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A VALUE CHAIN ANALYSIS OF THE MONGOLIAN CASHMERE INDUSTRY

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
BCC	Business Cooperation Contract
FDI	Foreign Direct Investment
FIFTA	Foreign Investment and Foreign Trade Agency
FSU	Former Soviet Union
GDP	Gross Domestic Product
GTZ	Gesellschaft für Technische Zusammenarbeit GmbH
IMF	International Monetary fund
IRR	Internal Rate of Return
JV	Joint Venture
GoM	Government of Mongolia
MFA	Multi Fiber Arrangement
SFU	Sheep Forage Unit
SME	Small and Medium Enterprise
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WTO	World Trade Organization

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EXECUTIVE SUMMARY

There have been numerous studies, and even more numerous recommendations, concerning the Mongolian cashmere industry. The industry has also received extensive funds, incentives, and technical assistance over the past decades. At present, however, both sectors of the industry – the herding sector and the processing sector – are in deep trouble. The herding sector may well have surpassed the total herd size that can be sustained by Mongolia's pasture lands and its herds may already be causing desertification; yet herding is heavily subsidized. Many firms in the processing sector have ceased to operate or have downsized their operations over the past eight years, yet processors still operate on average at less than 50% capacity. About half of Mongolia's raw cashmere, however, is smuggled to China for processing. Both segments of the market are highly distorted: both subsidized and over-taxed either implicitly or explicitly in complex ways.

The Mongolian cashmere industry operates within the context of the world cashmere industry which in turn operates within the context of the world garment industry. Over the past decades there has been rapid transformation of the world garment industry: costs and prices have been driven down while the fashion cycle has accelerated. As a consequence, the relative size of market for luxury clothing has declined over time. At the same time, there has been vertical disintegration in the industry as bargaining power in the value chain has shifted to brand name holders from producers and retailers. At the same time, however, brand name holders have withdrawn from production operations and have relied more heavily on contract producers.

Mongolia is the second largest producer of cashmere in the world with about 15% of world production, compared to China's 75% and lesser percentages for Iran, Afghanistan, South Africa, the United States, and Australia. For decades the government of China has subsidized its cashmere processing with very low interest rate loans, reduced contributions to social benefits and, until recently, export bounties. As yet, however, no Chinese processor has been able to integrate forward into the international channels of distribution much less develop an internationally recognized brand name. In 2005, at the China International Cashmere forum, Chinese officials outlined China's cashmere strategy for the future: China to control and regulate the entire value-added chain for cashmere by importing raw cashmere, using current excess capacity to process it into finished products to export under its own brand names (either developed or purchased), to brand name holders or under supply contracts.¹

This analysis has several implications for the cashmere industry in Mongolia: from a demand-side perspective, it should not seek to upgrade the quality of its cashmere, since the "spun gold" segment of the market is declining in relative importance; no incentives should be given to processors to integrate forward into international channels of distribution or into developing a brand name: these sectors of the industry are foreclosed to it. Conversely, Mongolia's foreign investment laws do not have to be changed to induce foreign producers to integrate backward into herding: they won't in any event. Most importantly, if the GoM and cashmere processors in Mongolia do not act rapidly and decisively, Mongolia will be relegated to being purely a producer of raw cashmere and its cashmere processing sector will decline even further. On the other hand, processors outside China are now actively searching for means to counterbalance the threat of Chinese processors and the Mongolian industry, if it acts expeditiously, may be able to forge alliances with these world-class players.

¹ At present Chinese processors control about 93% of the world's supply of raw cashmere. (China Daily, April 19, 2005).

The macroeconomic environment in Mongolia is not conducive to the development of the cashmere industry. The real exchange rate has appreciated against the dollar and the yuan over the past five years while at the same time China's real exchange rate has devalued against the dollar somewhat.² These relative exchange rate movements have widened Mongolia's cost disadvantage compared to costs in China. The GoM has set mandatory social payments at relatively high level (in order to subsidize the unemployed, herders, and the retired), such that total wage costs are quite high for a country at this income level. Not coincidentally, there is widespread unemployment and underemployment. Despite a reduction in the basic corporate income tax rate to 30% (15% for SMEs), it is still relatively high, especially when the relatively short tax holidays that are used for investment incentives aimed toward the cashmere sector are taken into account.³ Government revenues are high and rising, in part to fund a burgeoning bureaucracy and their expenditures.⁴ Finally, real interest rates are very high, as are the differentials between the deposit and the borrowing interest rates. These high rates place Mongolian firms at a severe disadvantage compared with firms in China that can access funds at very low rates.⁵

The GoM should consider ways to reduce interest rates for the processing sector (without itself guaranteeing loans to the sector); lowering social payments over time; adjusting the real exchange rate downward, and lowering taxes once again to the 15% range for all firms (and eliminating tax holidays, allowing accelerated depreciation and loss carryforwards for tax purposes at the same time). It should also further improve the foreign investment system, enhance the capacity of FIFTA, and reduce the regulatory burden on investors in order to attract and facilitate foreign investment and foreign funds into the cashmere sector.

The structure of the cashmere industry is complex and largely dysfunctional. The herding sector receives substantial subsidies from the GoM: almost no taxation, free medical care, free water services for their herds, subsidized fodder, and no pension, health or disability contributions. Yet the herding sector may well have surpassed its sustainable herd size and be imposing substantial negative externalities on Mongolia in the form of desertification. Despite the political power of the herders, these subsidies should be removed and the miniscule head tax on goats should be increased substantially.

The quality of Mongolian raw cashmere has declined over time despite many projects to reverse this trend and even more recommendations for the GoM to intervene to reverse this trend. These studies seem to have ignored one important fact: as cashmere quality (as measured by fiber diameter) increases, the average yield per goat declines. For example, a reduction in 2 microns in fiber diameter from 17.5 microns to 15.5 microns (to raise quality from average to good) will cause a reduction in yield of about 24%. Yet the price differential both in Mongolia and on international markets based on quality differentials is on the order of 15%. Not surprisingly, herders have not followed programs designed to reduce fiber diameter that perforce would reduce their incomes.

The structure of the processing sector also is far from optimal. Gobi, the largest firm in the sector, and also the largest integrated producer, is state owned. The GoM has been talking about privatizing Gobi for the past six years. In 2005, however, it decided once again to

² The real exchange rate of the tugrik appreciated 25% against the yuan and by 10% against the dollar.

³ The Tax law does not allow accelerated depreciation or loss carryforwards for tax purposes and excludes many expenses when calculating taxable income. Cashmere processors can avail themselves of the three-year tax holidays (with another three years at 50% reduction) applicable for export-oriented investors.

⁴ Since 1990, excluding teachers, doctors in government hospitals, the army, and the police, the number of government civil servants has risen from ten thousand to sixty thousand.

⁵ Mongolian firms pay about 35%/year vs. 6%/year for Chinese firms.

postpone this action. In the meantime, Gobi has been losing about \$2 million per year; its plant and equipment are generally old and not well maintained; its workers are not well trained or managed; efficiency is low; “yield” (input weight converted into output weight) is below best practice; and its product quality is low as reflected in the prices of its garments on international markets. Buyan, the second largest integrated producer is privately owned. It is in deep financial trouble and it cannot raise funds to buy raw cashmere. The fate of both these firms hangs as a huge question mark over the industry and deters investors from making new investments or expanding existing ones. The GoM should move expeditiously to privatize Gobi; it should not advance funds or guarantee loans to Gobi.

Many of the other firms in the processing sector also face difficulties: low productivity, high labor costs, uneven quality, lack of design capabilities, the high cost of funds, lack of design capabilities and little export sales capabilities. They need on-going technical assistance in production, worker training and skills development, product quality, design, and export marketing.

Examination of the value-added chain for cashmere highlights the difficulties of the industry: there is severe excess capacity in all segments of the chain with the exception of spinning (with 77% capacity utilization); most cashmere is exported with only low value added (raw or dehaired/tops cashmere), and product quality, as reflected in price, is highly uneven. A simulation model of the value added chain of processing firms shows that despite these problems, if a firm has access to funds at low international rates, has best practice yields, and produces quality products, it can return an acceptable profit to its investors. If it must pay domestic Mongolian interest rates of about 37%, it cannot be profitable. For an integrated producer, at a 37% borrowing rate, capital costs are roughly six times labor costs.⁶ If this situation is not addressed either through foreign ownership, through access to international lending, or through credits advanced by buyers, then a firm cannot survive in this environment.

The GoM faces three alternatives: to increase, enforce, and extend the export tax; to subsidize the processing sector directly, or to retain the *status quo*. In 1997, as part of its ascension to the WTO Mongolia undertook to remove its export ban on raw cashmere and to replace it with a specific tax of 4,000 tugriks/kilo (at that time about 30% of value). At current prices, this specific tax is about 12%, but, since 2000 there has been rampant smuggling that reduces the effective tax rate. This tax is due to expire January 1, 2007. The GoM could extend this tax for another ten years and enforce it by, for example, giving customs officers a bounty of some percentage of the tax collected or the value of intercepted smuggled cashmere. This action would represent a massive subsidy to the processing sector at the expense of the herding sector. It would further distort markets and prices in both sectors. Mongolia needs to move toward less distorted markets, not toward increasing the level of market distortion.

The processing sector in China has enjoyed subsidies for over thirty years and has developed into a powerhouse with which Mongolia will not be able to compete. Of note, the Chinese government never distorted the market for cashmere by using export taxes; rather it advanced very low interest rate loans, reduced social contributions for cashmere producers, and paid export bounties depending on the level of processing. In theory, the GoM could undertake a similar program (except it could not offer export bounties under the WTO). The GoM does not have the funds with which to undertake these direct subsidies, however.

⁶ An integrated producer with an input of 200 tons of raw cashmere and an output of 300,000 knitted sweaters would require plant and equipment of about \$6 million and average inventories of raw cashmere of another \$3 million. At 37% capital costs this means capital costs of about \$3.3 million/year compared to labor costs of \$600 thousand.

Finally, the GoM could undertake the recommendations outlined above, but not offer other incentives to the processing sector. If it were to do this, however, it would have to be prepared to face the demise of the processing sector in Mongolia as China follows its explicit strategy to becoming the cashmere processor for the world and relegates Mongolia to the role of raw material supplier. If this were to happen, the GoM would have to expect China to exercise its monopsony buying power to drive down prices for Mongolian raw cashmere.

SECTION I: INTRODUCTION

The importance of the cashmere industry to the Mongolian economy is clear: it provides income and employment for over a third of the population and raw cashmere and cashmere products are Mongolia's third largest export. A vibrant cashmere industry has the potential to contribute to the growth of the economy, of the manufacturing sector, of employment at both the herder and the manufacturing levels, and of exports. The cashmere industry, however, is exposed not only to the changes in international demand and prices for cashmere, but also to severe changes in weather⁷ and extreme competition from China for both raw cashmere as an input to the Chinese cashmere processing sector and with Chinese-produced semi-processed and finished cashmere products on world markets.

With annual production of over three thousand tons, Mongolia accounts for about 15% of world production of cashmere of 16 thousand tons, with China accounting for about 75%. Mongolia's *official net* exports of cashmere and cashmere products were \$57 million in 2004.⁸ About 50% of Mongolia's production of raw cashmere is smuggled to China, giving actual total net exports of about \$97 million. If all the raw cashmere produced in Mongolia were fully processed into finished knitted and woven products prior to export, exports would be about \$206 million and employment in the processing industry would more than double to about seven thousand.

The objectives of the Government of Mongolia (GoM) for the cashmere industry are to develop the cashmere industry so that it makes a significant contribution both to economic growth and to poverty alleviation. To achieve these twin objectives it assists the development of the herders whose goats supply the raw cashmere and the downstream processing industry that adds value to the raw cashmere prior to export. For herders the GoM offers free education for their children, virtually no taxes (only a small per head tax, which is often partly evaded), free provision of water wells, free veterinarian services, and fodder at subsidized prices.

For the processors, through 1997, the GoM instituted, and enforced, a ban on the export of raw (greasy) cashmere, thereby reducing the price of raw cashmere and increasing the supply available to processors. As a result, there was extensive investment in the industry by foreign investors, Mongolian investors and in JVs. In 1997, however, when Mongolia joined the WTO, the GoM replaced the ban on exports of raw cashmere with an export duty of 4,000 tugriks, at the time about 30% of the world price of raw cashmere. The GoM also undertook to remove this export duty by January 1, 2007. Since 1997, however, the tugrik has devalued and the price of cashmere on world markets has increased, such that 4,000 tugriks represents about 12% of the price of raw cashmere. Moreover, starting in 2000, there was a change in the customs regime that has allowed (even encouraged) widespread smuggling of raw cashmere to access the higher prices in China.

As a consequence of these developments, the cashmere processing sector in Mongolia has fallen on hard times: many firms have exited the industry, yet capacity utilization rates remain low at all stages of processing, causing losses for many firms in the industry. The

⁷ With the liberalization of the herding sector, the goat population rose from 5.1 million in 1990 to 11 million in 1999. Due to lower prices for cashmere and three successive dzuds (which kill about 20% of goat offspring), herd size declined to about 9 million in 2002, but rose again to over 12 million in 2004.

