3.2 Current Situation of Livestock-based Industry in Mongolia

3.2.1 Meat Products

A. Processing Structure and Product Lines

In Mongolia, a considerable volume of meat is consumed by herders themselves or sold directly to consumers. Although herders slaughter and eat any of the five major livestock (camels, horses, cattle, sheep and goats), only cattle, horse and sheep meat are sold extensively at markets. Depending on the type of animals and the proximity to the markets, livestock are sold alive, or slaughtered by herders and their carcasses transported to the markets. Carcasses are either sold whole, further processed into portioned cuts or deboned, or processed into sausages by meat processing companies.

A summary outline of the processing structure and major Mongolian meat products is shown below.

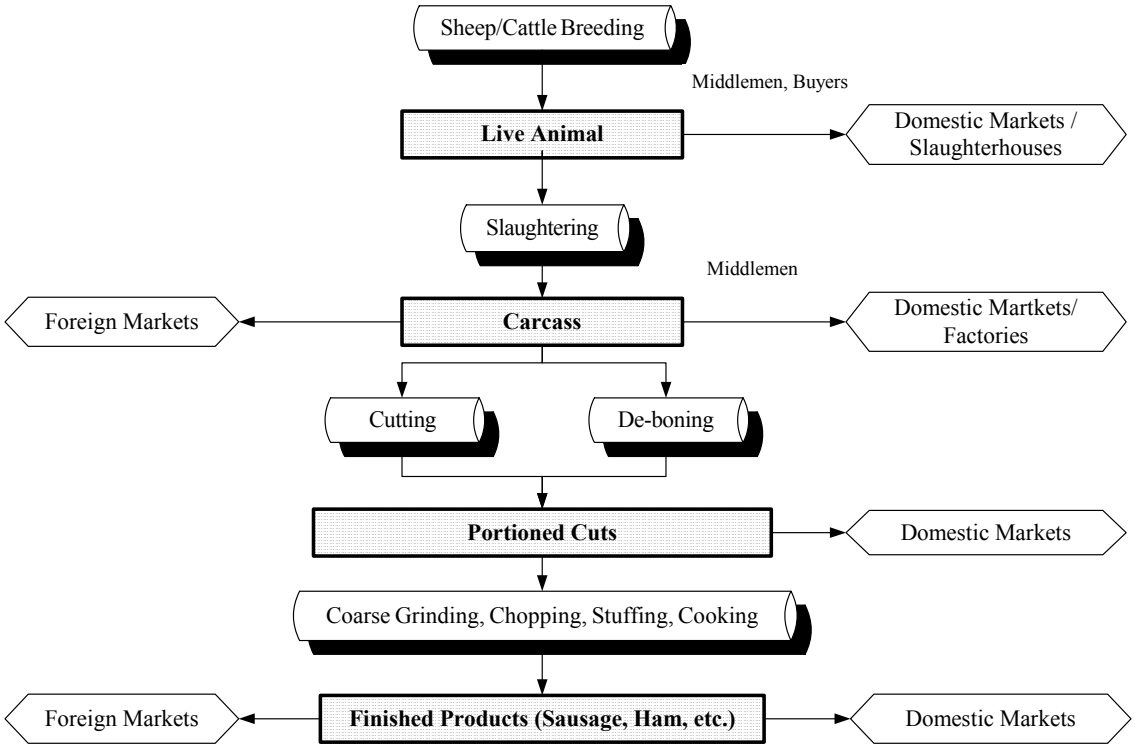


Figure 3.3 Processing Structure and Major Products: Meat

B. Export of Meat

During the centrally planned economy era, cattle, sheep and horses were exported to Russia, East Germany, Bulgaria, and Hungary, alive or as carcasses. Sheep meat was re-exported to Kazakhstan and Uzbekistan from Russia. Export of raw meat to other countries such as China has not realized due to Mongolia's inadequate animal disease prevention system. Although Mongolia exported 25 to 40 thousand tons of meat annually before 1990, the export volume drastically decreased after the collapse of the Soviet Union, mostly due to the decreased purchasing power of the Russian population and the collapse of meat distribution channels in Mongolia. In 1995, the export volume hit bottom at 22 thousand tons. Since then meat exports (mostly beef) have gradually recovered, reflecting a rise of private (or privatized) slaughterhouses in Mongolia and recovering purchasing power in Russia. The following graph shows the volume of meat exports from Mongolia[1].

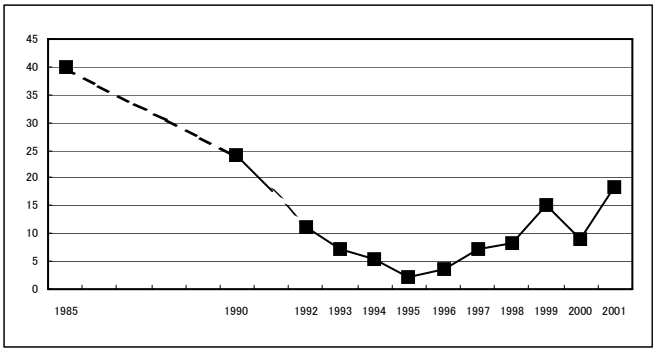


Figure 3.4: Volume of Meat Export from Mongolia (000 tons)

Source: Mongolian Statistical Yearbook, NSO and Mongolian Meat Export Association

Meat export is conducted only through licensed slaughterhouses, since sanitary conditions required by the Russian side are strict; meat to be exported to Russia must be inspected by Russian inspectors at each Mongolian slaughterhouse. Currently about 20 slaughterhouses are engaged in exporting beef and horsemeat to Russia. They are either privatized former state-owned enterprises or new enterprises established after 1990. The total export volume in 2002 was 12.2 thousand tons of beef and 4.6 thousand tons of horsemeat. In addition, several hundred tons of sheep meat is exported to Jordan and Kazakhstan. These slaughterhouses are located either along rail lines or close to the Russia-Mongol border. Slaughterhouses along rail lines export meat in freight cars

[1] Meat export to Russia was temporarily suspended due to the outbreak of foot and mouth disease in Mongolia in 2000.

equipped with freezer units. On the other hand, Russia and Kazakhstan send large cargo trucks (14 tons) with freezer units to transport meat from slaughterhouses located in western Mongolia.

The slaughtering and stocking capacity of major slaughterhouses - mostly ex-state-owned enterprises - far exceeds the current production volume. Although meat export companies would like to expand export of beef and horsemeat to Russia, they are not able to mobilize sufficient working capital to increase their purchase volume since Russian buyers often have liquidity problems and delayed payments. In this environment, an increase in working capital through domestic financial institutions would raise default risks, and moreover, slaughterhouses could not bear the burden of high interest rates imposed by banks. When payments from Russian partners are delayed, some slaughterhouses are forced to delay or even suspend the next year's purchases.

The following maps show the location and meat export volume of each slaughterhouse in 2002.[2]

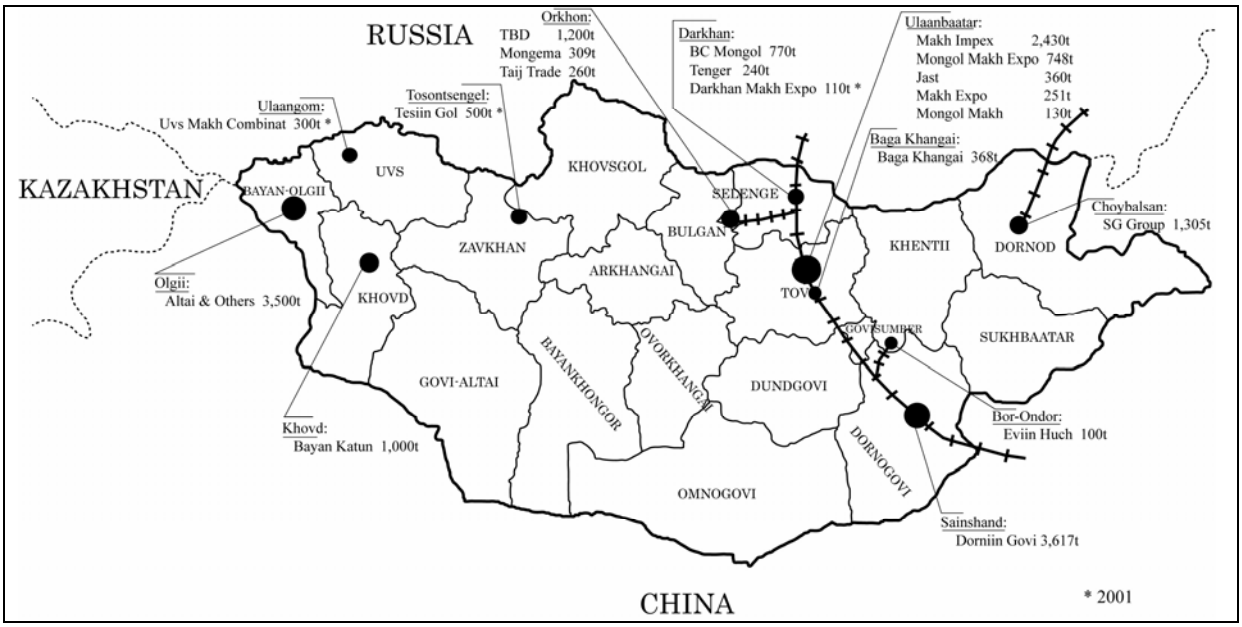


Figure 3.5: Slaughterhouses and Export Volume of Beef

Source: Mongolian Meat Export Association and JBIC Study Team

[2] Slaughterhouses in western regions could not export meat in 2002 due to the regional outbreak of foot and mouth disease.

