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A FEASIBILITY STUDY OF BLANKET MANUFACTURE

C/F

THE KINGDOM OF LESOTHO

(DP/LES/73/030/11 - 01/06)

P154

A Report prepared for

The Government of the Kingdom of Lesotho

by

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United Nations Industrial Development Organisation

acting as Executing Agency for

the United Nations Development Programme

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A FEASIBILITY STUDY OF BLANKET MANUFACTURE

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CONTENTS

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CHAPTER 1. INTRODUCTION

The objective of this study is to determine the feasibility of establishing a blanket factory in the Kingdom of Lesotho to supply the domestic market. The consumption of blankets in Lesotho is thought to be relatively high; all the blankets are imported and they form about 8% of total imports; at the same time the country has a large unfavourable trade balance; and finally it is possible that domestically-produced wool might be used as part of the raw materials for blanket production.

The method of the study is simple. Chapter 2 provides information on the market for blankets. Chapter 3 looks at the resource requirements for blanket production and the general supply position in Lesotho. Chapter 4 examines the feasibility of manufacture by estimating the likely costs of production in Lesotho, converting these costs into prices, and then comparing these with the prices of present supplies.

CHAPTER 2. THE MARKET FOR BLANKETS

2.1 The total consumption of blankets is estimated to be about 700,000 pieces a year.

2.2 Although a wide variety of different types of blanket are sold in Lesotho this total can be divided in four groups as follows:

Fashion (or Fancy or Basotho)	350,000	50%
Domestic	140,000	20%
Rugs and shawls	105,000	15%
Greys	105,000	15%
	700,000	100%

2.3 No significant changes in the demand for blankets, nor any important technical developments, are anticipated in the near future.

2.4 Wholesale distribution is mainly in the hands of four firms, who also operate at the retail level, along with many small traders.

2.5 Details of the costs and wholesale and retail prices of a number of representative blankets are given. The overall margin from mill cost to retail price varies from 40 to 55%.

2.6 Almost all the blankets are supplied by firms in a neighbouring country within the Southern African Customs Union (SACU). The industry is dominated by one powerful firm supplying about 90% of the market which amounts in total (including all the countries of the SACU) to about 13 million blankets a year.

CHAPTER 3. THE RESOURCE REQUIREMENTS FOR BLANKET PRODUCTION

3.1 The raw materials and the technology used in blanket manufacture are discussed. After examining the relationship between costs and levels of output we conclude that a mill producing about 600,000 blankets would be appropriate for Lesotho.

3.2 A mill of this size would require 950 tonnes of raw material a year. Of the 1420 tonnes of clean wool produced in Lesotho only about 400 tonnes is suitable for blanket manufacture. The actual requirement is 231 tonnes and therefore a surplus would be available for export. The remainder of the raw materials consist of man-made fibres, rayon, and cotton yarns. All these would have to be imported, mainly from outside the SACU.

3.3 There is a good supply of unskilled labour and, although there are no skilled or semi-skilled operators of the type required, no problems are anticipated in training Basotho to fill these positions. All skilled technicians, supervisory and management staff would have to be expatriates. After examining rates of pay in Lesotho and the SACU we adopt R 0.42 per hour as the rate for skilled machine operators and R 0.15 to R 0.31 for unskilled workers.

3.4 No problems are anticipated as far as electricity and water supplies are concerned, but the quality of the water will need further investigation. The mill will produce appreciable quantities of effluent. The disposal of this presents certain difficulties which will require examination.

3.5 Fairly large quantities of steam are required by a blanket mill but the provision of this should not present any particular problems.

3.6 It will be necessary to ensure reasonably stable climatic conditions inside the mill. We do not think that refrigeration will be necessary but some air conditioning will be required and the building will need to be well insulated. No problems are anticipated in constructing such a building.

3.7 The Government of Lesotho offers various tax incentives to firms. Two of these, a utility and transportation allowance and a citizen wage allowance are relevant to this study.

3.8 Transport within Lesotho presents no problem. Materials from the SACU will have to be transported by rail, which is slow and expensive. We consider that larger stocks than normal will have to be held by the mill and we provide for extra storage space.

3.9 A mill in Lesotho will suffer a disadvantage because of the lack of supporting industries and facilities.

3.10 We examine the question of location and conclude that the mill, if established, should be located at Maseru.

CHAPTER 4. THE FEASIBILITY OF BLANKET MANUFACTURE

4.1 The alternative ways of producing blankets are discussed and we conclude that a mill in Lesotho must carry out the full process from raw material to finished blanket.

4.2 In order to estimate the likely costs of producing blankets in Lesotho we construct a mill 'on paper'. Full details are given in Appendix A.

4.3 On the basis of this mill we estimate the prime cost of producing a number of representative blankets. The details and methods of calculation are given in Appendix B.

4.4 When Lesotho's prices are compared with those of present suppliers the position is as follows:

		Lesotho Price Rand	Present Supplier's Price Rand
Fashion blankets	Pitso	5.69	10.08
	Pitseng	4.74	6.60
	Lilala (75 x 80 cm)	1.48	1.48
	Lilala (110 x 115 cm)	2.75	2.97
Domestic	Mona Lisa	4.35	2.84
Rugs and shawls	Welwitschia	2.89	3.75

The Lesotho price is below the present supplier's price for the Pitso, Pitseng and Welwitschia; about the same for the Lilalas, and well above in the case of the Mona Lisa, a typical domestic blanket

These differences are explained by a number of factors. The bulk of the imported supplies come from one producer. This firm makes some 10 to 11 million blankets a year and has, by virtue of this large output, some considerable cost advantages over a small mill in Lesotho. It can gain economies by long production runs and by spreading its overheads over a large output. It can buy raw materials well below the prices at which a small unit could obtain them. This is particularly important as raw materials form, on average, about 43% of the total cost of making a blanket. Lesotho will have some advantage over the present supplier because of lower wages but this will have little effect on the final price as labour costs account for only 13%, on average, of total costs. Thus the foreign supplier will have lower costs than a mill in Lesotho, though the cost advantage will be more marked in some products than in others.

Given that the major supplier has these lower costs the prices actually charged for particular products are determined by market conditions. Where strong elements of exclusiveness and prestige are attached to a blanket and there is little or no competition, then a high price relative to cost is charged. At the other end of the scale where the product is basically 'cheap' and meant to satisfy the requirements of large numbers of poorer people then the price must be low and closely related to the cost.

4.5 Although we consider that a mill in Lesotho would have higher costs than those of the foreign supplier we examine various policies which might, even in these circumstances, make the mill viable. These are: the adoption of a certain price and output policy by the mill; changes in the scale of production; the use of quantitative controls on imports of blankets; tariffs, and subsidies. We consider that

4.6 none of these will be effective and we therefore conclude that it would not be feasible to establish a blanket mill in Lesotho.

4.7 There may be other textile possibilities in Lesotho which might be worth investigating. A very brief outline of these is given in Appendix D.

CHAPTER 1

INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 Objective

The objective of this study is to determine the feasibility of establishing a blanket factory in the Kingdom of Lesotho to supply the domestic market.

There appears to be a strong prima facie case in favour of undertaking this study. The consumption of blankets in Lesotho is thought to be relatively high as the Basotho use blankets as a form of apparel as well as for bedding purposes. All the blankets are imported and the total value of these imports in 1972 was R 3.3 million, or nearly 8% of total imports (R 43 million). In the same year total exports were only R 6.1 million. Hence Lesotho had a very large unfavourable trade balance. From another aspect the Kingdom is a large producer of wool and it was thought that this might form part, possibly the major part, of the raw material for the manufacture of blankets. Clearly if Lesotho could add value to her indigenous raw materials then this would be to her economic advantage. Finally, Lesotho urgently needs more employment opportunities for her people. One of the targets of her First Five-Year Development Plan was 'to create 10,000 - 15,000 new employment opportunities, mainly in non-agricultural activities'. A blanket factory would make some contribution towards the attainment of this target.

It is clear that if the production of blankets turns out to be feasible then this would have important beneficial effects on the economy of Lesotho. Our task is to examine in detail the prima facie case outlined above and to report.

1.2 Method

The method of this study is simple and straightforward. Chapter 2 presents information on the market and Chapter 3 deals with various aspects of the production of blankets. Chapter 4 builds on the material provided in the two previous chapters and examines feasibility.

Our main objectives in Chapter 2 are to determine the size of the blanket market in Lesotho; to classify the products in appropriate groups, and to select from these groups representative blankets which we can analyse in detail and use subsequently for comparative purposes. We also consider future trends in consumption and possible technical developments, and we provide information on methods of distribution and the costs and prices of blankets. In conclusion we look at the sources of the present supplies of blankets and at the market for blankets in the whole of Southern Africa.

Chapter 3 is concerned with the resource requirements for blanket production. We first of all give information on blanket manufacture in general, dealing with the types of raw material used, the technology employed and the economic aspects, in particular the question of the economic scale of production. The remainder of the chapter examines the availability of the required resources in Lesotho. We look at raw materials, including the possible use of Lesotho's wool, human resources, services, buildings, transport, etc.

In Chapter 4 our objective is to compare the likely costs and prices of blankets produced in Lesotho with the costs and prices of present suppliers and so determine the feasibility of a new mill. We first construct a mill 'on paper'. We then estimate the costs of producing a number of representative blankets. The costs are converted into prices and these are compared with prices of current supplies. On the basis of these comparisons we reach our conclusions on feasibility.

1.3 Country detail[1]

The Kingdom of Lesotho[2] is a small country of about 30,000 square kilometres which is entirely surrounded by another member-country of the Southern African Customs Union (SACU). It is bounded in the north and west by the Orange Free State, to the south by Cape Province and to the east by Natal.

About one quarter of the country lying to the west is lowland at a height of about 1500 metres above sea level. The remainder comprises foothills and mountains rising in the east to around 3500 metres. Although Lesotho is only about 800 kilometres from the Tropic of Capricorn the climate is strongly influenced by the altitude and tends to be extreme. In the lowlands temperatures vary from a maximum of 90°F or more in summer to a minimum of 20°F in winter. In the highlands the temperature range is considerably wider and temperatures as low as 3°F are common in winter. Frost has been known in every month of the year.

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[1] It is only proposed to give here such general information about the country as appears to us to be particularly relevant to the study.

[2] The country - Lesotho
The people - Mosotho - singular
Basotho - plural
The language - Sesotho

Accurate statistics of the size, distribution and rate of increase of Lesotho's population are not available. Total population is currently estimated as 1.15 million and it is assumed to be increasing at around 2.2% per annum[3]. About half the resident population live in the lowlands, a quarter in the foothills and the remainder in the mountainous regions to the east. Because of insufficient job opportunities at home large numbers of Basotho migrate and seak employment in other countries of the SACU. It has recently been estimated that about 60% of the Kingdom's active male labour force is employed outside Lesotho[4].

Lesotho is a poor country. Reliable national income statistics are not available but recent estimates[5] suggest that GNP per capita has remained fairly stable in the last few years at around R 150.

Communications witnin the country have improved considerably in the last decade but in many parts still remain difficult. There are good metalled roads joining the towns of the northern and eastern lowlands and connecting these same towns to centres in the SACU. However as one moves into the foothills, and particularly into the mountain areas, the position deteriorates considerably. The topography of the country and the late development of internal communications has meant that the economically important flows of trade and people have been, and still largely are, in and out, along a number of routes connecting Lesotho and the SACU rather than within the Kingdom itself. The improvements in the road network are obviously modifying this pattern but it still remains easier to supply many parts of Lesotho from a number of points on the periphery rather than to distribute from some central area.

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3 Annual Statistical Bulletin, 1972

4 International Bank for Reconstruction and Development, The Economy of Lesotho, Report No. 331a - LSO, IBRD, Washington, 1974, pp. 18 - 19

5 IBRD, op. cit. pp. 14 - 15.

Lesotho is a member of the Southern African Customs Union. There are generally no barriers to trade between the members of this Union and they use the Rand as their common currency. Throughout this study we assume the following rates of exchange:

US $ 1 = Rand 0.77 Rand 1 = US $ 1.30

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CHAPTER 2

THE MARKET FOR BLANKETS

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In this chapter we present information on the market aspects of our study. In Section 2.1 we estimate the total market for blankets in Lesotho. In Section 2.2 we analyse the total consumption breaking it down into various categories. In doing so we not only describe the nature of the market but we try to identify representative or typical blankets which we can use later in evaluating the feasibility of production in Lesotho.

