ewes	Stability through: a. safe hay supply b. improved pasture utilization, including infrastructure	Leasing arrangements for hay producers Farmer training courses Implementation of pasture rotation Provision of water supply on and access to remote pastures (public goods), and mobile field units (tent, solar power, etc., possibly through competitive/matching grants) Development and testing of field units Promotion and training of village-based pasture management associations

Farm type	Aims	Support activities needed
3. HHF with 2–3 dairy cows and additional beef cows (or horses), with herder	Increased productivity through: a. better feeding b. milk reception and storage c. diversification (some dairy cows inseminated with beef breed) d. better pasture utilization, including infrastructure	Leasing arrangements for hay producers Supply of protein and mineral core for concentrate, for village mixing or complete dairy feed Farmer training courses Regulatory or legal status Provision of water supply on and access to remote pastures (public goods), and mobile field units (tent, solar power, etc., possibly through competitive/matching grants) Provision of milk marketing facilities (village cooling tanks through cooperatives or traders, possibly with competitive/matching grants for partial financing)
4. PF with beef cattle breeds, 50 cows	Stability and expansion to enhance economy of scale through: a. safe hay supply b. improved pasture utilization, including infrastructure c. improved facilities d. access to nucleus herd of purebred beef cows (10 heifer calves); e. supplementary feeding in pasture	Leasing arrangements for hay producers Provision of water supply on and access to remote pastures (public goods), and mobile field units (tent, solar power, etc., possibly through competitive/matching grants) Credit for cattle Credit/matching grants for shelters and other facilities Accounting services Farmer training courses Extension: e.g., farmer study clubs on supplementary feeding, taking into account animals' weights
5. Medium-scale feedlot, seasonal	Efficiency and risk reduction through: a. adequate health checks of entering animals b. high rates of daily weight gain	Leasing arrangements for hay producers Credit for cattle and feed, possibly through a slaughterhouse Farmer training courses Detailed advice on feeding
6. Large year-round cattle feedlot with partial pasture (with or without associated cow-calf unit)	Efficiency and risk reduction through: a. adequate health check of entering animals b. utilization of low-cost pasture, or better utilization of existing pastures c. low-cost installations, where possible d. high rates of daily weight gain	Technical design and investment and business plan Management training courses Provision of water supply on and access to remote pastures (public goods) Long-term credit arrangements Easy working capital arrangements

Horses: On farm type 4 in Table D.2, the herd may be partially or exclusively horses. In either case, similar support interventions are relevant.

However, in farmers' study clubs, farmers with a similar interest in horses should form groups.

Farms types 1 and 3 are typically village-based. They should be approached through a village-level programme with elements in:

- farmer training and demonstration;
- cooperative and/or small-scale business development;
- pasture management association;
- farm accounting.

Cooperative and/or small-scale business development would be concerned with:

- haymaking/fodder production;
- milk cooling and trading;
- feed mixing;
- accounting.

The programme should engage village promotion agents. These should search within the villages for people who can act as village resource persons. The village promotion agent should be based in a *rayon* and be responsible for five to ten villages (or sections of large village). Agents should receive technical support and briefings, and should channel the training and demonstration budget according to a plan. Demonstration budgets should allow the lending of equipment for trial periods (the programme could contract suppliers to request short-term leasing of equipment).

PFs (types 2 and 4) should be contacted individually, and groups of PFs should be invited to meetings to discuss priorities and draw up a programme for training, trials and study meetings. Each farm should be supported with subsidized accounting services for a year. Each farm should receive several visits from the technical office, to support farm development planning and applications for support packages, which the programme should provide for construction/maintenance of firebreaks, and construction/renovation of shelters and, possibly, solar power units. Farmers who produce hay for the market should receive special training and lease/purchase arrangements for new equipment. Farmers who are

interested in animal breeding should be encouraged to establish a local breeding club for performance monitoring of their animals and to apply for credit for purchasing breeding heifers. Prior to this, programme managers should have prepared and field-tested relevant packages and models, and trained field staff.

For farm type 5 (fattening on a PF), it is recommended that only a few experiments involving 20 to 30 animals be undertaken initially, with very close technical assistance from the programme. For this experimental phase, the programme will also need to guarantee credit for animals and feed.

For farm type 6 (the large-scale feedlot), seasonal use of pasture is recommended where this is possible. When animals are on feed, high rates of daily gain should be achieved. Investment costs should be kept moderate, so that animal yards can be relocated in case of infection. Animals' health status should be assured, and animals entering the feedlot should undergo quarantine. Animals should be identified and be subject to regular veterinary inspection and sampling for residues.

The programme should provide improved access to remote pastures as a public good (through providing roads and water supply). It should also facilitate consultancy services and training seminars for owners and managers, and support credit arrangements (e.g., with competitive/matching grants and partial guarantees) during semi-experimental early stages.

Numbers of farmers to reach and logistics: In the first phase, for about five years, about ten to 15 villages in each *oblast* could be reached, and about 1 000 PF, or 5 to 6 percent of the total number (with variations among *oblasts*). It is recommended that the villages are located in one or two *rayon* clusters, and not over the entire *oblast*. In the second phase, of three to four years, the whole *oblast* could be covered. The pilot phase should last longer than the main phase because it requires time to build up and pre-test training and demonstration materials and methodologies and to train the staff.

Issues to resolve: Before deciding to finance the programme, the following should be undertaken:

(a) *A sample survey on the conditions of PFs in different zones*, to obtain more information on farm history and farm assets besides livestock, farmers' educational background, productivity levels, state of equipment, access to pasture and feed, marketing channels, problems, investment plans, social aspects and outlook.

(b) *Provisions* for granting management control over all or part of the communal pasture around villages to village-based pasture management associations with a representative board.

(c) *Legal provisions* to ensure that only products from certified disease-free farms enter the export chain. This detailed later.

Indications of necessary investment:

(a) *Training and demonstration activities:* Based on experience with similar programmes, these are estimated at about USD20 million for the five-year first phase. Less technical assistance should be required for the second three to four-year phase, and costs could be reduced to approximately USD7 to 10 million, depending on the nature of the support provided to farmers. These costs are lower than the current subsidy programme for beef.

(b) *Hay and forage reinvestment and improved pasture utilization sub-programme:* This should require a total investment of up to USD400 to 450 million over ten years, possibly by attracting funding from international financial institutions (IFIs). These costs should be treated as indicative, as more investigations are required for precise cost estimates.

Component 2: Pork development

Key objectives and policies: The proposed key objective is to maintain a viable pork sector for domestic supply by: i) improving efficiency in the sector; and ii) stabilizing the market by ensuring that part of the product meets sanitary and phytosanitary standards (SPS) for export. At present, the market is unstable owing to a lack of buffers. The option to export can reduce fears of oversupply.

Aims, activities and implementation methods: With reference to the farm models discussed in section C, the aims and activities in Table D.3 are envisaged.

Table D.3: Programme aims and activities, pork development

Farm type	Aims	Support activities needed
Small (HHF or PF) pig unit[a]	Higher feeding efficiency Fair hygiene of pig production in villages.	Demonstration programmes for small pig farms, and extension (incorporation in village programmes) Promotion of certified feed supply
Large pig farm[b]	Higher feeding efficiency Top breeding Higher labour efficiency Certified farms Traceability of products	Promotion of certified feed supply Training seminars and study tours for senior staff Collaboration with international suppliers of breeding material Possibly application of Global Partnership for Good Agricultural Practice (GlobalGAP)

[a] The village programmes for HHFs were discussed in the previous section. In regions where many swine are kept, this programme should focus on swine. For pork, even more than for grazing animals, feed quality is of a crucial importance. In villages where cheap grains are available, a feed mill can supply concentrate, which is then mixed with grains in the village, by a cooperative. A private trader is unlikely to be trusted in this case. However, feed pellets that are pressed under steam in a feed mill have higher nutritional value. Ways of promoting hygiene in small farms need to be studied in detail. Parasites are a constant threat.

[b] Larger pig farms should receive individual technical support similar to that for large feedlots for cattle. A certification system for high farming standards is recommended, such as GobalGAP.[1]. For large pig farms, disease-free certification and the possibility of separating the product stream for export should be required.

Issues to resolve: It is recommended that a sample survey be conducted to derive an accurate estimate of actual productivity on pig farms (existing data need to be updated), and to study patterns of parasite infections on HHFs with pigs. The pork component depends on the simultaneous and coordinated implementation of the feed milling component.

Indications of necessary investment: About USD3 million over a four to five-year period for technical assistance, applied research, training, study tours and demonstrations, all financed by the government.

Component 3: Feed milling development

Feed can be prepared by either the users of the feed or factories that supply to a chain or to the open market. Medium- and small-scale farms

cannot adequately mix feed themselves, and are best served by feed factories. However, this method requires assurance of excellent feed quality and farmers' trust in the feed.

Key objectives and policies: To ensure that good-quality compound feed is widely available.

Aims, activities and implementation methods: The promotion of an adequate supply of ingredients is included. This should create a chain of actors. The tasks per actor are reviewed in Table D.4.

Table D.4: Programme aims and activities, feed milling development

Actor	Aims	Support activities needed
Agricultural crop research	Identification and testing of varieties of peas with low anti-nutritive factors Testing/promotion of varieties of oilseed crops Investigation of the possibilities for a certification system for ingredients	Research funds Laboratory equipment
Crops farms	Contract growing of certified ingredients (i.e., peas)	Technical assistance Liaison for the creation of suitable contracting and financing routines
Government	Modernized regulations on feed, enabling least-cost formulation Reinvigorated feed inspection services	Technical assistance on standards for feed inspection laboratories and staff training
Feed mills	Updated feed specifications Application of least-cost formulations Purchase of traceable/certified ingredients Adequate storage and processing technologies and improved labour efficiency Application of good management practice (GMP) for feed mills Establishment of a team to advise farmers on type of feed and rations	Technical assistance on feeding and processing technology Matching grants for technical inputs (e.g., staff training, control laboratory) Lease financing for new equipment and storage capacity Facilitation of seasonal credit for ingredient stocks Support to promotion and information campaign on compound feed
Local distributors/ farmer service centres	Staff made familiar with feeds and their use, aspects of feed quality and certification	Training of staff Support for trial purchases/guarantee of payment for first stocks for selected cooperatives

The technical activities for feed mills can be performed through either a government programme or joint ventures with foreign companies. A government support programme would require a careful search for suitable technical assistance staff with practical experience (particularly at feed mills). Feed mills that participate should show considerable commitment and have business plans.

Issues to resolve: It is recommended that the number of feed mills likely to apply for participation be identified; insight into the financial situation of these feed mills is also necessary.

Recommended regulations: Modernized regulations on feed, to enable least-cost formulation (Table D.4).

Indications of necessary investment: Based on capacity of 1 million tonnes/year, Table D.5 presents the estimated investment costs.

Table D.5: Estimated investment needs, feed milling development

Financing source	Government	Beneficiary	Of which as credit
	USD		
Technical support activities	1.5 million	0.2 million	
Promotion and micro-grants for users	0.25 million	0.25 million	
Laboratory equipment	0.5 million	0.5 million	
Hardware for feed mills		30 million	25 million
Seasonal working capital		150 million	140 million

Component 4: Development of slaughter, processing and trade

Key objectives and policies: i) to meet domestic demand for processed meats in terms of quantity, specification and quality; ii) to meet legal obligations for the protection of public health; and iii) to engage in profitable exports of surplus meat.

There is need to choose between having uniform standards for processing or having a double system, with basic standards to meet safety requirements and optional extra standards for exporting. The latter should be accompanied by a special production line for export products. Products from outside this line are then exportable only when the producer farm or

rayon has obtained the relevant disease-free certification and entered into a reinforced system of inspection and monitoring for residues.

It is recommended and assumed that the double standard or "split" system[33] be chosen, to enable exports without making unnecessary demands on the entire sector.

Because of the public health interest, and to guarantee an open market for meat, it is suggested that local authorities invest in public service abattoirs, unless the objectives can be met in another way (see paragraph 53). Abattoirs for slaughter only are distinguished from processing factories, although in many cases both functions are combined.

It is a difficult to estimate the capacity that can realistically be built over a short period. However, it is suggested that the planned capacity should aim to meet at least consumer demand. Regarding the scenarios with demand for slightly more expensive and better packed "high meat" (Table B.8), a conservative provisional estimate could be a capacity of 350 000 tonnes/year by 2016, with export potential of 38 000 tonnes/year (Table D.6).

If there are delays in creation of the required slaughter capacity in livestock producing areas, supermarkets are likely to create alternative channels by buying meat from the present wholesale bazaar meat trade and creating their own packing units. This meat originates largely from slaughter that is not inspected.

33.- "Split system" is EU terminology. The EU will accept imports from countries/producers where only the part of the sector that exports is subject to preventive monitoring.

Table D.6: Official slaughter requirements by 2016 (year 7) (thousand tonnes)

Scenario (Table B. 8)	Base	One	Two	Three	Four	Four B
Year	2009	2016	2016	2016	2016	2016
Estimated production total	809	1 017	1017	944	944	1 017
Consumer requirement total	143	798	690	690	332	332
Effective capacity 2009 (estimate)	190	190	190	190	190	190
Required capacity, consumer demand-based	-48	608	500	500	142	142
after counting retention of 25% rural areas		760	625	625	177	177
Added export slaughter		114	55	-18	-35	38
Scenario (Table B. 8)	**Base**	**One**	**Two**	**Three**	**Four**	**Four B**
Total to build for consumer and export demand		874	681	608	142	215
Potential, without consumer or export demand		143	336	336	802	802
Provisional mid-estimate for completion by 2016 (rounded numbers)		Slaughter Processing and packing				440 350
of which with export capability						38

Aims, activities and implementation methods: Table D.7 presents the aims and activities required.