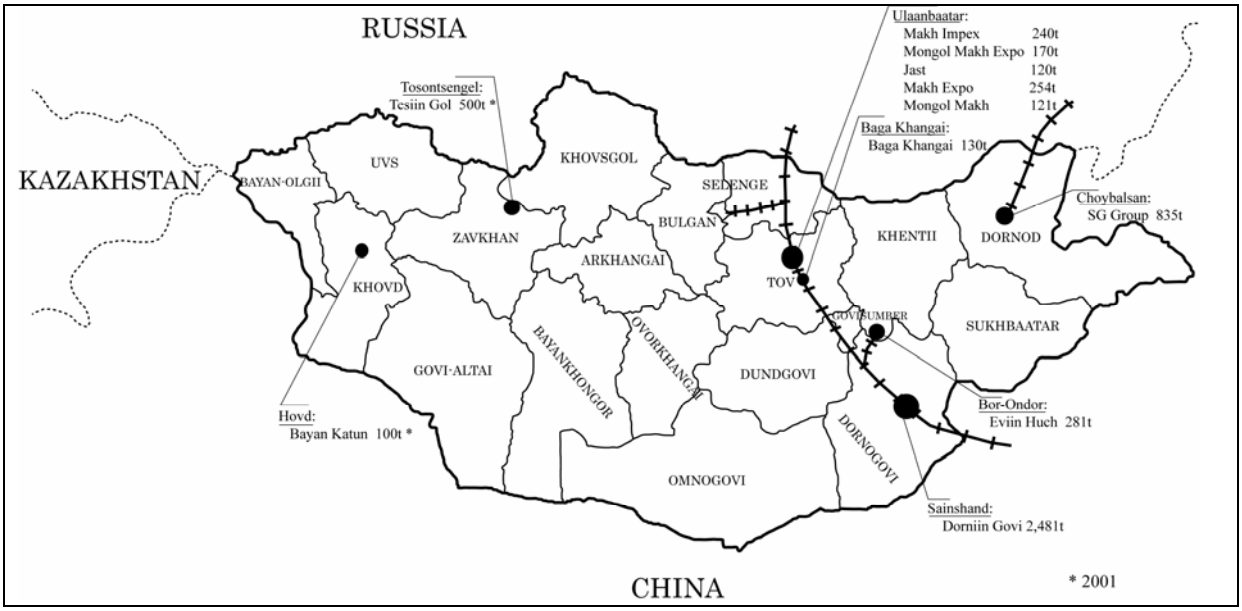


Figure 3.6: Slaughterhouses and Export Volume of Horsemeat

Source: Mongolian Meat Export Association and JBIC Study Team

C. Raw Material Supply

Each slaughterhouse dispatches its own agents to rural areas to purchase cattle and horses. Purchase agreements are normally made in the spring with herders when livestock prices are relatively low.[3] Afterwards, herders slowly drive their cattle and horses for long distances to the slaughterhouses while grazing them on the way ("tuuvar"), and deliver the animals in the autumn, the beginning of the slaughter season in Mongolia.

Purchasing of cattle and horses are taking place in all Mongolia aimags. The following maps show the supply networks of cattle and horses for slaughterhouses located in Ulaanbaatar, Darkhan and other cities.

[3] The prices of cattle are primarily determined by their weight.

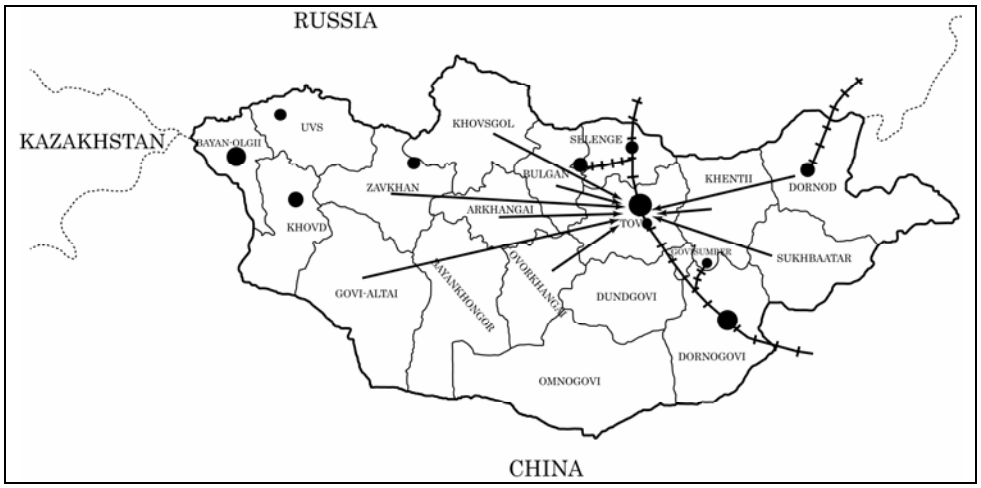


Figure 3.7: Cattle and Horse Supply Network for Ulaanbaatar's Slaughterhouses

Source: JBIC Study Team

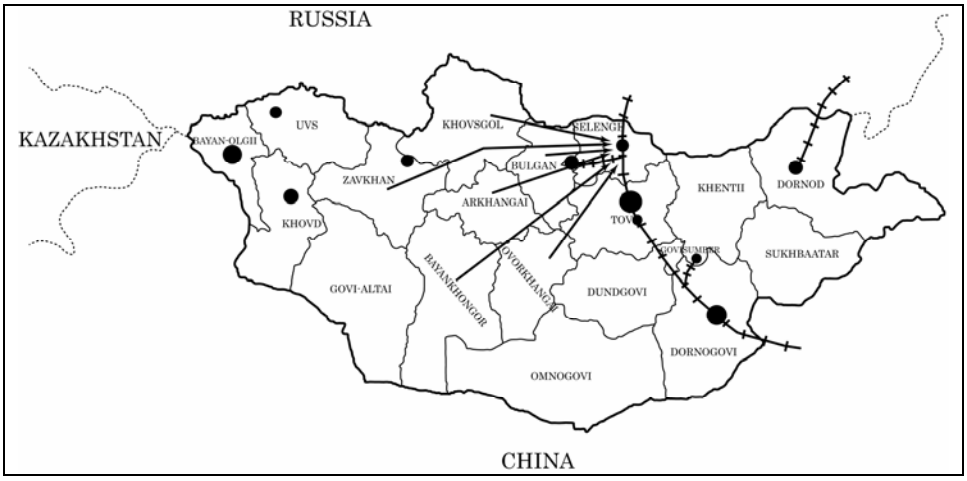


Figure 3.8: Cattle and Horse Supply Network for Darkhan's Slaughterhouses

Source: JBIC Study Team

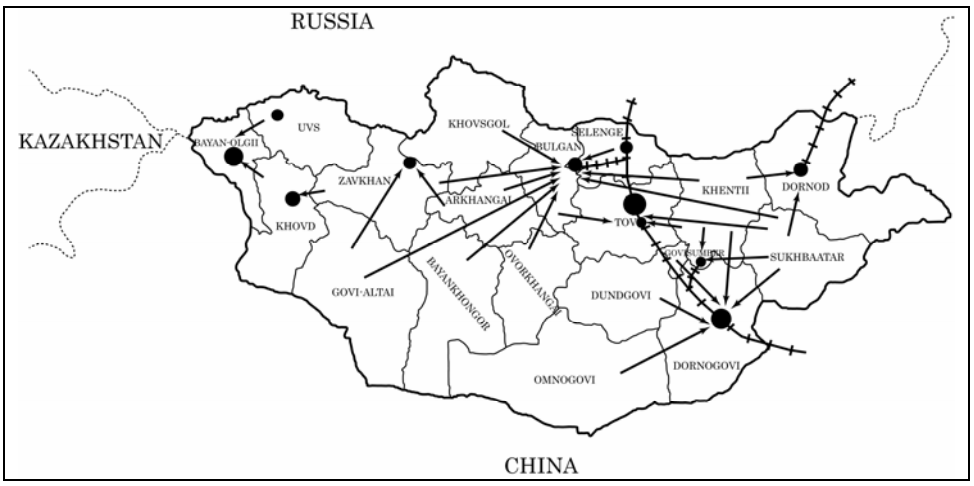


Figure 3.9: Cattle and Horse Supply Network for Other Cities' Slaughterhouses

Source: JBIC Study Team

Mutton is mostly consumed domestically since foreign markets for Mongolian mutton have not been developed. Sheep are relatively not adapted to the long-distance tuuvar because small animals need to drink water more frequently than large animals and thus the risk to lose animals is high during tuuvar.[4] Hence, herders usually slaughter sheep and transport the carcasses to markets in trucks. As such, transport costs (mostly fuel expenses), which are a function of distance, are an important factor in determining the profitability of the sale. Those herders who are residing close to markets have lower transport costs and thus more chances that middlemen come and buy their livestock. On the other hand, those who live far from markets must transport meat over great distances, paying high transport costs; in order to reduce transport costs, these herders must form sellers' groups and transport carcasses in large volume.

When the assets of a negdel were sold off to former employees and herders, reorganizing herders to conduct a group sale is an extremely difficult task in Mongolian culture. On the other hand, when a cooperative is created to take over a negdel's major assets and its management system, as are the cases in Dornogovi Aimag, the new entity is able to continue marketing livestock products, although the selling operation's cost-effectiveness is sometimes doubtful.