Section 2.3 gives our views on future trends in consumption and possible technical and product developments

In Section 2.4 we describe the system of distribution and in 2.5 we discuss the costs and prices of blankets, including wholesale and retail margins and regional price variations.

Finally in Section 2.6 we look outside Lesotho at the present sources of supply and at the blanket market of Southern Africa, of which Lesotho forms a part.

2.1 Total domestic consumption

There is no published information giving the consumption of blankets. As there is, as yet no domestic production then consumption should be given by the import statistics. However these latter figures have certain disadvantages and therefore in addition we use two other approaches. We make estimates on the basis of information gathered from a variety of trade sources and we endeavour to estimate total consumption by examining levels of income and related patterns of expenditure. None of these methods can be regarded as being completely satisfactory but we feel that a combination of the three may be enable us to reach reasonably reliable conclusions.

2.1.1 Estimates of total consumption based on import statistics

Details of the value of imports of blankets into Lesotho are given in Table 2.1. There are no statistics for imports in quantity terms.

Table 2.1 The value of blanket imports into Lesotho, Rand '000

Year	1970	1971	1972	1973	1974
1st quarter			529	724	955
2nd quarter			972	1215	
3rd quarter			904	1205	
4th quarter			877	1140	
Total year	1794	2034	3282	4302	

Source: Annual Statistical Bulletin.

The figures show an increasing trend over the period concerned. This is deceptive in that considerable changes have taken place in recent years in the methods of collecting information on imports generally. Following the new Customs Agreement in 1969, which came into force 1 March 1970, Lesotho's share in the common revenue pool has been largely dependent on the value of its imports and special efforts have been made to improve the comprehensiveness and accuracy of import data[1]. In particular from 1 April 1972 the value of imports has been derived directly from declarations made at border posts by traders, migrant workers and personal shoppers, i.e. persons crossing the border on shopping expeditions. This change in procedure accounts in large measure for the substantial increase which took place in 1972

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[1] See 'Notes on Trade Figures, 1972' contained Annual Statistical Bulletin, 1972 and also International Monetary Fund, Surveys of African Economies, Vol. 5, pp. 149 - 150, I.M.F., Washington, 1971.

as compared with 1971. Since these basic changes in 1972 further efforts have been made to improve the accuracy of the data but it is generally thought that imports may still be somewhat understated.

If we are to estimate total consumption in quantity terms we need to know the average price of imported blankets. It is not easy to estimate this as blankets may be imported at mill prices, at wholesale prices, or at retail prices, i.e. blankets bought by personal shoppers in nearby towns or brought in by migrant workers returning to Lesotho. In Section 2.2.2 below we estimate that the average retail price of blankets in Lesotho in September 1974 was between R6 and R7 - say R6.50. In the last two years the retail price of blankets has increased by over 40%, rising by 23.5% from October 1972 to October 1973 and by a further 18.2% by July 1974[2]. If we assume that retail prices were on average 25% lower in 1973 as compared with September 1974 then this would give an average retail price in 1973 of R5.50; a wholesale price of R4.10 (assuming a 35% margin wholesale to retail) and a mill price of R3.70 (assuming a 10% margin).

Such information as we have suggests that the bulk of imports come in at wholesale prices. We shall assume that 50% of imports enter at the average wholesale price of R4.10; 25% at the mill price of R3.70; 15% are brought in by migrant workers at an average price of R12.00 (probably about 100,000 such workers enter Lesotho each year and it is reported that each worker almost invariably has at least one blanket to declare and this blanket is nearly always of the more expensive type costing upwards of R10.00) and 10% are accounted for by personal shoppers at an average price of R5.50. On this basis the average price of imports is R5.40 and total imports in 1973 would amount to about 800,000 pieces.

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2 Information supplied by Bureau of Statistics.

Clearly this estimate is subject to wide margins of error. Apart from the obvious possibilities that our estimate of average retail price may be faulty and our assumptions concerning the proportions imported at the different prices may not be correct we have assumed that the total value of imports is consumed in the year in which the imports are recorded. In fact about 75% of the annual sales of blankets take place between the months of March and July and presumably most of the imports recorded in the first and last quarters of the year consist of orders to meet the demand in the winter months. There is no data on stocks of blankets and it was not therefore possible to make allowance for these seasonal movements.

2.1.2 Estimates of total consumption based on trade sources

For a number of reasons it was not possible to obtain as much information on total consumption as we would have liked from trade sources in Lesotho. First, the blankets entering the country do so from a wide variety of sources. For example, the largest trading company in Lesotho supplies its own retail outlets, numbering 50, as well as about 1000 other retailers, from 3 wholesale depots in Lesotho itself and from 3 depots outside the country in the neighbouring towns of Bloemfontein, Ficksburg and Wepener. It proved difficult to separate the trade which some of these branches carried on in Lesotho from that which was carried on outside the country. Additionally we were not able to interview the representatives of as many trading companies as we would have wished, partly owing to a shortage of time and partly due to certain administrative difficulties.

Nevertheless the company referred to above did provide us with details of its total sales of blankets in the period March to July 1974. They stated that 75% of their total sales take place in these months. Allowing for the balance sold in the remainder of the year this means that their total annual sales amount to about 260,000 blankets. In their view they have about 45% of the total blanket market. Assuming

this to be a correct estimate then this means that the number of blankets sold in Lesotho in a year is about 580,000. A very authoritative source in Lesotho considered that the market share of this company was much nearer 35%. In which case the total market would be 740,000.

2.1.3 Estimates of total consumption based on income levels and expenditure patterns

In this section we try to estimate the total consumption of blankets by attempting to calculate the expenditure on blankets in Lesotho and hence the number of blankets purchased. We look first at the urban households.

In 1972/1973 a household budget survey was carried out in the principal lowland towns of Maseru, Butha-Buthe, Hlotse, Teyateyaneng, Mafetung and Mohales Hoek[3]. The areas covered accounted for 90% of the total urban population. The details relevant to this study are shown in Table 2.2.

Table 2.2. Urban Households - Incomes, size of households, and expenditure on blankets. 1972/73.

Incomes. Rand			Households		Expenditure on blankets. Rand	
Strata	Range	Average	Number of	Average size	Annual per household	Total
1	0-199	146	2737	3.48	5.04	13 794
2	200-499	342	3096	4.05	11.04	34 180
3	500-999	692	1938	4.72	15.48	30 000
4	1000-	2249	1582	5.96	19.80	31 324
						119 298

Source: 1972/73 Urban Household budget survey

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3 Bureau of Statistics, 1972/73 Urban Household Budget Survey Report, Maseru, October, 1973.

The table shows the division of incomes into four strata: the average income in each strata; the number of households in each strata and their average size; the average annual expenditure on blankets per household in each income strata, and total expenditure. It will be seen that the total annual expenditure on blankets was R 119 298. If we make allowance for the 10% of the urban population not covered by the Survey this total then becomes R132 500.

Only 5% of the population of Lesotho live in urban areas. There is no information similar to the above relating to the vast bulk of the people who live in the countryside. As far as incomes are concerned we use some recent estimates and details are given in Table 2.3.

Table 2.3. Rural Households - Incomes, number and size of households by regions, 1970.

	Lowlands	Foothills	Mountains	Orange River Valley
Annual household income (Rand)				
From crop cultivation	53.35	41.35	40.75	31.80
From livestock	30.70	26.45	81.45	37.15
Total farm income	84.05	67.80	122.20	68.95
From labour outside Lesotho	93.80	78.00	57.80	92.50
From labour in Lesotho	21.50	15.45	17.55	24.25
Total income	199.35	161.25	197.55	188.70
Number of households	72 080	57 740	39 590	18 020
Average size of household	5.39	5.04	5.34	5.37

Source: I.B.R.D., The Economy of Lesotho, Report No. 331a - LSO June, 1974, Table 17

These figures relate to 1970 and if we are to use them in conjunction with those for the urban areas then some adjustment is necessary to allow for changes in rural incomes up to 1973. There are several reasons for thinking that the latter showed an appreciable increase in period concerned. In particular the prices of agricultural products rose considerably during these three years. For example, the value of exports of wool, mohair, and hides and skins increased from R1.5 million in 1970 to R3.2 million in 1972[4]. This is of particular relevance to households in the mountain areas who draw a higher proportion of their income from livestock than is the case in the Lowlands and Foothills. On the other hand these latter two areas gain a high proportion of their household income from labour outside Lesotho. Over this period, whilst the number employed in the mines has increased by about 13% from 1970 to 1972, voluntary deferred pay has grown from R2.5 million in 1970 to R4.7 million in 1973 and remittances from R2.1 to R4.0 million[5]. In addition to those Basotho who are employed in the mines appreciable numbers are engaged in other occupations outside Lesotho and it is likely that they have also benefitted from the general increase in wages which has taken place in recent years.

It seems likely that these increases in farm income by way of higher prices for farm produce and greater earnings from labour outside Lesotho may well have raised average total rural household income into the range of R300 - 350. We have no information which could be used to stratify rural incomes on the lines applied to urban households but the evidence suggests that they are much more evenly distributed than is the case in urban areas[6]. Comparison with equivalent urban income levels (Strata 2, R200 - 499, with an average income of R342) would suggest an annual expenditure per household on blankets of R11.04. This assumes the same expenditure pattern for both urban and rural households. We do not however consider that this is a valid assumption. First, the average size of the rural

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4 Annual Statistical Bulletin, 1972, Table: 31.

5 Bureau of Statistics

6 I.B.R.D., op cit, p. 22.

household is greater than that of the urban, 5.27 persons as compared with 4.05 for Strata 2 and 4.34 for all urban households. It is obvious that household demand for blankets is partly a function of household numbers, and figures given in Table 2.2 above provide some statistical evidence for this. In addition other factors are likely to result in higher levels of expenditure on blankets in the countryside as compared with the towns. Well over half the rural households live in areas which generally are colder than that of the lowland towns. In rural areas housing is less adequate and fuel is probably more difficult to obtain and certainly more expensive than in urban areas. Finally, rural society is undoubtedly more traditional in its dress than urban. One has only to move into the countryside to observe how much more common is the use of blankets as a form of apparel as compared with the more 'western' dress in the towns. Whilst the above factors clearly point to some modification of expenditure patterns in rural areas in comparison with the same income groups in towns it is difficult, without carrying out a detailed and expensive survey such as was conducted in urban areas, to decide precisely what adjustments should reasonably be made.

We have suggested above that the total spending on blankets by urban households in 1972/73 was R132,500. Assuming an average blanket price of R5.50 this puts total sales at about 24,000. If we accept that average rural household income in 1973 was in the range R300 - 350, say R325, and, if we assume for these rural households the same expenditure pattern as for Strata 2 of the urban households then total rural spending in blankets would be R2.1 million, or 376 000 blankets. However in view of our previous discussion we think we should assume a higher level of expenditure on blankets in rural areas[7]. It would

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[7] It is also possible that we should use a higher average price for blankets purchased in rural areas, partly because rural consumers may tend to buy a larger proportion of the more expensive types of blanket and partly because blanket prices may be higher in rural areas, but we do not feel that we have sufficient evidence on these points to make any realistic adjustments.

seem reasonable to suggest that, with an average household income of R325, annual spending on blankets would lie between R15 and R20. If we use the lower figure the total rural expenditure would be R2.8 million, or about 500,000 blankets. This would mean that the total consumption of blankets in Lesotho would be about 525,000. If we use the higher figure of R20 total rural spending would amount to R3.7 million; the number of blankets to 682,000 and total consumption to 707,000.

2.1.4 Total consumption - Conclusions

We have attempted to estimate the total consumption of blankets using three different methods. We recognise the weakness of much of the data used and we are conscious of the frailty of some of the assumptions we have been obliged to make. Our examination suggests an annual consumption of 800,000 using the statistics of imports; between 580,000 and 740,000 on the basis of trade information, and applying the income/expenditure method a range between 525,000 and 707,000. On balance we consider that the last two methods are the most reliable and our judgement is that the annual consumption of blankets lies between 650 and 750,000. For the purposes of the remainder of this study we shall assume a figure of 700,000. In money terms the annual value of this quantity of blankets would be R4.5 million, assuming an average price of R6.5 per blanket.

2.2 Analysis of total consumption.

In this section we classify the blankets sold into a number of groups and detail the significant characteristics of the blankets contained within each category. In order to further our study we select from each group one or more blankets which we consider to be typical or representative of that group. In subsequent chapters we use these 'representative' blankets as the basis for estimating fibre requirements and generally for examining the feasibility of blanket production in Lesotho.