Table D.7: Programme aims and activities, development of slaughter, processing and trade

Actor	Aims	Support activ ties needed
Local authorities	Informed decisions in consultation with stakeholders	Training seminars Elaboration of investment models and examples
Abattoirs, private or public-standard	Increased capacity for inspected and legal slaughter from about 190 000 to 440 000 tonnes/year Effective utilization of this capacity	Special long-term/low-interest credit Promotion of adequate micro-distribution of units Promotion of meat wholesale trading Promotion of (temporary) VAT reduction on meat
Meat auction cooperatives	Abattoir owners and users have created regional storage points, where meat can be auctioned for long-distance trading Carcasses are weighed and classified Functioning small meat trucks for local transport	Matching (up to 50%) grants for initial investments; remaining amounts provided as credit
Abattoirs, private export-standard	Capacity of about 38 000 tonnes/year created	Low-interest credit (leasing)
Long-distance wholesale transporters and traders	Sufficient trucks (at least 140)[a] and intermediary hanging points are functioning Hygienic work conditions established	Lease financing Training courses Involvement of veterinary inspectors
Meat processors, domestic only	Capacity increase of about 175 000 tonnes	Low-interest credit (leasing) Meat industry training schools
Meat processors, export and domestic	Capacity increase from 124 000 to 350 000 tonnes	Low-interest credit (leasing) Meat industry training schools Inspection and sampling of residues
Meat (export) association	Association/s established and inspecting, providing quality brands, undertaking market research and promotion, and organizing training seminars	In addition to State Meat Standard, consider adopting, e.g., BRC[b] or ISO Training seminars

[a] Meat transportation to urban areas will be about 400 000 tonnes every 300 days, or 1 300 tonnes/day. Given the average journey of two days, 140 to 150 units of 20-tonne trucks would be necessary.

[b] BRC = British Retail Council, a private standard used for food products.

Issues to resolve: Before entering the programme there is need to carry out:

(a) a detailed assessment of consumer behaviour regarding meat when income rises: the impact of income on the volume and quality of meat purchased; without such an assessment the estimates of required capacity in Table D.7 are uncertain;

(b) a detailed survey and mapping of existing capacities for processing and transport – obsolete units should not be included.

Recommended regulations: Under existing regulations, meat exports require a veterinary export certificate based on inspection of the meat. A further regulation is needed, under which the veterinary inspector should also licence factories to export or to supply to exporters, and should maintain a control system to ensure that only meat that is traceable as coming from disease-free zones and inspected feedlots is included in export batches. The quality stamp of a recognized meat export association is obligatory for exports.

Indications of necessary investment: Estimates are outlined in Table D.8.

Table D.8: Estimated investment needs, development of slaughter, processing and trade

Financing source	Government	Beneficiaries	Of which on credit
	USD		
Technical support activities	1.5 million	0.2 million	
Basic abattoirs for 440 000 tonnes/year with 2 days chilling		240 million	240 million
Meat trucks for local use (2–3 tonnes, about 150 trucks)		7.5 million	5 million
Meat wholesale stores for 200 000 tonnes/year	12 million	24 million	12 million
Export abattoirs for 38 000 tonnes/year		30 million	20 million
Long distance trucks (140 trucks)		31 million	25 million
Meat processors – domestic only for 175 000 tonnes/year		105 million	90 million
Meat processors – export for 38 000 tonnes/year		45 million	40 million
Training school for meat processing	3 million		
Brand development and promotion		0.3 million	0.3 million

Component 5: Government support services and financing facilities

The proposed interventions refer only to the immediate issues that concern production and marketing of meat.

Veterinary services: An overview assessment given in a separate volume[34] is summarized in the following box for easy reference.

34.- FAO. 2010. *Highlights on four livestock sub-sectors in Kazakhstan: Sub-sectoral cross-cutting features and issues*. Rome.

Item	Current status
Legal framework	Enacted
Regulatory framework	Processing: enacted Veterinary: pending
Border control	Weak, smuggling often occurs
Disease control	Fair to fragile: foot-and-mouth disease contained but requires monitoring, TB, Brucellosis and rabies not under full control and pose risk of resurgence
Disease monitoring	Increasing capacity (enzyme linked immunosorbent assay [ELISA]) and laboratories
List of permitted drugs, and control of drugs	List exists. Control of compliance needs continuous strengthening
Chemical residue monitoring	Reference laboratory under construction
Nuclear residue monitoring	Does not appear to be included in current planning
Animal identification	Detailed regulation pending
Approved slaughterhouse and meat transport network	Only a few establishments meet standards
Certification of meat for export	The authority exists, but administrative and sampling procedures are not routine

It appears that some noxious diseases may be not fully under control. Especially in southern regions, where animals can move for long distances, adequate control of diseases is difficult to maintain. If some diseases continue to linger, it is premature to end the current vaccination programme aimed at facilitating exports. It is recommended that either exports be delayed or narrow zones where disease absence can be assured be identified. Exports in the coming years should be no more than about 10 percent of production. It is therefore suggested that the Department of Livestock Sector Development and Veterinary Safety establish disease-free status on an area holding at least 10 percent of total livestock. Farmers from other regions would benefit indirectly from the exports, through higher prices on the internal market.

Having created such disease-free zones, it must be ensured that other animals and meat do not enter the export stream. This will require a number of regulations, such those referred to in the box above.

A second important point is the risk of radiological contamination. There is need to assess the preventive measures currently being taken.

On the whole, the veterinary services appear to be competent and do

not require a special support programme. However, it is recommended that a mixed (local and international) advisory panel be established for the analysis of epidemiological data and disease control policies.

Research and farm advisory services: Kaz-Agro-Innovation (KAI) should be a principal agent for implementing the programme. The programme would integrate several of KAI's ongoing activities, such as:

- sample survey to collect baseline information;
- development of information networks for PFs and villages (HHFs);
- training of extension field staff;
- on-farm/demonstration trials jointly with farmers' study groups, such as on supplementary feeding in pastures, calf rearing, etc.;
- testing of new methodologies for haymaking;
- technical support to feedlots, with formulation of rations and development of business plans;
- development of fodder crops, end-feed crops (e.g., peas);
- development (and testing) of upgraded standards for compound feeds;
- selection of laboratory methods for feed testing;
- development of a framework for animal breeding clubs for beef cattle.

The proposed technical assistance should, to a large extent, be attached to KAI, to strengthen the organization's capacity to undertake these tasks. It is expected that this involvement would help KAI to increase its capacity for applied research and communication. A separate research group, preferably not belonging to KAI, should monitor the results of the extension inputs and asses the effectiveness of extension methods.

Animal breeding: As stressed previously, the safeguarding of existing beef cattle breeds is very important. It was also noted that animal breeding in principle should be a farmer activity. Farmers are the animals' owners, and their interest and motivation is crucial.

It is suggested that farmers who keep purebred herds in adequate condition, and maintain records might be asked to continue doing so under contract for a limited transition period, while existing subsidies are phased out.

Subsequently, the government could promote breeding associations and support them with resources for contracting a professional workforce. After the transition period, the associations would decide how they and the breeders should share the income from sales of breeding stock. It will be important to establish the organizational structures for a breeding programme, which – in the case of cattle – should include both PFs and AEs (including government ones). This would need government support and services, and no substantial income could be expected from this in the near future.

Breeding work for beef can not be separated from that for dairy cattle. The breeding of pigs, sheep and horses also requires attention. The safeguarding of existing sheep and horse breeding stock might be as important as it is for cattle.

As a safeguard, the government could maintain a few herds of purebred animals as its own property.

Range and pasture management: The Department of Natural Resource Use Strategy should be asked for guidance in carrying out the sample survey of PFs referred to previously. The programme would work with the Range and Pasture Department to monitor rangeland use by farmers, detect problems, and develop materials for training clubs and extension. Another issue involving the same department is the possibility of establishing use rights for village pasture associations.

Credit: A specific rural programme for farmers should involve a relevant financial institution in formulating packages and mechanisms for credit and other financial products for medium-scale PFs, small rural service providers, entrepreneurs (e.g., haymaking contractors) and associations or cooperatives. Careful assessment of existing financial institutions is required during preparation of the programme. The credit line for haymaking equipment is essential, and must be assured before the programme starts.

Other credit facilities: The other credit facilities would be for substantial investments and would need tailor-made solutions. These should be identified during preparation of the programme.

Strategic decisions and actions by the public sector are required to involve private/commercial banking and the national financing system in investing in the agriculture sector. Support may be provided in the form of guarantee funds, rebate schemes and improving the sector-related risk assessment capacity of participating financing institutions.

Indications of necessary investment: The investment estimates for this component are included in those for other components. A detailed assessment is required for estimating the credit needs.

ANNEX 1:
REFERENCE TABLES

Table 1: Global production and trade of meat

		2007	2008 estimated	2009 forecast	Change: 2009 over 2008
		million tonnes			%
WORLD BALANCE					
Production		274.4	282.1	285.6	1.2
Bovine meat		65.1	64.9	65.1	0.3
Poultry meat		90.1	93.7	94.7	1.1
Pigmeat		99.8	103.9	106.1	2.1
Ovine meat		14	14.2	14.2	0.5
Trade		23.1	24.6	23.4	-4.8
Bovine meat		6.9	6.8	6.8	0.4
Poultry		9.8	10.5	10.2	-3.1
Pigmeat		5.2	6.1	5.4	-11.3
Ovine meat		0.9	0.9	0.9	0.7
SUPPLY AND DEMAND INDICATORS					
Per capita food consumption:					
World	kg/year	41.5	42.2	42.3	0.3
Developed	**kg/year**	**82.4**	**81.9**	**81.7**	**-0.2**
Developing	kg/year	0.9	0.9	0.9	0.7
Kazakhstan**	**kg/year**		**69**		
		2007	**2008**	**2009***	Change: Jan.–May 2009 over Jan.–May 2008 %
FAO Meat Price Index					
(2002–2004=100)		112	128	115.7	-6

* Jan. –May 2009
** Statistics Agency
FAO FOOD OUTLOOK, Market Analysis, June 2009
www.fao.org/docrep/011/ai482e/ai482e08.htm

Table 2: Value of imports and exports of meat in selected countries

	IMPORTS					EXPORTS					NET export
	('000 USD)					('000 USD)					('000 USD)
	1994–1996	1999–2001	2004	2005	2006	1994–1996	1999–2001	2004	2005	2006	2006
Kazakhstan	11 439	14 654	45 739	70 903	100 673	38 715	5 872	418	555	287	-100 386
Argentina	110 530	128 071	51 416	46 104	48 053	698 965	496 504	1 020 754	1 451 585	1 429 229	1 381 176
Australia	25 474	72 278	188 605	263 590	256 725	2 549 380	2 924 808	4 720 695	5 142 518	5 258 480	5 001 755
Brazil	192 394	95 197	84 768	96 793	84 271	1 066 614	1 887 055	5 529 670	7 159 951	7 313 846	7 229 575
China	1 452 918	2 359 770	2 184 123	2 489 729	2 769 661	2 805 075	1 520 886	1 072 085	1 045 198	1 273 641	-1 496 020
Egypt	184 146	246 925	198 324	317 229	495 422	4 689	1 408	1 164	1 094	1 110	-494 312
France	3 411 391	2 389 067	3 256 762	3 580 842	3 861 733	3 744 160	2 713 615	3 321 070	3 378 671	3 395 378	-466 355
Japan	8 415 66	7 364 802	7 738 662	7 926 896	6 456 122	7 521	9 855	6 100	6 702	8 855	-6 447 267
Netherlands	1 009 861	931 160	1 750 237	1 950 666	2 169 845	4 362 298	3 263 271	4 425 105	5 003 525	5 426 203	3 256 358
Russian Federation	1 545 513	1 280 416	2 134 756	2 883 854	4 325 487	18 251	3 014	1 319	1 163	2 511	-4 322 976
Turkey	23 202	3 079	1 980	1 229	1 788	6					
Ukraine	52 920	78 893	157 220	137 217	155 260	258 893	218 269	177 535	154 431	32 879	-122 381
United Arab Emirates	258 779	156 927	278 849	371 204	435 415	38 037	3 920	20 816	36 355	24 925	-410 490
United States of America	1 975 667	3 380 455	5 057 272	4 919 272	4 343 513	5 738 154	6 488 708	4 607 231	5 883 442	6 383 809	2 040 296
World	38 192 371	37 370 109	52 193 722	58 203 693	61 740 261	38 224 513	37 113 573	52 429 576	60 105 977	63 494 602	1 754 341

Source: FAOSTAT

Table 2bis: Export–import balance for different kinds of meat in the United States of America

	Balance Export–Import, 000 tonnes				
	2004	2005	2006	2007	2008
BEEF AND VEAL	-1 461 389	-1 317 213	-880 665	-734 663	-295 619
MUTTON AND LAMB	-78 305	-77 612	-78 159	-87 722	-77 657
PORK	490 806	745 590	910 459	986 426	1 741 256
BROILER	4 569 522	5 073 196	5 046 105	5 736 117	6 812 649

Source: Based on USDA data.