D. Production of Processed Meat

There are 22 combined slaughterhouses and meat-processing plants in Mongolia (UNIDO, 2002) and dozens of small-scale sausage factories. Most sausages consumed in Mongolia are from domestic producers, while imported sausages account for only 1% to 3 % of consumption. Since Mongolia has not made any agreement with foreign countries on the export of processed meat,[5] meat-processing plants are only targeting domestic markets. The following graph shows the production volume of sausages.

[4] Tuuvar's risk was lower under the centrally planned economic regime, since tuuvar routes and support infrastructure along the way, including water supply, were properly maintained by the government.

[5] Export of processed meat to Russia is practically impossible due to high import tariffs.

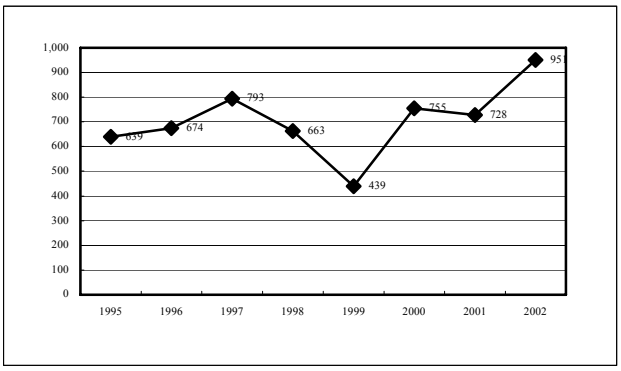


Figure 3.10: Production and Imported Volume of Sausages, 1995-2000 (tons)

Source: Mongolian Statistical Yearbook, NSO

Most of the sausage factories are located in three large cities: Ulaanbaatar, Darkhan and Erdenet. Although small-scale sausage plants are being established in regional centers, their production capacity is not enough to satisfy local demand. Hence, products of the factories in the three large cities still predominate in local areas. It is expected that local factories will gradually gain market share in their respective areas, taking advantage of the proximity to raw materials and consumers.

3.2.2 Leather Products

A. Processing Structure and Product Lines

Mongolia produces 1 million of large animal hides and 6 to 8 million of small animal skins annually. Hides and skins are first preserved in salt and sold to middlemen, who in turn sell these raw materials to domestic processing factories. Only 20% to 30 % of hides and skins are processed into leather domestically, while most of the rest are semi-processed into "wet blue[6]" and exported to China. [7]

A summary outline of the processing structure and major products of Mongolian skins and hides is shown below.

[6] "Wet blue" is a semi-processed hide/skin pickled and tanned with chrome.

[7] Due to the outbreak of foot and mouth disease in Mongolia in 2000, export of raw hides and skins was temporarily banned by the Chinese side, which encouraged wet blue processing.

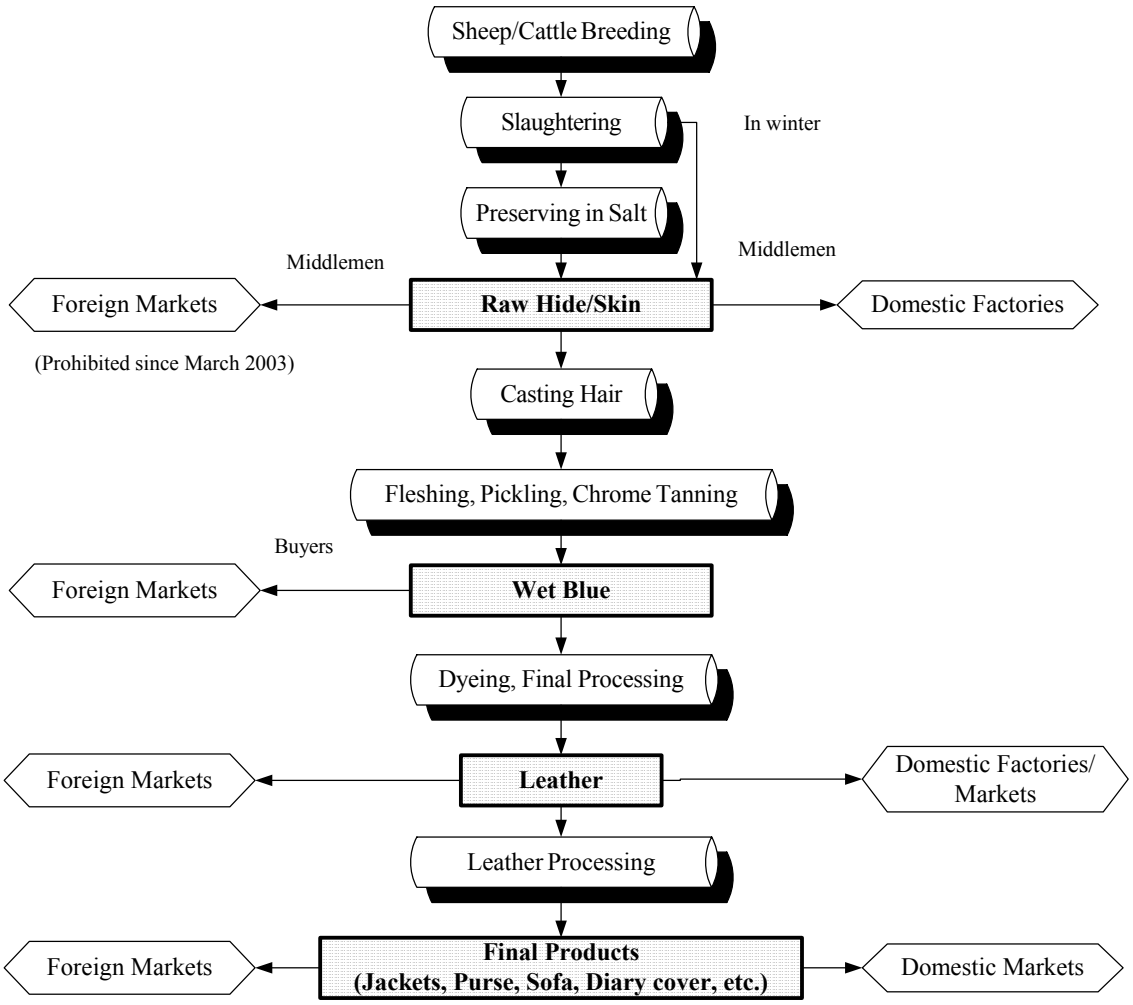
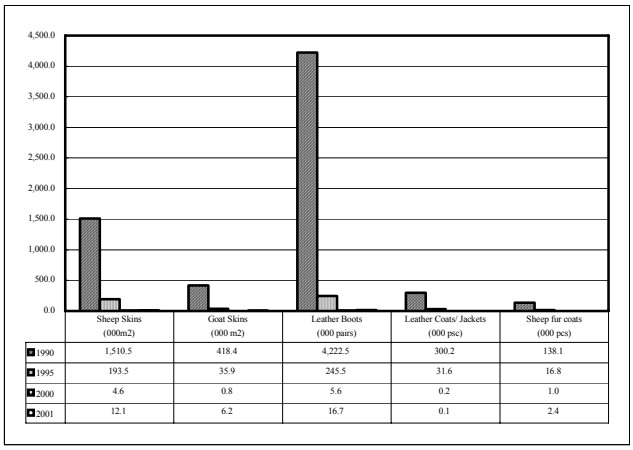


Figure 3.11. Processing Structure and Major Products: Hides and Skins

B. Production and Export of Hides/Skins and Leather Products

Mongolian skins and hides are estimated to cover 10% of the world's material supply. Although Mongolia used to be a large producer and exporter of leather products, its production rapidly declined between 1990 and 1995. This decline was mostly due to the eroded quality of domestic raw materials caused by the discontinuation of anti-parasite treatment, as well as due to the poor management of privatized state enterprises. As a result, Mongolia has become a net importer of leather and leather products, while exporting most of its semi-processed hides and skins (wet blue) to China. The following charts show the trends of skin/hide production, export of raw and semi-processed hide/skin, and export of leather products.

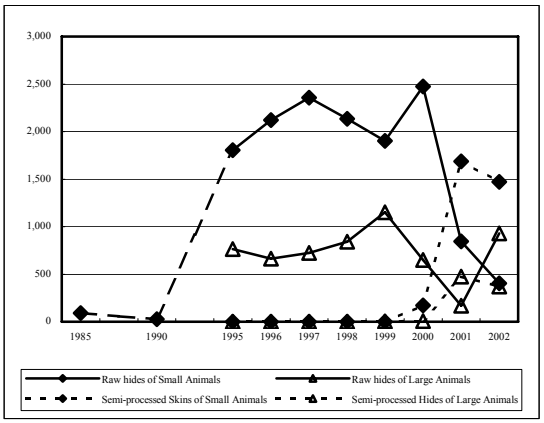
Figure 3.12: Production of Leather Products (Tanned or Finished), 1991-2000



	Sheep Skins (000m2)	Goat Skins (000 m2)	Leather Boots (000 pairs)	Leather Coats/ Jackets (000 psc)	Sheep fur coats (000 pcs)
1990	1,510.5	418.4	4,222.5	300.2	138.1
1995	193.5	35.9	245.5	31.6	16.8
2000	4.6	0.8	5.6	0.2	1.0
2001	12.1	6.2	16.7	0.1	2.4

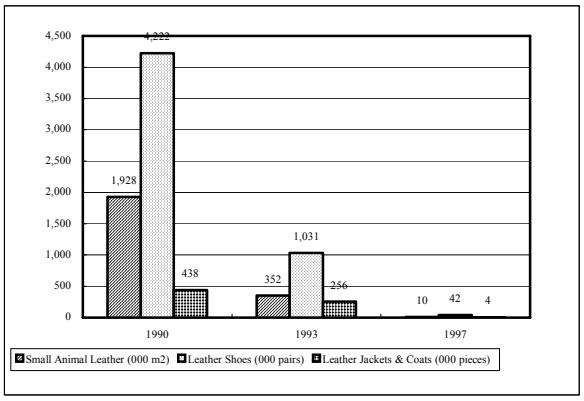
Source: Mongolian Statistical Yearbook, NSO

Figure 3.13: Export of Raw and Semi-Processed Hides/Skins, 1985-2002 (000 m2)



Source: Processed from Mongolian Statistical Yearbook, NSO and Customs Office

Figure 3.14 Export of Leather Products (Tanned and Finished), 1990-1997



Source: Processed Date from NSO

Since 1990, many small and medium-sized companies, including Chinese Mongolian joint ventures, were established: primary processing (35 companies), processing fur (14), tannery (15), and leather products (35).[8] In addition, the following large-scale companies are currently producing finished products.