2.2.1 Classification of blankets

The stock list of the leading trading company in Lesotho details about 80 different makes or brands of blanket and if all the size variations are included the figure rises to over 160. Nor would this company claim to stock all the different blankets that are available. Clearly the range of blankets on sale in The Kingdom is considerable. However they may be classified into four fairly clear groups - Fashion blankets, Domestic blankets, Travelling rugs and shawls, and Grey blankets. We examine each group in turn.

Group 1. Fashion blankets

These are sometimes referred to as fancy, or Basotho, or tribal blankets but the term fashion is in common use and we shall refer to them as such. The vast majority of the blankets used by the Basotho as wearing apparel are of this type, the balance being rugs and shawls which we discuss later.

Fashion blankets are generally woven on Jacquard looms in powerful patterns and colour combinations often of double-weave construction giving a different colour on each side. The designs range from what appear to be fairly traditional patterns to modern ones incorporating aeroplane and gun motifs. New designs are introduced periodically both by the blanket manufacturers and by the leading trading company which has them made to its specification by the blanket producers. This trading company has a number of registered designs, such as the 'Sefate', the 'Victory', and the 'Victoria' which appear to be in good demand and command appreciable prices. Certain of the more highly-priced blankets are keenly sought after by some buyers because of the prestige which appears to accrue to the owners of such blankets. In recent years some blankets made on plush looms have been introduced, such as the 'Sandringham', selling at R55.00 but these form a very small part of total sales.

Almost without exception the fibre composition of these blankets is stated on the label. Practically all of them were made with a cotton warp. Some of the more expensive types contained about 90% wool. The lower-priced qualities had a much reduced wool content, for example, the 'Pitseng' with 27% and the 'Lilala' with 3%. The balance was made up mainly of rayon with some man-made fibre, usually of an unspecified type.

The normal adult size for fashion blankets is 150 x 160 or 155 x 165 cm. In the 'Lilala' quality a range of children's and maids' sizes is also made. Details of these are given later in this section.

The prices of the blankets range from R7.25 for a 'Lilala' (150 x 160 cm) to R29.00 for a 'Magician' or a 'Sandringham' at R34.00. In between these extremes are the popular 'Pitseng' or 'Standard' at around R10.50 and the 'Crown/Pitso' at about R15.75.

We estimate that fashion blankets account for about 50% of the total sales of all blankets. The 'Lilala' range forms about half the fashion blankets sold, or in other words, 25% of all blankets sold. The 'Pitseng/Standard' range is the next most popular forming 14% of the total sold. The 'Pitso' meets 6% of the total demand and 5% is taken up by the more expensive qualities and heavy blankets of the 'Mountain' type. We summarise below the significant features of the four categories of blanket that make up the fashion group.

The 'Lilala'

Sizes	75x80	75x100	85x90	100x110	110x115	115x120	130x135	150x160	cm
Area per blanket	0.60	0.75	0.77	1.10	1.27	1.38	1.76	2.40	m^2
Weight per blanket	0.36	0.45	0.46	0.66	0.76	0.83	1.06	1.44	kg
% Sales of each size	14	4	14	12	16	11	14	5	

Weight per m^2 - all the same at 578 g

Fibre composition - all the same - 3.2% Wool, 89.2% Rayon, 7.6% Cotton

Weight of one average Lilala blanket - 0.72 kg

Share of total market - 25% equivalent to 175,000 blankets.

The 'Pitseng'

Size	155 x 165 cm
Area	2.55 m^2
Weight per m^2	551 g
Weight per blanket	1.48 kg

Fibre composition - Wool 27.2%, Nylon 5.1%, Rayon 54.9%, Cotton 12.5%

Share of total market - 14% equivalent to 98,000 blankets.

The 'Pitso'

Size	155 x 165 cm
Area	2.55 m^2
Weight per m^2	563 g
Weight per blanket	1.53 kg

Fibre composition - wool 80.4% Nylon 7.8%, Cotton 11.8%.

Share of total market - 6% equivalent to 42,000 blankets.

The 'Mountain' types, etc. (more difficult to classify - these are the typical dimensions)

Size	150 x 160 cm
Area	2.40 m^2
Weight per m^2	700 g
Weight per blanket	1.68 kg

Fibre composition - assumed to be Wool 40%, Other fibres, mainly Rayon, 52%, Cotton 8%.

Share of total market - 5% equivalent to 35,000 blankets

Group 2. Domestic Blankets

These blankets are used almost exclusively for sleeping purposes. They are usually produced in plain pastel shades but invariably have one or two stripes of some contrasting colour at each end. Looms equipped with dobby or cam-operated shafts are used to manufacture these products. Quite a lot of different constructions are used, but the most common one is a simple twill sometimes woven with two different sides i.e. a double-weave.

Domestic blankets are made in about a dozen different sizes but by far the most popular are the single bed sizes of 150 x 180 cm and 150 x 200 cm. Prices in the 150 x 200 cm size typically lie in the 4 to 7 Rand range.

There are probably about 35 to 40 different qualities of domestic blanket on sale in Lesotho but certain ones sell particularly well and can be regarded as typical of the whole group.

First in terms of sales comes the 'Mona Lisa'. Its size is 150 x 200 cm and it weighs 1.75 kg. In terms of fibre composition it contains, on a cotton warp, about 6% of wool, 2% of nylon, and 86% of rayon.

Typical of another popular group are the 'Swallow', the 'Misty', and the 'Impala'. They are identical in size and weight to the 'Mona Lisa' but have a slightly different fibre composition.

Representative of a rather heavier blanket is the 'Comfy', of the same size as those above, but weighing 2.1 kg per blanket.

Finally there are the acrylic blankets which have become popular in recent years and may be expected to increase their share of the market in the future. These contain 95% acrylic fibre, usually on a cotton warp.

We estimate that domestic blankets account for about 20% of the total market, equivalent to 140,000 pieces. Details of the four categories that we have discussed above are given below:

<u>The 'Mona Lisa'</u>

Area per blanket	3 m^2
Weight per blanket	1.75 kg
Weight per m^2	570 g

Fibre composition % Wool 6.2, Nylon 2.2, Rayon 86.0, Cotton 5.2

Share of total market - 10% equivalent to 70,000 blankets

<u>The 'Swallow', etc.</u>

Area per blanket
Weight per blanket
Weight per m^2
} as for 'Mona Lisa'

Fibre composition % Wool 3.5, Nylon 5.0, Rayon 83.5, Cotton 8.0.

Share of total market - 4% equivalent to 28,000 blankets.

The 'Comfy', etc.

Area per blanket	3 m^2
Weight per blanket	2.1 kg
Weight per m^2	700 g
Fibre composition %	Nylon 5.0, Rayon 88.0, cotton 7.0

Share of market total - 2% equivalent to 14,000 blankets

Acrylics

Area per blanket	3 m^2
Weight per blanket	1.75 kg
Weight per m^2	570 g
Fibre composition %	Acrylic 93, Cotton 7.0

Share of market total - 4% equivalent to 28,000 blankets

Note: All the above blankets are size 150 x 200 cm.

Group 3. Travelling rugs and shawls

These products are mainly used as wearing apparel particularly by female Basotho. Rugs tend to be worn round the shoulders in winter and be replaced in summer by shawls often tied round the waist.

Rugs and shawls are generally woven on looms with dobby or ex center shafts and consequently have geometrical patterns. Both products usually have fringes. In the case of rugs these are formed from the warp yarns and hence there are fringes on two sides only. Shawls often have a fringe on all four sides, as do a few rugs.

In terms of fibre composition varying proportions of wool, cotton, and man-made fibres are used, with the rugs tending to be made of better material than the shawls.

Shawls are made in the following sizes: in cm, 125 x 110, 150 x 125, 150 x 150, 150 x 160 and 150 x 165, with the sizes around 150 x 150 being the most popular. Rugs are available in a rather more limited range of sizes i.e. 150 x 200, 175 x 225 and 180 x 230 cm.

The prices of shawls vary from R4.00 to R7.00 whilst rug prices show a much wider variation ranging from R5.00 to R20.00 but with the bulk of products in the R7.00 to R11.00 range.

We estimate that rugs and shawls account for about 15% of the total blanket market, equivalent to 105,000 pieces per annum, of which half are rugs and half shawls.

We selected the popular 'Welwitschia' shawl as being typical of its category, and our representative rug is based on a 'Waverley' product. Details of both of these are given below:

Travelling Rug

Dimensions	150 x 200 cm
Area	3 m^2
Weight	1.7 kg
Weight per m^2	550 g
Fibre composition	% Wool 85.00, Nylon 15.0.
Share of total market	- 7½% - equivalent to 52,500 blankets

Shawls

Dimensions	150 x 150 cm
Area	2.25 m^2
Weight	0.7 kg
Weight per m^2	302 g
Fibre composition	% Wool (re-used) 57.00, Acrylic 43.00
Share of total market	- 7½%, equivalent to 52,500 blankets

Group 4. Grey blankets

This category comprises grey and cotton blankets and the emphasis, in this section of the market, is on cost. The blankets, in various shades of grey or brown, are made from the cheapest materials available. The warp is cotton, though in some cases this may include some rayon to lower the cost even further, and the weft is likely to be made from cheap rayon or man-made fibre waste.

There are probably twenty to twentyfive different varieties of grey blanket on sale in Lesotho. They are made in the following sizes (in cm), although 150 x 180 and 150 x 200 are the most popular.

110 x 120	125 x 130	135 x 150	150 x 155	180 x 200	195 x 205	200 x 215
			150 x 180	180 x 230		200 x 220
			150 x 200			200 x 230

Prices vary from about R2.00 to about R5.00 although there are a few types lying outside this range.

Grey blankets account for about 15% of the total blanket market in Lesotho, equivalent to about 105,000 pieces.

We consider that the 'Super Grey' blanket is fairly typical of this section of the market and details of this product are given below:

Grey blankets

Dimensions	150 x 200 cm
Area	3 m^2
Weight	1.7 kg
Weight per m^2	570 g
Fibre composition	% Nylon 4.00, Rayon 88.00, Cotton 8.00
Share of total market -	15% equivalent to 105,000 blankets.

2.2.2 Summary

In Table 2.4 below we summarise our classification of the blanket market and we also give our estimate of the average prices of each category and for blankets as a whole.

Table 2.4 Classification of the blanket market and estimate of average prices

Group	Market share		Estimate of average price Rand
	%	'000	
1. Fashion Lilala	25	175	4.00
Pitseng	14	98	
Pitso	6	42	12.00
Mountain etc	5	35	15.00
	50	350	8.30
2. Domestic	20	140	5.00
3. Rugs and shawls	15	105	7.00
4. Grey	15	105	3.50
	100	700	6.70

We obtained samples of the representative blankets. These were tested and the laboratory report is included in Appendix A as Table A.15.

2.3 Trends in consumption and future developments

We were asked to show any apparent trends in blanket consumption and to forecast any likely future developments.

2.3.1 Trends in consumption

There is not sufficient reliable data upon which to base any detailed description of past trends or any confident forecast of future consumption. Our investigations, in particular our discussions with traders in Lesotho, would not suggest any significant trends in recent years. There appears to be some consumer resistance to the recent increase in the prices of blankets and this undoubtedly will have some effect on the total sales. Given the lack of data it is impossible to say how great this effect will be, but it seems reasonable to assume that the demand for blankets is relatively price-inelastic, and therefore the fall in sales will be small.

With regard to the future demand for blankets we do not anticipate any fall in total demand in, say, the next decade. The population of Lesotho is increasing at about 2.2%[8] and we do not expect any of the factors which have caused a stagnation in the blanket market in developed countries to operate in Lesotho in the foreseeable future. In ten years time Lesotho will still be a country of extreme temperature variations; the majority of its population are still likely to live in the rural areas and fuel will still be scarce and probably even more expensive. All these factors will tend to maintain the demand for blankets. On the other hand it seems almost inevitable that there will be some decline in the wearing of blankets as more Basotho adopt western-style dress. However, given the importance of the blanket in the culture of Lesotho, we would not expect this trend to have any significant effect on total consumption in the near future.

2.3.2 Future developments

We have given our views above on the future demand for blankets. We are concerned here with the product and technological aspects of change.

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[8] Annual Statistical Bulletin. 1972, Table 85.

A fairly recent development has been the production of blankets on plush-type looms. These blankets have had a mixed reception - some selling extremely well - others very poorly. At present they occupy a very small part of the market and although we think it likely that their share will increase somewhat in the future we do not anticipate that it will ever be large.