⁸ Gross exports were \$79 million, but Mongolia imported \$23.5 million worth of dehaired cashmere and cashmere yarns. 2004 was unusual, however. In other years, imports were in the \$7 - \$10 million range and were largely cashmere yarn.

expiration of the Multi Fiber Arrangement (MFA) has exacerbated these problems with several Chinese-owned companies either closing entirely or relocating their knitting capacity back to China.

The firms in the cashmere processing sector point to two problems: the high cost of the working capital needed to purchase stocks of raw cashmere and the price competition of traders (called changers) who buy raw cashmere in Mongolia, at prices that Mongolian processors say they cannot match and make profits, and smuggle it to China. In addition to these problems, labor costs in Mongolia are somewhat higher than in Inner Mongolia in China and productivity is somewhat lower. In general, but with notable exceptions, labor and management skills are low and machinery is not well maintained and hence product quality is low and falling. This quality problem has been heightened by the falling average quality of Mongolian raw cashmere (as measured by micron diameter).

If the GoM were to assist the cashmere processing sector by, for example, converting the specific export duty of 4,000 tugriks it currently charges to its original tariff equivalent of 30%, enforcing the tariff by reducing smuggling, and extending the lifetime of the export tariff for another ten years, the herders would be damaged – and there are many more herders (with many more votes) than there are workers in the cashmere processing sector. Such an action would further distort the Mongolian cashmere sector rather than liberalize it further, another objective of the GoM. Yet if there is no change in the environment of the cashmere processing sector, it is likely that the sector will continue to decline as more firms will exit the sector, employment declines, value added in the total cashmere industry declines, and total exports of cashmere products decline as well.

These are the dilemmas facing the GoM in its policy toward the cashmere sector. The purpose of this report is to analyze the cashmere industry using the technique of value chain analysis to elucidate the cost and competitive factors in the industry and to present alternative actions by the GoM toward the cashmere industry.

SECTION II: THE WORLD CASHMERE INDUSTRY

The problems and policy options for the GoM with regard to the Mongolian cashmere industry must be viewed in relationship to the trends in the world garment and textiles industry, the role of cashmere in that industry, and the competitive position of Mongolia in the global cashmere industry. Over the past several decades, competitive pressures from garment (and more recently spinning and textile) producers in low wage countries have forced producers in high wage countries to use ever faster, more efficient, and more capital intensive equipment to produce ever higher quality output. The results of these trends have been higher quality garments at lower prices with an ever higher percentage of both garments and textiles produced in low wage countries. The expiration of the MFA will accelerate these trends.

In response, in order to counteract falling unit prices, garment companies have tried to increase unit sales by accelerating the fashion cycle and by increasing the number of style changes per year from four (the four seasons) to eight to monthly changes for some brand names and retailers. The garment industry has moved from a strategy of high retail margins, with high stock levels (many styles, many colors, and many sizes) with low turnover and high redundancy toward a strategy of lower margins, limited styles, colors, and sizes, with high turnover and low redundancy. At the same time, power has shifted from producers and retailers to the brand owners who take the risks in color, fashion, and size and overall demand. Due to these trends, the industry has vertically disintegrated with separate ownership along the value added chain as firms have found it too difficult to manage vertically integrated operations.

With production of over three thousand tons of raw cashmere per year, Mongolia is the second largest producer of raw cashmere in the world, behind China with production of about twelve thousand tons per year.⁹ Russia, Iran and Afghanistan are lesser producers and their cashmere is of inferior quality to that produced in Mongolia. Very small amounts of cashmere are produced in the US, Australia, and South Africa.¹⁰ China dominates world production of knitted garments with a capacity to produce over 20 million cashmere sweaters per year. Despite higher wages, Italy continues to dominate the high end of the cashmere market from spinning to knitting and weaving.

The cashmere herding and processing sectors in China are largely located in Inner Mongolia, one of China's poorer regions. Since the 1970s, the Chinese government has granted substantial subsidies to the cashmere processing sector: low interest rate loans, tariff protection, no charges for worker welfare and housing, and export subsidies in the form of tax rebates as a percentage of export sales (the percentages escalating depending on the stage of processing). It also has a strict licensing system for traders and excludes all foreign traders. When China joined to the WTO, it agreed to end the export incentives in 2004. It has also

⁹ Like most figures related to the cashmere industry in Mongolia, these production figures are estimates and may be substantially biased and inaccurate for two reasons. Production of raw cashmere is calculated based on the recorded number of goats and an imputed average production per goat of raw cashmere. The size of the goat flock in Mongolia may be underestimated, however, since the GoM levies a small tax per head on goats and hence herders have an incentive to obtain a short count for their herds. Secondly, as described below, the average quality of the goats in Mongolia (as measured by fiber diameter) has declined over time. But the thicker the fiber, the higher the yield per goat, such that Mongolian goats may be yielding over 20% more fiber per goat than they did twenty years ago.

¹⁰ The data on world cashmere production from different sources often do not agree even in the same forum. Some sources list world production as high as 19 thousand tons with Chinese production of about 14 thousand tons.

reduced its subsidies on interest rates on bank loans, although commercial bank rates remain very low in China.¹¹

The global cashmere industry has experienced the same trends as has the overall garment industry: falling costs and prices; a high end segment that has declined relative to overall demand; vertical disintegration; dominance of brand name holders in the market. As one example of the severity of these trends, less than ten years ago, Dawson was the largest integrated producer of cashmere products in the world with a dominant share of world production and sales. At present, Dawson has been broken up both vertically and horizontally and the owners of its parts are struggling to survive in the new global competitive environment for cashmere.

Despite the trend in falling prices and expanded demand in the mid-to-low quality end of the cashmere market, there continues to be a high end market for “spun gold” cashmere. This market is controlled by high-end brand name “producers”, such as Gucci, Dunhill, Ralph Lauren, and retailers such as Brooks Brothers and, more recently J. Crew. These firms do *not* have their own production facilities, i.e., they are not vertically integrated. Rather they control their brand names: styling, quality, and retail distribution either through their own stores or in retail outlets in which merchandizing is under their control. As analyzed in a subsequent section, the average quality of Mongolia’s raw cashmere has declined largely due to an increase in production of lower quality cashmere, not to a reduction in the amount of high quality cashmere it produces. Hence Mongolia is still well capable of serving this top market segment.

The fastest growth in demand in the cashmere market, however, will be in the middle and lower quality range and in blends with wool, silk, cotton and perhaps synthetics. These products will be increasingly produced in the country of origin of the raw cashmere to save on transportation costs and to access low-wage labor. The output from these producers will increasingly be sold through middle-market retailers, such as Wal-Mart and Carrefour with low margins and high turnover of both inventory and styles. To show the contrasts that currently exist, in 2005, a pure cashmere sweater sold at Wal-Mart for \$39.99 while a Ralph Lauren sweater sold for over \$900 in Saks Fifth Avenue, just down the street. Retail trends indicate that the future, however, is in the \$39.99 Wal-Mart sweater, although designer sweaters will still be produced.

In April 2005, at the China International Cashmere Forum, in speeches by several officials and industry representatives, the Chinese outlined their strategy for their cashmere industry: worldwide dominance by controlling the supply and pricing of raw cashmere and being the “factory to the world” for finished cashmere products either as contract producers or in alliances with international brand holders, and, more importantly, by either developing or buying brand names for themselves.¹²

These developments have profound implications for the Mongolian cashmere industry:

- There is no need to change foreign direct investment laws to allow foreign ownership at the herder level (as recommended in some previous reports) by brand name holders or other foreign investors

¹¹ Commercial loans at on the order of 6%/year are common and subsidized loans are still granted at rates of 0.01% - 0.1%/month.

¹² See “Forum Documentation” of the China International Cashmere Forum hosted by China Chamber of Commerce for Import and Export of Foodstuffs, Native Products, and Animal By-Products and the China Chamber of Commerce for Import and Export of Textiles, April 2005.

- Similarly, any initiative to foster the forward integration of Mongolian cashmere processors into ownership in the international channels of distribution via developing brand names and opening retail stores abroad in order to access more of the value added chain would be equally misguided. Contrary to the conclusion of some other reports, despite the much larger size (both of the industry in total and in the size of its largest firms), longer experience, and past heavy government subsidies, no Chinese cashmere processor has integrated forward into developing an internationally recognized brand name or into a chain of retail stores abroad. Instead of forward integration, Mongolian needs to develop closer, longer-term relationships with brand name holders and with firms in the distribution channels
- The decline in the average quality of Mongolian cashmere in terms of coarser fiber diameter may represent a lucky break, since the major growth in demand for cashmere will not be in garments using the highest quality cashmere, but in good quality pure cashmere and cashmere blends
- The statements by representatives of the Chinese government, trade associations, and private firms in the processing sector at the recent China Cashmere Forum should serve as a wake up call for firms in the cashmere processing sector in Mongolia and for the GoM. If they do not act soon and decisively, the future of the sector is in doubt
- The China Cashmere Forum also may have acted as a wake up call for processors around the world. Now they may be more interested in establishing operations and relationships in Mongolia to serve as a counterbalance to the open threat of the Chinese processing sector to dominate the world cashmere industry

Measures for Government consideration:

- No change should be undertaken in the foreign investment law to allow backward integration by brand name holder or processors into the herding sector
- No GoM (or aid) assistance should be extended to induce processors in Mongolia to integrate forward into the international channels of distribution or to develop brand names
- The Mongolian fiber mark should be promoted if and only if it is accompanied by strict quality control such that products exported under this mark are high quality
- All efforts should be made to increase the attractiveness of Mongolia to potential foreign investors in the cashmere processing sector (see the next section for specifics on these measures) as well as measures to promote Mongolia as an investment site and to facilitate investment in the country

SECTION III: MACROECONOMICS AND THE MONGOLIAN CASHMERE INDUSTRY

Macroeconomic factors have a substantial impact on the cashmere industry: labor costs, tax rates, interest rates, and the exchange rate. Tax revenues as a percent of GDP are very high and rising (25.6% in 2000 to 31.8% in 2004) in Mongolia.¹³ Although at 30%, the tax rate for large enterprises has been reduced, it is still relatively high. The Mongolian tax law excludes many expenses from the calculation of taxable income, accelerated depreciation and loss carryforwards are not allowed for tax purposes. The tax holidays available for investors in the cashmere processing sector are of short duration compared to those available to investors in other countries in the region, such as China.¹⁴ For these reasons, the effective tax rate is higher than it appears. Herders, however, pay no income tax; rather they pay a very small head tax on their goats.¹⁵ Social taxes (for health, pension, disability, and unemployment) are also high 10% from the employee and 19% from the employer. Again, herders do not pay these taxes. When standard company benefits (such as transportation allowance, in-factory meals) plus the social overhead are combined, the total wage bill in Mongolia is about \$150/month for a factory worker. This total wage bill is high for a country with GDP/capita of about \$600 and significantly above the rates in Inner Mongolia, China.¹⁶ There is significant unemployment and underemployment in Mongolia. This would seem to indicate that the total wage bill is above the market clearing rate at which unemployment would be minimized.

IMPLICATIONS OF HIGH COST OF CAPITAL: AN EXAMPLE

Mongolia produces somewhat over 3,000 tons of raw cashmere with a value of about \$80 million at 2005 prices. Most of this raw cashmere comes to market within a three month period from late March to June. If this cashmere were to be processed in Mongolia, inventories of raw cashmere must be financed over the one-year production cycle implying average inventories of about \$40 million. At 37% interest charges, this represents \$15 million dollars. The physical assets needed to process fully all of Mongolia's output of raw cashmere would also total about \$100 million and would have a capital cost presumably over 37%. Hence total capital costs required to process all of Mongolia's output would be on the order of \$60 million per year. (These figures are based on a archetypical fully integrated plant with 200 tons of raw cashmere input and 300 thousand knitted sweaters as output if it were expanded to be able to process all of Mongolia's production of raw cashmere. These capital expenditures and labor costs are set out by stage of processing in this amount can be compared to total labor costs for processing this raw cashmere into garments of about \$9.6 million. In China, by way of comparison, firms have borrowing costs of at most 6%/year such that the cost of carrying this inventory and the cost of capital for the physical assets would total less than \$10 million per year. Since Chinese producers essentially set the price of cashmere on world markets, Mongolian producers must work within this compressed value-added chain due to China's low interest rates and hence low cost of funds.

Mongolia has many banks and other financial intermediaries. Interest rates are determined by market forces, not set by government or by an oligopolistic financial sector.¹⁷ Although the financial system's assets have been growing very rapidly, it has substantial liquidity. Interest rates are high in Mongolia as is the differential between the borrowing and deposits at about

¹³ Total current government revenue as a percent of GDP rose from 34.5% to 38.1% over the same period.

¹⁴ Export oriented firms can access 3-year tax holidays with another 3 years at a 50% reduction in corporate income tax.

¹⁵ The tax varies among regions from 50 to 100 tugrik/goat/year (\$0.04-\$0.8), between 0.25% and 0.38% of the value of the goat/year.

¹⁶ Employees pay 10% of salaries and employers pay 19% of salaries to cover health, disability, pension, and unemployment insurance.