Table 3.1: List of major leather processing companies

Company	Major Production	Current Production Volume
Shevro	Tannery products	80,000 goat skins and 20,000 sheep skins
Nekhii	Tannery products, fur coats and gloves	150,000 to 200,000 sheep skins
Buligaar	Tannery and leather products	200,000 large animal hides

[8] These numbers are not definitive, obtained from the Ministry of Industry and Trade and from tanneries.

Buligaar, which has an entire processing line from wet blue to leather products, is one of the largest tanning factories in Mongolia. *Buligaar's* biggest customer – a Mongolian shoe maker, *Gutal* – went bankrupt in 1998, which further lowered the company's already marginal production rate to 5% between 1998 and 2001. However, the company has succeeded in shifting its focus to foreign leather product makers in China, Korea and Japan. As a result of this demand from new markets, *Buligaar*'s operation rate was boosted to 34% in 2002 and 40% in 2003. The company was able to meet its potential buyers at the international leather fairs where it exhibited its products. By investing in equipment to process skins of small animals, *Buligaar* expanded its production items to materials such as diary covers, briefcases, sofas, and jackets. These new types of products currently account for 70% to 80% of its production.

Shevro, the largest skin tanning company in Mongolia, exports 40% of its products to Croatia, Poland, Spain and China. 30% of its tanned leather is sewed into jackets, while the rest is sold to 36 domestic small-scale leather factories that manufacture products such as shoes, clothing, souvenirs, and horse saddles. After being privatized in 1993, the company had been saddled with management difficulties caused by dispersed shareholding. After successfully consolidating company shares under four manager-owners in 2001, the company's financial condition has been significantly improved; the annual sales increased from MNT 67 million in 2000 to MNT 420 million in 2002.

Nekhii, the largest producer of fur and fur leather located in Darkhan, was forced to suspend operations in 1998 for the same reason as *Shevro*. After five persons purchased 80% of the total shares, the company resumed operations in 2000. *Nekhii* exported 20% of its products in 2002, mostly to Turkey, Russia and Korea. Although the company has received several inquiries from foreign clients in Germany, Poland and Hungary, it would most likely turn down these requests due to the lack of working capital to procure raw materials.

In Mongolia, there are many skillful designers and engineers who learned leather possessing techniques in foreign countries. They are ex-employees of state-owned leather factories, and they created tannery and/or leather processing plants by purchasing equipment from shuttered state-owned enterprises. Including the above-mentioned companies, there are some 30 small-scale leather product producers in Mongolia. Because of the domestic leather's low quality, many of these companies import leather from foreign countries such as Germany and Korea.

One of the concerns in Mongolian hide/skin processing is pollution. The tanning process is accompanied by the discharge of chrome residues. Although chemical residues are transported to a collective plant in Ulaanbaatar for treatment prior to the final discharge, this plant is reported to not be functioning properly.

C. Raw Material Supply

20% to 30% of the hides and skins produced in Mongolia are processed into leather domestically, while most of the rest are semi-processed into wet blue and exported to China. [9]

The quality of Mongolian hides and skins deteriorated after veterinary services were privatized in the early 1990s. As a result, the majority of the leather produced ranks between 3 and 5 on a 1 to 5 scale used internationally. Dipping baths and injections must be used for animal treatment to protect the hides and skins from parasitic worms. Since scars and wormholes cannot be detected at the time of purchase, and only appear when the leather is processed, a buyer of hides and skins is not able to distinguish the difference in quality. As such, most herders are discouraged from paying for anti-parasite drugs, since treated and untreated hides and skins fetch the same price.

After the state-organized collection system collapsed in the early 1990s, tanneries have purchased raw materials from individual herders and middlemen, or have contracts with slaughterhouses. Since tanneries need a large amount of working capital because they have to buy and stock all the materials necessary for a year during the short slaughter season (September-December), high interest rates requested by Mongolian financial institutions constitute a major bottleneck against expanding businesses.

3.2.3 Cashmere Products

A. Processing Structure and Product Lines

Mongolia is the second largest producer of raw cashmere, accounting for a quarter of world production after China's 70% share.

Cashmere processing has three stages. The first stage is to scour cashmere procured from herders and produce fine "combed" cashmere. This is a

[9] Chinese factories apparently have techniques to process damaged skins and hides, such as slicing hides/skins into two pieces or covering up scars, which Mongolian factories do not have.

relatively low value-added process. Combed cashmere is exported mainly to China, Europe and Japan. The second stage is to spin yarn from combed cashmere, which requires a heavy capital investment. The third stage is to produce textile or garments from spun thread.

A summary outline of the processing structure and major products of Mongolian cashmere is shown below.

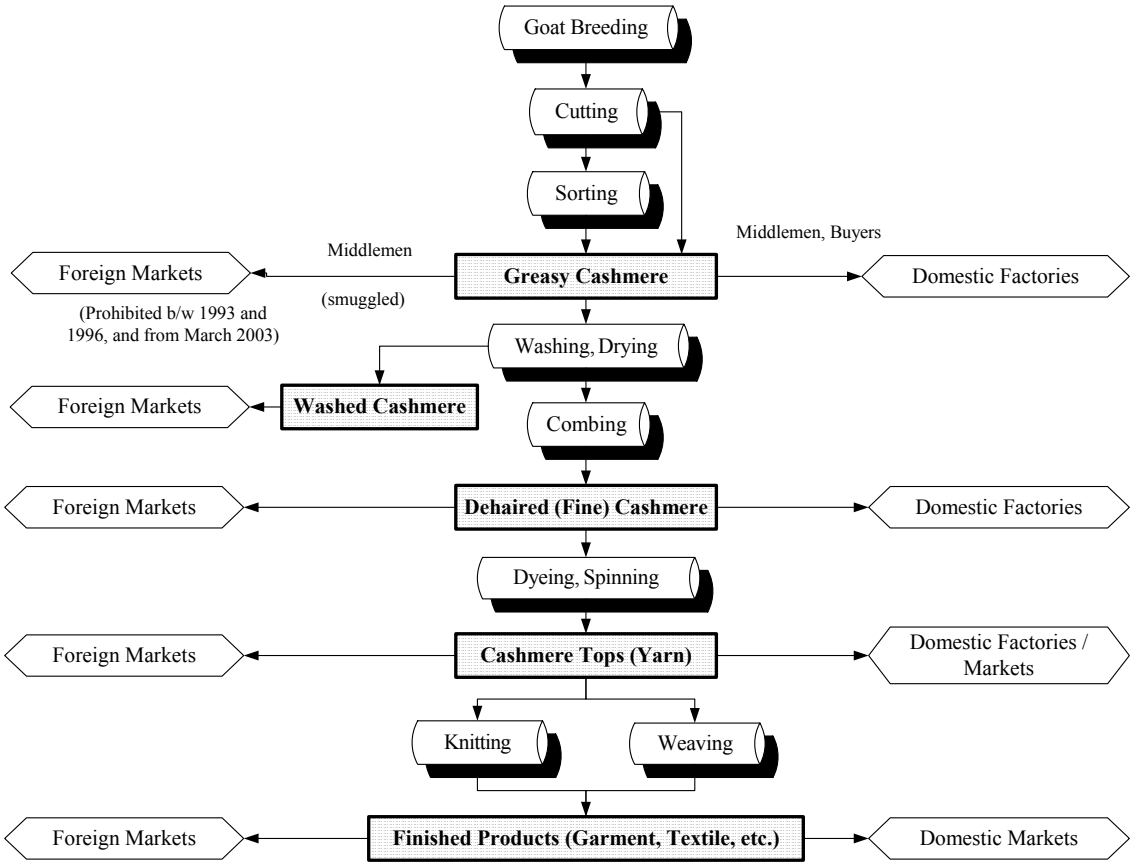


Figure 3.15: Processing Structure and Major Products: Cashmere

B. Production and Export of Cashmere Products

As was discussed in Section 3.1 "Problems of Animal Husbandry in Mongolia," raw cashmere has become herders' main source of cash income. Thus the number of cashmere goats rapidly increased in the 1990s, doubling from 5 million to 11 million between 1990 and 1999. Aggregate raw cashmere production, which is estimated by the number of goats, increased from 1,600 to 3,200 tons during this period. The annual production decreased to 3,000 tons due to dzud damages from the winter of 1999. This expanded production and the surge in demand for cashmere on the world market attracted many foreign partners to the cashmere processing industry. Foreign joint ventures increased

from zero in 1989 to 80 in 2000, though a majority of them stopped production in 2001 and 2002 due to lack of raw material (UNIDO, 2002). The locations of current cashmere processing plants are shown below.