There appears to have been a fairly rapid increase in the use of acrylic fibres in blankets in the last few years. Acrylic blankets for domestic use have become popular and increasing quantities of acrylic fibre have been used in apparel blankets, largely at the expense of rayon and some nylon. We do not think that the use of wool, either virgin or re-used, will decline as some kind of moisture-absorbing material is essential to make a blanket comfortable to use. This increased use of acrylics does not raise any particular technical problems as these fibres can be processed on the same machinery as is used for the other man-made fibres.

2.4 Distribution of blankets

The distribution of blankets in Lesotho is somewhat complex. The wholesale trade is dominated by four large firms, three of whom have their headquarters outside Lesotho. These four firms have wholesale depots within the country and probably account for about 75% of the wholesale business. In addition other wholesalers from outside are active within the Kingdom. Furthermore some of the larger retailers are able to buy direct from the blanket manufacturers and thus by-pass the wholesaler. All these supplies enter Lesotho by a variety of routes. Some are delivered from depots in the SACU to wholesale depots in Lesotho for re-distribution to the retail section. Others are delivered direct to the retail trader from depots in towns just across the border, such as Fouriesburg, Ficksburg, Wepener, etc. Finally some blankets move by various channels direct from the manufacturer to the larger retailers.

The main function of the wholesale firms is, of course, to supply the retail traders but some of themalso operate stores and trading stations dealing direct with the consumer. For example the largest trading company has eleven wholesale depots, three of which are in Lesotho; one hundred and sixty retail outlets, fifty of which are in Lesotho and in addition serves over one thousand traders. These figures indicate not only the extent to which this company is involved in the retail side but illustrate the fact that most of the company's interests lie outside Lesotho. This is true of three of the four large wholesale firms. In other words these companies have a well-developed distributive organisation going far beyond the boundaries of Lesotho.

This brief review of the distribution arrangements in Lesotho tends to confirm our view expressed in Section 1.3 that it is easier to supply the Country from a number of points rather than distribute from one or two depots. This situation and other factors suggest that, should a blanket factory be established in Lesotho, then there would be much to be said in favour of it using the established distributive system provided by the present wholesalers. They have considerable knowledge and experience in this field. They distribute blankets along with other goods thus reducing transport and other costs, and, very important, they have access to wider markets outside Lesotho.

2.5 Costs and prices

2.5.1 Costs, wholesale and retail prices and margins

Table 2.5 shows the cost, and the wholesale and retail prices and margins of a selection of blankets. It is based on information obtained from a variety of sources. The cost refers to the price charged by the major supplier for blankets delivered to the Lesotho border. This supplier only accepts large orders upon which he gives

a discount of 10%. The wholesale margin is the percentage mark-up on this lower price. The retail price is the price at which the blankets are sold in the lowland towns.

The wholesale margin on cost varies from 4 to 15%. If we take into account the share of the different groups of blankets in the total we estimate the average mark-up to be about 9%.

The figures in the table show a retail margin ranging from 35 to 44%. This latter figure is somewhat exceptional. The typical range for all blankets is from 35 to 40%, the mark-up varying because of the need to have a convenient selling price based on a multiple of 25 cents, or the desire of the retailers to establish a range of appropriate prices over a number of sizes or qualities. The only prominent exception to the 35 - 40% margin appears in the fashion blankets. Here the cheaper blankets tend to have a larger margin than the very expensive types e.g. the small Lilala sizes with a retail price of between R2.25 and R4.75 have a mark-up of just over 40% whereas the Magician, the Sandringham, and the Victoria retailing at R29.00, R34.00 and R26.00 respectively have 20 to 25% added to the wholesale price.

If we combine the wholesale and retail margins we get a total mark-up from cost to retail of 40 to 55%. We do not consider that this overall margin is unreasonable.

Table 2.5 Costs, wholesale and retail prices of blankets and margins. Prices in Rand.

Type of blanket	Size	Cost		Wholesale		Retail	
	cm	Mill	Less 10%	Price	Margin %	Price	Margin %
Fashion							
Lilala	150 x 160	5.69	5.13	5.33	4	7.25	36
Pitseng	155 x 165	7.70	6.60	7.55	14	10.50	39
Pitso	155 x 165	11.20	10.08	11.50	14	15.75	37
Major	155 x 165	6.12	5.51	5.78	5	7.95	37
Domestic							
Mona Lisa	150 x 200	3.15	2.84	2.97	5	4.00	35
Swallow	150 x 200	2.92	2.54	2.69	6	3.75	40
Misty	150 x 200	3.47	3.13	3.28	5	4.50	37
Impala	150 x 200	4.30	3.78	4.04	7	5.75	41
Demon	150 x 200	5.40	4.86	5.05	4	6.75	34
Harcot (Acrylic)	150 x 200	4.32	3.80	4.38	15	6.15	40
Rugs							
Waverley	150 x 200	6.80	6.12	6.98	14	9.75	40
Erne	150 x 200	14.50	13.05	14.65	12	20.25	38
Shawls							
Welwitschia	150 x 160	4.16	3.75	4.23	13	5.75	36
Kalahari	150 x 150	3.70	3.33	3.78	13	5.25	39
Traveller	125 x 110	2.75	2.48	2.81	13	3.95	40
Greys							
Super Grey	150 x 200	2.38	2.15	2.42	12	3.50	44

2.5.2 Regional price variations

The prices of blankets appeared to be fairly uniform in the lowland towns. The leading trading company informed us that their policy was to charge the same prices for blankets in all such areas. In any case in these urban areas there are sufficient numbers of outlets to ensure that competition keeps prices at reasonable levels.

We were informed on a number of occasions that prices were much higher in the rural areas, and particularly so in the more inaccessible regions. Time did not permit us to investigate this matter fully but we did visit Mokhotlong, a small town in the mountains, in order to compare prices there with those in Maseru. The results of our findings are given in Table 2.6 below.

Table 2.6 A comparison of blanket prices in Mokhotlong and Maseru

Type of blanket	Price (Rand)		% Difference Mokhotlong over Maseru
	Mokhotlong	Maseru	
Fashion			
Pitseng	14.00	10.50	+ 33
Sefate	21.50	17.50	+ 23
Sandringham	36.50	34.00	+ 7
Pitso	16.75	15.75	+ 6
Victory	16.00	16.50	- 3
Lilala 150 x 160	7.00	7.25	- 3
100 x 110	3.00	3.50	- 14
Standard	9.50	10.50	- 9
Domestic			
Demon	6.00	6.75	- 11
Connoisseur (Acrylic)	14.75	14.15	+ 4
Shawl			
Kalahari	5.00	5.25	- 5

It is difficult to draw any firm conclusions from this limited data. First, our visit took place at the end of the main blanket selling season. Stocks were clearly at a low level and possibly some prices reflected seasonal adjustments. It may also be that Mokhotlong is not typical of the remoter regions, for the presence of at least four stores in the town ensured a fair degree of competition. However, accepting these qualifications, the data does suggest that generally the higher-priced blankets appear to be dearer in the mountains as compared with the lowlands and the cheaper ones appear to be selling at lower prices as compared with Maseru. We were not able to investigate the reasons for these differences but it seems likely that the traders recognise two sections of the market. In the one containing the high-priced fashion blankets they can increase their margins. (Prestige or scarcity factors are important in the case of all the first four blankets listed above) but in the section containing the cheaper products they are obliged, because of the nature of the demand, to accept lower prices.

Our investigation of regional price differences was very limited. We were not able to determine if the pattern found in Mokhotlong was typical. However, given the difficulty of communication in many parts of Lesotho and the monopoly position which many traders must of necessity occupy in the remoter areas, it would seem almost inevitable that prices in these areas will be well above those prevailing in the lowland towns.

2.6 Present sources of supply and the market for blankets in the SACU

There are three reasons why it is necessary to examine in some detail the present sources of supply of blankets to Lesotho and the market for blankets in the SACU.

First, it is not likely to be in the economic interests of Lesotho to produce blankets unless they can be manufactured at the same or lower cost than those of present suppliers. It is indeed one of the central tasks of this study to compare the estimated costs in Lesotho with those of current producers, and as part of this process we need information about the latter. Some of this we provide in this section.

Second, we have to see the possibility of producing blankets in Lesotho in the context of the total blanket market of the SACU. Production of blankets in Lesotho will add to the total supply of blankets to this market. How big this new slice of output is in relation to the total market will determine the extent of the market adjustment required. Clearly, for example, if the output from Lesotho was a large proportion of the present total output the market adjustments required in terms of reductions in price or output, or both, would be greater than if the new output was a small proportion of the present total. Information is therefore needed about the size of the present market and about the number and size of firms supplying that market, for the structure of the industry may have an important bearing on the reaction of established firms to the new entrant, i.e. the producer in Lesotho.

Third, it is not possible for one mill to meet the blanket needs of Lesotho and simply concentrate on the requirements of that market. One mill could not economically supply the variety of blankets demanded and even if it could do so it could not hope to take the complete market from established suppliers. A mill in Lesotho will have to limit its range of products and sell some of its output in the domestic market and the balance in other countries of the SACU. We therefore need information on the blanket market in Southern Africa.

2.6.1 Present sources of supply - the blanket industry in the SACU

Almost all the blankets consumed in Lesotho are manufactured within the SACU. There are a few blankets on sale in Lesotho which are made in England but these form a minute proportion of the total.

The total output of blankets in 1973 from firms within the SACU was 12.7 million. The industry consists of 8 firms operating 15 plants in total[9]. Three of the firms are extremely small employing less than 100 persons each, so the bulk of the industry consists of 5 firms comprising 12 mills with a total employment of about 8500. The industry is dominated by the Frame Group of companies which controls 8 of the 12 establishments referred to above and is responsible for about 90% of the total output. In addition it has blanket mills in Malawi, Rhodesia and Zambia. It is reputed to be the largest firm of blanket manufacturers in the world. The head of the Frame Group, Mr. Philipp Frame, has a very considerable reputation within the SACU as a tough and shrewd businessman who does not lightly tolerate any developments which threaten the established position of his companies. In this connection, and of interest to our purposes, is the announcement that Pep Stores, who operate about 270 stores in the SACU (including one in Maseru) are about to start blanket production[10]. The plant, to manufacture about 1 million blankets a year, is expected to be completed in July 1975 and reach full production in 1976. The blankets will initially be sold through the group's retail outlets, with the possibility of selling to other retailers at a later stage. It is many years since a new firm of this size has entered the blanket market and there is much speculation in the SACU as to what the reaction of Mr. Frame will be to this new venture.

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9 The sources of this information are: The Industrial Census, 1967/68, and the Bureau of Market Research Industrial Directory.

10 'Will Frame respond to Pep's blanket venture?', Southern Africa Textiles, Johannesburg, August, 1974.

There is no reliable information on the number and types of machinery and equipment in use. Such information as we have suggests that the majority of the weaving equipment is old but some re-equipment has taken place very recently, including the installation of a number of wide shuttleless weaving machines.

2.6.2 The blanket market in the SACU

Table 2.7 shows the production of blankets in the SACU from 1963 to 1973. There are some imports but these are relatively small[11] and for our purposes we can regard these production figures as representing the total market.

Examination of the total figures shows that, whilst there have been considerable fluctuations from year to year, the average annual rate of growth has been just under 5% per annum. The indications are that the period 1974 to 1976 will be one in which demand will stagnate, with some fall in consumption in 1974 and 1975 and slight growth in 1976.

The output of the blanket industry has expanded steadily over the years to meet the increasing demand. There is no shortage of capacity in the industry. In fact at the present time there is evidence of growing under-utilisation of machinery because of the slowing down in the rate of growth, or even decline, of the market. We should note here that the entry of Peps Stores in 1976 with an output of about 1 million blankets will further widen the gap between capacity and demand.

We were not able to carry out a detailed survey of the market for blankets outside Lesotho but in relation to our study the following two points are relevant.

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11 The import tariff on blankets is 25% ad valorem or between $6\frac{1}{2}$ and $11\frac{1}{2}$ cents per pound (depending on fibre composition) whichever is the higher. It is believed that this is to be raised in the near future.