Table 3: Comparison of cost of feedgrains and mixed feed for pork in Kazakhstan and other countries

Comparison of cost of feedgrains Prices in USD and tenge as indicated per block	Kazakhstan			Russian Federation	United States	Brazil (south)		Netherlands/ EU
Domestic grain supply situation (scenario)-->	Severe surplus a)	Surplus	Shortage	Severe surplus	Surplus	Surplus	Shortage	Shortage
Cost of feedgrains	USD/tonne							
Gulf base grains (yellow maize for feed) USD/tonne b)	172	172	172	172	172	172	172	172
Advantage/disadvantage regional port to Gulf	5.0	5.0	40		0	-10	10	20
Quality deduction (broken grain, etc.)	-20.0	-10.0	0		-10	-5	0	0
To from regional port–inland, incl. elevators c)	-90.0	-50.0	50		-40	-40	40	4
Gulf price at inland (A)	67	117	262	81 (e)	122	130	222	196
Domestic grains farm costs (B)	100	100	120	110	115	130	130	190
50-50 average base grains for feed industry (A + B)/2	84	109	191	96	119	130	176	193
Comparison cost of feed mix for swine (porker)	T/kg							
Feedgrains price per kg	12.4	16.1	28.3	14.1	17.5	19.2	26.0	28.6
Added cost for swine feed, base per kg feed d)	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7
Correction +/- soya and feed mill scale effects per kg feed	1.0	1.0	1.0	3.0	-3.0	-1.0	-1.0	0.0
Compound swine feed pellets/kg feed	30.0	33.7	45.9	33.8	31.2	34.9	41.7	45.2

The projected price of grain inside Kazakhstan for a number or situations is indirectly derived from the price of United States yellow maize in the Gulf area, the main indicator for feedgrain. The "market" is considered a fictive place located e.g. in the southern Mediterranean. Thus, full transportation cost to the United States is not counted but, in principle, only the difference in transportation cost from either the Gulf or Kazakhstan to the Mediterranean. This leads to the "Gulf price at inland" (A). There is also a domestic price of grains derived from production costs (B). The average of A and B is taken as an indicator for the cost of feedgrains. The calculated prices thus have a fair correspondence with the prices that were found in the market.

For converting the grain into complete feed, price statistics series from the Netherlands were used to obtain costs of the added ingredients and mixing value. Plus (+) and minus (-) and corrections are applied to reflect the availability and cost of protein cake and economies of scale in processing.

a) Surplus so large that it cannot be transported adequately/extra rail cars have to be hired at high cost.

b) Data Pink Sheet World Bank, price Nov. 2009. It is assumed that where feed-quality wheat is available it is valued as yellow maize.

c) Transport for Kazakhstan Tobol-Novorossyisk (Black Sea) normally USD44.30/tonne + storage charges and elevators = approx. USD50 in total.

d) Based on data set (LEI) for the Netherlands.

e) USDA-FAS Russian Federation Grain and Feed Update 29/10/2009.

Table 4: Comparison of production cost of pork in Kazakhstan and other countries

Prices in USD and tenge as indicated per block											
	Kazakhstan					Russian Federation		Un ted States	Brazil (south)		Netherlands/ EU
Domestic grain supply situation -->	Severe surplus	Surplus	Surplus	Surplus	Shortage	Severe surplus	Surplus	Surplus	Surplus	Shortage	Shortage
Technology situation -->	Low	Low	Medium	Good	Medium	Low	Good	Good	Very good	Very good	Very good
Compound swine feed pellets/kg feed	30.0	33.7	33.7	33.7	45.9	33.8	37.6	31.2	34.9	41.7	45.2
Overall farm feed conversion (kg gain/kg feed)	4.4	4.4	3.5	3.1	3.5	3.7	3.2	3.21	2.86	2.86	2.75
Feed cost kg pork per kg LW	132	148	118	104	161	125	120	100	100	119	124
Per kg SW (80% of LW)											
Feed cost	165	185	147	131	201	156	150	125	125	149	155
Housing and heating	27	27	27	22	22	30	30	22	13	13	40
Labour	44	44	35	22	22	35	25	18	15	15	18
Miscellaneous	7	7	7	7	12	15	15	44	22	22	66
Financing cost	21	21	21	21	21	20	20	18	15	15	18
Subsidy	-98	-98	-98	-98	-98	0	0	0	0	0	0
Total cost	166	186	139	105	180	256	240	227	191	215	296
Total cost without subsidy	264	284	237	203	278	256	256	227	191	215	296
Farm-gate price (Dec. 2009)/kg SW (1)	368	368	368	368	368	607(2)	607	193	225	225	286
Margin without subsidy	104	84	131	165	90	351	367	-33	35	10	-10

Notes: (1) For Kazakhstan November price (producer region Kostanai); in December pork prices increased by about 20%.
(2) USDA GAIN Report No, RS 9059 of 21/9/2009: RUR 113 (quote from the Russian Ministry of Agriculture).

Sources: 1. Robert Hoste Linda Puister. 2009. Production cost of pork and international comparison. LEI Report No. 2008-82. Wageningen, Netherlands.
2. Field observations in Kazakhstan; miscellaneous Web site information, reconciliations (italic numbers) and projections (see text).

Table 5: Comparative feed cost for beef in Kazakhstan and other countries for a number of scenarios

Feeding cost for a bull calf from a dairy/dual-purpose herd from weaning at 80 kg to 420 kg LW (for small-framed cattle).											
	Kazakhstan					Russian Federation		United States	Brazil (south)		EU (Netherlands)
Domestic grain supply situation -->	Severe surplus	Surplus	Surplus	Surplus	Shortage	Severe surplus	Surplus	Surplus	Surplus	Shortage	Neutral
Technology situation -->	Low	Low	Medium	Good	Medium	Low	Good	Good	Good	Good	Good
	Tenge										
Feedgrains price/kg (see Table 6)	12.4	16.1	16.1	16.1	28.3	14.1	17.9	17.5	19.2	26.0	28.6
Added cost for cattle feed mix , base/kg feed	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Correction +/- soya and feed mill scale effects/kg feed	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	-1.0	-1.0	0.0
Compound cattle feed/kg feed	16.9	21.6	21.6	21.6	33.8	19.7	23.5	21.1	23.8	30.6	34.1
Pasture months	5	5	5	5	5	5	5	5	5	5	5
Price of grazing/animal month, incl. supplement feed if any	1 000	1 000	1 000	1 300	1 300	1 000	1 300	1 500	1 500	1 500	1 742
Subtotal cost/season	5 000	5 000	5 000	6 500	6 500	5 000	6 500	7 500	7 500	7 500	8 712
Average daily gain (kg/day)	0.35	0.35	0.40	0.55	0.40	0.35	0.55	0.60	0.35	0.35	0.7
Weight at end of period	133	133	140	163	140	133	163	170	133	133	185
Concentrate feed mix first winter	298	298	466	649	466	298	649	671	692	692	862
Prices	18	22	22	22	34	20	23	21	24	31	34
Subtotal cost/season	5 336	6 439	10 074	14 033	15 766	5 866	15 235	14 151	16 456	21 166	29 401
Harvested forage, kg air-dry basis	303	303	290	260	290	303	260	266	242	242	302
Prices	10	10	10	10	10	10	10	10	10	10	33
Subtotal cost/season	3 033	3 033	2 898	2 597	2 898	3 033	2 597	2 664	2 421	2 421	9 954
Average daily gain in winter (kg/day)	0.2	0.2	0.5	0.7	0.5	0.2	0.7	0.7	0.9	0.9	0.9
Weight at end of period	169	169	230	289	230	169	289	296	295	295	347
Pasture months second period (variable)	5	5	5	5	5	5	5	0	5	5	0

Feeding cost for a bull calf from a dairy/dual-purpose herd from weaning at 80 kg to 420 kg LW (for small-framed cattle).											
	Kazakhstan					Russian Federation		United States	Brazil (south)		EU (Netherlands)
Domestic grain supply situation -->	Severe surplus	Surplus	Surplus	Surplus	Shortage	Severe surplus	Surplus	Surplus	Surplus	Shortage	Neutral
Technology situation -->	Low	Low	Medium	Good	Medium	Low	Good	Good	Good	Good	Good
Price of grazing/animal month, incl. supplement feed if any	1 500	1 500	1 500	2 000	2 000	1 500	2 000	2 000	1 800	2 000	3 696
Subtotal cost/season	7 500	7 500	7 500	10 000	10 000	7 500	10 000	0	9 000	10 000	0
Average daily gain in second summer (kg/day)	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.5	0.5	0.7
Weight at end of period	244	244	305	379	305	244	379	296	370	370	347
Days feeding second period	252	252	128	35	128	252	35	89	36	36	52
Use of concentrate feed mixes, kg/season	1 338	1 338	741	221	741	1 338	221	507	228	228	320
Prices	18	22	22	22	34	20	23	21	24	31	34
Subtotal cost/season	23 968	28 920	16 014	4 774	25 063	26 345	5 182	10 699	5 420	6 971	10 915
Use of harvested forage, kg air-dry basis/season	535	535	296	88	296	535	88	203	91	91	128
Prices	10	15	18	18	18	18	18	20	20	20	24
Subtotal cost/season	5 353	8 030	5 336	1 591	5 336	9 636	1 591	4 059	1 823	1 823	3 097
Average daily gain in second winter (kg/day)	0.7	0.7	0.9	1.2	0.9	0.7	1.2	1.4	1.4	1.4	1.4
Total feed costs	50 191	58 922	46 822	39 494	65 563	57 379	41 104	39 072	42 620	49 881	62 079
Final weight	420	420	420	420	420	420	420	420	420	420	420
Total gain kg	340	340	340	340	340	340	340	340	340	340	340
Total feed costs/kg gain after weaning, LW	148	173	138	116	193	169	121	115	125	147	183
Age at 420 kg LW (months)	27.2	27.2	23.1	20.0	23.1	27.2	20.0	16.8	20.0	20.00	15.5

Sources: Estimated numbers. Considerations include: Improved ADG on pastures with supplements at T 300 to 500/month; Slower growth on tropical pastures in Brazil; Lower ADG in feedlots in Kazakhstan owing to lack of maize silage; Compensatory growth in feedlots in "Good" scenarios after pasture period.

Table 6: Semi-annual import volumes of beef and pork to the Russian Federation, and import prices

		Mln. USD	'000 tonnes	Price	Difference with chilled	Price
BEEF				USD	USD	T/kg
Import beef all	Jan.–June 2009	873	244	3.58	(1)	
	Jan.–June 2008	967	344	2.81	(1)	
	Jan.–June 2007	881	358	2.46		
Fresh and chilled	Jan.–June 2009	25.9	5.46	4.74		702
	Jan.–June 2008	36.2	8.75	4.14		612
	Jan.–June 2007	29.7	9.17	3.24		479
Frozen carcasses	Jan.–June 2009	25.8	8.2	3.13	1.61	463
	Jan.–June 2008	37.1	10.3	3.60	0.54	533
	Jan.–June 2007	46.6	17.3	2.69	0.55	397
Frozen cuts boneless	Jan.–June 2009	808.7	226.6	3.57	1.17	528
	Jan.–June 2008	889.9	323.2	2.75	1.38	408
	Jan.–June 2007	799.3	329.2	2.43	0.81	359
PORK						
Import pork all	Jan.–June 2009	823.4	274.3	3.00	(2)	444
	Jan.–June 2008	952.9	367.7	2.59		384
	Jan.–June 2007	689.6	282.4	2.44		361
Fresh and chilled	Jan.–June 2009	33	9.3	3.56		527
	Jan.–June 2008	43.1	12.4	3.51		519
	Jan.–June 2007	26.824	8.7	3.08		456
Frozen	Jan.–June 2009	762	258.3	2.95	0.61	437
	Jan.–June 2008	879.1	347.1	2.53	0.98	375
	Jan.–June 2007	639.9	266.5	2.40	0.68	355
Frozen hams	Jan.–June 2009	60.8	25.9	2.35		347
	Jan.–June 2008	78.2	36.1	2.17		321
	Jan.–June 2007	66.5	30.8	2.16		320
Frozen boneless	Jan.–June 2009	513	160.3	3.20		474
	Jan.–June 2008	573	215.5	2.66		394
	Jan.–June 2007	407.2	148.1	2.75		407

(1) 80% or more from South America , 8 000–17 000 tonnes from Ukraine, Australia.
(2) Brazil 40%, rest EU, United States, Canada.
Source: Adapted from USDA FAS GAIN Report No, RS 9095.

Table 7: Wholesale prices of imported and domestic beef and pork in the Russian Federation

Date		BEEF		PORK	
		Domestic	Import	Domestic	Import
		T/kg			
30-12-2003	1	258	278	263	273
29-12-2004	1	384	432	445	448
29-12-2005	1	417	440	438	454
29-12-2006	1	477	515	418	499
29-12-2007	1	611	635	559	602
28-12-2008	1	684	724	625	633
July 2009, processors 2		553		639	
Sources:	(1) USDA FAS using IKAR data; GAIN Report No. RS9010 of 3/5/2009.				
	(2) USDA FAS, GAIN RRS No. 9059 of12/1/2009.				
Data are converted to tenge using a fixed exchange rate of T 148 to USD1.					

Sources: (1) USDA FAS using IKAR data; GAIN Report No. RS9010 of 3/5/2009.
(2) USDA FAS, GAIN RRS No. 9059 of12/1/2009.
Data are converted to tenge using a fixed exchange rate of T 148 to USD1.

Table 8: Example of current wholesale offer on the Internet in the Russian Federation

Price list	www.apraksin.ru/lait-prod/price_alfa.xls		
4	Alpha, tel.329-3511		
6	In currencies, the prices.		
7	Prices listed on 25/12/2009		
10	Price group/omenclature/characteristics of nomenclature	Retail	
11		Price	Ed.
12			
13	VETERINARY INFORMATION		
14	Veterinary certificate 150 (perekidka)	150.00 rub.	pc
15	Veterinary certificate 450 (by region)	450.00 rub.	pc
16	BONELESS BEEF		
17	Beef boneless “shank” 20–30 kg (Brazil)	133.00 rub.	kg
18	Beef boneless “shank” 15–32 kg (Argentina)	135.00 rub.	kg
19	Beef boneless “shank” Minerva 20–25 kg (Brazil)	135.00 rub.	kg
20	Boneless beef “brisket” 20–25 kg (Brazil)	122.00 rub.	kg
21	Beef boneless “knakl” Bertin 20–25 kg (Brazil)	184.00 rub.	kg
22	Beef boneless “blade (Bertin)” 19–29 kg (Brazil)	148.00 rub.	