¹⁷ This section is based on research conducted by Alene McMahon of Chemonics. Her report is attached as an appendix to this one.

25% (37%/year (1.2%/month) vs.15%/year (2.5%/month)). Financing costs are crucial to the processing industry for two reasons: they represent *the* major cost of processing and China, the major player in the processing industry, has very low capital costs. The impact of these high capital costs can be seen from the example shown in the adjustment text box.

In addition to the cost of funds, banks in Mongolia typically only make short-term loans, so that loans to finance capital investments are difficult to arrange. The banks also impose stringent requirements for collateral and typically will not lend against inventories, purchase orders or projected cash flows.

The cost wage and funds cost differentials between China and Mongolia are exacerbated by the value of the tugrik. The real value of the tugrik has risen by 10% against the dollar and 25% against the yuan over the past five years. These exchange rate movements have caused costs in Mongolia to rise relative to those in China by a similar amount.

In summary, the macroeconomic environment is not only unfavorable for the cashmere industry, but it is becoming worse. Mongolia is following the worst of all strategies for a developing country that wants to compete on export markets: high wages, high interest rates, high taxes, and an appreciating currency relative to its major competitor and its major market.

Measures for government consideration:

- The GoM should consider the following: Reexamine its social contributions policy with a view of decreasing them such that the total labor costs are decreased to be more in line with the income level of the country
- Reexamine its policy of having the social contributions of the manufacturing sector subsidize social payments to the herding sector and to current retirees
- Explore all ways of reducing the spread between the borrowing and lending rates in Mongolia. In particular, it should consider reducing the interest rate charge levied by the Central Bank on concession loans that are reloaned to the private sector via the commercial banks and also reduce the surcharges these commercial banks can levy when they reloan these funds
- Encourage lenders such as KFW to increase their low interest rate loans to the cashmere processing sector as a matter of priority
- Encourage initiatives to increase the transparency of the commercial law system and to develop it more fully to protect the interests of lenders
- Guard against the appreciation of the real value of the currency relative to the currencies of its major competitor (China) and its major market (the United States)
- Reduce the tax rate for large enterprises further to the 15%- 20% range. It might consider removing tax holidays (see below under FDI), but also allowing accelerated depreciation and loss carryforwards for tax purposes, and increasing the number and amount of allowable expenses to international levels so as to reduce the effective tax rate

SECTION IV: THE STRUCTURE OF THE MONGOLIAN CASHMERE INDUSTRY

A. The herding sector¹⁸

About one third of the population of Mongolia is engaged in herding cashmere goats as one part of their income stream. After the liberalization of the herding sector in the early 1990s to allow private ownership of herds, the goat population increased dramatically, much faster than the populations of other herding animals, such as sheep, cattle, and camels, from 5 million in 1990 to over 11 million in 1998. Experienced herders increased the size of their flocks and there was significant entry into the sector by small herders often located near aimag or sum centers who raised goats as one source of income in an effort to cushion falling incomes. The severe winters of 2000 – 2002, however, drastically reduced the goat population as up to 25% of offspring did not survive the winter. By 2004, however, the goat population had recovered and surpassed its pre-dzud levels to over 12 million goats (Exhibit 1).

In order to increase the size of their herds, instead of culling most male goats at an early age (except for prime bucks used for breeding) and also culling older female goats, herders have been letting both male and female goats live longer in order to harvest their cashmere. This increase in the number of males and older goats in the herds has also been due to the lack of financially rewarding opportunities to sell goat meat from culled goats or to sell their skins at attractive prices.¹⁹ The death of the young goats during the recent dzuds also affected the average age of the goats in herds. Since males have thicker diameter fibers than females and young goats have finer fiber cashmere than older goats, the increase in goat population and the consequent change in its age and sex composition have been responsible for much of the deterioration of the *average* quality of the raw cashmere produced in Mongolia.

The important point here is that *although average cashmere quality has declined, this has been more due to the increased production of lower, but acceptable, quality cashmere, rather than to a decline in the amount of high-quality cashmere being produced.*

Mongolia still produces sufficient high quality cashmere to meet world demand in this small and declining market segment. Moreover, the current (and most probably the future) price differential offered by Mongolian processors between high quality (13.5 - 15.5 micron) and lower quality (15.5 – 17.5 micron) cashmere is only about 15% (Exhibit 2). This differential is also equal to the price differential between Mongolian cashmere and Chinese dehaired cashmere. The price differential offered by Mongolian processors (and by the world market) is not large enough to offset the decline in the weight of cashmere harvested per goat of 20%-25% that occurs when fiber diameter is decreased by 2 microns (Exhibit 3).

In order to improve herder income if herd quality is increased, a decrease in fiber diameter of two microns must be accompanied by an increase in price of at least enough to compensate for the decrease in yield per goat of 20%-25% (Exhibit 4). To be quite clear on this important point, an initiative to increase fiber quality by decreasing fiber diameter *reduces* the economic

¹⁸ This section is largely based on secondary sources, such as World Bank, “From Goats to Coats : Institutional reform in Mongolia’s cashmere sector,” 2003, Open Society Forum, The future of nomadic Pastoralism in Mongolia,” 2004, Mongolian Agricultural University Research Institute of Animal Husbandry, “Program for Improvement of Goat’s Fiber Quality of Mongolia,” 1999, James Hamilton, “Umnugovi Herders Producer Association NGO-Driven Cashmere Market Days 2003 Event Assessment, for the Gobi Initiative, June 2003, Vernon Roningen, “The Impact of a Ban on Mongolia’s Raw Cashmere Exports,” Gobi Initiative, A. Bakei and T. Saipolda, Cashmere Market: processing requirements for raw cashmere,” Gobi Initiative, 2003, as well as a field trip to visit herders, interviews with GOM officials, and interviews with Gobi II, GTZ, and the World Bank.

¹⁹ During the Soviet Era, Mongolia sold goat meat to the Soviet army. Now that sales outlet is not available.

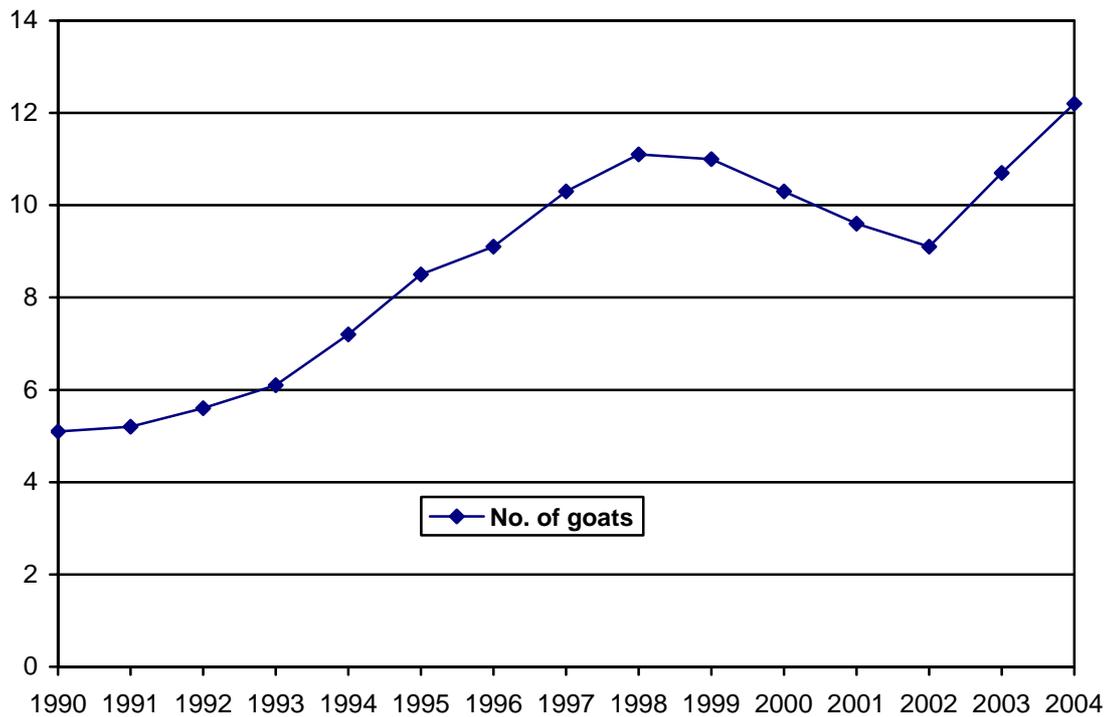
value of each goat and reduces the income of herders unless price differentials are greater than 20%-25%.

Contrary to the recommendations in other reports, initiatives to increase fiber quality by decreasing its diameter are (and have been) misguided. Again contrary to the conclusion in other reports, despite the decline in the quality of Mongolian cashmere, the price differential between Mongolian cashmere and Chinese cashmere has not increased over time. Nor is the price of Mongolian cashmere falling toward the level of cashmere produced in Iran and Afghanistan (See Exhibit 4).

In the past, some reports have strongly criticized the processing sector for paying only one price for cashmere regardless of quality, i.e., for buying all a herder's output at one price regardless of quality. The reports attributed this behavior to the processors' desire to mask price movements and price differentials based on quality from the herders in order to gain lower average prices. At this time, however, the processors are willing to pay price differentials based on quality, yield, and color and priced in relationship to price differentials on world markets (Exhibit 3). They now in turn accuse Chinese traders of buying all output at one price, a price they cannot match and remain profitable. The reasons for this behavior on the part of Chinese traders are analyzed below within the context of the processing sector.

As mentioned in the introduction, the government extends many subsidies to the herding sector. Herders pay no income taxes; rather they pay a very low tax based on the number of goats in their herds.²⁰ They do not pay for their dormitory or food expenses when they board at sum or aimag schools and pay no social security or health fees; water is provided free from wells drilled and maintained by local government units; and fodder is subsidized. The effect of subsidized fodder prices on the stock of fodder has been severe: rapid declines in fodder production (Exhibit 7). Similarly, local government budgets cannot accommodate such large expenditures on drilling and maintaining wells and the number of wells has declined significantly (Exhibit 6). Pilot projects have shown, however, that herders are willing to pay for water if this ensures supplies.

²⁰ These taxes differ among the regions ranging from 0.25 to 0.38\$ of the value of a goat.

Exhibit 1: Number of Cashmere Goats in Mongolia 1990-2004

Source: National Statistics Office

Exhibit 2: Fiber Yield and Diameter by Age and Sex of Goat

Age and Sex of Goat ("Mongol" pure breed)	Cashmere weight/goat in grams	Cashmere diameter in microns	Cashmere length in cm.
Buck	281	16.05	35.4
Baby buck	210	14.26	39.8
Doe	246	14.05	39.8
Baby doe	201	13.69	45.6

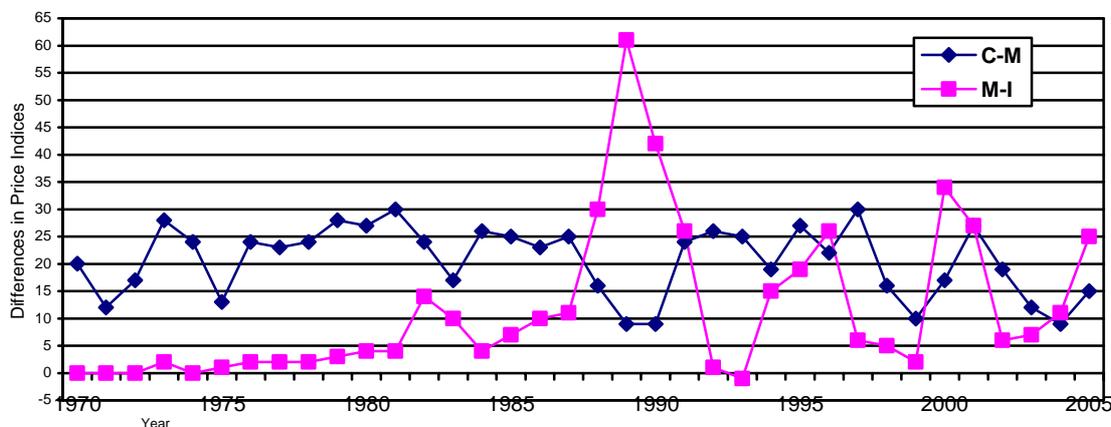
Source: Dr. Zagdsuren, Director, Animal Husbandry Institute

Exhibit 3: Offer Price from Processors (in Tugriks) by Color and Fiber Diameter (2005)

Diameter	Superior 13.0-15.5 micron	Grade I 15.51-16.8 micron	Grade II 16.81-17.6 micron	Grade III 17.61-19.0 micron
Color				
White	40,000	37,000	34,000	26,000
Light grey	40,000	37,000	34,000	26,000
Grey	39,000	37,000	33,000	25,000
Brown	39,000	36,000	33,000	25,000

Source: Project survey

Exhibit 4: Differences in the Price Indices between Chinese and Mongolian Dehaired Cashmere (C-M) and Mongolian and Iranian Dehaired Cashmere (M-I)



Source: Derived from data displayed in G.Schneider.com

Exhibit 6: Livestock watering facilities, 1990-2000 (in 000's of units)

	1990	1995	2000
Total	41.6	34.6	30.9
with engineering construction	24.6	14.6	8.2
simple mine well	17	20	22.7
Located in pasture	38.3	26.3	21.7
Unused	1.1	6.2	5.8
Tank for livestock	4.1	1.9	1.0
Capacity 000 (Cub Meter)	39.4	27.7	14.9

Source: World Bank, “Goats to Coats”, 2003.