Table 2.7 Production of blankets in the Southern Africa Customs Union. '000 blankets

Year	Wool	Wool blend	Cotton & Rayon Mixtures	Rayon	Others	Total
1963	245	711	3500	2603	833	7892
1964	317	863	3488	2657	938	8263
1965	341	918	4125	3140	986	9510
1966	340	1141	4081	3514	620	9696
1967	367	1485	3925	3987	541	10332
1968	378	1201	3374	4279	616	9848
1969	515	1388	2959	4827	1077	10466
1970	709	1575	2624	4268	1124	10300
1971	826	1899	3465	4135	994	11319
1972	770	1894	3956	4277	906	11803
1973	260	1918	4478	4985	1081	12722

Source: Quarterly Bulletin of Statistics, Pretoria

First, in general the types of blankets bought outside Lesotho are the same as those consumed within the country. This is certainly true of the domestic and grey types. The typical Basotho blanket i.e. the fashion type, is not widely purchased in other areas of the SACU but there is a good demand for such blankets from Africans living in areas adjacent to Lesotho and from Basotho who are working in other parts of the SACU.

Second, it is clear that many of the big buyers of blankets, such as the retail chains and the leading companies within the SACU, are dissatisfied with the policies pursued by the major blanket producer and would in principle welcome new sources of supply. We should not conclude from this that the market for blankets would be 'easy'. Even assuming that a mill in Lesotho could compete on price and quality it would only be able to supply a small proportion of the needs of these buyers either in terms of the quantities or types of blanket required. In these circumstances the monopoly supplier might well put pressure on the buyers by threatening to restrict supplies of other blankets to them unless they confined all their purchases to him. On the other hand some of these buyers purchase appreciable proportions of the supplier's output and may well be able to resist such pressures. The success of a mill in Lesotho will clearly depend to some extent on the reaction of the established major producer. There are a number of possibilities and we return to this matter in Chapter 4 when we discuss the basic question of feasibility.

CHAPTER 3

THE RESOURCE REQUIREMENTS FOR BLANKET PRODUCTION

2.7 Conclusions

We have examined the market for blankets and related matters. Our main findings are, that the annual consumption of blankets in Lesotho is of the order of 700,000 pieces; that these are mainly supplied by one manufacturer who dominates the blanket industry in Southern Africa, and that there is a very large market for blankets outside Lesotho in other countries of the SACU.

Our conclusions are that a mill in Lesotho must regard its total market as that of the SACU and not be exclusively concerned with domestic demand. As we have already said above one mill could not economically supply all the variety of products required in Lesotho, nor even if it could meet that requirement, could it hope to completely take over the market from existing manufacturers. The major market difficulties facing a mill in Lesotho are the presence of a dominating supplier, uncertainty about his reactions to the entry of a new producer, and the problems associated with the over-capacity which is likely to exist in the blanket industry during the next few years.

CHAPTER 3

THE RESOURCE REQUIREMENTS FOR BLANKET PRODUCTION

In this chapter we give information on the resources which are required for the production of blankets and examine the availability of such resources in Lesotho. Section 3.1 discusses blanket production in general, dealing with the raw materials required, the technology involved and the economic aspects. In Sections 3.2 to 3.9 we look at the situation in Lesotho and consider raw materials, human resources, services, etc. Section 3.10 deals with location.

3.1 Blanket production in general

3.1.1 Raw materials

Before the advent of synthetics wool was the main raw material used for the manufacture of blankets. In the industrially developed countries this was predominantly cross-bred type wool. It was either local or imported, usually from South America, and had a fibre diameter of around 28μ. Wool of this diameter will give a fairly soft blanket with a springy, airy texture. In developing countries local wool was also used but this was often coarser in diameter.

Virgin wool has always been a fairly expensive raw material and often re-used wool and cheaper fibres such as cotton were (and still are) used in order to reduce the price. These cheap blankets were often woven with a cotton warp and a coarse woollen spun weft of low quality.

With the introduction of regenerated and synthetic fibres, this type of new raw material has come to be used in blanket manufacture. Low quality rayon is mixed with a small proportion of wool, acrylic (polyacrylonitrile) fibre, nylon or similar material to make cheap blankets. Rayon can also be used in the warp yarn, either mixed with cotton, or by itself. For domestic uses blankets of 100% acrylic fibre in the weft are used more and more.

Thus wool is not necessary for producing blankets, but even in rather low quality blankets there is usually a small proportion of virgin or reclaimed wool in order to introduce a springiness to the blanket and give it an open and airy texture. The crimpiness of the wool fibre, which is retained after washing, will make a blanket with a proportion of wool, less heavy and compact, leaving it lighter, fluffier, and softer to the touch.

3.1.2 Technology

Blankets are generally woven fabrics and are consequently manufactured by combining two systems of threads, warp and weft. As we have said above, before synthetic fibres came to be used as spinning material, wool was the usual raw material for both warp and weft. This is still the case for very exclusive and lightweight blankets. The main bulk of blankets is today made with a very fine warp yarn mostly of cotton or synthetic fibre. The weft is much coarser and can consist of wool, mixtures of wool and synthetic or rayon fibres, or entirely of the two latter types of fibre. If rayon is used it is generally mixed with a small percentage of synthetic fibres like nylon, polyester or acrylic fibre. The fibres used are not necessarily virgin or new and often the spinning material for the weft yarn is made up of reused material, stemming from rags, waste from other processes, etc.

Cotton yarns need to be produced on a large scale in order to reduce the cost. Hence a blanket manufacturer will normally buy his cotton warp yarns from specialist cotton spinning companies rather than producing them himself.

On the other hand, the weft yarn should be produced by the blanket manufacturer. The whole economy of making the coarse weft yarn necessary for blankets lies in the skilful blending of raw materials. The manufacturer must make a blend which, though using cheap materials, will still produce a yarn that is strong enough and good enough to make a blanket of acceptable quality and at the appropriate price. The subsequent processes of spinning and weaving need to be carried out as economically as possible but they are not as important for successful blanket manufacture as the initial selection and mixing of raw materials.

Yarns for blankets are generally spun by the woollen spinning system. We disregard in this context warp yarn of cotton. In the woollen system the components of raw materials used in the blends are mixed either by hand, or in countries with high wages, by fairly complicated and expensive mixing machinery. In a country like Lesotho it will not pay to use blending machinery of this type for two reasons:

1. Any blanket mill we can foresee in Lesotho is too small for an automatic blending unit.

2. The wages in Lesotho are low and it is cheaper to make the blend by hand rather than by machine.

After the blending the material is put into big carding machines and in the carding a number of things happen to the raw material. The card consists of a number of cylinders covered by so-called card clothing equipped with a large number of tiny pins. Between the

surfaces of the cylinders, which have a different surface speeds, the material is opened up, fibres are made parallel and to a certain extent mixed. The material will emerge from the last cylinder as a fine web of parallel fibres. In the woollen spinning system this web is divided into strands by a device attached to the carding machine called a tape condenser. The carding web is consequently divided into a number of equally wide and heavy strands which are wound up to a kind of crosswound package which is used as a yarn or roving in the subsequent spinning operation.

The spinning is done on conventional spinning frames and because the yarn is fairly coarse the bobbins produced on the spindles are fairly big. The bobbins can be used in the weaving department, with or without rewinding, depending on the type of weaving machinery employed.

Cards used in the woollen system are very expensive, and it is essential that these cards are used on three shifts and at the maximum production per machine-hour in order to reduce the cost of the yarn. A modern card will produce about 100 kg/h and consequently it is of importance that the production in a woollen spinning mill is proportional to a multiple of this production.

The spinning frames used in the woollen manufacture are also very expensive. Every ring spinning frame has a number of spindles, and this number can be adjusted to suit the production of yarn per hour. If the number chosen is such that all the spindles are fully occupied for three shifts then capital costs per kg of yarn will be minimised.

The weaving of blankets is a fairly straightforward process. Ordinary shuttle looms are used. The only difference from ordinary looms found in other trades of wool manufacture is

that shuttles with big solid cops are used in blanket looms, making these machines fairly slow producing. Blankets are generally woven as plain weaves, or as twills. If a blanket with a different colour on the reverse side is required, then simple two-weft cloth constructions are used. Very often blankets have big patterns, and if a multi-colour pattern is required, a loom with shuttle boxes on each side of the reed is necessary. Such fabrics are characterised by a change of weft yarn for each single weft thread being inserted into the fabric.

Today, fabric making machines other than the ordinary shuttle looms are available for blanket manufacture. There are a number of different types of shuttleless looms, which are characterised by a special weft inserting arrangement. The weft is drawn into the warp thread shed by other means than by a shuttle. As the inertia of the shuttle is the main reason for the low speed of the shuttle looms, these 'shuttle-free' looms work faster. Depending on construction, modern types of weaving machines are divided into rigid-rapier looms, flexible-rapier looms, and gripper-shuttle looms, just to mention the most commonly used types.

'Shuttle-free' looms are much more expensive, but more productive than shuttle looms. The choice between the two will largely depend on the cost of labour. In countries where labour is expensive then 'shuttle-free' looms will give lower production costs. Where wages are low the situation is reversed.

A disadvantage of modern shuttle-less weaving machines is that true selvedges are not formed. The selvedges are usually not stable enough to be used in the finished blanket and consequently blankets made on modern machinery have to be bound, by means of a tape or a ribbon, which is folded along the edges and stitched. On very cheap blankets, this is an extra cost to be considered.

The preparation of warp and weft before weaving will offer no technical difficulties. The warping can be made on an ordinary warping machine of the normal type. The weft preparation, in the case of solid cops, is made on quite normal cop winding machinery.

It should be pointed out that many blankets have a big, complicated pattern, which cannot be produced by using shafts in the loom. In this case a jacquard machine must be used in order to give the shedding necessary for these complicated patterns. Because the blanket weave is of fairly coarse construction only a fairly cheap jacquard with a restricted size is used. Even so, jacquard patterns are a little more expensive to produce than plain patterns, obtained by using shafts for the warp shedding.

The finishing of blankets will differ widely depending on the quality of the blanket. Very expensive, all-wool blankets will have a fairly complicated finishing procedure. The very cheap blankets on cotton warp and with a very low quality weft might just be given a steaming with or without previous raising.

Normal blankets, as sold in Lesotho, will need to be finished by washing, drying, some form of raising, and by steaming. The washing is generally done in order to remove impurities and to relax the blanket. The raising will add a certain amount of nap which is needed in order to produce warmth and give the blanket a soft surface. In steaming the blankets are treated in a machine where steam is blown through them and they are brushed at the same time by roller brushes. This will ultimately give a certain amount of 'set' to the blanket and reduce shrinkage in household washing.

3.1.3 The economic aspects

In Section 3.1.1 above we have discussed in general terms the raw material side of blanket production and in Section 3.1.2 we have outlined the technology involved. Here we consider the economic aspects and in particular the question of the economic scale of blanket production. These matters are of concern to us in that we have eventually to decide on the scale of output for a blanket mill in Lesotho.

We can look at the problem by comparing the costs for different sizes of mill. From the technical point of view the production of blankets requires at least one carding machine plus the equivalent spinning spindles and looms. (In addition we require appropriate dyeing and finishing equipment). A large mill will simply be a multiple of the smaller mill. There will be no change in technology and provided that there is a correct balance between the different types of machinery then the costs of production will not differ between mills of different sizes. However a large mill will gain economies over a small one in a number of ways. It will be able to reduce costs by processing larger batches of material thus cutting down on changeover time, etc. and permitting greater specialisation by personnel, machinery, and departments within the mill. Overheads can be spread over a greater output and both raw materials and other supplies can be bought at lower prices. Some of the above advantages will be even more marked where a firm operates a number of mills for it will then be possible to concentrate production of a limited number of qualities in each of the firm's establishments. Mills producing a few products, each in some quantity, are much easier and cheaper to manage than those that make small quantities of a wide variety of qualities. It should be noted that many of the above advantages gained by the large mill are based on its ability to process large quantities of material. Where this is not possible, say because of market considerations, then the small unit will be able to compete on more equal terms with the larger one.

It is not easy to quantify the costs of production of blankets at different scales of output. A fairly recent study[1] suggests that the maximum economies in the spinning of woollen blanket yarns will be attained with an output of about 5500 kg per hour. At half this output, 2750 kg. then costs would be about 2% up, at 1200 kg about 7% up, and at 800 kg about 13% higher. The position is similar with regard to weaving though the advantages of large scale production are less marked. If we combine spinning and weaving and think in terms of numbers of blankets then the position is probably something like this. The lowest costs are given with an output of about 7 million blankets a year; at half this scale, costs increase by 2 to 3%; around 1 million costs are up by 7 to 10%, and at 5 to 600,000 they are likely to be 15 to 20% above the minimum possible. We should note that these figures relate purely to production costs. They do not include any allowance for the buying advantages that a large mill may have. We should also remember that the estimates relate to modern mills in Europe, and whilst the general picture presented is likely to be the same in Southern Africa, we should not expect detailed conformity.