Table 9: Value chains for different kinds of meat and level of

processing

Farm prices Kostanai December 2009; consumer prices Astana December 2009										
	Parameter	Beef		Mutton (young)		Pork		Horsemeat		Notes
		Per head	kg SW	Per head	kg SW	Per head	kg SW	Per head	kg SW	
A. Formal (green) chain										
LW		390		40		110		400		
Conversion LW to SW		0.5		0.6		0.8		0.55		
Kg SW		195		24		88		220		
Farm-gate net kg SW		82 411	423	11 004	459	36 849	419	118 736	540	
Commissioner or trader or management		2 609	13	348	14	1 167	13	3 808	17	
Transport, first leg		1 950	10	240	10	880	10	4 400	20	
Farm-gate KAM data		86 970	446	11 592	483	38 896	442	126 944	577	a)
Slaughter costs (Including inspection)		12 916	66	2 153	90	5 829	66	14 572	66	
Yield by products (offal, skin, casings, fat)		-10 740	-55	-960	-40	-3 520	-40	-11 000	-50	
Net profit slaughterhouse (% over costs)	20%	2 583	13	431	18	1 166	13	2 914	13	
Wholesale purchase prices		91 729	470	13 215	551	42 371	481	133 430	607	
VAT 12% is deductible later on	12%		pm		pm		pm		pm	
Cold store hire, 3 days (tonnes/day)	1 000		0		3		0		3	b)
Cold transport 400 km (T/tonne/km)	30		12		12		12		12	
Wholesale trader commission (% over value)	3%		0		17		0		18	b)
Processor/packer purchase price		94 069	482	13 972	582	43 427	493	140 733	640	
Meat yield after partly deboning (% yield)	80%	156		21	(leg not deboned)	70		176		
Processor purchase price/kg deboned			603		659		617		800	
Processing costs: deboning, packing (per kg)	30		30		30		30		30	

	Parameter	Beef		Mutton (young)		Pork		Horsemeat		Notes
		Per head	kg SW	Per head	kg SW	Per head	kg SW	Per head	kg SW	
Delivery and marketing costs (per kg)	5		5		5		5		5	
Processor net margin and risk (% over costs)	20%		7		7		7		7	
Purchase price retailer, deboned, packed			645		701		659		842	
Total margin and risk retailer (% over value)	15%		97		105		99		126	
Sales price ex-VAT			742		806		758		968	
Sales price including VAT	12%		831		903		849		1 084	
Observed market prices, class 1 supermarkets, deboned		800-1 000		900		900		11 00-1 200		
B (Semi)-informal chain										
LW				44		110		420		
Conversion LW to SW				0.55		0.8		0.55		
Kg SW				24		88		231		
Farm-gate net kg SW				10 992	458	36 696	417	124 744	540	
Trader and market fees				360	15	1 320	15	3 927	17	
Transport, first leg				240	10	880	10	4 620	20	
Farm-gate KAM data				11 592	483	38 896	442	126 944	577	a)
Slaughter costs				833	35	2 444	28	6 417	28	c)
Yield by products (offal, skin, casings, fat)				-960	-40	-3 520	-40	-11 550	-50	
Net profit slaughterhouse (% over costs)	20%			167	7	489	6	1 283	6	
Wholesale purchase prices				11 632	485	38 309	435	123 094	560	
Cold store hire, 3 days (tonnes/day)	3 000				9		9		9	
Cold Transport 400 km (T/tonne/km)	30				12		12		12	
Wholesaler commission and risk (% over value)	3%				15		13		17	

	Parameter	Beef		Mutton (young)		Pork		Horsemeat		Notes
		Per head	kg SW	Per head	kg SW	Per head	kg SW	Per head	kg SW	
Bazaar purchase price				12 341	514	40 779	463	136 789	592	
Meat yield after partly deboning (% yield)	85%			22		75		196		
Bazaar purchase price/kg partly deboned					551		545		697	
Processing costs : basic cutting only	10				10		10		10	
Veterinary inspection (legal meat)	275				3		3		2	
Market stall fees	5				5		5		5	
Bazaar profit and risk (% over value)	5%				28		27		35	
Sales price ex-VAT					603		590		756	
Sales price including VAT	8%				641		634		806	d)
Bazaar prices, Astana found and reported by KAM					600		600		700-800	e)

Notes:

a) Farm-gate prices reported by KAM are on the high side, and may reflect prices in the market. For horses, the slaughter animal price is about 80% of the live horse prices reported by KAM. It appears that breeding horses are in demand and are traded above slaughter value.

b) Where zero is entered, there is no involvement of a trader.

c) Slaughter cost in the informal sector estimated as cost of 1 workday/cow plus simple facilities.

d) Estimated at 2/3 of VAT as 1/3 is not paid.

e) In Almaty, prices for beef and mutton are about 15–20% higher than in Astana.

Table 10: Customs duties

Meat, milk and poultry exports are not subject to customs duties. There are export duties for some types of wool.

A. Customs tariffs for meat

Code	Commodity	Import duty
0201	Bovine meat, fresh or chilled	25% but not less than EUR 0.35/kg
0202	Bovine meat, frozen	25% but not less than EUR 0.35/kg
0203	Pigmeat, fresh, chilled or frozen	25% but not less than EUR 0.35/kg
0204	Sheep or goat meat, fresh, chilled or frozen	25% but not less than EUR 0.35/kg
0205	Horse, ass, mule, hinny meat, fresh, chilled or frozen	25% but not less than EUR 0.35/kg
0206	Edible offal, bovine, swine, sheep, goat, horse, ass, mule, hinny, fresh, chilled or frozen	25% but not less than EUR 0.35/kg
	Exception: if used for production of pharmaceutical products, including commodity codes: (etc.)	5%
0207	Meat and edible offal of poultry, fresh, chilled or frozen	20% but not less than EUR 0.4/kg
0208	Meat and edible offal ...., fresh, chilled or frozen	25% but not less than EUR 0.35/kg
0209	Pig and poultry fat fresh chilled frozen salted dried smoked	15% but not less than EUR 0.15/kg
0210	Meat and edible offal salted, dried etc. and flour and meal	15% but not less than EUR 0.4/kg

B. Customs tariffs for meat products

Code	Commod ty	Import duty
1601	Sausages, similar product meat etc food prep of these	25% but not less than EUR 0.4/kg
1602	Prepared or preserved meat, meat offal & blood ...	25% but not less than EUR 0.4/kg

Table 11: Tariff rate quota

	Quota ('000 tonnes) (a)	Below-quota rate	Above-quota rate (b)
Bovine meat, frozen	10	Provisionally assumed that old rates will apply	30% but at least EUR 0.30/kg
Pork	7.4		75% but at least EUR 1.50/kg
Poultry	110		95% but at least EUR 0.80/kg

(a) Customs Union Decision No, 130 www.tsouz.ru/db/ettr/pages/kvota.aspx.
(b) USDA: Russian Federation Livestock and Products Semi-Annual Report, executive summary on www.thepigsite.com/articles/7/markets-and-econmics/2660/russian-federation.

Table 12: Slaughter by meat processors, by region (tonnes)

Region	2005	2006	2007	2008	Jan. –Nov. 2009
Kazakhstan	92 429	100 454	120 032	124 571	106 365
Kostanai	4 229	3 650	4 346	4 673	4 134
Northern Kazakhstan	6 716	5 806	7 295	6 516	5 773
Akmola	3 899	3 150	2 478	2 901	3 048
Astana City	1 509	2 327	1 793	1 815	1 424
Pavlodar	9 399	9 392	11 466	11 240	8 685
Northern crop region	25 752	24 325	27 378	27 145	23 064
Eastern Kazakhstan	16 336	17 212	18 590	17 752	15 327
Almaty oblast	18 130	23 056	30 353	30 143	27 946
Almaty City	6 938	5 721	5 895	5 631	4 012
Zhambyl oblast	2 568	4 915	7 941	8 227	6 937
Southern Kazakhstan	7 345	7 923	7 481	7 514	6 206
East and South	51 317	58 827	70 260	69 267	60 428
Karaganda oblast	6 306	7 680	9 933	14 043	10 873
Aktobe oblast	3 471	3 847	5 079	5 247	4 778
Western Kazakhstan	4 737	4 897	6 219	7 683	6 117
West and Centre Steppe	14 514	16 424	21 231	26 973	21 768
Atyrau oblast	7	14	118	47	110
Kyzylorda oblast	809	833	990	1 074	947
Mangistau oblast	31	28	53	64	46
Desert regions	847	875	1161	1185	1103

Based on Statistics Agency data. Breakdown by oblast based on share of processing in Kazakhstan and total volumes of processed meat.

Table 13: Average beef wholesale prices, 2006 to 2009 (tenge/kg)

Month	Kazakhstan	Astana	Aktau	Aktobe	Almaty	Atyrau	Kyzylorda	Kokshetai	Karaganda	Kostanai	Pavlodar	Petropavlovsk	Taraz (Zamb)	Taldykorgan	Uralsk	Ust-Kamenogorsk	Shymkent
Jan. 2006	336	375	491	345	321	427	321	326	355	334	293	293	323	313	280	287	326
Feb. 2006	347	382	456	360	330	481	323	335	348	334	316	312	323	338	280	334	326
Mar. 2006	349	373	506	373	335	491	323	341	335	334	319	313	323	345	280	332	326
Apr. 2006	352	380	533	377	339	481	323	332	333	333	328	304	323	345	285	331	326
May 2006	359	390	548	396	348	448	323	324	336	333	342	300	328	345	302	373	326
Jun. 2006	356	393	469	428	349	424	327	339	336	333	326	298	331	345	318	375	324
Jul. 2006	350	393	410	385	357	390	335	335	350	335	358	291	302	345	320	339	341
Aug. 2006	349	386	400	380	368	364	359	339	316	348	362	290	324	342	320	330	361
Sep. 2006	353	383	403	393	370	368	365	339	320	352	339	292	360	343	320	338	368
Oct. 2006	349	385	405	400	389	374	365	343	310	314	332	312	368	337	312	286	369
Nov. 2006	347	382	405	382	404	378	365	336	318	305	346	286	365	330	305	273	370
Dec. 2006	352	382	405	403	420	381	365	341	323	308	365	287	365	330	300	280	370
Jan. 2007	362	378	424	430	423	423	365	340	374	315	366	295	370	330	300	298	370
Feb. 2007	369	399	419	391	419	464	365	340	390	315	375	304	370	330	300	352	370
Mar. 2007	385	420	500	420	437	483	365	340	420	315	393	313	370	330	305	374	370
Apr. 2007	389	421	525	414	450	490	365	340	413	311	374	319	410	330	310	371	381
May 2007	405	444	555	419	476	498	374	340	441	320	373	320	442	343	314	390	426
Jun. 2007	417	450	572	420	547	495	431	340	415	329	373	319	465	346	320	413	429
Jul. 2007	418	467	486	481	542	482	445	345	409	357	373	331	470	363	320	390	430
Aug. 2007	413	452	509	524	560	410	447	296	374	314	373	348	484	386	320	373	436
Sep. 2007	420	465	469	528	564	414	450	292	380	343	378	348	505	422	320	369	481

Month	Kazakhstan	Astana	Aktau	Aktobe	Almaty	Atyrau	Kyzylorda	Kokshetai	Karaganda	Kostanai	Pavlodar	Petropavlovsk	Taraz (Zamb)	Taldykorgan	Uralsk	Ust-Kamenogorsk	Shymkent
Oct. 2007	434	459	510	521	580	410	468	348	380	388	383	348	532	445	320	360	497
Nov. 2007	442	438	548	511	580	410	510	353	380	405	383	354	513	500	320	366	508
Dec. 2007	443	449	545	400	590	415	482	328	395	447	385	407	510	500	335	391	515
Jan. 2008	466	473	614	480	595	442	500	322	438	423	403	387	515	507	410	426	512
Feb. 2008	472	488	656	480	575	488	500	340	449	360	408	387	508	530	413	457	518
Mar. 2008	469	504	541	480	575	470	500	385	468	360	396	384	504	529	420	475	514
Apr. 2008	474	518	570	484	587	481	500	400	486	361	363	390	515	504	420	500	500
May 2008	496	576	583	496	610	493	500	463	490	389	411	426	523	495	435	552	500
Jun. 2008	503	592	575	500	610	475	500	500	490	400	469	439	525	495	448	525	500
Jul. 2008	497	585	588	496	619	427	500	520	478	400	508	439	525	495	442	448	487
Aug. 2008	492	566	631	480	625	415	500	490	464	400	508	440	521	492	440	410	488
Sep. 2008	492	568	640	480	625	417	500	510	450	400	508	434	520	486	440	404	490
Oct. 2008	492	559	596	480	612	425	550	475	450	400	513	431	520	485	440	404	525
Nov. 2008	475	519	575	480	601	425	564	419	435	398	423	428	520	484	435	403	493
Dec. 2008	472	528	569	480	602	424	563	400	435	393	419	433	505	472	435	407	493
Jan. 2009	480	560	565	480	611	426	563	436	470	456	431	413	500	450	435	413	491
Feb. 2009	484	556	574	480	608	447	560	423	486	432	487	409	501	450	435	445	488
Mar. 2009	499	577	565	480	597	496	560	423	509	432	504	433	519	450	465	515	488
Apr. 2009	509	605	563	480	597	503	560	423	510	432	550	446	534	450	480	543	507
May-09	518	615	560	480	596	548	573	426	511	433	550	452	535	476	485	543	528
Jun. 2009	519	624	560	480	577	550	574	427	512	443	544	459	542	483	485	512	545
Jul. 2009	510	604	560	480	596	510	576	435	495	435	540	459	549	490	470	457	530

Table 14: Regression analysis of price reaction to volume of supply of beef

14.A. Prices and production volumes of beef, and national currency rate

Prices, July to Nov, T/kg	496.30	502.57	497.44	491.95	492.05	492.05	474.75
Production, June to Dec. '000 tonnes LW	82.00	52.00	67.90	88.40	80.00	91.00	131.00

14.B. Regression statistics

Multiple R	0.976
R square	0.953
Adjusted R square	0.944
Standard error	2.06
Observations	7

14.C. Regression coefficients

	Coefficients	Standard error	t stat	P value	Lower 95%	Upper 95%
Intercept	521.94	3.02	172.68	0.00	514.17	529.71
Production	-0.35	0.03	-10.10	0.00	-0.44	-0.26

Multiple R value is higher than ratio of 2 to the square root of the observations number (0.76). The absolute values of t stat for production variable is higher than 2.5. The variables' 95% reliability interval does not include zero. Thus, the correlation between the production volume and average price is statistically significant with 95% reliability. According to this model, changes in production volume explain 95.3% price fluctuations. The dependence function is represented by the following formula:

$$y = 521.94 - 0.35 * x$$

where y is the price and x the production volume of the previous month.