Exhibit 7: Fodder Production and the Evolution of Fodder Supply, 1990-2002

	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02
Sown Areas Under Fodder Crops (000 hectares)	118	80	53	26	11	6	4	5	5	2	1	2	3
Harvest of Fodder Crops (000 tons)	527	213	138	112	29	19	19	14	15	5	4	3	4
Hay Harvest (000 tons)	866	886	669	698	672	744	655	688	667	715	689	831	767

Source: World Bank, “Goats to Coats,” 2003

There is another looming problem with in the herding sector: desertification. The carrying capacity of Mongolia for all herd animals – goats, sheep, camels, cattle, and horses – is

limited. One estimate of the total carrying capacity shows that in equivalent sheep forage units (SFUs), Mongolia's herd size surpassed its carrying capacity in the mid to late 1990s and the SFUs were only reduced below the carrying capacity by the dzuds in the early 2000s.²¹ By 2004, however, with the recovery of the herds, SFUs again significantly surpass the estimated carrying capacity of Mongolia.

The consequences of overgrazing can be quite severe. One study in Mongolia shows that a low culling rate (as is currently practiced) leads to an increase in flock size to 12 million (its current level) and then a precipitous decline to zero as Mongolia is denuded of forage and becomes a desert.²² The Chinese are also faced with a similar situation. Since the 1960s, the average grass output has declined in Inner Mongolia by one third to two thirds as the size of their herds has increased.²³

Ironically, at present the GoM highly subsidizes a sector that has significant negative externalities. A GoM mandated high level of taxes and charges for social benefits levied on workers in the formal sector has contributed to urban unemployment and underemployment. In turn the GoM subsidizes employment in the herding sector to alleviate the unemployment problems caused by other of its policies. Yet if these subsidies continue, there is every chance that they will turn Mongolia's grazing lands into a desert.

Measures for consideration by the GoM:

- Remove the subsidies on the herding sector such that herders contribute fully to the social security and health insurance funds, pay the cost of dormitory and meals when they board at sum and aimag schools, full water well costs, and pay taxes on their incomes. Although quite rough and ready, this tax initiative could be implemented by increasing the head tax on herds. The head tax could also be used to address the negative externality of herding: desertification.
- Develop wells with user charges based on herd size.
- Cease subsidizing fodder production and allow the free market to set fodder prices.
- Disregard any plan for active intervention in the market for raw cashmere, such as state buying, or forced selling to Mongolian processors at prices determined by the GoM or by the processors.
- Continue the "Market Watch" program that provides herders with price information, but extend it if possible to include information on prices by grade and color of cashmere.

B. The processing sector

The cashmere processing sector in Mongolia has seen significant exit over the eight years after the ban on exports was lifted in 1997 and the coincident fall in the world price of cashmere. More firms will most probably exit the industry or reduce their knitting capacity due to the expiration of the MFA. Yet, despite this reduction in capacity, substantial excess capacity still remains at every stage of processing: scouring (40% capacity utilization in

²¹ See World Bank, "Goats to Coats", pp. 12-16.

²² See D. Badarch and B. Ochirbat, "On Sustainable Development of Cashmere Production and Goat Population in Mongolia," System Science Research Center, Mongolian University of Science and Technology. 2002.

²³ It has been estimated that the average overloading in northern China is 36.1%.

2004), dehairing (52%), spinning (42%), knitting (77%), and weaving (52%).²⁴ This underutilization of existing capacity is indeed ironic, since over 50% of Mongolia's production of raw cashmere is smuggled to China without any processing at all.

The processing sector is dominated by Gobi, the largest of the three fully-integrated producers and the only state-owned enterprise in the processing sector. The GoM has been talking about privatizing Gobi since 2000. In 2005, however, Gobi's privatization was once again postponed, perhaps indefinitely. In the meantime, Gobi has been losing about \$2 million per year for the past four years; the quality of much of its processing equipment has declined due to misuse and inadequate maintenance and repair. Gobi's labor and machine efficiency, "yield", output quality are low and have declined when compared with other dehairers. Gobi's yield from dehaired to spun yarn is way below best practice, normally around 95%.

Gobi's new management has developed a five-year strategic plan to improve its operations across the board. This plan, however, does not address Gobi's severe problems in a concrete, operationalized manner. Until Gobi's situation is resolved, its operations and future will hang as a cloud of uncertainty over the cashmere industry and deter new entrants who have concerns of the impact of a reformed Gobi on the industry. For example, Gobi produced 7.55 tons of cashmere yarn in 2002, 29.3 tons in 2003, and 116.1 tons in 2004. Yet its one-shift capacity is 75 tons and, according to a spinning expert, on a three-shift basis with proper training and maintenance, Gobi could produce 280-300 tons per year. This output would require about 700 tons of raw cashmere as an input, almost a quarter of Mongolia's total output and 80% of industry demand for yarn as input to the knitting and weaving process.²⁵

The second largest and the only other major integrated processor, Buyan, has experienced severe financial difficulties over the past several years, such that in 2004 it was unable to purchase almost any raw cashmere. In 2004 Buyan's scouring and dehairing processes operated at less than 1% of capacity and its spinning operations operated at only 10% of capacity. Yet Buyan has first class spinning and knitting machinery and has the potential to become a major force in the industry.

Sun Shiro, the other integrated producer, is much smaller than Gobi and Buyan. Its owner and manager is technically expert and his product innovation ideas are excellent. Hence quality is high and costs are low. Nonetheless, Sun Shiro has over three years of finished goods inventory and, with the high interest rates prevailing in Mongolia, financial charges are gradually pushing the firm toward bankruptcy.

There is another characteristic of the structure of the processing sector that influences the performance and future prospects of the sector: foreign ownership. During the mid-1990s, much of the entry in the processing sector was via joint ventures between Mongolian and foreign firms. These foreign firms often have had an agenda that extends beyond Mongolia: to use

IMPACT OF FOREIGN OWNERSHIP IN THE PROCESSING SECTOR

An interview with a manager of a joint venture de-hairing operation provides some clues on the impact of foreign ownership on the sector. The manager stated that it was "our partner's fondest wish to integrate into spinning." Yet when asked if his firm would supply de-haired cashmere to an independent spinner in Mongolia, he became quiet and finally answered, "This would depend on the needs of my partner for de-haired cashmere abroad." Another foreign-owned firm has recently closed its knitting facility due to the expiration of the MFA. Previously it had scoured and de-haired raw cashmere, exported the de-haired cashmere to its parent abroad for spinning, and imported the yarn made from this de-haired cashmere back into Mongolia as an input to its knitting operations. When asked if it would supply its de-haired cashmere to a new cost and quality effective spinning facility located in Mongolia and then use this yarn as input to its revived knitting unit, the reply was, "This would depend on the capacity needs of our parent."

²⁴ These figures are derived from averages among the producers of their self reported capacity utilizations. They do not correspond to a derived figure if capacity is divided into production due to under-reporting of production data to the government.

²⁵ See the report by Philip Edelston for EPRC on cashmere spinning for more analysis of this important problem.

their processing facilities in Mongolia to produce inputs for further processing in their units located in their home countries, to sell output from their Mongolian units through their channels of distribution to long-term customers, and to “quota hop” over quotas imposed by the governments in the countries in which they market their output on output from their home country. For these firms, capacity utilization, sales, and investment are done in relationship to the needs and internal decisions of the foreign partner, not in relationship to the economic dictates of the market.

Measures for consideration by the GoM:

- Gobi’s situation needs to be clarified as soon as possible, preferably by privatizing the firm as a whole or privatizing its parts. Until this happens, much of the industry will be frozen in place and will be hesitant to implement any type of development plans.
- The GoM should encourage a foreign buyer with access to low-cost working capital to form a BCC with Buyan or to purchase the firm.
- The GoM could encourage aid agencies to provide long-term technical assistance in production, quality control, design, and marketing for cashmere products to the firms in the processing sector. For many of these firms, unless efficiency, costs, yield, quality, marketing and prices are improved, they cannot continue as viable enterprises.
- If the GoM decides to continue the export tax on raw cashmere, it might also consider imposing a lower export tax on dehaired cashmere and cashmere tops.

SECTION V: THE VALUE-ADDED CHAIN OF MONGOLIAN CASHMERE

The value added chain for cashmere in Mongolia has five major stages: raw/greasy cashmere, scouring/dehairing, dieing/spinning, knitting or weaving. In 2004, Mongolian production, exports, and imports of cashmere by stage of processing are given in Exhibit 9.

Exhibit 8: Production, capacity, and capacity utilization in the value added chain

	Cashmere Production	Capacity	Capacity utilization ²⁶
Scouring	1,298 tons	9,417 tons	40%
Dehairing	806 tons	1,910 tons	52%
Dieing/Spinning	147 tons	363 tons	42%
Knitting	866,000 pieces	3,479,000 pieces	77%
Weaving	79,000 meters	163,000 meters	52%

Source: Project research by the Textiles Institute

**Exhibit 9: Production, exports, and imports of cashmere by stage of production, 2002 - 2004
(All units in metric ton)**

Stage	Production	Exports	Imports	Input to next stage of production
Raw/greasy cashmere	3,200	1,600	0	1,600
Scouring/dehairing	800	616	0	184
Dieing/spinning	147	6	180	341
Knitting	312	303 ²⁷	0	0
Weaving	30	21	0	0

Source: based on data provided to the project by the Textiles Institute

At each stage of the process in 2005, data on value added is given in Exhibit 10. As can be seen from the data in these exhibits, most cashmere is exported with the least value added possible: raw/greasy cashmere. The next largest export is dehaired cashmere, again with low value added. In recent years, a substantial quantity of cashmere yarn has been exported. Production of yarns was also used as an input to further processing into knitted and woven textiles. A substantial percentage of the dehaired cashmere that is exported was spun into yarn in China and then imported back into Mongolia to be used for knitting and weaving.²⁸

Exhibit 10: The value chain for Mongolian cashmere 2005²⁹

Stage	Output price	Value added
Raw/greasy cashmere	\$24-\$30/kg	\$24-\$30
Scouring/dehairing (50%)	\$58-\$74	\$7-\$10/kg

²⁶ These numbers are not consistent for two reasons: excess capacity may be used to process other fibers, such as wool, and camel hair and firms may under-report output when they do contract spinning or dehairing.

²⁷ Actually Mongolia exported over 500 tons of knitted sweaters in 2004, but much of this was produced in 2003 and has not been included in these figures. As well, firms accelerated shipments in 2004 to beat the expiration of the MFA. There is also under-reporting of production, but not export figures, for firms that undertook contract scouring, dehairing, and spinning.

²⁸ The potential for investment in spinning capacity to remove the necessity to have Mongolian dehaired cashmere exported to China, spun there and then imported back into Mongolia is examined in another report for this project.

²⁹ Note: this value chain does not present any stages in the chain beyond those physically based in Mongolia, such as international trading, wholesaling and retailing. As concluded above, there is not potential for Mongolian firms to integrate forward into these stages and it is inappropriate, even dysfunctional, for Mongolian firms and the GOM to contemplate actions that would lead to attempts to undertake this forward integration.

yield)		
Dieing/spinning(95% yield)	\$66-\$90/kg	\$8-\$16/kg
Knitting	\$80-\$150/kg	\$12-\$40/kg
Weaving	\$80-\$95/kg	\$8-\$20/kg

Source: Project research by the Textiles Institute and interviews with processors

In 2004, total recorded *net* cashmere exports amounted to about \$57 million (exports of \$80 million minus imports of yarn worth \$23 million). If smuggled exports were included, the net exports would rise to about \$97 million. If all the cashmere that entered the processing value chain had been fully processed into high quality knitted garments and then exported, net exports would have been increased from \$57 to \$103 million. If, instead of being smuggled, all Mongolia's raw cashmere were fully processed into high quality knitted sweaters in Mongolia and then exported, exports would increase to about \$206 million. Employment in the processing sector would also increase from about 2,500 thousand at present to over seven thousand. Given the substantial excess capacity in the industry, most of this additional processing could be accomplished without substantial additional investment in capital plant or equipment except for additional spinning capacity (Exhibit 8).

This analysis raises the questions of why smuggling is so rampant and why additional value has not been added in the processing sector rather than exporting low value added products, such as dehaired cashmere. A large part of the answer lies in the costs of producing semi-finished and finished cashmere products in Mongolia compared to the costs in China.

Compared to production costs in Inner Mongolia in China, labor costs (including fringe benefits) are about 25% higher in Mongolia, while labor productivity is 25% less than in China.³⁰ Skilled mechanics are in short supply and, since there are no machinery producers in Mongolia, parts must be shipped from China or Europe causing substantial downtime when equipment breaks. China has been able to develop cashmere clusters of herders, processors, machinery and parts manufacturers, die and other chemical input producers, and traders and service providers (repairs, shipping and transportation, and so on). (Garment designers, however, are relatively plentiful and low cost in Mongolia.) Overall, at each stage of the value added chain, production costs are 30% - 40% higher in Mongolia compared to China.