Before we consider the size of mill to be established in Lesotho it is interesting to look at the sizes of mills currently in operation in the SACU. We have employment figures for these mills and, assuming that output is related proportionately to the numbers employed the following is the approximate position with regard to size of output.

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[1] National Economic Development Office, The strategic future of the Wool Textile Industry, H.M.S.O., London, 1969.

The largest mill produces around 4 million blankets a year. There are four establishments making around 1.2 million each; two with 1 million each; three with 800,000 each and two each producing 600,000. Thus there are no mills in Southern Africa likely to have the very lowest costs. Compared with the largest mill, producing around 4 million blankets, a mill producing 1 million is likely to have a 5 or 6% cost disadvantage and a mill making 5/600,000 blankets one of 13 - 14%

With regard to the size of mill for Lesotho we have decided to assume at this stage that it will produce about 600,000 blankets a year and in all our future calculations we shall use this figure. An output of this size will enable us to have a balanced mill in terms of machinery and equipment. The capital cost will be around R 2.2 million. We appreciate that a plant of this size is likely to be at some cost disadvantage compared with much larger units but generally we think Lesotho should, if possible, start in a relatively small way and if feasible grow later. We return to this question of size in Section 4.5 when we consider feasibility. We shall then consider the possible effects of changes in the size of mill.

3.2 Raw materials

Assuming an output of 600,000 blankets a year and a composition of qualities based on the present Lesotho market the annual raw material requirement will be 950,000 k.g. The breakdown of this total is given in Table 3.1

Table 3.1 Annual consumption of raw materials for a mill producing 600,000 blankets

Group	Quality	Raw materials										
		Total '000 kg /year	%					Annual consumption '000 kg				
			Wool	Nylon	Rayon	Acrylic	Cotton	Wool	Nylon	Rayon	Acrylic	Cotton Y
1. Fashion blankets	1.1 Lilala	130	3.2	-	89.2	-	7.6	4.2	-	116.0	-	9.8
	1.2 Pitseng	149	27.2	5.1	55.2	-	12.5	40.6	7.6	82.2	-	18.6
	1.3 Pitso	66	80.4	7.8	-	-	11.8	53.1	5.1	-	-	7.8
	1.4 Mountain	82	43.9	-	52.1	-	4.0	36.0	-	51.2	-	4.8
2. Domestic	2.1 Mona Lisa	126	6.2	2.2	86.0	-	5.2	7.8	2.8	108.8	-	6.6
	2.2 Swallow etc	42	3.5	5.0	83.5	-	8.0	1.5	2.1	35.1	-	3.4
	2.3 Comfy etc	21	-	5.0	86.0	-	7.0	-	1.0	18.5	-	1.5
	2.4 Acrylics	42	-	-	-	93.0	7.0	-	-	-	39.1	2.9
3. Travelling	3.1 Rugs	92	85.0	15.0	-	-	-	78.2	13.8	-	-	
	3.2 Shawls	38	57.0	-	-	43.0	-	21.7	-		16.3	
4. Greys		184	-	4.0	88.0	-	8.0	-	7.4	162.0		14.7
Total		950	24.1	4.2	58.4	5.9	7.4	231.1	39.8	553.8	55.4	70.1

Y = all cotton is in the form of 2-fold yarn

3.2.1 Wool

Table 3.2 below gives details of the production of wool in Lesotho in recent years and Table 3.3 shows the production by district in 1972/73

Table 3.2 Wool production in Lesotho

Year	Bales Number	Weight kg	Sales value M Rand	Average price c/kg	Clean yield %
1959/60	20,628	3,297,000	1.61	50.2	38.0
1964/65	26,130	3,710,000	1.61	41.9	37.7
1969/70	31,295	4,5[illegible],000	1.62	35.4	35.0
1970/71	27,761	4,1[illegible],000	0.96	23.1	n.a.
1971/72	23,904	3,6[illegible],000	3.53	96.2	n.a.
1973/74[1]	21,858	3,0[illegible],000[2]	2.85[3]	93.2	38.7

Source: Wool Board, SACU

1. Preliminary according to 15 pools
2. 16 pools (Pool 152-168, [illegible] trading types)
3. First payment R 1,548,87 : second payment not noted (75%)

Table 3.3 Wool production by district - 1972/73

District	Weight kg	%
Mafeteng	192,000	5.2
Maseru	1,045,000	28.4
Mohaleshoek	214,000	5.8
Quthing	217,000	5.9
Quachas Nek	544,000	14.8
Leribe	567,000	10.0
Buthe-buthe	377,000	10.3
Mokhotlong	220,000	6.0
Unallocated	498,000	13.6
	3,675,000	100.0

Source: Wool Board, SACU

The figures given above for the production of wool are based on levies paid to the Wool Board in the SACU and must be treated with reserve. Communications in many parts of Lesotho are poor, especially in the mountainous eastern parts where there are no truck-roads, and quite a lot of the clip is transported over the border on pack horses.

This quantity is not covered by the statistics of the Wool Board. Another estimate[2] gives a total clip for Lesotho of 4 M kg for 1973/74 and a yield of 36%. We should note that this quantity is 30% higher than that given in Table 3.2 above.

The Wool Board have produced a 'Type list' for the 1974/75 season. Table 3.3 is derived from this list and shows the quantities of the different types of wool which may be expected from the forthcoming clip.

Table 3.3 Estimate of types of wool - 1974/75 Season

Type of wool	Weight kg	%
Top making group	283,801	9.3
Fleece wool	1,161,542	38.0
Bellies, pieces, locks	775,542	25.3
Coarse and coloured	838,015	27.4
	3,058,571	100.0

Source: Wool Board, SACU

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[2] By Dr. Phororo of the Livestock Marketing Board.

We cannot however accept these figures without taking into account the work currently being done by the Livestock Marketing Board in cooperation with the Wool Board. By the end of 1974 about 100 shearing stations will have been established all over Lesotho. The objective is to collect the clip in these government stations and have the wool graded immediately. It is of prime importance that the wool is sorted at the shearing stage, for subsequent sorting cannot completely remedy mistakes which are made earlier. The result of these developments will be that the better wools will not be mixed with the lower grades and a higher average price will be obtained for the clip as a whole. It will mean that a higher proportion of the total will consist of the better qualities of wool e.g. at least 20% will be top making types as compared with only 9% previously, etc.

Table 3.4 gives some revised estimates, taking into account these new developments, and is based on a total clip of 4.0 M kg greasy wool a year.

Table 3.4 Estimate of types of wool by end-use - 1974/75 season

Type of wool by end use	Greasy M kg	% of Greasy Weight	% Yield	Clean M kg	% of Clean Weight
For top making	0.84	21	42.5	0.36	25
For fine woollen yarns	1.96	49	34.6	0.66	47
For coarse woollen yarns	1.20	30	33.3	0.40	28
	4.00	100	36.0	1.42	100

Source: Estimates made by the Livestock Marketing Board and the Wool Board.

Having established the quantities and types of wool produced in Lesotho we can now turn to the question of their suitability for use in blanket manufacture. Lesotho wool is a fine wool of the merino type, the fibre diameter of the bulk of the clip being about 20 - 21 μ. It is also a very soft wool, imparting a soft 'handle' to fabrics made from it. In some cases it can replace 'lambs' wool in products where extreme softness is required. Lesotho wool is excellent for mixing with synthetic fibres e.g. in blended fabrics for mens wear. It has valuable uses in the fine woollen trade, especially in making cloths of the flannel type, and because of its good felting properties it is used extensively in the manufacture of felts for hats. When blended with other types of wool e.g. Australian, it produces good knitting yarns.

Wools of this quality are not normally used by European blanket manufacturers. They use a coarser, stiffer and more 'springy' wool e.g. a South American crossbred wool with a diameter of about 28μ. In the Southern part of Africa coarse wool like Karakul is used for some blankets. The prices of these low quality blanket wools are much lower than those for the top making and fleece (for fine woollen yarns) wools from Lesotho. New Zealand wool, 50 - 52s, 28 - 30μ will cost cif Durban 1.65 - 1.80 R/kg and Buenos Aires, Montevideo or Punta Arenas wool, 50s, staple 2 - 2½", 1.45 R/kg. These prices may be compared with 1.90 R/kg for Lesotho top making wool and fleece wool at 1.65 R/kg

However the traditional Basotho blanket is of a softer 'handle' and not so springy and airy as the European one. This means that the finer and softer Lesotho wool could be used to form the wool component of the blankets produced in Lesotho. The wool to be used would be that suitable for coarse woollen yarns as shown in Table 3.4.

On the basis of a mill producing 600,000 blankets a year, Table 3.1 shows that 251,000 kg of wool would be required. 400,000 kg of suitable wool is available. This would leave a surplus of 170,000 for export along with all the top making wools and the wools for fine woollen yarns. We estimate the price of the wool to be used for blankets at US ¢ 1.89/kg and we have used this figure in our calculations in Chapter 4.

3.2.2 Man-made fibres and rayon

Table 3.1 above shows that the requirement for man-made fibres and rayon is roughly as follows, in tonnes:

Nylon	40	-	4 denier
Rayon	554	-	2.5 or 6 denier
Acrylic	55	-	4 denier

These fibres are obtainable in three forms - as first quality staple as sub-standard staple, and as waste. The latter two types are the cheapest and are perfectly satisfactory for producing the type of blanket we are concerned with. None of these fibres are produced within the SACU and there are very limited supplies of waste. The bulk of the fibres needed would therefore have to be imported. There are no tariffs on such imports. Suitable fibre and waste can be obtained from a very wide variety of sources throughout the world

The prices we have adopted and use in Chapter 4 are as follows:

Nylon	US ¢1.60/kg
Rayon	US ¢1.25/kg
Acrylic	US ¢1.30/kg

These prices are based on information obtained from sources in Europe, North America and the SACU. The prices of all textile fibres have fallen considerably in the last six months. The prices we use are those prevailing in Southern Africa before this fall took place[3] and they are prices which a relatively small mill in Lesotho would have to pay to obtain the stated quantities. In the context of this study the relationship between the price paid for raw materials and the quantity purchased is an important one. In Chapter 2 we pointed out that the blanket industry in the SACU was dominated by the Frame Group who produce about 90% of the blankets. In 1973 this probably amounted to about 11 million pieces. Assuming an average weight of blanket of 1½ kg this would mean a total raw material requirement of about 16,500 tonnes, compared with about 880 tonnes for a mill in Lesotho. This gives the Frame Group a considerable advantage. We were reliably informed that they are frequently able to buy at up to 20% and more below the normal market price. We will return to this matter when we consider feasibility in Chapter 4.

3.2.3 Cotton yarns

We estimate that a mill producing about 600,000 blankets would require about 70 tonnes of cotton yarn. Within the SACU there is only one independent cotton spinning firm. The remainder of the spinning capacity is controlled by the Frame Group. We do not think that a mill in Lesotho can rely on this latter source for its supplies of cotton yarn. Unfortunately the independent firm has limited capacity, and whilst it could at the present time supply yarns as trade is currently depressed, normally it would not be able to do so. In these circumstances we think that the cotton yarns will have to be imported. Such two-fold yarns bear an import tariff of 25% ad valorem.

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[3] This is the raw material price upon which we presume the prices of present supplies of blankets are based. If we are to compare Lesotho and present suppliers' prices then we must, as far as possible use the same raw material price.

In subsequent parts of our study we use the following prices for cotton yarns:

Nm 10/2 - R 1.97/kg
Nm 12/2 - R 2.03/kg

3.3 Human resources

3.3.1 The supply of labour

A blanket factory in Lesotho would require the following broad categories of labour. The actual numbers would of course depend on the size of mill.

	Category	Approximate number	Nature of duties
1.	Unskilled	a few	general duties, movement of materials, etc.
2.	Skilled and semi-skilled operators	fairly large, the majority of the work force	machine minders, e.g. weavers, spinners, warpers, pirn winders, etc
3.	Skilled technicians	a few	machine setting, repairs, maintenance, etc
4.	Supervisors or foremen	a few	general supervision
5.	Management	a few	technical and commercial management

With regard to categories 1 and 2 there is good supply of skilled labour and whilst there are at present no skilled or semi-skilled workers of the required type we are confident that this need could be met by training. Our discussions with employers in Lesotho indicated that the Basotho responded well to training and showed

considerable aptitude in performing work of the type with which we are concerned.