According to this model, an increase of 1 000 tonnes of monthly beef production volume causes a T 0.35 reduction in the average price.

Table 15: Per capita income, by region

	Index of real monetary per capita income							Nominal per capita income	
	2003	2004	2005	2006	2007	2008	2003–2008 av.	T/month 2008	USD/year
Republic of Kazakhstan	**110 5**	**113.8**	**114.5**	**111.7**	**118.9**	**104.3**	**112.3**	**30 781**	**2 496**
Akmola	110.4	109.7	112.3	120.6	122.7	111.5	114.5	25 859	2 097
Aktobe	109.9	113.0	115.3	106.6	117.5	107.8	111.7	30 296	2 456
Almaty oblast	107.8	118.9	108.0	122.2	122.5	111.4	115.1	21 959	1 780
Atyrau	113.3	102.7	122.7	88.1	122.8	114.3	110.7	66 150	5 363
West Kazakhstan	110.0	101.6	109.7	92.4	122.5	111.6	108.0	30 828	2 500
Zhambyl	104.7	117.3	122.7	122.2	127.2	108.6	117.1	21 251	1 723
Karaganda	108.1	112.9	102.5	111.7	118.4	113.1	111.1	30 948	2 509
Kostanai	115.5	114.7	112.2	121.4	120.6	104.0	114.7	26 424	2 142
Kyzylorda	110.6	115.5	120.7	109.3	117.9	117.9	115.3	25 727	2 086
Mangistau	110.0	112.4	114.1	99.4	104.5	108.7	108.2	56 128	4 551
South Kazakhstan	107.5	115.6	119.6	120.9	117.5	103.0	114.0	17 639	1 430
Pavlodar	109.7	114.7	103.2	109.0	118.6	114.8	111.7	31 549	2 558
North Kazakhstan	107.2	115.5	105.2	120.5	115.9	109.2	112.2	24 286	1 969
East Kazakhstan	102.5	109.6	99.2	121.2	119.9	103.4	109.3	26 508	2 149
Astana City	116.6	119.0	116.7	106.0	113.4	103.8	112.6	59 290	4 807
Almaty City	107.7	110.8	111.1	116.1	116.6	92.3	109.1	58 214	4 720

Table 16: Estimate of expenditure on meat at different income levels

	Data								Estimates		
	Production	Import	Export	To products	Consumption	Consumption per capita	Price kg low	Price kg high	Extra volume high income	Cost per capita	
										Low Income	High Income
	'000 tonnes						T/kg		%	T/capita/year	
Total all meats	932.2	190.2	2.9		1074	69.0				.	.
Beef	400.1	11.7	0.4	17.0	394.5	25.3	600	900	10%	15 200	25 081
Horsemeat	66.3	2.1		2.1	66.3	4.3	700	1100	10%	2 981	5 152
Mutton	130.8	0.3		0.3	130.8	8.4	600	900	10%	5 040	8 317
Pork	206.2	9.1		13.8	201.6	12.9	600	900	10%	7 767	12 815
Other	5.5	0.6			6.1	0.4	600	900	10%	235	388
Poultry	65.3	132.6	2.5		195.4	12.5	350	550	10%	4 392	7 593
Offal	12.5			12.5	0.0						
Sausages	40.5	28.4	0.0		68.9	4.4	600	900	10%	2 655	4 381
Canned meat	5.0	5.4	0.0		10.4	0.7	600	900	10%	401	661
Total from products	45.5			45.6					TOTAL	38 672	64 388
Total consumption in USD										261.3	435.1
Price USD/kg										3.8	5.7
Average income USD										2 500	5 000
Food in CPI*										40%	33%
Value food in CPI										1 000	1 650
Meat in food										26%	26%
* OECD-FAO averages.											

Table 17: Scenarios for demand of different qualities of meat and surplus for export

SCENARIO 1											
tem	Parameter	Parameter	2008	2009	2010	2011	2012	2013	2014	2015	2016
Per capita income, constant USD	incr./y	9%	2 500	2 725	2 970	3 238	3 529	3 847	4 193	4 570	4 981
% income on food			40%	39%	38%	37%	37%	36%	35%	34.3%	34%
% meat in food			27%	27%	26%	26%	25%	25%	24%	24%	23%
Value of meat purchase			267	281	295	310	325	341	357	374	391
Quantity of meat p. capita	kg incr./% PCI	0.05	69.0	69.4	69.9	70.3	70.8	71.2	71.7	72.1	72.6
Av. price of meats	USD/kg		3.87	4.04	4.22	4.40	4.59	4.79	4.98	5.18	5.39
Av. price of meats, demand	T/kg		573	598	625	652	680	708	737	767	798
Base meat price	Incr./year	1%	561	566	571	576	581	586	592	597	602
Base meat market share			90%	89%	82%	74%	67%	60%	52%	44%	37%
High meat price	Incr./year	1%	849	856	864	872	880	888	896	904	912
High meat market share			10%	11%	18%	26%	33%	40%	48%	56%	63%
Av. price realized with breakdown			589	598	625	652	680	708	737	767	798
Population	Incr./year	1.13%	16	16	16	16	16	16	17	17	17
Volume, '000 tonnes consumption			1 074	1 093	1 113	1 132	1 153	1 173	1 194	1 215	1 236
Volume base meat			967	970	908	842	772	698	621	540	456
Volume high meat			107	123	205	291	381	475	573	674	780
Sausages and canned, incl. in base meat	Share	6.6%	63	64	60	55	51	46	41	35	30

tem	Parameter	Parameter	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sausages and canned, incl. in high meat	Share	14.8%	16	18	30	43	56	70	85	100	115
Total sausages and canned			79	82	90	98	107	116	125	135	145
Total processed and packed			171	187	264	346	431	520	613	710	810
Rural slaughterhouses houses 500 tonne units		500	342	373	529	692	863	1 041	1 227	1 420	1 620
Domestic factories, 6 000 tonns units		6 000	29	32	45	58	72	87	103	119	135
Available '000 tonnes	Initial	Annual growth									
Beef (to max. 600 000 tonnes)		2.5%	400	410	420	431	442	453	464	476	487
Horse (Increasing to max. 110 000)		5.0%	66	70	73	77	81	85	89	93	98
Mutton and other (to max. 170 000 tonnes)		3.0%	136	140	145	149	153	158	163	168	170
Pork (Increasing to max. 300 000 tonnes)		3.0%	206	212	219	225	232	239	246	254	261
Poultry and imports (to max. 300 000 tonnes)		3.0%	195	201	207	214	220	227	233	240	248
Industrial meat and offal im/export			22	26	23	20	16	12	6	1	-6
Luxury meat import			2	2	2	2	2	2	2	2	2
Sausage and canned import		-12.0%	34	30	26	23	20	18	16	14	12
Local offal for sausage and canned			11	12	20	29	38	47	57	67	78
Total			**1 073**	**1 104**	**1 136**	**1 170**	**1 204**	**1 240**	**1 276**	**1 314**	**1 351**
Use '000 tonnes											
Sausage and canned consumption			79	82	90	98	107	116	125	135	145
Local offal for processing			11	12	20	29	38	47	57	67	78
Local beef trimmings for industry			6	7	10	13	16	20	23	27	30

tem	Parameter	Parameter	2008	2009	2010	2011	2012	2013	2014	2015	2016
Local pork trimmings for industry			6	7	10	13	16	20	23	27	30
Im(+)/export(-) trimmings offal			22	26	23	20	16	12	6	1	-6
Horse production			66	70	73	77	81	85	89	93	98
Mutton and other production			136	140	145	149	153	158	163	168	170
Fresh pork production, trimmings			200	205	209	212	216	220	223	227	231
Poultry and import as is			195	201	207	214	220	227	233	240	248
Luxury import meat			2	2	2	2	2	2	2	2	2
Fresh local beef = balance of consumption			395	393	387	381	374	366	358	350	343
Prime beef available for export '000 tonnes			-1	10	23	37	52	67	83	99	114
Total			**1 073**	**1 104**	**1 136**	**1 170**	**1 204**	**1 240**	**1 276**	**1 314**	**1 351**
Number of export factories 5 000 tonne scale		6 000	0	2	4	6	9	11	14	17	19

Table 18: List of 83 meat processing companies

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
1	Astana	Large	ТОО Apple City Food	Meat processing	Промзона тел. 91-11-51, 91-11-56 Gulden@applecity.kz	Чирков М.А.	2 640 (a)
2	Astana	Large	ТОО Апрель	Meat processing	г. Астана, ул. А. Молдагуловой, 27б	Абышев Ермек Ануарбекович	1 716
3	Astana	Medium	ТОО Пищекомбинат Астаналык	Meat processing	ул. Дулатова, 191 тел. 73-14-44 (104)	Юрченко Ю.В.	650
4	Astana	Medium	ТОО Александров	Meat processing	г. Астана ул. Бейсекбаева, 28, тел. 34-61-91	Александров Александр Павлович	657
5	Almaty	Large	СП Беккер иК	Sausage production	ул. Розыбакиева, 95 пр. 246-42-78, тел. 246-44-05, ф. 250-93-31, becker@asdck	Кравченко Иван Михайлович	2 880
6	Almaty	Large	ТОО Ораз	Sausage production	ул. Северное кольцо, 49 тел./ф. 234-83-48	Есельбаев Асет Наримановичч	1 400
7	Almaty	Medium	ИП Бижан	Sausage production	ул. Дулатова, 52б, тел./ф. 294-35-22, 236-14-37	Бижан Хадиша Нуртаевна	475
8	Almaty	Medium	ТОО Еткон	Sausage production	ул. Булкышева, 92А, тел. 233-27-64, ф. 233-27-77	Хегай Галина Петровна	404
9	Almaty	Medium	ЧП Тян	Sausage production	ул. Сатпаева, 90 тел. 260-10-60, ф. 259-74-13	Тян Юрий Алексеевич	375
10	Akmola region	Large	ТОО Щучинский мясокомбинат	Meat processing	Щучинский район, г. Щучинск, ул. Заречная, 44, тел. 3-08-82	Строкалис Николай Федорович	3 600
11	Akmola region	Large	ТОО Жана Бас	Meat processing	Щучинский район, г. Щучинск, тел. 3-29-29, 4-50-33	Богданец Виктор Григорьевич	2 650
12	Akmola region	Medium	АО Акмола Феникс	Poultry, sausage production	Целиноградский район, с. Малиновка, тел. 2-72-21	Юрьев Анатолий Федорович	1 440
13	Akmola region	Medium	ТОО Бай-Азат	Sausage production	Шортандинский район, п. Шортанды, тел. 8(716 31) 2-27-36, 2-27-60	Сербиладзе Николай Давыдович	1 200

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
14	Akmola region	Medium	ТОО Тамыз	Meat processing	Аршалынский район, с. Жибек жолы, тел. 2-56-00	Бычков Павел Венедиктович	520
15	Akmola region	Medium	КХ Виктория	Meat processing	Есльский район, г. Есиль, тел. 2-17-82	Гетманов Сергей Николаевич	510
16	Akmola region	Medium	ТОО Амантай	Meat processing	Атбасарский район, с. Мариновка, тел. 5-15-24	Макрашев Дюсен Макрашевич	480
17	Akmola region	Medium	ТОО Хладокомбинат	Sausage production	г. Кокшетау, р-н нового мясокомбината, тел. 77-26-54, 77-13-55	Бектасов Кенес Бектасович	384
18				Meat processing			1 440
19	Akmola region	Medium	ТОО ОСКО	Sausage production	Щучинский район, г. Щучинск, ул. Степная, 113, тел. 4-23-01	Осипов Константин Петрович	130
20	Aktobe region	Large	ТОО Владимир и Д	Canned meat	г. Кандыагаш, ул. Калыбаева, 25	Исмуханов Айдын Каирболатович	2 025
21	Aktobe region	Medium	ТОО Рокос ввод янв. 2009г.	Sausage production	г. Актобе, 41р, тел. 8 (7132) 98-72-82	Ни Аркадий Юрьевич	2 025
22	Aktobe region	Medium	ТОО Адель и М	Sausage production	г. Актобе, пр. Победы, 8, тел. 50-18-82, 50-34-06	Пан Анна Владимировна	400
23	Aktobe region	Medium	ТОО Бал-Юн	Sausage production	г. Актобе, пр. 312, стр. див. 28А, тел. 50-03-70	Степаненко Нина Ивановна	400
24	Aktobe region	Medium	ТОО Глоб	Sausage production	г. Актобе, пер. Дальний, 1, тел. 23-23-07	Тулегенов Руслан Аманжолович	400
25	Aktobe region	Medium	ТОО Тандем W	Sausage and canned meat production	г. Актобе, Промзона, тел. 23-23-07	Талаева Таттыгуль Жаксыбайевна	250
26	Aktobe region	Medium	ТОО Есік	Sausage and canned meat production	г. Актобе, Лесхоз, тел. 8 (7132) 24-21-92, 92-10-20	Намешов Ерлан Князбайевич	250
27	Aktobe region	Medium	ТОО Степное	Sausage production	ргалинский р-н, с. Степное, тел. 8 (713-42) 2-97-41, 2-96-10	Тулеуов Амангос Сансызбайевич	750