Exhibit 11: Comparative production costs
(Dollars per kg.)

Stage of process	China	Mongolia
Dehairing	\$2.50-\$3.00	\$4-\$5
Spinning	\$6.00-\$7.00	\$6.50-\$9.50
Knitting	\$2.50-\$3.00	\$4.00
Weaving	\$1.50-\$2.00	\$3.00

Source: Project research by the Textiles Institute

On the demand side, Chinese processors have several advantages over those in Mongolia. They have a large, protected domestic market in which they can sell lower quality pure cashmere products (produced using the lower quality portion of the Mongolian raw cashmere they purchase) at high prices. Mongolian processors cannot access this market and the market in Mongolia is limited. Although on average Mongolian cashmere has a larger diameter than Chinese cashmere, it also is longer so that when it is mixed with Chinese cashmere it reduces

³⁰ Different producers cited widely different figures for both the wage and productivity differential. The figures quoted above come from a manager of a Chinese-owned processor who has also been a manager in Inner Mongolia.

pling in garments. Mongolian producers cannot access raw Chinese cashmere to be able to produce this mixture.

Although these cost differentials, lower productivity rates and lack of a protected domestic market pose problems, they are not fatal to the processing sector in Mongolia.³¹ They can be overcome with proper management at the firm level to increase productivity and yield, to reduce costs, and to increase quality and sales price (see below next section). The fatal constraint on many firms in the sector is the cost of funds in Mongolia relative to their cost in China and abroad. The cost of funds for a medium-sized, privately-owned processor in Mongolia is 37%/year (2.5%/month) compared to 1%-6% in China and 6% abroad in dollars.

These far lower capital costs allow Chinese processors to pay substantially higher prices for their inputs than can the processors in Mongolia. Put another way, low capital costs in China compared to Mongolia compress the value added in each stage of the processing value added chain. Mongolian processors cannot operate profitably in this compressed value chain if they pay such high interest rates.³² Conversely, low interest rates in China increase the value of the raw cashmere produced by Mongolian herders when used as an input to the processing sector in China.

THE IMPACT OF COST OF CAPITAL IN MONGOLIA AND CHINA

As an example, using best practices, a medium sized, fully integrated processor with an input capacity to process 200 tons per year of raw cashmere would have an output of 300 thousand knitted garments per year with revenue of about \$12 million. It would require investment in land, plant and equipment of about \$6 million. Since raw cashmere comes on the market from two combings in late March and June, a processor essentially has to buy all its input needs for the year over this three-month period. This requires an inventory of raw cashmere costing about \$6 million at 2005 prices (\$30/kg x 200,000 kg). At 37% interest, inventory carrying costs are then well over \$1 million and the cost of capital to finance the plant and equipment add at least another \$2 million to this amount. Total labor costs, on the other hand, would be about \$600 thousand. In China, the capital costs are negligible, less than 1% per year at rates subsidized by the government to assist development of firms in the less developed Inner Mongolia region. Interest rates even at full commercial rates are only about 6%.

As described in some detail in an appendix to this report, financial markets in Mongolia have been extensively liberalized such that interest rates reflect the supply and demand for funds and there is no GoM intervention in the market. Deposit rates are about 15% (1.2%/month) compared to loan rates for mid-sized enterprises of 37%/year (2.5%/month) for deposits and loans in tugriks. A spread of 22% is very large by any standard.³³ Concessional lenders, such as KFW have loaned in hard currencies at rates below 10%. In 2004, a major bank loaned \$6 million to one of its clients (on whose board it sits) at 6% in dollars to finance its raw material inventory. Since much of the processors' output is exported and paid for in hard currencies, any borrowing in hard currencies is "self hedged." Until and unless small and medium sized Mongolian-owned firms can access funds (repayable in dollars) at below 10%, they will be at an extreme disadvantage when competing with firms in China.

As part of the value added chain analysis of this project, a simple spread sheet model was developed using an Excel program. This model allows for the following as inputs:

³¹ A model of a cashmere processing firm developed as part of this report shows that even with these cost and efficiency problems, a well-run processor can be profitable in Mongolia, see below.

³² Some processors in Mongolia believe that this value chain compression through low interest rates and the consequent high prices that Chinese processors can offer for Mongolian raw cashmere is a deliberate policy of both the Chinese government and Chinese processors to first run Mongolian processors out of business and then as monopsony buyers to drop the price they pay to Mongolian herders. To support this claim, they refer to the fate of the wool and leather processing industry in Mongolia.

³³ Since the differential deposit-loan spread is used, the impact of inflation is removed.

Wages rates and social charges for workers of different categories, input prices and quantities of water, heat, electricity, other inputs, capital equipment, plant, and land costs (costs and volume/number), output prices, and yield rates on inputs of the basic raw material: cashmere. The model also allows inputs of the interest rates and the division of capital between equity and loans. The user can also input the tax rate, depreciation rate and loss carryforward provisions for tax purposes, any tax holidays, other taxes on land and buildings. The model then generates the internal rate of return (IRR) and value added for the investment. This model allows the simulation of investments in the different stages of the value added chain for cashmere and for an integrated producer. It also allows the user to play “what if” with different scenarios of costs, efficiencies, yield rates, and interest rates (among other things). This model gives the following results:

- a. With best practice technology, efficiency, yield rate, quality (and hence output prices), and an interest rate below 10%, investments in a fully integrated cashmere processing operation and/or in any of the stages of the value added chain is feasible in Mongolia, i.e., the IRR is acceptable. In other words, such an investment would still be viable given other costs and efficiencies in Mongolia relative to those in China.
- b. With best practice technology, efficiency, yield rate, quality (and hence output prices), but with an interest rate of 37%, investments in a fully integrated cashmere processing operation and/or in any of the stages of the value added chain are not feasible in Mongolia, i.e., the IRR is not acceptable. In other words, such an investment would not be viable given other costs and efficiencies in Mongolia relative to those in China and if the investor had to pay 37% on borrowed funds.
- c. If the yield rate is changed to 48-45% for de-hairing, 78-80% for spinning (but all other variables remain as in a., above), investments in a fully integrated cashmere processing operation is not feasible in Mongolia, i.e., the IRR is not acceptable. In other words, such an investment would not be viable given other costs and efficiencies in Mongolia relative to those in China and if the investor had these yield rates.
- d. If product price is dropped to 10-11 cents per gram (but all other variables remain as in a., above), an investment in a fully integrated cashmere processing operation is not feasible in Mongolia, i.e., the IRR is not acceptable. In other words, such an investment would not be viable given other costs and efficiencies in Mongolia relative to those in China and if the investor had poor product quality and hence output price.

Surprisingly, these simulations show that if an investment is best practice in technology, manning, efficiency (given Mongolian skills and efficiency levels), yield, and quality, it can be viable in Mongolia – provided it has access to funds at international interest rates.

These simulations support the conclusions reached in the previous sections of this report. Access to low-cost finance is a necessary, but not a sufficient condition for the viability of an investment project. Given the level of development of financial markets in Mongolia, it is unreasonable to expect such low interest rates on loans even in the medium term. Low-cost loans from aid donors are in limited supply as well. This leaves international funding of some sort either via banks, or via foreign investors in the form of equity, loans, or advanced credits against delivery from long term customers. At present the environment for any of these types of credit is not favorable for most companies.

At present the environment for foreign investment is in need of further improvement. Tax rates are relatively high in Mongolia, tax holidays are of short duration.³⁴ Government

³⁴ Mongolia’s tax holidays for cashmere producers are for a 100% reduction for three years followed by a 50% reduction for another three years. Other countries in the region offer up to ten years for export-oriented firms.

regulation, although greatly improved and better than many other countries in the region, is still complex, nontransparent, and pervasive, and the legal system needs further development. As well, the rule of law is not yet firmly established, particularly when it comes to arriving at or enforcing judgments against Mongolians relative to foreign investors or lenders. As one of many examples, when a lender goes to court to obtain a default judgment against a borrower, further interest can not be charged on the loan.

Measures for consideration by the GoM:

- The GoM could develop its laws further to shift more power to lenders by increasing the ease, speed, and conditions under which a lender can declare a borrower in default and gain compensation.
- The GoM could continue to improve the FDI system in Mongolia to induce further FDI in the processing sector. Specifically, the GoM (or one of the aid agencies) should sponsor an Investor Roadmap Study (Phase I, II, and III) to further reduce the barriers to investment; develop an Investor Tracking System for FIFTA to develop better data on the amount of FDI in Mongolia, and its employment, production, and export impacts; review the incentives offered to processors in the cashmere sector such that they are extended to domestically-owned firms as well as to foreign investors; and further develop FIFTA's capacity in investor promotion, facilitation and aftercare.
- The GoM should *not* guarantee any loans to any firm in the processing sector.
- The GoM could reduce producer/worker contributions to social funds to remove the subsidy of workers and producers in the formal manufacturing sector to those in the herding sector, the unemployed, and those who have already retired.

Domestically-owned firms are currently not entitled to any tax holidays – a most unusual and dysfunctional situation. As importantly, Mongolia does not allow loss carryforwards for tax purposes, accelerated depreciation, or many expenses as deductions from taxable income.

SECTION VI: ALTERNATIVE GoM POLICIES TOWARD THE CASHMERE INDUSTRY

The GoM faces three basic alternatives in its policy toward the cashmere industry: continuation of the export tax in some form but over an extended time period; a direct subsidy to the sector in some form; and maintaining the *status quo* plus following the recommendations given above.

A. Export tax on raw cashmere;

Mongolia already has an export tax on raw cashmere. It is only equal to 12% of the current 2005 value of raw cashmere; it is due to expire in January 2007; it is not enforced effectively and there is rampant smuggling to China. This situation raises three interlinked questions. Should the export tax be extended? If so, at what rate should it be extended? And also if so, how can it be effectively enforced? Taking these questions in reverse order:

Through 2000, the export tax was enforced effectively such that official recorded exports of raw cashmere plus domestic usage by the processors more or less equaled output of raw cashmere, i.e., there was little smuggling. The point here is that it is possible to enforce an export tax if there is the will from the top and the cooperation of customs inspectors at the border. Unfortunately, there has been over four years of rampant smuggling with the concomitant increase in the income, expenditures and expectations of customs officials. To reverse this situation via administrative fiat would be difficult. It would also be difficult to raise the salaries of customs officials to the point at which smuggling (and the possibility of loss of a lucrative job) would not seem to be an attractive option.

Given this situation, one possibility to reduce smuggling would be to give bounties to customs inspectors based on a percentage of the duty (plus fines) that should have been paid on smuggled raw cashmere that was intercepted at the border. Alternatively, all raw cashmere that had been attempted to be smuggled and was intercepted could be seized and sold at market and a percentage of the realized value could be given to the inspectors who made the seizure.

The rate of the export tax could be immediately returned to 30% as it was in 1997.³⁵ This action could be done quite expeditiously and most probably without undue protest from multilateral assistance organizations. Unless the export tax is extended and its administration made effective as suggested above, however, at most this export tax would last for the next eighteen months. This protection is not enough to induce any current (or potential investor) to alter its behavior so as to modernize its operations and improve quality or to make a new investment in the industry. At most increasing and enforcing the export tax would just be a transfer of income from herders to producers without any efficiency gains or long term benefits for the country.

For these reasons, if the GoM decides to use an export tax to foster the development of the processing sector of the cashmere industry, it should extend the export tax for a considerable period, such as another ten years, to give the processing sector an incentive to develop over time. Although as part of its ascension to the WTO Mongolia committed to remove the export tax in 2007, it can make strong arguments to the WTO for retaining it. And, in any event, there is nothing in WTO regulations to prohibit export taxes of whatever height or duration. This action by the GoM, however, will incur the displeasure of some multilateral and bilateral

³⁵ We were unable to learn why this rate had been made a fixed sum rather than a percentage of value. Perhaps it was for ease of calculation.

assistance organizations.³⁶ Their displeasure may be muted and not operationalized for several reasons:

- Among developing countries, and especially among formerly centrally planned countries, Mongolia has a special position due to the vibrancy and openness of its democracy, the generally low level of corruption, its economic growth, and the market-orientation of its economy. Mongolia's performance has placed it on the list of countries eligible for the Millennium Challenge Fund. Imposing a long-term export tax, however, would be a regression away from market forces. Given Mongolia's overall performance, an export tax might not be seen as a major regression.
- The manufacturing sector is already bearing a heavy burden in terms of government-mandated high social contributions as well as high interest rates. An export tax would serve to offset these burdens and level the playing field. As well, the "theory of the second best" shows that removing one distortion in an economy with multiple distortions does not necessarily move the economy toward greater economic efficiency.
- The GoM could employ the infant industry argument and make the case that the processing sector has not had sufficient time to "grow up" given the ineffectiveness of the administration of the relatively low export tax. The GoM can also point out that no country in the world has developed its manufacturing sector without trade protection of some kind. The infant industry argument dates back to at least President Thomas Jefferson of the United States.
- Export bans, to say nothing of export taxes, are not covered by the WTO. In fact, such countries as Canada ban the export of logs. Even the United States bans the export of logs cut from trees on federal government lands.
- Finally, these aid agencies have tolerated much more extreme subsidies in China that have allowed its processing sector to develop. The argument could be made that Mongolian processors need similar subsidies to develop as well and to be able to achieve efficiency and quality levels similar to China's. At present, the playing field is strongly tilted against processors in Mongolia. An export tax would simply be leveling the playing field to allow Mongolian processors to compete and develop over time.