The position of categories 3 to 5 is very different and raises particular problems. There is an acute shortage of skilled technicians of all types. This partly reflects the stage of the economic and social development of Lesotho. It is also due to the fact that until recently the educational system was not geared towards the provision of commercial and technical skills. Additionally, and most important, skilled workers tend to leave Lesotho and work in other countries where the wages are higher.

In textile factories the supervisory and technical roles are often combined and what we have said above on technicians would therefore apply to such supervisors. However even if we envisage a supervisor performing fairly non-technical duties then such persons are not readily available in Lesotho, although over a period of time we think that suitable people could be found and trained to occupy these positions.

On the management side successful blanket production requires technical and commercial skills of a very high order. Such skills are not available in Lesotho, nor, we venture to suggest, are they likely to be for some considerable time to come. These would therefore have to be provided by expatriates.

Our general conclusions on the supply of labour are that we would not envisage any difficulty with unskilled labour, nor, given suitable training, with skilled and semi-skilled operatives; but there are problems with the remaining categories of technicians, supervisors, and management.

3.3.2 Remuneration

There are no official statistics of wage rates, earnings, or hours of work. The following information was gathered during the course of discussions with the Department of Labour, certain public utilities, and some private business concerns.

The rate of payment for unskilled labour appears to be about 10 cents an hour. The Government pays its unskilled workers between 7.5 and 9 cents; one of the public utilities pays 10 to 11, and a hand weaving concern pays about 10 cents to untrained weavers. This latter rate is probably a little above the rate that is really required to obtain such labour but it is the policy of the firm to pay higher wages. This is partly because the firm thinks it socially right to do so and partly because it is able to hire the best quality of labour available.

It is more difficult to give a typical wage for skilled workers for so much depends on the level of skill and training involved. The following are the hourly rates in cents paid by the Government to its employees: apprentices 1[illegible], technicians Grade C 19, Grade B 25, and Grade A 50 - 62. It was suggested to us that a loom mechanic would fall into the Grade A category. One of the public utilities pays its artisans 48 to 50 cents an hour and a hand weaving concern pays about 16 cents an hour for fully trained weavers.

The wages paid in the textile industry within the SACU are also relevant to our study. First, we shall eventually be comparing Lesotho costs with the costs of foreign suppliers and second, to some extent the wages paid to Basotho must probably be related to the wages they might get if they chose to work outside the country. We return to this point in the next paragraph.

Our information on textile wages outside Lesotho is that in industrial centres weavers earn 35 to 50 cents/m, though one mill paid 52 c for a weaver minding 2 plain looms and 58c for jacquards. In the Border Areas wages are much lower, skilled mill operators receiving 19 to 27 cents and skilled females 13 to 20 cents/m.

In deciding what rate we should adopt in Lesotho there are a number of points to consider. All skilled labour must be trained, or attracted from the SACU. When it is fully trained it must receive a wage related to what it could obtain in neighbouring areas outside Lesotho. Possibly the wage need not be equal to that obtained in foreign employment for no doubt many workers would accept a somewhat lower reward if they can remain in their homeland; but, if the wage is too low, they may migrate to other countries of the SACU. Similar considerations will apply to those who are attracted back into Lesotho. Finally, though trade unions are in their infancy at present, they may become better organised in the coming years and may well press for wages that are comparable with those in the SACU. Taking all these factors into account we have adopted R 0.42 (US $ 0.54) per hour as the rate for skilled machine operators and between R 0.15 (US $ 0.2) and R 0.31 (US $0.4) for unskilled workers. These rates have been used to make our estimates of the prime costs of production in Chapter 4. It will be seen there that we present our cost estimates in such a way that different wage costs may be used, should the view be taken that our present assumptions are incorrect.

3.3.3 Hours of work

With regard to hours of work, 42 to 45 hours a week appear to be the normal practice. There are some regulations laid down in the Employment Act No. 22 of 1967 but these seem to be fairly flexible and in any case exemption from some of its provisions may be granted on application to the Minister of Commerce and Industry.

The maximum hours of work per worker per week are 45. Establishments may work a 5 or a 6 day week. In the latter case 8 hours per day may be worked on the first 5 days and 5 hours on the 6th. If a 5 day week is in operation with a 9 hour day then there must be a 1 hour continuous break during each day.

There is a 12 hour per week limit on overtime with an annual limit of 150 hours. If work takes place on Sundays then one day's pay is to be made for the first 5 hours and double-time is to be paid thereafter. There are no restrictions on the operation of shift work systems either for male or female labour.

3.3.4 Miscellaneous

In this final section we deal briefly with a number of the more social aspects of employment. The general picture is, that as yet, there is little legislation covering such matters as factory conditions, employee compensation, sick leave, redundancy, etc, and what there is tends to be permissive rather than obligatory. The Government of Lesotho is reviewing the situation and in due course expects to bring forth new measures. The following presents the position as it is at the moment.

There are no factory regulations and employers do not have to pay any social charges.

Workmen's compensation, say for an injury received in the course of his employment, is entirely the employer's responsibility. There are no statutory arrangements. If injured the employee is entitled to half pay and if death ensues then the employee's dependents are entitled to 40 months' wage or R 1000, whichever is the lower.

If a female worker is pregnant she cannot be dismissed within six weeks of the expected date of her confinement. She may get maternity leave with pay but this will depend on the terms of her agreement with her employer. Special arrangements may also be made for her in the six weeks following the confinement.

Normally 12 days holiday with pay are given each year. A new employee would normally start to qualify for holiday at the rate of one day per month after having completed three months service with the firm. There are no statutory arrangements concerning retirement or redundancy pay.

The general conclusion is that social charges are minimal and we have not allowed for any in our cost calculations.

3.4 Services

3.4.1 Electricity

We were informed by the Lesotho Electricity Corporation that the supply of electricity would not present any problem. The tariff is R 3.0 per kW of maximum effect (registered monthly) and R 0.75/kWh for the first 100,000 kWh and R 0.60 for consumption above this figure. Combining the two tariffs the rate is about R 0.14 (US ¢ 0.18) per kWh. We have added a little to this figure to allow for contingencies and use US ¢0.20/kWh in our estimates of prime cost in Chapter 4. As the cost of electricity is a very small part of the total cost this will have a negligible effect.

3.4.2 Water

A blanket mill of the size under consideration would consume about 100,000 m^2 of water a year. During the dry season in Lesotho the water in the rivers falls to a very low level and supplies often have to be drawn from reserves provided by a natural lake or reservoir. There are such arrangements in Maseru and we were informed by an official of the Water Authority that they could satisfy the requirements of the blanket mill.

The cost of the water today is R 0.50/1000 gallons, equivalent to US ¢ 0.14/m^3 but a large consumer could anticipate a reduction of this price to US ¢ 0.07 or 0.04/m^3. A blanket mill not only requires appreciable quantities of water but it must be of a suitable quality, not only for the finishing of blankets but especially if it is to be used as feed water for boilers.

Table 3.5 shows an analysis of the Maseru water. It is derived from tests carried out in connection with a brewery in 1973. Water to be used for textile dyeing and finishing should be as follows: total dissolved solids - about 5 mg/l and total hardness - $CaCO_3$ - < 25 mg/l. Thus the Maseru water needs softening in order to reduce total hardness. Fortunately water-softening equipment is not expensive and is available within the SACU. The analysis does not specify the content of heavy metals like manganese and iron, nor refer to the colour of the water. These matters would require investigation before the water could be used. The standard requirements are: Mn 0.01 - 0.05 mg/l, Fe 0.10 - 0.30 mg/l, and colour < 5 pt - Co units.

Table 3.5 Water analysis - Maseru

Composition	Town sample mg/l	Hotel mg/l
pH	6.3	6.0
Conductivity u.s.	199	207
Total dissolved solids	140	144
Loss on ignition	22	20
Total hardness as $CaCO_3$	76	80
Ca^{++} as $CaCO_3$	56	58
Mg^{++} as $CaCO_3$	20	22
Sodium as Na	5.0	5.2
P as $CaCO_3$	0	0
M as $CaCO_3$	24	24
HCO_3^- as $CaCO_3$	24	24
CO_3^{--} as $CaCO_3$	0	0
OH as $CaCO_3$	0	0
Chlorides as Cl^-	3.5	3.4
Nitrates as N	2.8	2.8
Sulphates as SO_4^{--}	18.1	23.2
S_1O_2	20.5	21.5
KMO_4 value as O	0.4	0.4

Source: Maseru Brewery, Henrik Foss, 29,3,1973

Note: Two samples were analysed, the normal drinking water of the town and the drinking water of the Holiday Inn.

3.4.3 Effluent disposal

A blanket mill will produce appreciable quantities of effluent which will have to be disposed of. There are, as yet, no regulations in Lesotho in this area. Untreated water could therefore, from the purely legal point of view, be discharged into the Caledon River but this is likely to cause considerable pollution when the river falls to low levels during the dry season. In any case the river forms the boundary between two states and this course of action could probably not be pursued without consultation with Lesotho's neighbour. Effluent treatment is costly and especially so in the case of water from wool scouring. The waste water from dyeing and finishing can be treated by combined chemical and biological methods for about R 0.75/m^3 (US $ 1.0) but for a small plant these figures should be increased by about 25%. Effluent from wool scouring cannot be treated today by any established method at reasonable cost. In countries having a serious water shortage, such as Japan, distillation methods are used. This is a fairly large scale operation and costs R 2 - 3/m^3. We have no estimates for a small plant but it would certainly be more expensive. There are clearly a number of matters concerning effluent disposal which require further consideration and we do not take account of any of the costs involved when we make our cost estimates in Chapter 4.

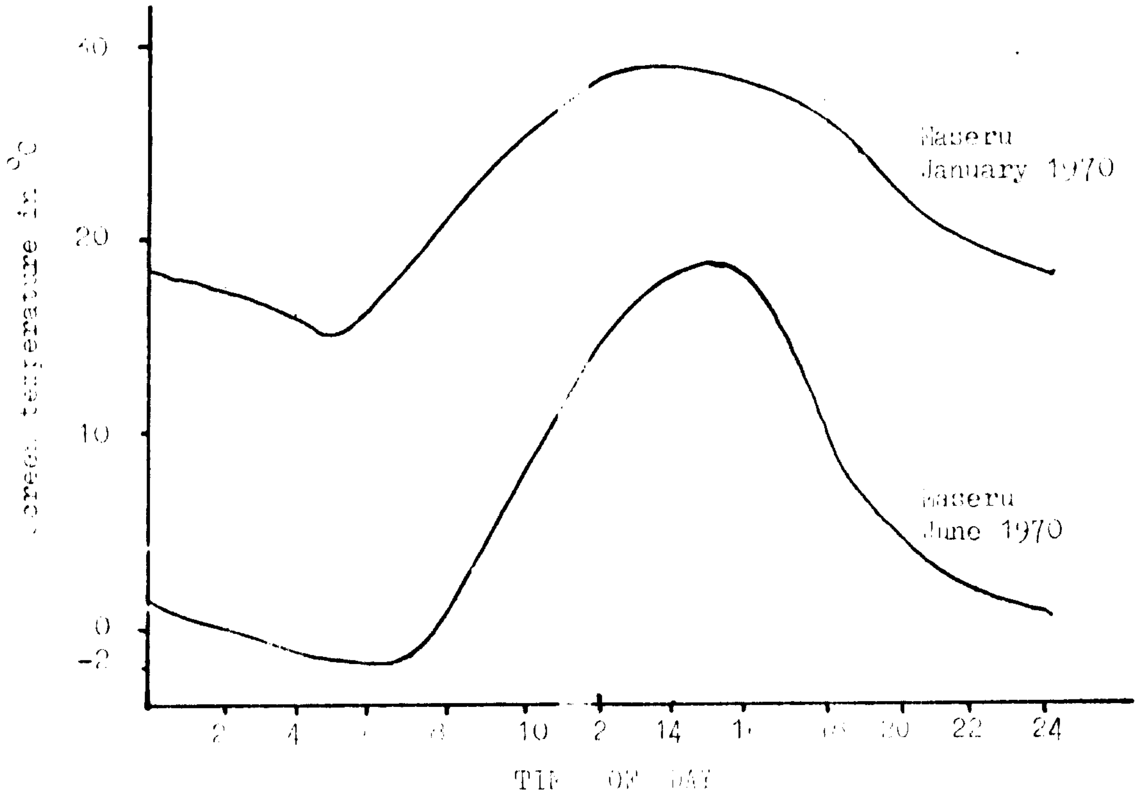
3.5 Steam requirement

The blanket mill will require about 6 - 8000 ton of steam a year. It will not be economic to produce such large quantities of steam using electric power. Coal or oil must be used and there is apparently no problem in obtaining these from the SACU. Coal is the cheapest and can be bought to Maseru by rail. A suitable boiler is the so-called 'steam bloc' type. These are supplied ready to install, including feed water-pumps, etc. Equipment for chemical-dosing would also have to be obtained but this, and the boilers, are available within the SACU.