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
28	Aktobe region	Medium	АО Агрофирма ДГОК	Sausage production	Хромтауский р-н, Промзона, тел. 8 (713-36) 3-40-52	Медерова Роза Тлеугалиевна	375
29	Aktobe region	Medium	ТОО Қайсар	Sausage production	Мартукский р-н, п. Хлебодаровка, тел. 8 (713-31) 2-71-56	Ашимова Бибигуль Елтайевна	250
30	Almaty region	Large	ТОО КазРОС-Бройлер	Poultry production	Уйгурский р-н, с. Бахар, сот. 8 777 4812346, тел. 8(7273) 21-00-91, офис в г. Алматы 8(7272) 91-60-84, 93-88-47	директор–Кыдырбаева Светлана Хайдаровна, исп. Проскуряков Юрий Васильевич	24 000
31	Almaty region	Large	АО Бент	Poultry processing	Илийский р-н, п. Первомай, тел. 8(7272) 63-16-52, 99-36-52, 99-36-90	Кузиев Дильмурат Пирмухамбетович	8 000
32	Atyrau region	Medium	ТОО Макаш	Meat processing	Курмангазинский р-н, тел. 8(71233) 3-21-01	Кажымгалиев У.	500
33	Atyrau region	Medium	ТОО Самрук Өнімдері	Meat processing	Макатский р-н, сот. 8 701 722 69 51	Зирьянов А.	500
34	Atyrau region	Medium	КХ Қорған	Meat processing	Махамбетский р-н, тел. 8(71236) 2-17-80	Куанышев А.	100
35	Atyrau region	Medium	ТОО Данис-сервис	Meat processing	Исатайский р-н, тел. 8(71231) 2-45-24	Актажин Б.	50
36	East Kazakhtan	Large	ТОО Семипалатинский мясокомбинат	Sausage and canned meat production	г. Семей, ул. Краснознаменная, 13, тел. 33-51-99, 33-52-55	Килишбеков Болат Акилжанович	8 400
37	East Kazakhstan	Large	ТОО Шемазат	Meat processing	г. Риддер, тел. 5-63-51, 5-70-69	Гарыничев Борис Анатольевич	3 696
38	East Kazakhstan	Large	ТОО Улан	Meat processing	г. Усть-Каменогорск, тел. 57-40-69	Ногайбаев Хамит Кусаинович	720
39	East Kazakhstan	Large	ТОО Валеас	Meat processing	г. Семей, ул. Набережная, 55, тел. 64-56-45, 64-02-18	Кособринов Александр Иванович	3 600
40	East Kazakhstan	Large	ТОО Аксуат-ет	Meat processing	Тарбагатайский р-н, с. Аксуат	Кажагалиев Сайлаубек	480
41	East Kazakhstan	Large	ТОО Швабские колбаски	Meat processing	Урджарский р-н, С. Жанай, тел. 2-22-78, 2-17-06	Сейтканов Кусайын Бейсенович	1 080

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
42	East Kazakhstan	Medium	СПК Калба	Meat processing	Жарминский р-н, с. Колбатау, тел. 6-56-74	Ракымжанулы Сати	2 880
43	East Kazakhstan	Medium	ТОО ВК Бекон	Meat processing	Уланский р-н, Восточное, тел. 25-22-77	Сукневич Владимир Владимирович	540
44	East Kazakhstan	Medium	ТОО Арарат	Meat processing	Шемонаихинский р-н, г. Шемонаиха, ул. Вокзальная, 256, тел. 3-10-01	Волженин Николай Станиславович	1 800
45	East Kazakhstan	Medium	ИП Мирзоян	Meat processing	Шемонаихинский р-н, г. Шемонаиха, ул. Вокзальная, 2, тел. 3-03-03	Мирзоян Шура Аршакович	2 880
46	East Kazakhstan	Medium	ТОО Бона	Meat processing	г. Усть-Каменогорск, ул. Лермонтова, 50/1, тел. 47-88-11	Попов Виталий Владимирович	900
47	East Kazakhstan	Medium	ИП Баков	Meat processing	г. Усть-Каменогорск, ул. Авроры, 62, тел. 53-28-08	Баков Николай Степанович	72
48	East Kazakhstan	Medium	ТОО ВК Иртыш	Meat processing	г. Усть-Каменогорск, пр. Абая, 191, тел. 23-00-24, сот. 8 777 5839714	Карючина Валентина Леонидовна	850
49	East Kazakhstan	Medium	ТОО Багира	Meat processing	г. Усть-Каменогорск, ул. Лениногорская, 102, тел. 50-28-85	Белобородова Любовь Ивановна	432
50	East Kazakhstan	Medium	ТОО Нур-Зырян	Meat processing	Зыряновский р-н, г. Зыряновск, ул. Промышленная, 3, тел. 7-01-42	Уранкаев Темирхан Мамырбекович	234
51	East Kazakhstan	Medium	ТОО Зыряновские колбасы	Meat processing	Зыряновский р-н, ул. Кирзаводская, тел. 6-98-59	Керцман Михаил Яковлевич	180
52	East Kazakhstan	Medium	К/Х Е.Зайтенов	Meat, milk, bakery, fat-and-oil production	Бородулихинский р-н, с. Бородулиха, тел. 2-13-34	Зайтенов Ерлан Амирбекович	
53	Zhambyl region	Large	ТОО Мерке-ет	Meat processing	Меркенский р-н, с. Т. Рыскулова, тел. 8(726-32) 2-33-73	Егембердиев Б.Е.	2 800
54	Zhambyl region	Medium	АО Подгорное	Meat processing, grain production	р-н Т. Рыскулова, с. Юбилейное, тел. 8(726-31) 2-14-41	Садыков С.	336

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
55	Zhambyl region	Medium	ТОО Леодр	Meat processing	г. Тараз, пр. Жамбыла, 5, тел. 8(7262) 42-61-25	Пак А.С.	336
56	Zhambyl region	Medium	ТОО Гамбург	Meat processing	Жуалынский р-н, с. Бурнооктябрьское, тел. 8(726-35) 2-53-46, 8(7262) 45-96-33	Кох Г.	280
57	Zhambyl region	Medium	ЧП Мамбетова	Meat processing	Байзакский р-н, с. Талас, тел. 8 701 598 19 13	Мамбетова Р.И.	280
58	Zhambyl region	Medium	ЧП Антоненко	Meat processing	г. Тараз, ул. Наманганская, 135, тел. 8(7262) 45-98-29	Антоненко С.П.	140
59	Zhambyl region	Medium	ТОО Мясной мир	Meat processing	г. Тараз, ул. Махамбет батыра, 14а, тел. 8(7262) 42-50-73	Абдусаликов А.А.	140
60	Zhambyl region	Medium	ТОО Бриг Компани	Meat processing	Кордайский р-н, с. Кордай, тел. 8(726-36) 2-26-00, сот. 8 701 716 24 73	Жансериков Б.Ж.	100
61	West Kazakhstan region	Large	ТОО Береке	Sausage production	тел. 28-34-43	Айдаров К.К.	67 500
62	West Kazakhstan region	Large	ТОО Ибрагим	Meat processing, sausage production	г. Уральск ул. Раздольные, 1/1	Махметов Юрий Александрович	4 500
63	West Kazakhstan region	Large	ТОО Жаик ет	Meat processing, sausage production	г. Уральск, ул. Гагарина, 70	Султангалиев Асан Мендыбаевич	4 500
64	West Kazakhstan region	Large	ТОО Кублей	Canned meat and fish production	г. Уральск, ул. Транспортная, 6	Берекешев Талгат Маликович	4 500
65	Karagandy region	Large	ТОО Апрель Кулагер	Sausage production	г. Шахтинск, ул. Сатпаева, 14, тел. 4-01-38	Воленберг Александр Эдуардович	2500
66	Karagandy region	Large	ТОО фирма Тулпар	Sausage production	г. Карагада, ул. Дуневского, 1а, тел. 41-74-19	Ферапонтова Галина Брониславовна	1100

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
67	Karagandy region	Large	ТОО Тай	Sausage production	г. Караганда, ул. Складская, 9, тел. 2-92-04, 2-94-42	Ким Артур Юрьевич	600
68	Kostanay region	Medium	ТОО Аян-Озат	Meat product production	Костанайский р-н, п. Затобольск, тел. 8(714-55) 2-20-76	Турук Светлана Анисимовна	288
69	Kostanay region	Medium	ТОО АГФ Ирина и К	Meat product production	г. Костанай, ул. Уральская, 2а, тел. 8(7142) 28-54-24	Корчинский Александр Васильевич	1 680
70	Mangistau region	Medium	ИП Поздняков	Meat processing	Мунайлинский район, тел. 8(7292) 31-87-29	Поздняков Игорь Александрович	302
71	Mangistau region	Medium	ТОО Школьник-Актау	Meat processing	г. Актау, мкр. 3А, тел. 8(7292) 50-78-23	Замараева Валентина Григорьевна	242
72	Pavlodar region	Large	ТОО Рубиком	Meat processing	г. Павлодар, ул. Ген. Дюсенова, 3/1, тел/ф. 32-95-50, 53-98-04, п. Ленинский, тел. 53-71-10, 33-72-90	Шмит Елена Валериевна	3 050
73	Pavlodar region	Large	ТОО Золотой теленок ПФ	Meat processing	г. Павлодар, ул. Луначарского, 10, тел. 32-20-53, 32-13-05, факс 32-10-37	Кананадзе Нона Георгивна	1 525
74	Pavlodar region	Large	ТОО ТПФ Акоба	Meat processing	г. Павлодар, ул. Ак. Сатпаева-6, п. Жана-аул, тел. 34-91-76, факс 33-31-73	Бахарь Анатолий Анатольевич	1 220
75	Pavlodar region	Large	ТОО МПК-Экибастуз	Meat processing	г. Екибастуз, ул. Кунаева, 1/1, тел. 2-26-21, факс 2-26-56	Чакириди Константин Панаетович	2 135
76	North Kazakhstan region	Medium	ТОО Сби-Агро	Meat and by-product processing, sausage production	г. Петропавловск, ул. Медведева, 41 тел. 8(7152) 33-12-80, 31-05-56	Утегенов Берик Рахимович	1 265
77	North Kazakhstan region	Medium	ТОО Фрегат	Meat and by-product processing, sausage production	г. Петропавловск, ул. Ауэзова, 287 тел. 8(7152) 33-19-63	Капезов Аскар Еркенович	1 020

No.	Region	Size	Name	Type of activity	Address and contacts	Administration	Capacity (tonnes/year)
78	South Kazakhstan region	Large	ТОО Риористо	Meat processing	г. Шымкент, ул. Капал батыра, №4, тел. 54-05-35	Ибрагимов Эммин Есмаханович	2
79	South Kazakhstan region	Large	ТОО Қазығұрт БРБ	Meat processing	г. Шымкент тел. 8(7252) 43-11-67	Алдабергенов Бегалы	1,5
80	South Kazakhstan region	Large	Гулдер	Meat processing	г. Шымкент, ул. Привокзальная, 9, тел. 56-55-05	Лифшиц И.А.	6,5
81	South Kazakhstan region	Large	ТОО Шымкент Ет	Meat processing	Сайрамский р-н, п. Фабричное, тел. 54-70-75	Досболов Айдар Абилькасымович	3
82	South Kazakhstan region	Large	ТОО Акмал-ЛТД	Meat processing	Сайрамский р-н, п. Сайрам, тел. 8(745-31) 4-13-91	Абдукадирова Мархаба	2
83	South Kazakhstan region	Large	ТОО Инфрастрой ЛТД	Meat processing	Ордабасы р-н, с/о Бозер	Алтыбаев Омар	5

(a) During the visit to the factory the maximum capacity was quoted as 20 tonnes/day. This is close to 5 000 tonnes/year.

Table 19: Estimates of productivity parameters and profit and loss accounts for sheep operations

	PER 100 EWES		PER 100 EWES		PER 100 EWES		PER 100 EWES		PER 100 EWES	
Example cases Summaries with selected parameters PER 100 breeding females:	**Mixed breeds sheep 2 lambing seasons HH Farm near Almati**		**Fat tail 1 lambing, Peasant**		**Mixed Sheep Mixed places HH unit**		**Fine Wool 1 lambing, Large Farm**		**Fine wool 1 lambing, Medium Scale Peasant**	
Annual live young (> month)	160		80		85		125		115	
Female mortality	6		6		6		6		6	
Female herd increase	5		5		5		5		5	
Culls sale weight (kg)	44		46		50		50		48	
Young stock sale/transfer weight (feede	22		26		25		32		28	
Nr. young to fattening or winter feeding	60		20		23		85		38	
Daily weight gain during winter feeding	0,1		0,1		0,05		0,2		0,1	
Loss % in feed lot										
Weight after winter feeding	31		35		30		52		37	
Number of males kept through next summer	60		0		0		0		0	
Weight after season pasture	45		47		45		64		49	
Kg forage (hay and straw)	12986		8643		10446		22870		13335	
Kg concentrate ingredients	14750		3927		4771		10372		8019	
Hired labour (excluding management)	0,7		0,5		0,7		2,8		0,5	
Family labour (at T 25000/mo)	1,3		1		1,3		0		1	
Gross meat production (kg LW)	0		0		0		0		0	
kg LW nerd increase (females only)	290		304		330		330		317	
Gross milk production (kg)	0		0		0		0		0	
Other outputs (Tg)	6200		6200		3200		110000		83000	
output prices used										
Purchase price feeder stock										
Sales stock, Tg /Kg Live Weight	242		240		242		242		266	
Milk /kg	0		0		0		0		0	