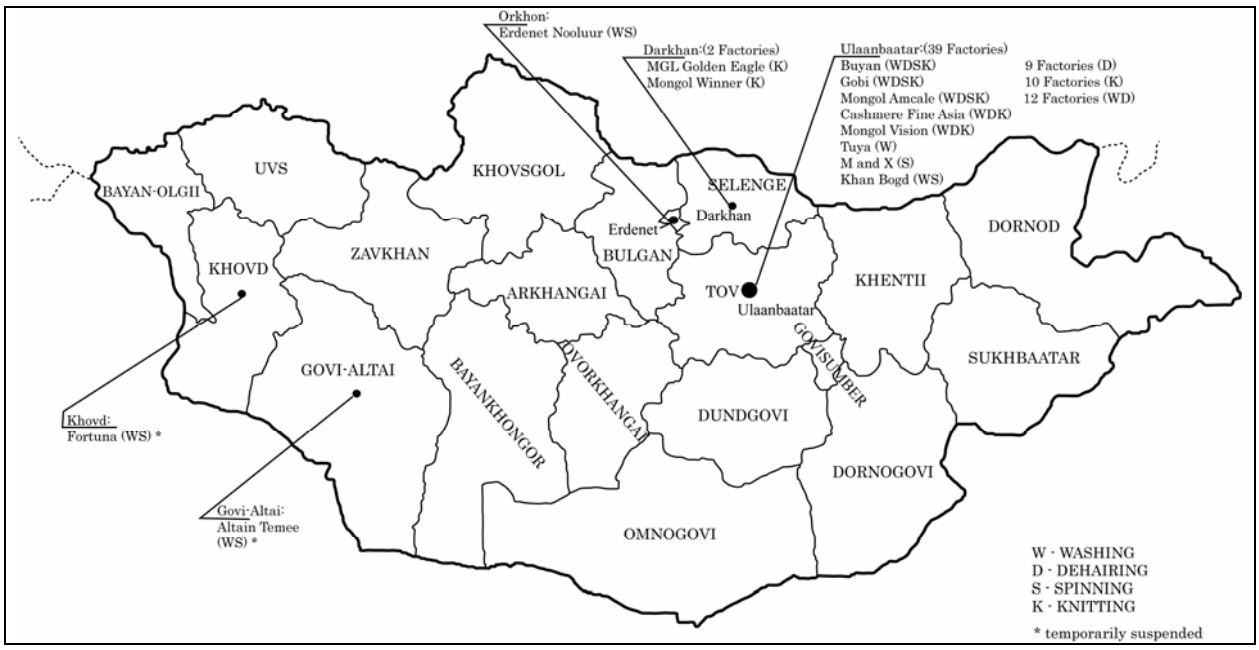


Figure 3.16 Locations of Current Cashmere Processing Plants

Source: Wool and Cashmere Association and JBIC Study Team

According to the Customs Office's records, 50 % to 70% of the 3,000 tons of raw cashmere produced in Mongolia is semi-processed into combed cashmere and exported to garment producers mainly in China, Italy, the UK and Japan. The export volumes of raw, semi-processed and processed cashmere are shown below.

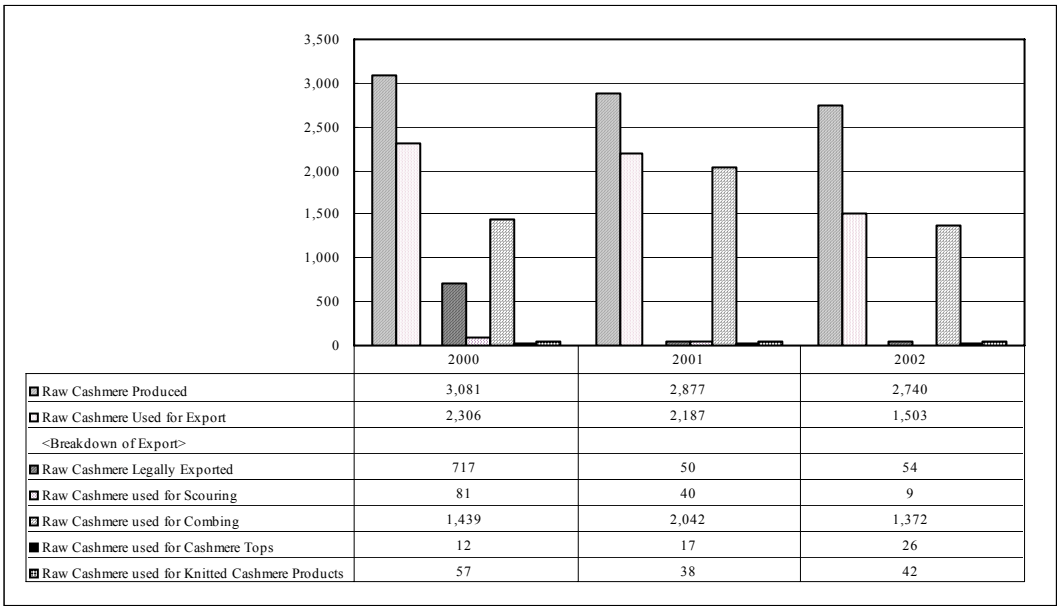
Table 3.2: Export Volume of Cashmere (tons), 2000-2002

	2000	2001	2002
Raw Cashmere	717	50	54
Scoured Cashmere	33	16	4
Combed Cashmere	719	1,021	686
Cashmere Tops	7	10	15
Knitted Cashmere Products	34	23	25

Source: Customs Office

Although the share of raw cashmere domestically processed into final products is not known due to deficiencies in official statistics, it is estimated that the raw cashmere processed into cashmere tops or knitted cashmere products and exported to foreign counties represents only 3% of the total raw cashmere

produced domestically[10]. The following graph shows the use of raw cashmere produced in Mongolia, estimated by the JBIC Study Team. The difference between "Raw Cashmere Produced" and "Raw Cashmere Used for Export" is either smuggled cashmere or raw cashmere processed into finished products and sold domestically. Given the small size of the domestic market of cashmere products, smuggling accounts for 20% to 40 % of raw cashmere.



	2000	2001	2002
Raw Cashmere Produced	3,081	2,877	2,740
Raw Cashmere Used for Export	2,306	2,187	1,503
<Breakdown of Export>			
Raw Cashmere Legally Exported	717	50	54
Raw Cashmere used for Scouring	81	40	9
Raw Cashmere used for Combing	1,439	2,042	1,372
Raw Cashmere used for Cashmere Tops	12	17	26
Raw Cashmere used for Knitted Cashmere Products	57	38	42

Figure 3.17 Production and Export of Cashmere, 2000-2002 (tons)
Source: Customs Office and JBIC Study Team Estimate

An export ban on raw cashmere was first imposed in 1994.[11] Afterwards, many joint ventures to scour and/or comb raw cashmere were established in Mongolia, since raw cashmere must at least be scoured in order to be exported. Garment manufacturing, another type of cashmere processing industry, increased in the second half of the 1990s to take advantage of Mongolia's quota-free access to the US market. These garment manufacturers use yarn from domestic producers such as *Gobi* or *Amicale*, or yarn imported from China or Italy.

Most of Mongolian cashmere processing companies, including vertically integrated companies such as state-owned *Gobi* and privately owned *Buyan*, are not competitive in the world market. This is especially true of Mongolian firms

[10] The basis for the estimation is: 1 kg of raw cashmere can be processed into either 0.6 kg of scoured cashmere, 0.5 kg of combed cashmere, or 0.4 kg of cashmere tops/garments.

[11] The ban was lifted in 1996 and later replaced by an export tax of 4,000 MNT (about US$ 5) per kg of raw cashmere in 1997. The tax remains in effect until 2007 under a WTO agreement.

when compared to the large Chinese stand-alone spinning, dyeing and garment factories, which can take advantage of economies of scale. Mongolian combed cashmere is sold at US$ 50 to 55 per kg in 2002; domestic plants can barely cover their production costs given that raw cashmere prices alone costs US$ 22 to 24 per kg. On the international market, fine combed Chinese cashmere sells at a 25 % premium over Mongolian cashmere (US$ 70-80 vs. US$ 50-60) because Chinese cashmere is slightly finer (14-16 vs. 16-18 microns) and whiter. The latter characteristic makes Chinese cashmere suitable for producing pastel shades, which dominate the women's knitwear market.

On the other hand, Chinese producers purchase Mongolian raw cashmere, which is l5 % longer on average, in order to give garments a soft feel and durability. This feature has boosted the desirability and price of raw Mongolian cashmere (UNIDO, 2003).

Another disadvantage significantly affecting Mongolian manufacturers' profitability is the lack of their own distribution and marketing chain and label branding. An exception is *Amicale*, a US-Mongol joint venture that has its own brand name and marketing channels in Europe, although the company was forced to reduce production due to the withdrawal of part of its working capital by the parent company following the September 11, 2001 incident.