The counterargument to these propositions, however, is clear: Mongolia's micro-economy already is distorted by many government regulations. To increase the effective export tax, to enforce it, and to extend it would simply add another layer of distortion so that the market becomes less efficient at allocating resources. This conclusion leads to the next alternative.

B. A direct subsidy from the GoM treasury to the firms in the processing sector

Economic choice theory shows clearly and unequivocally that if a subsidy is to be granted a lump sum payment is more efficient than a payment that is contingent on some action.³⁷ Welfare economics concludes that a direct subsidy is preferable to a subsidy, such as an export tax or a maximum selling price, that is achieved by distorting the market. As well, the magnitude, kind, and recipients of a direct subsidy can be clearly and easily identified,

³⁶ The strength of the objections of these organizations, however, should not be underestimated. The following "logic" was used in "Goats to Coats", the World Bank's monograph on the cashmere industry in Mongolia, to support removing the export tax, "Removal of distortionary taxes – including the export tax – would reduce smuggling and increase the supply of cashmere to the domestic processing capacity." (p. 43).

³⁷ Better to give a pan-handler \$1.00 (and let him make his own decisions on its use) than to give him \$1 worth of food.

features that are often lacking in a subsidy via the market. For this reason, a direct subsidy may be difficult politically to generate and be open to political attack over time.

In general, however, the governments of countries around the world have chosen to grant subsidies by distorting markets rather than by direct subsidies.

C. Retain the *status quo*

As described throughout this report, retaining the *status quo* is not an attractive alternative. Both the herding and the processing sectors are highly distorted: both highly subsidized and highly taxed such that market forces are not effective in allocating resources. There is extensive excess capacity in the processing sector, but the herding sector may already be operating beyond its sustainable yield. Despite the excess capacity in the processing sector, about half of Mongolia's raw cashmere is smuggled to China with no additional value added and much of the rest is exported with only minimal additional value added.

If the "measures for GoM consideration" that were made throughout the text of this report were accepted and implemented by the GoM, however, many of the distortions would be removed from the industry and it would be able to operate on a more efficient basis. This is not to say that the decline in the processing sector might not continue, but this decline would reflect Mongolia's comparative advantage, not a distorted market that is issuing incorrect signals.

The simulations run as part of this project, however, indicate that with proper management and with access to funds at international rates, the processing sector can and will survive and prosper, although the operations of some of its current units will either have to be reformed or they will be bankrupted by market forces.

**ANNEX A: REVIEW OF SPINNING CAPACITIES AND CAPABILITIES IN THE
MONGOLIAN FINE HAIR INDUSTRY**

Executive Summary

The veracity of the report is dependent on the quality of the inputs from the key players in the Mongolian fine hair industry and the objective evaluation of those inputs by the EPRC team.

A great deal of openness and transparency was encountered. The Mongolian companies interviewed, including all current spinners and those planning to become spinners together with de-hairers, knitters and weavers of the products of the spinning sector were eager to give the team an accurate appreciation of their status and their perception of the current situation of the overall industry. However, some grey areas exist, largely through lack of appreciation by key executives of the characteristics and needs of the export markets. These matters are highlighted where possible in the report and form the basis of proposals for further work.

The market for cashmere products and cashmere derivatives and blends, both in woven apparel, accessories and knit goods is expanding. The increasing speeds of new production technology and the increasing quality of these technologies are driving unit costs down, and thus expanding the market by producing ever lower unit cost goods.

The retail model is also changing fast and becoming more efficient and fashion responsive. Technology, accelerating velocity of fashion change and garment replacement in Western wardrobes are leading to cashmere becoming more widely available to an increasing market.

The implications for the Mongolian industry are clear. The industry must open up to market forces more at all stages of the production cycle.

It must involve itself in new product development and new market development.

The existing capacities must engage in better understanding of the markets and the developments of new and more effective routes to market.

If the existing capacities cannot engage more thoroughly with the emerging and developing markets, then new players from market countries must be encouraged to engage in the Mongolian industry.

Both factors can play their part in the growth of the industry.

Review of spinning capacities and capabilities in the Mongolian noble hair industry

A. Market developments which affect the climate of operation for the industry.

- Changes in technology over the past decades, that is increased production speeds and increased quality at intermediate production stages, have led to increasing efficiency, lower production costs, higher quality and lower unit garment costs.
- Outsourcing has led to ever lower production costs, and this trend will be accelerated with the ending of the MFA.
- Further to the above, brand name holders have essentially outsourced all their manufacturing to contract producers in low wage, low cost countries. This trend is at an earlier stage in the cashmere industry, but is becoming more pronounced with each season.
- Conversely, producers in low wage countries have not integrated forward into retail sales or developed brands.
- Garment companies have successfully gone to more and more “seasons” and faster fashion turnover in order to induce higher unit sales.

- The retail model has changed. The exclusive, top end market, where extraordinarily high margins cover low stock turn, high redundancy and high staff costs, is being replaced by a high stock turn, nil redundancy, low staff service model with low margin, and thus more market accessibility.
- The margins taken by the new model are much lower than in the traditional luxury goods market, but still offer to the retailer a higher average margin than his traditional fast moving classics. Thus an attractive addition to his range, with higher than average contribution.

Implications

- The fall in unit prices has been offset with an increase in unit demand, such that overall sales revenues for textiles/garments have risen.
- The market share at the very top of the market is declining relative to lower-priced, but good quality garments.
- Cashmere demand will grow into the future, but not at the top of the market.
- Cashmere will also have increased demand in blends: silk, wool, cotton and synthetics. These product developments will expand the availability of cashmere at lower costs into the middle market, and even into the low cost/high disposability lower end market.
- Mongolian cashmere is therefore fortunate that the decline in the average quality of the raw cashmere it produces should not have a negative impact on the competitiveness of its product – as long as other quality and other problems are addressed.
- Current markets for Mongolian spun products, that is spun yarn, knitwear and woven blankets, are primarily the domestic market and a narrow client base of export markets, via the two vertically organized major companies. Export markets are restricted by lack of marketing skills.

B. Specific implications for the Mongolian spinning sector

The following two distinct market sectors are forming:

- 1) The traditional, high quality cashmere market which will continue to give cashmere its cachet as a luxury product in knitwear, accessories and high market fashion apparel, woven or knitted.
- 2) The fast developing volume cashmere market, where lower quality, sometimes blended products will give access to cashmere and cashmere derivatives to a much wider audience. This market will be characterized by lower quality products, more ephemeral fashion in nature and thus of higher velocity of change of style, market response and short term disposability.

The needs which these factors bring to the Mongolian spinning industry are at first glance contradictory – lower price and hence quality, and on the other hand a return to high quality, lower micron real cashmere. They are not contradictory. They are two strands of a strategy which can be run concurrently – return to high quality cashmere for the residual true luxury goods market from a part of the flock, and a higher yield flock to provide feedstock for a product development program of blends, new performance end uses and new routes to the developing middle market.

C. Current status of the industry

- There are currently only two spinners of significant capacity, with equipment which can meet international market quality standards. These are the Gobi Corporation and “Buyan Holding”. The third spinner, Sun-shiro Company Ltd is small, enthusiastically run, but a small player in niche markets, dependent on the energies and skills of a one-man band.
- A further two spinners of cashmere products are about to take part in the industry and will be potential players on the international scene. These are Eermel Joint Stock Company, and Mongol Cashmere & Camel Wool Company (MCCWC)

Gobi.

The equipment in the Gobi Corporation covers both woolen spinning and semi worsted spinning, that is yarns typically used in the manufacture of knitted goods and of tweed type wovens, and fine yarns for fine gauge knitting (for the layman, merino types) or for finer apparel cloth weaving.

The stated capacity is 150 tones per annum of all fibers, and currently the company is engaged in cashmere, camel hair, wool, and some work has been done on blends, using silk and other fibers.

This measure of capacity is based on five day working, one shift only. Actual production achieved is considerably lower than this. The constraints are in terms of:

- Lack of market. The client base is too narrow, with overdependence on one client, and ineffective marketing organization to find new, good margin clients
- Lack of working capital. (refer Donald Lecraw inputs)
- Costs of working capital (refer as above)
- Poor skills
- Inadequate support equipment in terms of testing, QA systems, and product development
- The poor state of repair of the existing equipment, and inadequate spare parts, repair and maintenance program

The actual capacity, if these constraints are overcome, would be in excess of 250 – 300 tones per annum, working 3 shifts, six days, and increasing machine efficiencies, with reduced downtime.

To utilize these capacities, and the preparation facilities which service and supply them, in terms of scouring, de-hairing, blending and dyeing exist in sufficient depth, if used in the same intensity, maximum machine utilization as should be developed for spinning, the business model would need to be changed to offer a wider product range, to sell commission capacities at all value added processes, and new market development programs. The philosophy to be adopted with older but serviceable equipment would best be described as “to sweat the assets”. That is, to obtain maximum outputs from this machinery rather than optimum outputs which has an agenda of prolonging asset life rather than maximization. To support these activities, new product development programs would also be needed. (see below).

We allude to several areas of product development that could be pursued. These are product areas known from the consultants empirical experience to be worthy of examination. It is not within the remit of this phase of the project to supply such answers as proven, but as worthy of examination from the companies in house competences, or as commissioned from outside, but within the project.

Summary

The existing machinery is in poor condition, is under utilized, poorly run, and poorly maintained, with no clear vision as to what products could be developed for its better exploitation.

It is however potentially adequate for the purpose of producing international quality acceptable yarns, if repaired, serviced, maintained, and operated by technicians and operatives trained to the standards needed to produce such products.

The machinery can be repaired and returned to optimum performance.

Skills can be developed at all relevant levels of operation and R&D.

The problems of exploitation of these capacities are therefore not inherent in the kit, but in the management.

Buyan

The situation here is in contrast to that at Gobi.

The equipment is state of the art.

The criticisms leveled at the Gobi equipment are not relevant here.

Similarities of characteristics appear at the operating level, the use of the machinery by the skills or lack of them of the labor force.

The stated capacity is said to be also 150 tones per annum.

Given the quality of the kit, 6 day working and 3 shifts would give a capacity of in excess of 200 tones per annum.

The consultant's opinion poor skill standards at operator level, poor quality assurance procedures, and particularly, the lack of machine tuning skills at the carding stage would cause deterioration of yarn quality.

The throughput level is low, through lack of orders or other constraints referred to above.

And the product range, whilst better than Gobi in design quality, shows little understanding of major export market needs.

The problems therefore cannot be laid at the door of inadequate machinery. They are management problems. A greater degree of production methodology and the technology employed is needed.

Eermel and MCCWC

These two companies are about to come to market with new capacity for cashmere spinning, which will augment their existing camel hair capacity.

These two companies could add in excess of 200 tones per annum to the country's capacity.

The equipment is not new, but is adequate for the production of quality product.

The senior managers of these two companies display more comprehension of the international markets to which new capacity should be addressed. However, they both originate from production backgrounds, and therefore they have little experience of international marketing. The infrastructure and financial resources of the companies

are inadequate in terms of design and marketing staff. The markets that they hope to target are not yet sufficiently researched, as is the case with Gobi and Buyan.

Other capacity considerations

Overall trends within the international textile and apparel industry show that outsourcing is now not just the dominant model, but almost the exclusive model. The apparel companies, the labor intensive sectors of the apparel industry, however, have moved faster and more often than the textile industry, the high capital users. This is now changing fast, and the textile manufacturers are now setting up new plants in proximity to the processors of their products i.e. fabrics and yarns.

In Mongolia there exist several companies whose ownership, management and original model of trading originate from the traditional luxury goods supply countries – Italy, Scotland, France, Germany and the US. The economic necessity for these suppliers of the traditional and new markets is to follow the apparel trade trends of location to lower cost centers of production.

Thus the shape of the distribution chains and routes to market are changing.

The decision points are still in New York, Dusseldorf, Milan, and London, and the other homes of brand holders, directional retailers, and key design sources. The supply points are in China, India, The Balkans, S.E.Asia, and all the developing stitching locations.

There is no reason to think that these same factors will not affect Mongolia.

We have considered the possibility of existing international players on moving current downstream capacity to the source of raw materials and primary production. That is, to add spinning and even further downstream activities, to existing scouring and de-hairing activity in Mongolia. Increased capacity could become a source for the development of cashmere processing clusters within the country. (We cannot be more specific about the company involved here. It would be a breach of confidential information. However, as a leading player and opinion former, the possibility should be noted.)

Our findings would indicate that these moves are under consideration.

The needs of the newly developing volume markets for cashmere and cashmere blends would indicate a growing need for these capacities and processes to become more available.