	PER 100 EWES		PER 100 EWES		PER 100 EWES		PER 100 EWES		PER 100 EWES	
Financial	**Expenses**	**Returns**	**Expenses**	**Returns**	**Expenses**	**Returns**	**Expenses**	**Returns**	**Expenses**	**Returns**
Purchase livestock										
Feed inputs	321932		93348		110885		310977		173551	
Hired labour /manager inputs	214286		150000		214286		1129500		150000	
Family labour input	375000		300000		375000				300000	
Other inputs	67755		137921		68269		293519		138085	
Slaughter value output		1347940		705120		716089		1413324		1049697
Wool production value		200		200		200		110000		77000
Premium or subsidy for breeding farms								385452		0
Other subsidies meat, milk, wool		0		0		0		89100		89100
Manure sold/value		6000		6000		3000		0		6000
Taxes Income							11408			
Taxes Land and other taxes							9120			
Depreciation fixed assets	16875		16875		16875		73750		73750	
Net profit/income after tax	358292		13176		-66026		169603		386411	
total	**1354140**	**1354140**	**711320**	**711320**	**719289**	**719289**	**1997877**	**1997876**	**1221797**	**1221797**
	PER FARM UNIT		**PER FARM**		**PER FARM UNIT**		**PER FARM**		**PER FARM**	
Assumption # females per farm:		50		200		40		10000		200
Net profit (after tax)		179146		26352		-26410		16960285		772822
Family labour input included		187500		600000		150000				600000
Total family/owner income		366646		626352		123590				1372822
Income per month		30554		52196		10299		1413357		114402
Profit % of cost.	**36,00%**		**2,00%**		**-8,00%**		**9,00%**		**46,00%**	
Profit % of capital	**16,00%**		**1,00%**		**-3,00%**		**$0,05**		**12,00%**	
Rsk assessment	Moderate, family labour is near 50% of input costs		Moderate, family labour is near 50% of input costs		High, family labour insufficiently rewarded		High, famr depends on subsidies, that constitute 24% of turnover		Moderate, family labour is near 50% of input costs	

Table 20: Estimates of productivity parameters and profit and loss accounts for cattle operations

	PER 100 COWS	PER 100 COWS	PER 100 COWS	PER 100 COWS
Example cases Summaries with selected parameters PER 100 breeding females:	**Cattle Dual Purpose winter feeding of young tock included .HH farm actual**	**Cattle Dual Purpose high imputs, winter feeding of young stock included, HouseHold**	**Cattle Beef outside village; winter feeding of young stock included. HH using**	**Cattle Beef breeds, Peasent**
Annual live young (> 1 month)	90	90	90	90
Female mortality	4	4	4	4
Female herd increase	2	2	2	2
Culls sale weight (kg)	440	400	480	480
Young stock sale/transfer weight (feede)	290	290	330	330
Nr. young to fattening or winter feeding	55	55	55	55
Daily weight gain during winter feeding	1	1	1	1
Loss % in feed lot				
Weight after winter feeding	365	410	410	411
Number of males kept through next summer	0	0	0	0
Weight after season pasture	0	0	0	0
Kg forage (hay and straw)	245 272	186 020	107 588	147 203
Kg concentrate ingredients	166 174	420 997	111 579	167472
Hired labour (excluding management)	2.1	2.1	4.1	0.9
Family labour (at T 25000/mo)	20.0	20.0	3.0	3.5
Gross meat production (kg LW)	32 835	34 150	35 510	35 085
kg LW nerd increase (females only)	1 126	1 024	2 458	3 072
Gross milk production (kg)	250 000	445 000	0	0
Other outputs (Tg)	6 000	6 000	0	0
Output prices used				
Purchase price feeder stock				
Sales stock, Tg /Kg Live Weight	232	224	228	211
Milk /kg	30	30	0	0

	PER 100 COWS		PER 100 COWS		PER 100 COWS		PER 100 COWS	
Financial	**Expenses**	**Returns**	**Expenses**	**Returns**	**Expenses**	**Returns**	**Expenses**	**Returns**
Purchase livestock	0		0		0			
Feed inputs	3 534 901		6 402 136		1 976 878		2 904 641	
Hired labour /manager inputs	637 500		637 500		1 215 000		255 000	
Family labour input	6 000 000		6 000 000		900 000		1 037 500	
Other inputs	296 000		306 000		216 000		650 000	
Slaughter value output		7 351 768		7 491 133		7 865 790		7 643 503
Contract herding incomes						0		622 500
Milk production value		6 750 000		12 285 000				0
Premium or subsidy for breeding farms								
Other subsidies meat, milk, wool		0		0		0		0
Manure sold/value		6 000		6 000				
Taxes Income							656 772	
Taxes Land and other taxes							9 120	
Financial charges	0		0		0		0	
Depresiation fixed assets	135 000		135 000		135 000		235 000	
Net profit/income after tax	3 504 366		6 301 497		3 422 912		2 617 970	
total	**14 107 768**	**14 107 768**	**19 782 133**	**19 782 133**	**7 865 790**	**7 865 790**	**8 266 003**	**8 266 003**
	PER FARM UNIT		**PER FARM UNIT**		**PER FARM UNIT**		**PER FARM UNIT**	
Assumption # females per farm:		3		2.0		2.0		50
Net profit (after tax)		105 131		126 030		68 458		1 308 985
Family labour input included		180 000		120 000		18 000		518 750
Total family/owner income		285 131		246 030		86 458		1 827 735
Income per month		23 761		20 502		7 205		152 311
Profit % of cost.	**33%**		**47%**		**77%**		**46%**	
Profit % of capital	**15%**		**26%**		**15%**		**11%**	
Rsk assessment	Moderate. Avaliability of grazing and hay in risk		Moderate. Avaliability of grazing and hay in risk		Moderate. Avaliability of grazing and hay in risk		Moderate. ample margin. Transport costs are critical factor	

Table 21: Estimates of productivity and costs and return for medium-scale beef fattening

	PER 100 BULLS		PER 100 BULLS	
Example cases Summaries with selected parameters PER 100 breeding females:	Seasonal Feed lot, beef Medium Scale ADG 0.9 kg/day		Seasonal Feed lot, beef Medium Scale ADG 1.3 kg/day	
Annual live young (> 1 month)				
Female mortality				
Female herd increase				
Culls sale weight (kg)				
Young stock sale/transfer weight (feede)	330		330	
Nr. young to fattening or winter feeding	100		100	
Daily weight gain during winter feeding	0.90		1.30	
Loss % in feed lot	3%		3%	
Weight after winter feeding	411		447	
Number of males kept through next summer				
Weight after season pasture				
Kg forage (hay and straw)	89 299		105 253	
Kg concentrate ingredients	40 308		47 509	
Hired labour (excluding management)	0.0		0.0	
Family labour (at T 25000/mo)	0		0	
Gross meat production (kg LW)	41 100		44 700	
kg LW nerd increase (females only)	0		0	
Gross milk production (kg)	0		0	
Other outputs (Tg)	0		0	
Output prices used				
Purchase price feeder stock	211		211	
Sales stock, Tg /Kg Live Weight	241		253	
Milk /kg	0		0	
	PER 100 BULLS		**PER 100 BULLS**	

Financial	Expenses	Returns	Expenses	Returns
Purchase livestock	6 963 000		6 963 000	
Feed inputs	999 759		1 178 372	
Hired labour /manager inputs	0		0	
Family labour input	100 000		100 000	
Other inputs	820 000		820 000	
Slaughter value output		9 589 608		10 978 499
Contract herding incomes				
Premium or subsidy for breeding farms				
Other subsidies meat, milk, wool		0		0
Manure sold/value				
Taxes Income	114 370		356 425	
Taxes Land and other taxes	9 120		9 120	
Financial charges	0		0	
Depresiation fixed assets	135 000		135 000	
Net profit/income after tax	448 359		1 416 582	
total	9 589 608	9 589 608	10 978 499	10 978 499
	PER FARM UNIT		PER FARM UNIT	
Assumption # females per farm:		100		100
Net profit (after tax)		448 359		1 416 582
Family labour input included		100 000		100 000
Total family/owner income		548 359		1 516 582
Income per month		137 090		379 145
Profit % of cost.	5%		15%	
Profit % of capital	6%		20%	
Risk assessment	High narrow margin Feed costs are critical factor		High narrow margin Feed costs are critical factor	
	cost per Kg LW grain cost 2 063 879 grain 6 867 per Kg 301		cost per Kg LW grain cost 2 242 492 grain 10 359 per Kg 216	

Table 22: Provisional estimates for a large-scale feedlot with 2 400 places

Beef fattening farm with Feed Lot, Grazing and Forage 2 Investments / provisional	Data	price	USD Investmer	USD Operation
Feecing pens:metre feed barriers	1750	150	262 500	
Feed pens: metre side fence (at 30 m2 / animal)	86	100	8 571	
Refurbishment old winter shelters, m2	7 500	50	375 000	
Drinkers in yards and in shelter, number	25	1 000	25 000	
Water pump and reticulation (recupertation)			25 000	
Silo and elevator for grains (500 tons)	not included			
Feed shed and floor bins (60 days supply)	300	250	75 000	
Silage bins/ plate m,2 high	909	150	136 364	
Loading mixing platform	200	250	50 000	
Equipment cleaning and service station			20 000	
Houses for field unit guards	10	15 000	150 000	
TMR Feed mixers, 20 m3, 2 pieces for safety	2	52 500	105 000	
Loading shovel	1	35 000	35 000	
Front loaders (manure etc)	2	3 000	6 000	
TMR tractors 110 HP	2	35 000	70 000	
Small ingredient mixer	1	2 000	2 000	
Forage harvesteter (maize, chopper with set for WCS)	1	50 000	50 000	
(capacity for 400 ha in 14 days)				
Forage trailers / also use as manure spreaders	4	15 000	60 000	
Hay making set (2 mowers tedder, rake for	786 ha		114 800	
(extra tractors to hire)				
Movable water troughs in pastures	5	50 000	25 000	
Water tanker (8- 10 M3 with tractor)	1		40 000	
Tractor & trailer for bringing supplement feeds to pasture	1	(2nd hand)	20 000	
Harrows for fire breaks			5 000	
Car			10 000	
Motorbikes	5	3 000	10 000	
Fire equipment			10 000	
Total investment			**1 690 235**	

Table 22: Provisional estimates for a large-scale feedlot with 2 400 places (continued)

Beef fattening farm with Feed Lot, Grazing and Forage 3 operational costs / provisional	Data	price	USD Investmer	USD Operation
Depreciation				174 615
Financing costs over 100% investment			6%	101 414
Financing cost cattle	av months	4.84	6%	62 626
Financing cost concentrate feed	av months	5	6%	19 073
Financing cost annual forage	av months	13	6%	8 485
Financing cost wages and (other) consumables	av months	5	6%	5 411
Maintenance / repairs				39 433
Tractor & car operation (fuel)	hrs	16 000	12	117 000
Energy	$/mo	200		2 400
Labour	15	35 000		42 000
Management staff	1	500		6 000
Bonuses		over salary	20%	9 600
Hired tractors + drivers	days	180	250	45 000
Cleaning materials				3 000
Plastic for silage	$/m2	1	1 091	1 091
Concentrate for feed rations	kg			317 890
Purchase forage crops for cutting ha new		563.0	100	56 298
Purchase forage crops for cutting ha old		563.0	50	28 149
Inspections				3 000
Income from manure				-10 000
Overhead		7%		72 274
Total				1 104 759
% margin		10%		110 476
12% VAT		12%		132 571
Total revenue need at 100 % capacity				1 347 806
cost per animal delivered	100%	5 929		**231**
In Tenghe				**34 454**
Cost per kg LW gain				**287**

Table 23: Estimates of productivity, costs and returns for pork production

	PER 100 SOWS	PER 100 SOWS	PER 100 SOWS	PER 100 SOWS	PER 100 SOWS
Example cases Summaries with selected parameters PER 100 breeding females:	Pigs HH Farm	Pigs Peasant and Enterprise, Actual	Pigs large Farm, Actual with 50% higher feed prices	Pigs Large Farm, Potential	Pigs, Large farm, Potential with 50% higher feed prices
Annual live young (> 1 month)	1 600	1 900	1 900	2 100	2 100
Female mortality	10	6	6	6	6
Female herd increase	3	4	4	4	4
Culls sale weight (kg)	160	180	180	180	180
Young stock sale/transfer weight (feede)	18	22	22	23	23
Nr. young to fattening or winter feeding	1 545	1 850	1 850	2 050	2 050
Daily weight gain during winter feeding	0.35	0.58	0.58	0.75	0.75
Loss % in feed lot					
Weight after winter feeding	115	110	110	110	110
Number of males kept through next summer	0	0	0	0	0
Weight after season pasture	0	0	0	0	0
Kg forage (hay and straw)	0	0	0	0	0
Kg concentrate ingredients	1 288 399	926 131	926 131	749 507	749 507
Hired labour (excluding management)	0.0	22.8	0.0	25	25
Family labour (at T 25000/mo)	10	0	0	0	0
Gross meat production (kg LW)	184 395	210 700	210 700	232 700	232 700
kg LW nerd increase (females only)	691	1 008	1 008	1 008	1 008
Gross milk production (kg)	0	0	0	0	0
Other outputs (Tg)	0	0	0	0	0
Output prices used					
Purchase price feeder stock					
Sales stock, Tg /Kg Live Weight	335	335	335	335	335
Milk /kg	0	0	0	0	0
	PER 100 SOWS	PER 100 SOWS	PER 100 SOWS	PER 100 SOWS	PER 100 SOWS