C. Raw Material Supply

As mentioned above, the international market pays less for Mongolian cashmere than for Chinese cashmere, since the latter is finer and whiter. The quality of raw cashmere in Mongolia has markedly deteriorated during the 1990s. Since Chinese traders and their agents buy Mongolian raw cashmere at one price regardless of quality, herders have adopted cross-breeding of cashmere goats with higher yielding goats. Herders also maintain old-aged goats that produce even coarser hair. At the moment, herders have no incentives for sorting and grading, and instead simply mix cashmere from old and young goats, from male and female goats, and cashmere of different colors and shades. The USAID-funded "Gobi Initiative" project has promoted direct negotiations between herders' groups and domestic buyers, while another USAID-funded "Competitive Initiative" project distributed leaflets to inform herders about the methods and benefits of sorting, grading and proper breeding. These projects have helped to raise herders' awareness of breeding, leading to an increase of cross-breeding with high quality goats such as "Red Goats" of Bayanderger soum in Sukhbaatar aimag. However, these new developments have not been enough since the prices offered by domestic companies on high quality

cashmere are still lower than the prices offered by Chinese buyers who do not request any grading.

3.2.4 Sheep and Camel Wool Products

A. Processing Structure and Product Lines

Mongolia produces a large quantity of sheep wool, at least a third of which does not reach markets but is discarded in the countryside due to its low value compared to high transport costs. Sheep wool and camel wool are both exported, mostly either in raw form or scoured. Mongolian sheep wool is coarse and thus not suitable for garment production. It is processed either into felt products – mostly *ger* or footwear for herders - or into carpets or blankets. Camel wool is processed into knitted or woven products. A summary outline of the processing structure and major products of Mongolian sheep and camel wool is shown below.

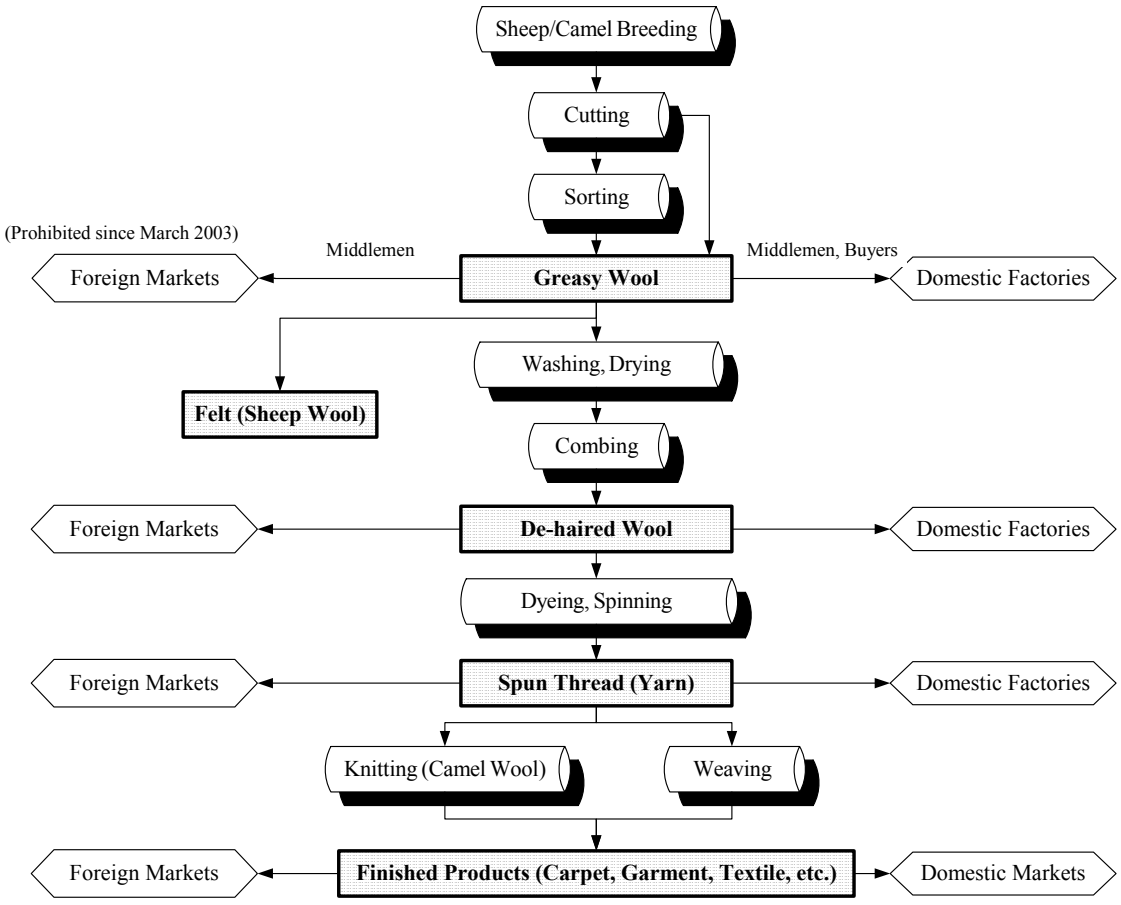
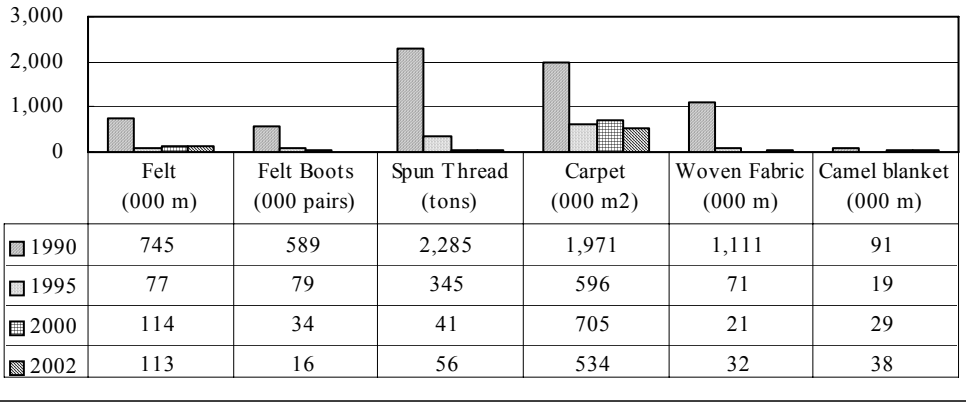


Figure 3.18 Processing Structure and Major Products: Sheep and Camel Wool

B. Production and Export of Wool Products

Industrial production of sheep and camel wool products fell sharply after 1990, as shown below. Wool spun thread and blankets are produced by *Eermel*, a former state-owned company, privatized in 1992. Current sales of these products are not significant, since after the transition to a market economy, these products were ultimately not competitive in terms of quality and prices on the international market.



	Felt (000 m)	Felt Boots (000 pairs)	Spun Thread (tons)	Carpet (000 m2)	Woven Fabric (000 m)	Camel blanket (000 m)
1990	745	589	2,285	1,971	1,111	91
1995	77	79	345	596	71	19
2000	114	34	41	705	21	29
2002	113	16	56	534	32	38

Figure 3.19: Production of Sheep and Camel Wool Products, 1990-2002

Source: Mongolian Statistical Yearbook, NSO

Although there are several wool washing factories in local areas, most of them are temporarily or permanently closed due to the poor performance of their customers, namely spinning and carpet factories. The locations of sheep wool processing factories are shown in the map below.