Installed spinning capacity

- ❖ Capacity assuming machines are in good condition, no restraints of a financial nature, operatives are optimally trained, and adequate repair and maintenance have been carried out
- ❖ They are as reported, with the view of the consultants as to actual achievable capacities overlaid where appropriate.

Company	Capacity (tones per annum-tpa)
Gobi	300
Buyan	200
Eermel	70
MCCWC	150
Sun-Shiro	75
Total	795

Total potential spinning capacity of the Mongolian fine hair industry appears to be about 795 tones per annum. Mongolia produces approx. 3,000 tpa, of raw cashmere. If all the cashmere were available to Mongolian dehairers it could produce 1,500 tpa, twice the existing spinning capacity. In terms of supply, the opportunity exists to place further spinning capacity alongside higher capacities in blending and dyeing.

D. Opportunities for spinning capacities within the situation of the Mongolian industry

We have examined the product offer of the existing participants in the industry. The product ranges which we have been shown, at the spun products level, offer little other than production capacities for hire as commission spinning or as product to be made to clients specification in count, color, twist and finish. In other words, commodity, with no product differentiation. We would suggest that these products be measured against market needs, which we would believe to be:

- Offer seasonal color ranges, to well researched international fashion needs
- Stock service of dyed knitting yarns, in 2-3 counts
- Development of cashmere/natural blends for defined end uses
- Blends with natural and synthetics aimed at specific end uses, eg performance fabrics, underwear, hosiery, thermal products and accessories
- Weaving twist yarns, in natural blends, mélanges, color ranges as above.

E. Proposals for new capacities

Establishment of new plant

As there is no privatization plan for Gobi corporation, an interested foreign player could involve himself in the Mongolian cashmere industry via a Greenfield site investment.

Whether Greenfield site, or utilization of existing buildings, not purpose built for cashmere or other fine hair processing, there are three options available.

The first would be to build a state of the art plant using the best available machines, that is the best available for the needs of cashmere, and thus not the latest, fastest and most productive machines in the fast evolving world of textile machine building.

The second option would be to buy Chinese built machines, probably of the last generation of technology. This would undoubtedly be a cheaper but less productive route than option one.

The third option is to buy second hand machinery, or a combination of option two and option three, from the well developed world sources such machinery. The brokers are in Italy, England, Sweden, Hong Kong, etc.

The selection of which option will also influence the transportation and installation elements in both costs and timescale.

There is considerable economic and philosophical debate about the optimum route for installation of new capacity – state of the art, new equipment, or second hand, refurbished and much cheaper equipment. The ultimate arbiter will be the financial resources of the investor and the viability of their business plan. Unlike most textile technologies which aim for ever faster processing whilst maintaining or increasing quality, cashmere is different. High speed spinning is not desirable, as it is not conducive to quality. Quality at optimum speed is the aim.

Where the business plan is sound, state of the art is the answer to quality, longevity and growth at optimum speed. It will also give more options for product development for new products for new markets.

List of processes/machines for the establishment of a spinning plant

Currently there are two different spinning systems extant in Mongolia, woolen system and semi worsted. The former relate to knitting primarily, of standard 8 and 10 gauge garments and to weaving of tweed like fabrics. Finer spinning, on the semi worsted system will produce knitting yarns for fine gauge, botany types, and for finer weaving. In the quality apparel markets these are the growth areas, on the basis of long term trend. We address both needs, as the initial preparation is similar.

Recent experience by European companies seeking to relocate their production facilities to centers of lower cost production, and of contiguity to final producers (stitches and other makers – up, who are driven by the Western brand builders to centers of lowest labor cost), is to build Greenfield sites, to receive their own manufacturing culture. That is, not to take over existing facilities and to take over old labor force with old working practices and productivities, but to take new, young and better educated workers, and train them in best practice. “Unlearning” old speeds and old practices is difficult and costly.

Thus the first requirement for a new production facility would be purpose designed buildings, work flowed for minimum disruption and minimum handling.

The production steps are:

1. Scouring (washing)
2. De-hairing
3. Blending for other fiber blends
4. Dyeing of loose stock
5. Blending for color
6. Carding
7. Combing, for semi worsted production
8. Spinning. Ring
9. or Spinning by mules. These two are complimentary, depending on quality and product mix required.
10. Spinning – semi worsted
11. Package dyeing
12. Doubling and splicing
13. Winding and twisting

Capacities

The balancing of capacities at every stage of the production chain is difficult, if not impossible, as it needs change with the characteristics of the input raw material, and the changing product mix. In totally vertical operations, this has proved to be a major headache, and international experience indicates that the vertical model is difficult to operate successfully. The methodology which has best been adopted is to make each operating area a profit centre, responsive to market pressures and able to source and sell independently.

A model which has been developed for the project previously is to base proposals around a capacity of output of finished product of 100 tones per annum. A pro rata methodology up or down while whilst not totally accurate, is a good starting point. Some elements of the production chain can be severely out of line, but are of a scale and cost that cannot be modified. For example, the best scouring line available is probably that produced in New Zealand, and is capable of producing one ton per hour, which is obviously out of line with a plant to process 200 tons of input, 100 tons of output per year. Yet the cost of a smaller line is close to the cost of the optimum line. Therefore, the business model to which the company needs to address itself, at all stages of the production sequence is the optimum use of the line for its own purposes, and the availability and suitability of selling commission capacity to other players.

The range of capital spend which could be required will vary according to size, and to which equipment model is chosen.

- The existing draft proposal drawn up by Textilconsult for the Mercy Corps project would need approximately \$2.5 of investment and working capital, for a start up of 25 tpa rising to 75 tpa over 5 years. This cost does not include buildings and thus assumes bolting a spinning facility to an existing de-hairing plant or a user plant. The slow rate of growth, and indeed the relatively small size of such a proposed plant is constrained by the assumption that the capital spend will be small, and that working capital will be partly self generating. As a model to be scaled up on proportionate basis, it is however valid
- A new plant, using refurbished second hand machinery for a capacity of approximately 100 tpa would cost, buildings included, about \$4.5.M
- A bigger plant, to mirror one of the existing facilities, with its own de-hairing and scouring would be in excess of \$15m. This however would be the state of the art supplier to foreseeable expansion of the indigenous industry.
- A detailed feasibility pan for such a facility can be prepared, but the essential precursor to this would be a market assessment, and the establishment of a viable business model.

F. Possible ways forward to enhance the spinning sector capabilities

F.1. Open up existing capacities

- Sell Gobi to an investor(s) who will buy into the model recommended here. It is well recognized that a state-owned entity such as Gobi is a potential distortion on the market
- Investigate ways to open up the facilities of Buyan to the open market
- Assist existing players to locate marketing partners/methods/routes to market. This will help develop downstream manufacturing facilities where the major players will drive increasing capacities to supplement their in house facilities.

F.2. New investment.

- In the absence of a sensible market-driven model at Gobi, and the absence from the market of the minimally utilized facilities at Buyan, there is room for at least one more significant player in the spinning sector. Full entry of Buyan into this market, however, is likely to have a preferred impact.
- The same constraints would not apply to a foreign-based sourcing house that would bring captive markets, e.g., Patagonia Inc, and other.

Potential return on 75 t.p.a Spinning Plant, capital cost US\$ 4.5 mio
(based on average price of dehaired cashmere and yarn as at April 2005)

Description	US\$ million
Sales Revenues	8.50
Raw Materials	4.75
Gross Margin	3.75
Operating Costs	1.25
Margin, before cost of finance	2.50
Finance costs	1.00
Net Margin	1.50

F.3. Focus for Government of Mongolia policy and industry associations:

These effects should focus on:

- Creation of a climate to encourage foreign participation in the industry at least up to the spinning stage, and preferably to finished knitted garment stage and to colored unfinished goods stage in woven apparel goods. This would include:
 - FDI in state of the art plant
 - FDI in a new plant with used machinery
 - JVs
 - Long term contracts to fill local factories with market designed goods of brand holders AND local makers brand goods, if possible
 - Concession arrangements.
- The objective will be to bring :
 - Market.
 - Market driving methods
 - Management
 - Technology
 - Skills
 - Investment capital
 - Foreign raised, foreign rate working capital
 - Loyalty.
- The second objective of policy would be to discourage exports of unprocessed raw materials, and to encourage value-added processing up to the stage where market-driven flexibility considerations become paramount. This would mean encouragement of processing to finished garment stage, and at least to spun fiber stage. Exports of de-haired only cashmere should become increasingly less desirable to the producers in Italy, UK and other UE locations as their costs of processing rise. However, the industry and the government must appreciate that the need for proximity to market to supply the faster moving fashion markets will still drive the established players to access raw materials for processing in locations nearer to market. This refers specifically to Turkey and S.E. Europe – the Balkans and Romania. Prohibition of exports of de-haired fiber, or punitive taxation would be a mistake. The development of policies of encouragement is the favored option.

The logical conclusions of such policies would be to encourage FDI by mounting a pro active market based program to sell Mongolia to targeted players in the fine hair process and distribution chain, to develop concession or BCC programs with existing players, to encourage the establishment of further downstream processing, e.g. spinning of colored yarns, and to put into private management the current state-owned facility.

Spinning for worsteds and semi-worsteds

1. At the time of writing, there is only one facility in the country for the production of fine count yarns via the worsted and semi worsted routes. This is under the control of The Gobi Corporation, and suffers more than other departments from the ills of Gobi:
 - Under utilization, through lack of orders
 - Machinery under very poor repair
 - Lack of both supervisory, machine mechanic and machine operator skills
 - Lack of product development needs
 - Lack of product development skills
 - Lack of range design and development skills.
2. The range of products which could be developed and manufactured through better use of this technology would be aimed at fine gauge fully fashioned (FF) knitting, similar fine gauge cut and sew (C&S) garment manufacture, and woven apparel cloth manufacture, for sports coatings and coatings. The technology is particularly apt for movements into blends for all the above end uses. The use of the technology to move into very fine blends for suiting has been the goal of some players in the orient. We would not consider this suitable for the developed Western markets, and would regard some of the cloths appearing in tailoring outlets as of dubious component composition, and of dubious origin.
3. There is a demonstrable move in the major markets to add fine gauge knitwear to the range offer and in line with the move to multi layer clothing repertoire for fashion, comfort and climatic reasons; this move is somewhat at the expense of coarser gauge garments.
4. The players in the performance and sportswear markets are increasingly considering these products as being capable of delivering the enhanced performance that they need. Performance is defined as additional features over and above the normal e.g. thermal properties, rain resistant, stretch and recovery, soil and stain resistant, etc.
5. A major player in the Chinese industry, Shandong Dashing Cashmere Textile Company offers these yarns in 100% Cashmere, and in blends with silk, long staple cotton, wool. Mercerized wool, and in three component blends with silk, cotton and cashmere.
6. Thus, in the absence of sensible utilization of existing facilities and of a fashion-driven need for the addition of these items to an existing line or range, an opening for the establishment of a fine spinning plant becomes attractive.
7. Mongolian long staple fiber is particularly suited to this type of spinning and the apparel fabric business would have no problem with the absence of a high proportion of white and light colored hair. Such needs can be met by purchasing blended tops for dyeing, or a small proportion of dyed yarn, or yarn for package dyeing.

ANNEX B: FINANCING THE CASHMERE INDUSTRY

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Credit: a major cost driver in the cashmere value chain

Finance is one of the key cost drivers along the value chain of the cashmere industry. Herders, traders, scourers, dehairers, spinners, knitters, up through finished garment exporters all require substantial working capital financing. Most processors (note: “processors” is used to designate several links in the value chain starting with scourers and dehairers up through finished garment producers) also require longer term financing for plant and equipment improvements to be competitive in world markets. Credit from commercial lenders in Mongolia is expensive, however, and constitutes a large share of business operating costs. Credit costs are contributing to the difficulties that have already squeezed many players out of the cashmere business and are fast rendering the remaining few uncompetitive on a cost basis alone.

A raw material cost, i.e. raw cashmere, is the largest cost component in the industry value chain. Thus, the biggest constraint processors face is obtaining and affording the large amount of working capital they need to acquire raw cashmere from herders or “changers.” The magnitude of working capital needed becomes clear in the following scenario. For a scouring and dehairing plant established with 900,000 U.S dollars (USD) in plant and equipment, the raw cashmere required to operate the plant at capacity costs 9,000,000 USD. (Assumes plant capacity = 360,000 kg of raw cashmere purchased for @ 25 USD/kg.) The annual interest cost alone on the 9,000,000 USD of raw material inventory at 2.5% per month amounts to 1,350,000 USD. (Assumes an average inventory value over the year of 4,500,000 USD, i.e. half the original purchase.) 1.35 million USD in annual interest for raw material on a total capital investment of \$1 million USD. Clearly, financing the raw material acquisition presents a major hurdle even though processors are sometimes able to arrange deferred payments to suppliers and get partial advance payments from buyers to avoid carrying the full cost themselves.