Financial	Expenses	Returns	Expenses	Returns	Expenses	Returns	Expenses	Returns	Expenses	Returns
Purchase livestock										
Feed inputs	19 847 305		29 335 779		44 003 668	0	22 795 237		34 192 856	0
Hired labour /manager inputs	0		7 383 963		7 383 963	0	7 449 936		7 449 936	0
Family labour input	3 000 000		0		0	0	0		0	0
Other inputs	650 000		846 500		846 500	0	2 430 252		2 430 252	0
Slaughter value output		52 815 338		67 055 275	0	67 055 275		70 353 936	0	70 353 936
Milk production value		0		0	0	0		0	0	0
Premium or subsidy for breeding farms		0			0	0			0	0
Other subsidies meat, milk, wool				14 454 020	0	14 454 020		15 963 220	0	15 963 220
Manure sold/value					0	0			0	0
Taxes Income	1 584 460		2 403 483		1 523 410	0	3 018 704		2 334 847	0
Taxes Land and other taxes					0	0			0	0
Financial charges	0		0		0	0	0		0	0
Depresiation fixed assets	900 000		3 885 000		3 885 000	0	3 330 000		3 330 000	0
Net profit/income after tax	26 833 573		37 654 570		23 866 754	0	47 293 027		36 579 265	0
Total	52 815 338	52 815 338	81 509 295	81 509 295	81 509 295	81 509 295	86 317 156	86 317 156	86 317 156	86 317 156
	PER FARM UNIT		PER FARM UNIT				PER FARM UNIT			
Assumption # females per farm:		2		1 000		1 000		1 000		1 000
Net profit (after tax)		536 671		376 545 703		564 818 554		472 930 267		709 395 401
Family labour input included		60 000				0				0
Total family/owner income		596 671		376 545 703		564 818 554		472 930 267		709 395 401
Income per month		49 723		31 378 809		47 068 213		39 410 856		59 116 283
Profit % of cost.	103%		86%		41%		121%		74%	
Profit % of capital	64%		34%		21%		51%		39%	
Risk assessment	Disease risk		Disease risk		Disease risk		Disease risk		Disease risk	

Table 24: Estimates of productivity parameters and profit and loss accounts for horsemeat

	PER 100 MARES	
Example cases Summaries with selected parameters PER 100 breeding females:	**Horse**	
Annual live young (> 1 month)	90	
Female mortality	5	
Female herd increase	10	
Culls sale weight (kg)	420	
Young stock sale/transfer weight (feede)	300	
Nr. young to fattening or winter feeding	44	
Daily weight gain during winter feeding	0.20	
Loss % in feed lot		
Weight after winter feeding	330	
Number of males kept through next summer	0	
Weight after season pasture	390	
Kg forage (hay and straw)	104 724	
Kg concentrate ingredients	44 377	
Hired labour (excluding management)	2.7	
Family labour (at T 25000/mo)	4	
Gross meat production (kg LW)	27 870	
kg LW nerd increase (females only)	5 376	
Gross milk production (kg)	0	
Other outputs (Tg)	0	
output prices used		
Purchase price feeder stock		
Sales stock, Tg /Kg Live Weight	279	
Milk /kg	0	

	PER 100 MARES	
Financial	**Expenses**	**Returns**
Purchase livestock		
Feed inputs	1 274 815	
Hired labour /manager inputs	806 250	
Family labour input	1 200 000	
Other inputs	650 0'00	
Slaughter value output		709 395 401
Contract herding incomes		
Wool production value		
Milk production value		0
Premium or subsidy for breeding farms		
Other subsidies meat, milk, wool		0
Manure sold/value		
Taxes VAT		
Taxes Income	741 933	
Taxes Land and other taxes	9120	
Financial charges	0	
Depresiation fixed assets	135 000	
Net profit/income after tax	2 958 612	
total	7 775 730	709 395 401
	PER FARM UNIT	
Assumption # females per farm:		15
Net profit (after tax)		443 792
Family labour input included		180 000
Total family/owner income		623 792
Income per month		51 983
Profit % of cost.	**61%**	
Profit % of capital	**10%**	
Rsk assessment	Low	

Table 25: Simulation assumptions ACC feedlot mode

			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
			number of tons													
Cows			1100	1085	1507	1737	1935	2005	2045	2031	2024	2035	2027	2028	2029	2027
Cows culled			15	15	200	400	620	728	810	818	796	812	806	804	808	804
Female weaners			485	478	664	766	853	884	902	896	893	897	894	895	895	894
Male weaners			485	478	664	766	853	884	902	896	893	897	894	895	895	894
Male sales (98% x weaned)				475	469	651	751	836	866	884	878	875	879	876	877	877
Males in farm	days	489	485	641	890	1026	1143	1184	1208	1200	1196	1202	1197	1198	1199	1197
Heifer in farm	days	730	485	957	1329	1532	1707	1768	1804	1791	1786	1795	1788	1798	1790	1788
Heifer calving (90% x weaned)					437	431	598	690	768	796	812	806	804	808	804	805
Heads stock in farm			2070	2683	3725	4296	4785	4957	5056	5022	5006	5032	5012	5016	5018	5012
Sales males	kg/ SW	273.6	0	130	128	178	205	229	237	242	240	239	241	240	240	240
Sale heifers cull (10% weaned)	kg/ SW	200			10	10	13	15	17	18	18	18	18	18	18	18
Sale cows cull *98%	kg/ SW	313.5			61	123	190	224	249	251	244	249	248	247	248	247
Sum sals, tons				130	199	311	409	468	503	551	503	507	606	504	506	505
		KZT	KZT million													
Return mln KZT	KZT/kg SW			60	92	143	188	215	231	235	231	233	233	232	233	232
Subsidy return	KZT/kg SW			23	35	54	72	82	88	89	88	89	89	88	98	88
Operations expense after yr1, (variable)	KZT/head-yd		0	80	112	129	144	149	152	151	150	151	150	150	151	150
Loans service																
	cost KTZ Mln															
Initial project cost	1461															
% loan and loan (% =variable in model)	85%		1242	1242	1242	1111	980	850	719	588	458	327	196	65	0	
Repayment		1242	0	0	131	131	131	131	131	131	131	131	131	65	0	
Interest 6%			75	75	75	67	59	51	43	35	27	20	12	4	0	
Total debt service			75	75	205	197	190	182	174	166	158	150	142	69	0	
Cashflow for investor			Downpay													
Downpay+ secundary investment		724	219	72	190	129	73	33	6	0	0	0				
Return+ Subsidy- loan service - operations			-219	-72	-190	-129	-73	-33	-6	8	11	20	29	101	171	170
Final value: 50% hardware, 100% x livestock																806
Total			-219	-72	-190	-129	-73	-33	-6	8	11	20	29	101	171	977
IRR	percent		6%													

Comment: the crucial variable is the level of operations expense after year 1. In case it is above about KZT 35000 per head per year the project becomes infeasile as investment project. This means that a large propotrtion of the feed has to consist of inexpensive grazing

ANNEX 2: SUMMARY OF TECHNICAL REGULATION REQUIREMENTS FOR SAFETY OF MEAT AND MEAT PRODUCTS

The Kazakhstan legal food safety system is designed to be flexible. Principal procedures are defined in the law, whereas the details are laid down in regulations that do not require parliamentary adoption but are approved by the Minister.

The regulations can refer to standards. When this is the case the standards become obligatory for the particular situation. Otherwise the standards are voluntary and can be used as a basis for reference in trade.

Below an extract is given of the Technical Regulation Requirements for the Safety of Meat and Meat Products. This regulation makes cross-references to:

- unspecified veterinary regulation(s);
- unspecified normative documentation for equipment and machinery;
- Technical Regulation Requirements for Packaging, Marking, Labeling and their Correct Application;
- Technical Regulation Conformity Assessment Procedures;
- harmonized standards.

Meat and meat products: rules of acceptance and testing methods

(1) Meat and meat products. Packaging, labelling, transportation and storage.
(2) Meat and meat products. Rules of acceptance and testing methods.
(3) Meat and meat products. General technical requirements.
(4) Meat and meat products. Organoleptic [standards].

SHORT EXTRACT

Decree 18/04/2008, No. 336
Technical Regulation Requirements for the Safety of Meat and Meat Products

1. Scope

This Technical Regulation applies to all manufactured and imported species of meat animals and poultry, edible offal, sausages, and other derivatives

2. Terms and definitions

3. Terms for treatment of meat and meat products on the market

Meat and meat products can be put on the market and implemented only if they do not pose a danger to health or safety of people. Meat and meat products with clear signs of low quality and lack of expiration dates, etc. are removed for veterinary and sanitary examination in an accredited (certified) veterinary laboratory.

4. Dangerous factors (risks) for the harvesting of meat and the production of meat products

An analysis of risks must be made ("risk factors must be taken into account").

The most probable risks include presence of:

(1) pharmacological substances and chemical contaminants;

(2) toxic elements, antibiotics, pesticides, radio nuclides, and other harmful substances and their residues;

(3) microbiological indicators in meat and meat products;

(4) dietary supplements and products of genetic engineering.

5. Safety requirements for site selection and the territory of the establishment

This chapter details provisions for drainage, avoidance of crossing traffic, disinfection barriers, loading platforms, etc. Establishments must be registered.

6. Safety requirements for the establishment of industrial zones for production (manufacturing) and processing of meat and meat products

This chapter details the required internal layout specifications, with spaces for veterinary inspection, decontamination of vehicles, quarantine facility, sanitary slaughter, disinfection of waste water, etc., as well as the

required flow design, with separation for dry and clean materials. Sanitary specifications for floors, walls and ceilings are also given.

7. Safety requirements for the preparation of animals and birds for slaughter

This section specifies that animals must come from a disease-free area and be identified.

Animals not permitted for slaughter include:

(1) animals vaccinated with foot-and-mouth vaccine or serum against anthrax fewer than 21 days ago;

(2) birds vaccinated against avian influenza fewer than 21 days ago;

(3) animals and birds fed antibiotics and other drugs or antihelmintics for treatment and/or prevention, or drugs to stimulate growth within the withdrawal period specified in the instructions on their use in veterinary medicine;

(4) animals and birds treated with insecticides before the waiting period;

(5) animals and birds in an abnormal state;

(6) animals and birds that have been treated with veterinary medicines that are not allowed in the Republic of Kazakhstan;

(7) birds that have eaten fish, fish waste and fish meal within the last ten days.

Each batch of animals and birds earmarked for slaughter must be accompanied by a veterinary certificate, drawn up in due course.

Animals and birds must be raised and fed under conditions that preclude the possibility of harmful and hazardous components entering their bodies, including:

(1) substances with anabolic action and pharmacological substances prohibited for use in animal husbandry;

(2) substances and chemical pollutants: organochlorides, including polychlorinated biphenyls, organophosphoric compounds, toxic elements, mycotoxins, dyes.

The section makes additional provisions for ante-mortem inspection and disposal of sick animals.

The section also defines the technological process, detailing flows of product, fluids and water; veterinary "stop" buttons; decontamination and identification of carcasses; and supply of hot and cold water and compressed air.

8. Safety requirements for refrigerating chambers and freezers

The volume and number of cold stores and freezers must take into account the production capacity of the facilities and the conditions so that they provide the possibility of controlling the temperature, depending on the type of output, from 0 °C to 30 °C, and the humidity from 60 to 95 percent. Specific temperature and humidity requirements for processing stages are given in Annex 1 of the regulation. For cutting and deboning these are 12 °C and 70 percent RV.

9. Safety requirements for equipment and metrological support

The section prescribes the measurement equipment and its calibration.

10. Safety requirements for health sites and amenities

As for staff quarters.

11. Safety requirements for the accumulation and disposal of waste

As for waste. Separation of different streams of wastewater is prescribed, and the treatment (decontamination, filtering) of some of these.

12. Safety requirements for the production of meat and meat products

This section makes cross-references to veterinary standards in meat and meat products. The contents of pharmaceutical substances and chemical contaminants must be controlled in accordance with sanitary rules and standards established by sanitary-epidemiological and veterinary supervision bodies.

Production of meat products using raw materials that contain residues of drugs that are not registered in the Republic of Kazakhstan is not allowed.

The maximum permissible levels of contaminants in meat and meat products, as defined by the authorized sanitary-epidemiological and veterinary supervision bodies, cannot be exceeded.

Recycling of water is not allowed.

The factory must organize a control system for veterinary examination of meat and meat products.

Note: This paragraph does not specifically state that the meat must be traceable to the animal or batch of animals, however a good control system should include such traceability.

The section further states the following.

Manufacture of meat products must be carried out in accordance with an approved recipe, supported by a regulatory document.

Meat and raw material for processing must be accompanied by a veterinary document.

13. Safety requirements for warehouses, packaging, packaging and labelling of meat and meat products

This section prescribes permitted contact materials for storage. It prescribes that contact equipment must have normative technical documentation.

For packaging and labelling of meat and meat products, cross-reference is made to Technical Regulation Requirements for Packaging, Marking, Labeling and their Correct Application.

14. Safety requirements for transportation of animals, meat and meat products

Vehicles and/or containers for the transportation of meat and meat products must have inner surfaces of stainless materials that do not affect the organoleptic properties of food and health; ensure effective protection of products, etc. Carcasses, half carcasses, quarter carcasses, must be hung with stainless steel hooks so as not to touch the floor [no provision is made for packed carcasses].

The temperature-humidity regime must comply with requirements of sanitary-epidemiological and veterinary-sanitary (health) rules and regulations.

15. Conformity

Conformity of meat products is carried out both on a mandatory basis to determine compliance with safety performance requirements of this

technical regulation, and on a voluntary basis to assess their properties in terms of consumer requirements and standards and the standards of recipes for specific products.

Conformity with the requirements of this Technical Regulations will be certified by:

(1) adoption of the manufacturer's declaration of conformity;

(2) the applicant's receiving a certificate of conformity in the manner prescribed by law.

16. List of harmonized standards

Methods of testing and measurement, and sampling for testing and measurements must be carried out in accordance with the applicable standards, including the harmonized standards, in accordance with Annex 2 Technical Regulations and veterinary-sanitary and sanitary-epidemiological rules and regulations.

17. Terms and conditions of entry into force

This Technical Regulation will come into effect six months from the date of its first official publication.

Annex 2 to the Technical Regulations On Requirements for the Safety of Meat and Meat Products

List of harmonized standards

(1) Meat and meat products. Rules of acceptance and testing methods.

(2) Meat and meat products. Packaging, labelling, transportation and storage.

(3) Meat and meat products. Rules of acceptance and testing methods.

(4) Meat and meat products. General technical requirements.

(5) Meat and meat products. Organoleptic [standards].