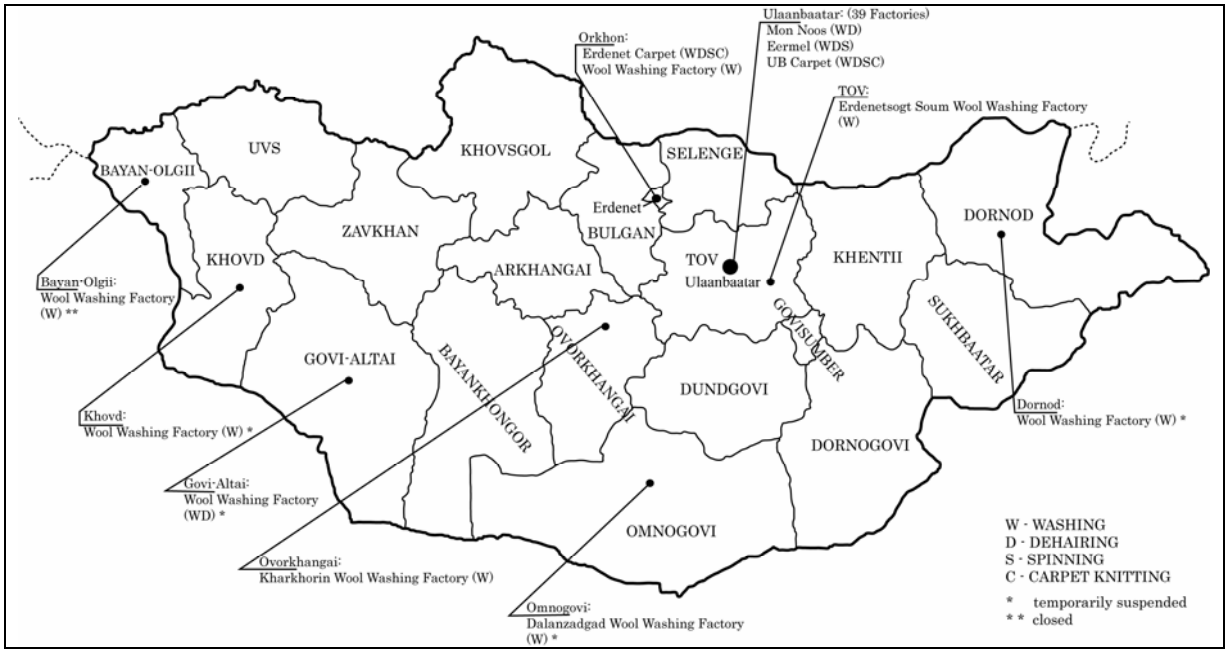


Figure 3.20 Locations of Sheep Wool Processing Factories

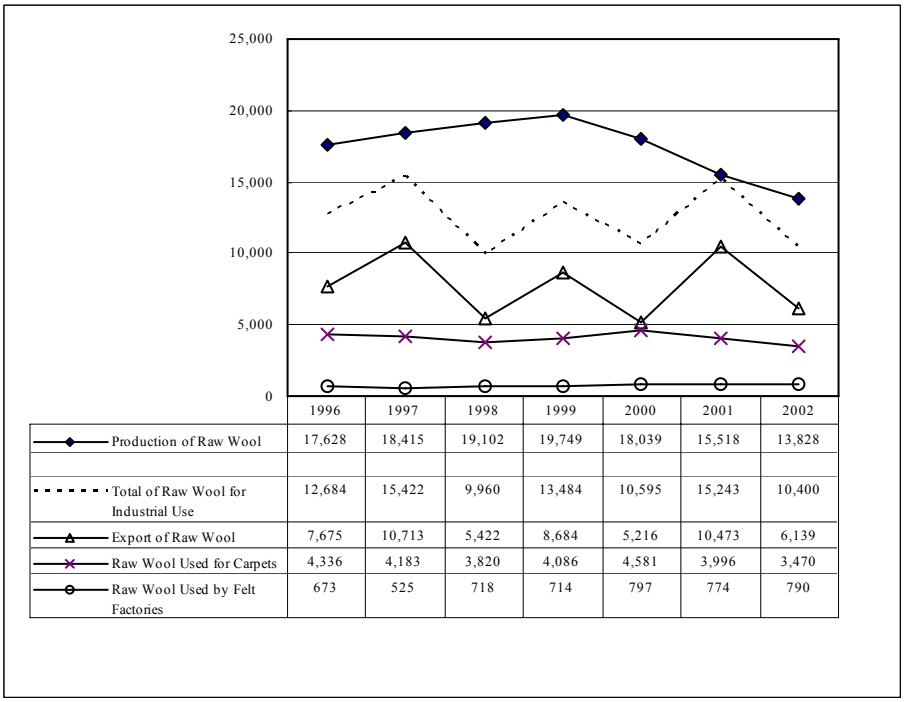
Source: JBIC Study Team

The two major carpet producers in Mongolia, Ulaanbaatar Carpet and Erdenet Carpet, were both formerly state-owned enterprises, privatized in the first half of the 1990s.[12] Erdenet Carpet occupies 60% of the domestic market, while Ulaanbaatar Carpet [13] accounts for the remainder. The combined total processing capacity is 2 million m^2 per year, while the current annual production stands at 0.5 million m^2. 20% to 30 % of their products are exported to Russia, China, Canada and the US, while the rest are sold on local markets. Their production technology is outdated and inflexible, unable to respond to customer demands for flexible, small batches of varied and novel designs. From this perspective, both carpet makers produce, 300 m^2 each per year, hand-made carpets for high-end customers. Hand-made carpets' prices are five times more expensive than those of machine-made ones and the Mongolian manufacturers currently target only domestic customers. Yet despite these conditions, Mongolian products could be sufficiently competitive on the world market in terms of quality and prices in this field.

The following graph shows the total production, export and industrial use of raw sheep wool. On average, about 70% of raw sheep wool is either exported or used for industrial production (mostly carpets and felt). Since sheep wool consumption by individual herders' families is limited, most of the remainder is discarded in the countryside.

[12] There was another carpet maker "Kherlen", which went bankrupt in the late 1990s.

[13] Ulaanbaatar carpet is saddled with a serious shortage of working capital, since it is not qualified for a bank loan due to its liability of 1 billion MNT to commercial banks, which was made before privatization. As a result, the company is deferring tax and social security payment in order to buy raw materials.



	1996	1997	1998	1999	2000	2001	2002
Production of Raw Wool	17,628	18,415	19,102	19,749	18,039	15,518	13,828
Total of Raw Wool for Industrial Use	12,684	15,422	9,960	13,484	10,595	15,243	10,400
Export of Raw Wool	7,675	10,713	5,422	8,684	5,216	10,473	6,139
Raw Wool Used for Carpets	4,336	4,183	3,820	4,086	4,581	3,996	3,470
Raw Wool Used by Felt Factories	673	525	718	714	797	774	790

Figure 3.21: Utilization of Raw Sheep Wool, 1996-2002 (tons)

Source: Estimate by JBIC Study Team based on the data from Mongolian Statistical Yearbook, NSO, and Customs Office

Felt factories are mostly located in rural areas, since customers are usually local residents. The following map shows the locations of felt factories.

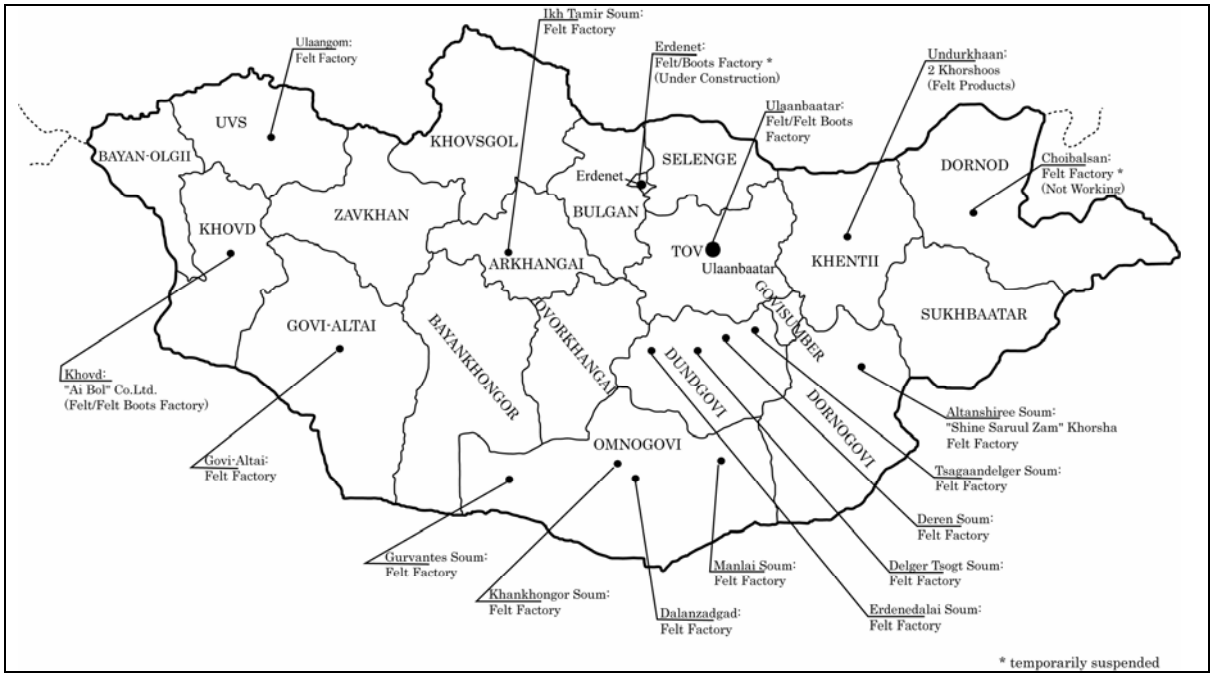


Figure 3.22: Locations of Felt Factories

Source: JBIC Study Team

Although felt production decreased in the 1990s according to the statistics, it does not necessarily mean that actual demand and supply of felt decreased. In the former centrally planned economy, felt ger and footwear were principally produced in felt factories and distributed/sold to herders and negdel employees. After negdels were phased out, most herders started producing ger and footwear by themselves, since they had both the traditional knowledge of felt making and the raw materials on hand. Current demand for factory-made felt ger and footwear is small, limited to the military, tourist camps, semi-urban residents and relatively wealthy herders.

Most camel wool has been either exported raw or processed into blankets. Production of camel wool blankets is not significant at 20 to 40 thousand meters per year, while 1,500 to 5,000 pieces are exported annually. However, international apparel manufacturers have recently started paying more attention to camel wool as a material for cardigans and sport coats. Therefore, *Amicale*, the US-Mongol joint venture wool processing company, is trying to increase camel spun thread production.

C. Raw Material Supply

Because of the low quality and value of final products made of Mongolian sheep wool, the prices for raw wool remain low: from US$ 0.1 to 0.3 per kg at the factory, depending on the quality. Since the profitability of raw wool procurement is marginal, individual herders do not take the trouble to bring their wool to traders from a long distance, but simply discard it. Therefore in most cases, sheep wool is collected only from herders residing near soum or aimag centers or near processing factories.

On the other hand, the future profitability of camel hair, which is currently purchased at US $ 2 per kg, is more promising. However, since the camel population has significantly decreased from 350 thousand to 250 thousand between 1999 and 2002 due to dzud disasters, the inefficiency of procurement must be overcome in order to increase the value-added of camel hair production.

3.2.5 Dairy Products

A. Processing Structure and Product Lines

Per capita milk consumption in Mongolia is higher than that of many developed countries, and the Mongolian population also consumes a variety of dairy products processed by herders or dairy processing factories. Traditional dairy products include yogurt, butter oil, butter, acid cheese, curd, milk vodka, casein,

etc. A summary outline of the processing structure and major products of Mongolian dairy is shown below.