Interest rates. Current market rates for one year loans in Mongolia range from 1.8% to 4% per month for loans in Mongolian tugriks (MNT), and from 1.33% to 1.6% per month for U.S. dollar (USD) loans. (See Table I below.) The exporting firms with assured buyers in hard currencies are able to borrow in hard currency at the lower rates. Many of the smaller processors are only able to borrow in local currency at the higher rates. The herders and traders pay the most at 2.5% to 4 % per month for loans typically of three and six month durations. In contrast, producers in China, Mongolia’s main competitor in cashmere production and processing, reportedly can borrow at monthly rates of 0.4% - 0.6% per month. Because of the huge working capital requirements in cashmere processing, these disparities in Mongolian and Chinese interest rates give the Chinese an enormous cost advantage. This cost advantage allows them the latitude to pay higher prices for raw cashmere in Mongolia, which they do in order to secure the quantities they require. Because the Chinese are the largest buyer of Mongolian raw cashmere (indications are that they purchase approximately 50% of total production) they effectively set the market price. Mongolians are hard pressed to match these prices, since they are saddled with financing costs three to ten times higher than the Chinese pay.

Lack of long-term financing. Besides high interest rates, the lack of mid- to long-term capital loans is a major problem for processors wishing to expand or upgrade their plant and equipment. Loans longer than one year are virtually nonexistent at the moment. A few banks claim they will lend for more than one year, but only to a few of their best exporting clients, in

dollars. Several banks cited a lack of staff experienced in long term risk management as a constraint.

Collateral requirements. Collateral requirements are also substantial for borrowers. In the case of processors, most lenders accept only real estate or immovable property to secure loans of 30 to 70% of the collateral’s value as appraised by the bank. Herders and traders can pledge animals, vehicles, furniture and their homes, as collateral at the same loan to value ratios. Banks cite the lack of enforcement of contract law in the current legal environment as one of the main reasons they take so much collateral. In the event of default it is very difficult for them to liquidate collateral and pursue collections through the court system. So banks assume they will only be able to collect on part of the collateral.

In addition, most of the banks are carrying a large percentage of non-performing loans. From a banker’s perspective that is a good reason to take substantial collateral. A few of the larger banks with foreign investment and management influence are beginning to accept inventory, cash, export contracts and letters of credit as collateral, but only for a few of their best customers. Most banks interviewed cited their lack of experience in cash flow-based credit analysis and risk management as reasons for not doing cash flow lending (lending based on expected flow of funds rather than collateral.)

In summary, high short term interest rates, short working capital loan durations, lack of long term capital financing, and substantial collateral requirements raise the cost of and lower access to credit for businesses. The high cost of credit in Mongolia lowers the competitiveness of all domestic industries, both against imports in the case of production for domestic consumption, as well as for production intended for export. The exhibit below presents interest rates, collateral requirements, and customer base information collected from several key lenders.

Bank	Customer base	3 mos – 1 year monthly rate	5 -7 years	Collateral Requirement
TDB	garment producers, dehairers	1.33% - 1.6% (USD)		Immovable property, inventory, export contracts, LOCs, deposits at TDB
Anod	SMEs	1.5% (USD) 2.3% (MNT)	N/A	Immovable property; Loan to value up to 80%
Golomt	SMEs	1.2 – 1.5 % (USD) 1.8 – 2.4 % (MNT)	Same rates as short term	Immovable property, inventory, deposits, LOCs Loan to Value = 70%
Khaan	Herders & Traders, Scourers	3 – 4% herders for 6 mos 2.5 – 4% traders for 3 mos	5 year same rates as short term	Animals, cars, homes. Loan to value = 75%
Xac	Herders & Traders	2.5 % - 3.5%, or 1.5% w/ Guarantee	N/A	Moveable and Immovables: Loan to value 50% - 70%

Reasons for high interest rates, short terms, high collateral requirements

The bankers and economists interviewed cited many factors contributing to the high cost of credit in Mongolia. For example, banks are paying 15% to depositors for one year savings certificates. With annual inflation currently at about 10% in Mongolia, this represents a real

rate of 5%. Several sources said these rates are necessary to induce citizens to bring their money “out from under the mattress” and trust it to the banks. There is no deposit insurance for savings in banks. Banks say they are competing heavily for sufficient deposits to fund not only the demand for loans, but also to meet nonperforming loan reserve requirements of 40%. (Officially, 10% of the banking sector’s loan portfolios are nonperforming, but the real figure is suspected by many observers to be at least 20%.) Adding to the banks’ liquidity “crunch” is borrowing by the government of Mongolia. It is a heavy borrower, competing for domestic savings with government backed bonds at lower rates but also with lower perceived risk.

The typical 8% to 25% (and sometimes higher) spread between deposit rates and interest rates is accounted for by banks’ costs, and the banks’ perception of borrowing company risk. Mongolia’s banking sector is still young and developing. Systems are weak and human resources are thin, resulting in inefficient and ineffective administration, which lead to higher transaction costs. Another cost contributing to the larger spreads is the high rate of taxation on corporate profits (30%) — leading banks to charge more in order to increase their net income.

With regard to company risk, bankers see several characteristics contributing to the risk of default. Perhaps first and foremost is their recent lending experience with the domestic cashmere industry. In 2001 there was a decline in the world price of cashmere which caused several companies to default on their loans. These are now some of the nonperforming loans still on the banks’ books. In addition to the risk posed by the volatility of the world price of cashmere, the banks are aware that few players within the Mongolian cashmere industry are accessing world class design and marketing expertise, i.e., they know the industry is not yet competitive, in general, in international markets. These are the main risk factors specific to the cashmere sector. The rest apply to Mongolian corporate borrowers in general.

A basic constraint to corporate lending is the fact that businesses do not have adequate financial records or business plans. International Accounting Standards (IAS) are not used. The resulting lack of reliable financial information makes credit analysis difficult and lending based on cash flow analysis virtually impossible. According to the banks, Mongolian companies are also unaccustomed to using secure forms of trade finance such as letters of credit, relying instead on direct wire transfers that have left some of them without payment for shipments. Another major risk factor for banks is their lack of legal recourse when borrowers default. Courts do not generally enforce banks’ right to foreclose, and furthermore, while a case is in dispute in court, interest payments are suspended.

The bottom line is that the current interest rates are determined in the market place, and although they are high, they do not appear to be inappropriately so. Nevertheless, there are several initiatives either underway or under consideration that could ameliorate the high cost of credit for some borrowers.

Current and potential sources of lower cost loans

World Bank – Starting in June 2005 the World Bank will provide a two-step Private Sector Development Credit through the GoM of 7 to 10 million USD for medium enterprise development. The maximum loan amount will be \$500,000 for longer terms. Interest rates ranges will be agreed upon with the banks, which are the Trade and Development Bank, Golomt, Zoos, and Mongol Post Banks.

KFW- the German Development Bank (DEG) has a biannual assistance agreement with the GoM administered by KFW which is due for renegotiation in November 2005. The most recent 2-year agreement provided 10 million euros to the central bank (BOM) for on-lending to selected commercial banks for long term financing for the manufacturing sector. The maximum loan amount was 500,000 euros, and up to 25% of the loan amount could be used

for working capital. The term was five years with a two-year grace period. The rates (and collateral requirements) were set at the discretion of the banks, at between 7.75% and 10% per year. A long term advisor was placed in each the participating banks to train staff in evaluating and managing risk of long term loans. The original 10 million euros has been dispersed, but KFW has recently provided supplemental funding of 2.5 million euros, and lowered the loan ceiling to 250,000 euros.

It is uncertain whether the next KFW – GoM agreement will include a similar SME loan program, as the GoM has expressed strong interest to KFW in funds for other purposes such as equity fund financing, housing, insurance and leasing.

Gobi Initiative/USAID/Xac Bank - The Gobi Initiative, funded by USAID and managed by Mercy Corps, is running a micro lending guarantee program for rural borrowers (herders and traders) through the Xac Bank. Loans guaranteed through the Gobi Initiative’s program are made at 1.5% - 2.2% monthly for 6 month loans. Unguaranteed rates from Xac Bank for these borrowers are 3% - 5% monthly. The loan amounts range from \$500 to \$5,000, with the average being \$1,500 – \$2,000.

USAID/EPRC Equity Fund (under consideration) – This is an equity fund which would provide an alternative to bank loans for medium and long term financing. The EPRC project is currently investigating the viability of such a fund and evaluating various Mongolian companies as prospects for inclusion in the fund. At present, however, no cashmere companies are under consideration.

ADB (under consideration) – ADB is in discussions with EPRC about establishing or participating in an equity fund such as the one EPRC is investigating.

JBIC (under consideration) – JBIC is considering a SME credit support program working directly with commercial banks. There are indications that this loan facility will be in the range of 10 million euros.

Other initiatives that could reduce the cost of financing:

USAID (implemented by EPRC) - Establish a multi-bank Development Credit Authority (DCA) loan portfolio guarantee to provide guarantee coverage to a select group of commercial banks and non-bank financial institutions. The financial institutions would extend loans under guarantee coverage with longer terms and reduced collateral requirements, and offer more financial products tailored to SME needs.

DCA is the legal authority that allows USAID missions to issue partial loan guarantees to private lenders. In turn, these guarantees provide a way to encourage local capital funding of projects. By offering a guarantee on up to 50 percent of a lender’s loans made to single or multiple borrowers, the DCA encourages private lenders to extend financial services to credit-worthy but underserved markets. It also encourages those lenders to offer longer term loans and reduce collateral requirements. DCA includes four different tools to enhance credit in a broad variety of situations and environments. The first two described below, Loan Portfolio Guarantee and Loan Guarantee, are the most relevant to the cashmere industry and other SME sector lending.

- **Loan Portfolio Guarantee:** The mission decides on the definition of “borrowers” which can range from a narrow to an all-inclusive designation. The guarantee provides up to 50 percent coverage on a series of loans from a lender or lenders to a pool of borrowers.

- ***Loan Guarantee:*** Both lender(s) and borrower(s) are identified and lump sum or multiple disbursements are offered. The guarantee provides up to 50 percent coverage on the principal.
- ***Portable Guarantee:*** Allows the borrower to “shop” around for the best loan term and provides up to 50 percent coverage on the principal.
- ***Bond Guarantee:*** This choice offers stronger impact for missions whose objectives also include capital markets development. Issue rating is strengthened and the guarantee provides up to 50 percent principal coverage to potential bond purchasers

ANNEX C: LIST OF INTERVIEWS

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Cashmere Companies:

R. Lamb, CEO, Mongol Cashmere and Camel Wool Company

D. Buyanaa , Managing Director, Monital Cashmere (G. Schneider Group)

R. Borhkuu, Director, Sun Shiroh Co;

E. Enkhsaikhan, General Manager, Ezio Foradori Co;

Dr. P. Batoch, Owner, Ocean Company

M. Erdenetuya, Director, Sor cashmere Co., Ltd

A. Buyandelger, Managing director, Loro Piana Mongolia Co., Ltd

Ch. Enkhtogtokh, deputy director, Buyan Holding LLC

E. Golzio, director, Cashmere Fine

YongPing Hao, general manager, Mongolia Viction Textiles Co., Ltd

B. Bayaraa, director, Altai cashmere Co., Ltd

R. Schmidt, consultant, Eermel SC

Ts. Sedvanchig, CEO, Gobi Corporation

Tsogbayar, director, Gobi II factory

Ch. Tumenbayar, vice director, Gobi Corporation

L. Sunduimijid, T&I company

Associations:

G. Yondonsambuu, vice president, Wool and Cashmere Federation

D. Altantsetseg, executive director, Wool and Cashmere Federation

B. Tumenbayar, MNCCT, general manager

Mongolian Government

Dr. B. Chimedtseren, senior officer, MIT

E. Otgontuya, officer, Export promotion center, FIFTA

Parliament:

Batj. Batbayar, Member of State Great Hural

Donors:

Barry Hitchcock, Country Director, ADB

Saha Dhevan Meyanathan, Country Manager and Resident Representative, World Bank

Sh. Altantsetseg, economist, World Bank

Dawn E. Rehm, Resident Representative in Mongolia, International Monetary Fund,

A. Battushig, Office Manager, KFW Bankengruppe (German Financial Cooperation)

Stieve Zimmerman, COP, Gobi Initiative (Mercy Corp)

Sean Granville-Ross, DCOP, the Gobi Initiative (Mercy Corps)

Albert Gierend, Project Coordinator and L. Hulan, Project Manager, GTZ Export-oriented Industrial and Trade Policy Project, (976+11) 315 464

Others:

Dr. Yo. Zagdsuren, Animal Husbandry Institute, Mongolian Agricultural University

Dr. D. Alimaa, Textile Institute, Mongolian University of Science and Technology

Banks:

D. Daribazar, Director of Corporate Banking Unit, Anod Bank,

Munkhtur Dagva, VP & Director Corporate Banking Division, Golomt Bank,

B. Erdenetsetseg, Sr. Acct. Manager & N. Tuul, Acct. Manager for cashmere sector, Trade and Development Bank of Mongolia

Michel Vande Velde, Director of Special Projects, Trade and Development Bank,

Dennis Openshaw, Executive Chief Operating Officer, Trade and Development Bank,

Niel Isbrandtsen & Ella Beavers, DAI/EBRD consultants to Khaan Bank,

Jim Anderson, Sr. Technical Advisor, Xac Bank