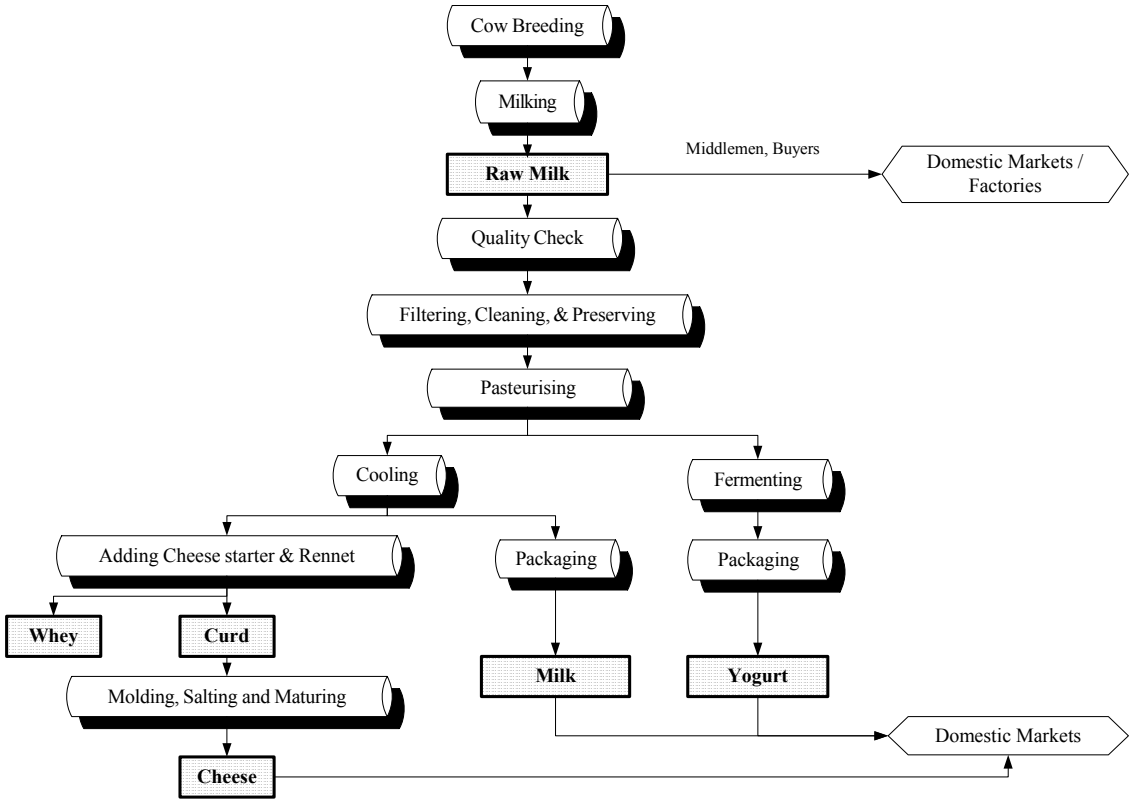


Figure 3.23: Processing Structure and Major Products: Dairy

B. Production of Dairy Products

Before the transition to a market-oriented economy, milk was distributed to urban residents from some 40 state-owned dairy farms, through dairy processors. These farms were located on the outskirts of Ulaanbaatar, Darkhan or Erdenet, owning approximately 40,000 cows in total. During the transition, to a market-based economy, most dairy farms were dissolved and the cows distributed to individual herders. Current small-scale dairy farms located near large urban areas sell their milk directly to consumers or to dairy processors in towns, who then process it and sell to retailers or to end-users. A lot of dairy products such as cheese, butter and yogurt are also produced by herders for self-consumption or sale to urban residents. The evolution of the volume of raw milk and industrial milk production is shown below.

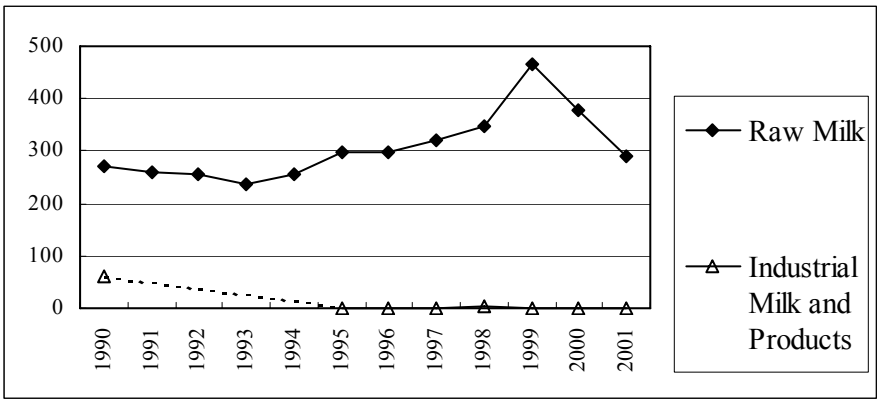


Figure 3.24: Raw Milk and Industrial Milk Production 1990-2001 (million liters)
Source: FAO for raw milk, Mongolian Statistical Yearbook, NSO for Industrial Milk and Products

After domestic production of raw milk increased from 270 to 470 million liters between 1990 and 1999 due to a corresponding increase in the number of cows, it decreased to 1990 levels due to a loss of cows by dzud disasters. Although dairy factories processed 60 million liters or 20% of raw milk in 1990, their production dropped to 2 to 3 million liters after 1995.

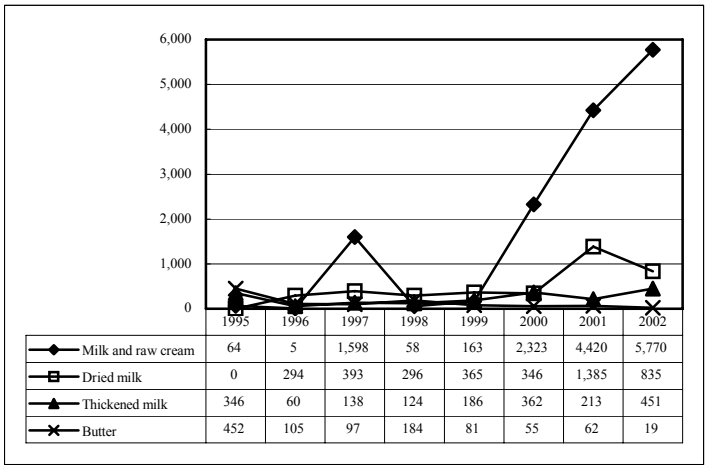
Suu company, the largest dairy processors in Mongolia, used to produce 40 million liters of milk annually before 1990. It was semi-privatized in 1992, with the State retaining 51% of total shares. The plant collected milk from several large-scale state-owned dairy farms, some of which owned up to 800 milk cows, each producing 15 liters per day. The plant also utilized a network of collection points and centers along a paved road to the north of the country. After 1990, however, state-owned dairy farms ceased operations and the collection system collapsed. Cows were allocated to individual herders, who then started selling milk to urban residents, traders or dairy companies. Because herders could not maintain exotic dairy cattle that require heated housing to survive, poor indigenous milk cows have eventually become dominant. As a result, *Suu*'s milk procurement has become inefficient and unreliable, [14] significantly eroding the company's sales and profitability. Moreover, state interference has been very disruptive for the company's management. The plant is currently operating at less than 1% of its capacity due to the above reasons, coupled with lack of trucks and working capital.

[14] Suu company is currently collecting milk from individual dairy farms at six to seven collection points by using 10 trucks granted by Japan.

Without warm shelters and supplemental feed necessary to maintain milk production throughout year, Mongolian cows produce only 1 to 2 liters of milk during winter. In order to supply milk during winter, *Suu* uses 250 tons of powdered milk imported from Russia and produces long-life milk, in addition to 30 tons of powdered milk produced on its own.

Due to the low production level of raw milk during the winter, there is a large demand for long-life milk or powdered milk in Mongolia. Powdered milk is also produced by *Sim* company, a medium-sized food company in Mongolia, located in Sukhbaatar City in Selenge aimag. Although the company has introduced Danish technology and equipment with the capacity to produce 75 tons of powdered milk annually, its current production remains at 30 tons because of its low raw milk procurement capacity, namely the insufficient number of trucks and high transport cost due to scattered dairy farms. Moreover, long-distance transport often means that the raw milk is spoiled before it reaches its destination.

The low production level of powdered milk and long-life milk has lead to an increase in the import of these products. The following graph shows the growth in import volume of major dairy products.



	1995	1996	1997	1998	1999	2000	2001	2002
Milk and raw cream	64	5	1,598	58	163	2,323	4,420	5,770
Dried milk	0	294	393	296	365	346	1,385	835
Thickened milk	346	60	138	124	186	362	213	451
Butter	452	105	97	184	81	55	62	19

Figure 3.25 Import Volume of Major Dairy Products, 1995-2002 (tons)
Source: Customs Office

C. Raw Material Supply

Since the collapse of intensive state-owned dairy farms and milk collection networks, individual dairy farms now either contract with dairy processors for raw milk supply, or simply transport raw milk directly by railway or truck to traders at markets, to dairy processors, or to consumers.

Distance and the availability of transport are the factors that determine the type of products and their marketability. Dairy farms and herders are able to sell raw milk if they have good access to markets or are located within the reach of dairy processors. Long distance makes transport of raw milk quite difficult, directly affecting costs and the quality of raw milk. Therefore, herders in remote areas such as Arkhangai, Ovorkhangai, Bayankhongor, and Dornod aimags process milk into butter, cream or other dairy products, for transport and sale to traders at Ulaanbaatar markets.