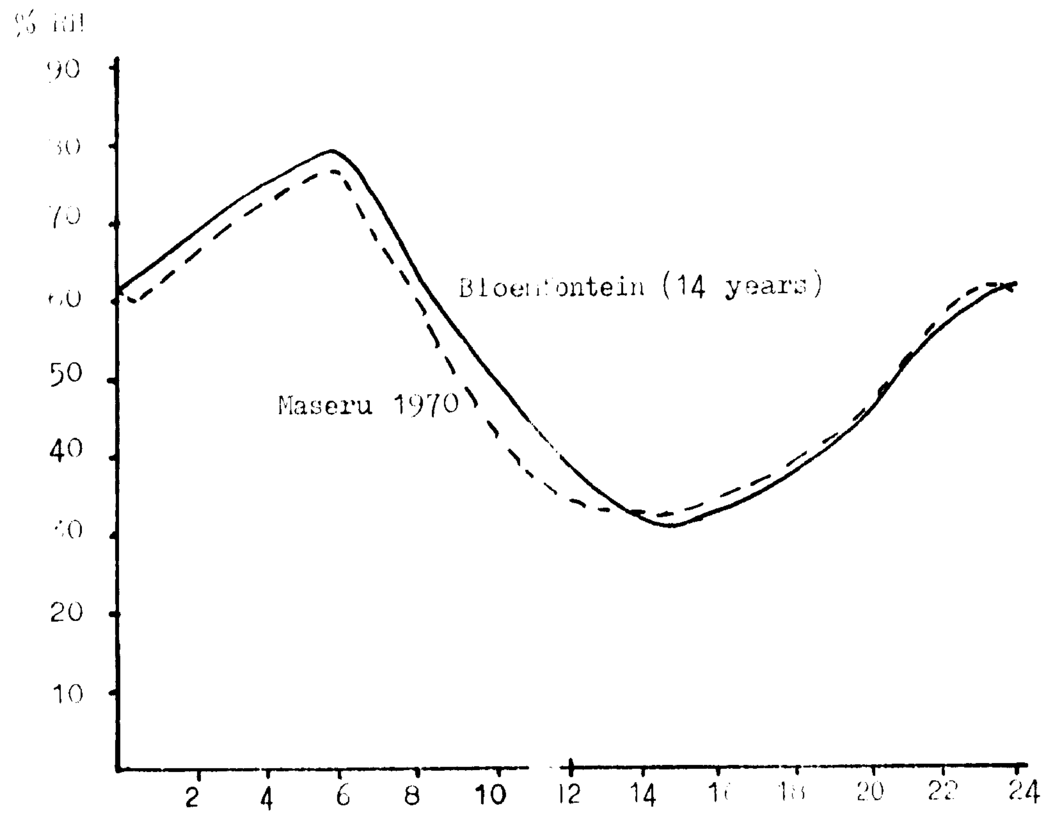
3.6 Buildings

We discussed this question with a firm of architects in Maseru. No particular problems will arise with regard to the actual construction of an industrial building. However in textile processing it is necessary to avoid wide variations in temperature and humidity inside the mill. The insulation standards of a mill and whether air conditioning with or without refrigeration is necessary are determined by the climatic conditions in the area concerned. Lesotho is a country with strong sunlight and with appreciable temperature variations, but one which is dry in the sense that high relative humidity is unusual. The position is illustrated in Figure 3.1.

Refrigeration is expensive to install and run and in these climatic conditions we think that its use can probably be avoided provided that the building is suitable insulated and we do not use the more advanced technology. This is another reason for selecting older type machinery for the blanket mill (see Section 4.2). If we take the most difficult climatic conditions during the year, a summer day around 1400 hours, we can anticipate a temperature of 32°C and 35% RH. The enthalpy of this air is 16.5 k cal/kg dry air. If we accept e.g. 26°C and 65 RH inside the mill this air will contain 16.5 k cal/kg dry air. It is difficult to say, without making up a complete heat balance for the building in Lesotho, if this difference between the enthalpy of the air inside and outside the building is sufficient to cool the building in summer time with only ventilation and evaporative cooling inside. Our guess is that it would just about be possible and our mill is designed on the basis of this assumption. On the other hand, air conditioning would be necessary in some parts of the building. The insulation of the walls, windows, and particularly the roof of the building must be extremely good. The heat conductability expressed in e.g. k cal/m^2, h, °C, or W/m^2, °C (the k value) should be about 0.3 for the roof and 0.4 for the walls.



Diurnal variation of temp[illegible]ature based on [illegible] hourly values



Diurnal variation of rela[illegible]ve humidity in January based on mean [illegible]ourly values

Source: International B[illegible] for Reconstruction and Development [illegible], '[illegible]Study [illegible] Water Resources Development' [illegible] Report, Vol. 1, [illegible]

We were informed that a building of this type would cost R 85 per m^2 without air-conditioning but including toilets, cloakrooms, etc. Full air conditioning would add R 25/m^2. It was estimated that a building of the required size and type would take about seven months to build.

3.7 Tax incentives

The Government of Lesotho offers considerable tax incentives to companies establishing or expanding their operating within the Kingdom. Full details are given in The Pioneer Industries Encouragement Act, 1969. Most of the incentives consist of allowances against the capital costs of plant, machinery and buildings. These would benefit a company in the early days of its existence. We are more concerned with the longer term situation after the company has become established. Essentially we wish to determine the competitiveness, and hence the viability, of a mill in Lesotho as compared with its competitors within the SACU. We assume that the initial difficulties have been overcome and that the associated costs have been met

There are two allowances which relate to this longer term situation: First, a utility and transportation allowance equal to 15% of the cost to the manufacturer of electric power, water or sewerage services, transportation within the countries of the SACU of goods used for manufacture or finished products; and second, a citizen wage allowance equal to 10% of the wages or salary paid to Lesotho citizens employed by that manufacturer. We consider the effects of these in Section 4.4

3.8 Transport

We do not foresee any particular problems with regard to the movement of finished goods within Lesotho. Transport from other parts of the SACU to Lesotho is more of a problem. As we have seen in Section 3.2 above the mill will have to import large quantities of raw materials from the SACU and from other parts of the world. These will have to be moved to Lesotho by rail which is not only expensive but also slow and unreliable. The tax allowance referred to in Section 3.7 above will help to reduce the cost but little can be done to deal with the time aspect. Because of this problem we think it necessary for the mill to hold a higher level of stocks of raw material than would otherwise be the case and we have made provision for this.

3.9 External economies

By this phrase we refer to the advantages which a firm may gain by being located near to, or within easy reach of other firms in associated, or even very different, industries. For instance, if we consider the position of a blanket mill in the country bordering Lesotho, it will have fairly easy access to a range of services provided by other branches of the textile industry, by the electrical and mechanical engineering industries, and by firms engaged in merchanting, shipping, etc. These services are not available in Lesotho and a mill located there will suffer a real disadvantage because of their absence. There is little that can be done in the short run to remedy this situation. The mill will have to try to be more self-reliant than would normally be the case. In the long run the development of other industries in Lesotho may provide some of the services mentioned.

3.10 Location

Whilst we can appreciate the desire of the Government of Lesotho to locate industry away from the Capital we consider that Maseru would be the best site for the blanket mill. It is one of the few places where water supplies are adequate and reliable. It is on the rail head and if a scouring plant is established then the blanket mill should clearly be nearby.

CHAPTER 4

THE FEASIBILITY OF BLANKET PRODUCTION

CHAPTER 4

THE FEASIBILITY OF BLANKET PRODUCTION

In Chapter 2 we presented information on the market for blankets and in Chapter 3 we discussed in general terms the resource requirements for blanket production. In this chapter we come to the core of our study. We first of all examine in Section 4.1 the technological alternatives available in the production of blankets. Section 4.2 gives details of a 'paper mill' which we have constructed in order to estimate the costs of production in Lesotho. These estimates are given in Section 4.3 and in the subsequent section they are converted into prices and compared with those of the foreign suppliers. Section 4.5 deals with feasibility and our conclusions are given in the final section.

4.1 Technological alternatives

At first sight it might appear that the simplest way of starting to make blankets would be to weave them from yarn which was bought from an outside supplier. It would then only be necessary to have a weaving plant and some simple finishing. The investment required would be small. There are a number of reasons why we do not think that this method is feasible in Lesotho.

First, the weft yarn is normally[1] produced on the woollen system.

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[1] An alternative method is to use the semi-worsted system. However this system is technically more complicated and calls for more expensive material than is presently used in Lesotho blankets.

As has been described earlier (Section 3.1.2) this system requires the preparation of a blend of fibres and the subsequent processing of this blend on a carding machine preparatory to the spinning stage. The composition of this blend in terms of different fibres of different qualities and prices is vital in determining not only the price and nature of the yarn produced but more important the price and quality of the final blanket. It is therefore essential that a blanket manufacturer controls the composition of the original blend. To buy yarn from an outside supplier would mean a considerable reduction in his ability to do so and he would suffer appreciable disadvantages as compared with his competitors who operated integrated plants.

Second, even if the disadvantages referred to above could be overcome (which is very doubtful) and yarn was bought from outside, other problems arise. If the yarn was bought in colours then, in order to reduce delivery times, time required for shade approval, etc, it would almost certainly have to be purchased from a country within the SACU, but there is only one small independent woollen spinner in that area and he could not meet the requirements of a mill in Lesotho. It is hardly conceivable that a blanket manufacturer could purchase coloured woollen yarn from countries outside the SACU.

Another alternative would be to buy undyed woollen yarn and dye it as required. This would overcome the delivery problem but this course of action is precluded for another reason. It is not possible, in our experience, to dye low quality woollen yarns uniformly enough for blanket manufacture.

Third, we have suggested that a small proportion of Lesotho wool could be used in blanket manufacture. It would be clearly advantageous to use such indigenous raw material, but it would hardly be feasible to export the wool in a greasy state, have it scoured and spun, and then import it back into Lesotho. In any case as we have already said there is no surplus spinning capacity in the SACU and therefore one could not expect to have the work done on commission at an acceptable

price. A further problem is that the bulk of the Lesotho wool to be used in blanket manufacture would be used as part of a blend of man-made fibres and rayon and it would again hardly be feasible to have this spun abroad.

For these reasons then a blanket mill in Lesotho must produce its own weft yarn. This would be spun from material, blended and dyed at the mill. No such problems arise with cotton yarns for use as warp threads. These are available in standard qualities; only one or two yarn counts are required, and they are used in an undyed form. They can be bought from any part of the world where the price is acceptable. Our conclusion therefore is that, if a blanket mill is erected in Lesotho, it should consist of dyeing, spinning, weaving and finishing.

We have referred to the use of some Lesotho wool, amounting to about 230,000 kg, in blanket production in Lesotho. Before this wool can be used it must be scoured. We know that the Lesotho National Development Corporation is negotiating with a firm from outside Lesotho with the objective of establishing a scouring plant to scour the whole Lesotho clip. If this project is implemented this will of course facilitate the use of Lesotho wool in a blanket factory. If the scouring plant does not materialise then it will be necessary to have the wool scoured abroad or alternatively, and preferably, to scour it using hand-operated machinery in Lesotho itself.

4.2 A blanket mill in Lesotho

We have argued in the previous section that a blanket mill in Lesotho must carry out the full production process from raw material to finished blanket. We have constructed such a mill 'on paper' and details are given in Appendix A. This mill is used as the basis for estimating the costs of producing a number of representative

blankets (Section 4.3) and these costs are subsequently compared with the mill-price of present supplies (Section 4.4). We should emphasize that this mill has been constructed purely in order to carry out these cost-price comparisons. It is not meant to represent an actual mill which would be erected.

The proposed mill is designed to produce 600,000 blankets a year on the basis of 3-shift working in the main departments. The numbers and types of blankets to be produced are as in Table A.5

The machinery consists of 2 carding machines, 500 spinning spindles and 48 looms, plus associated equipment for preparation and finishing. We have generally chosen simple machinery of the most labour-intensive type. This machinery, being unsophisticated, is easy and simple to maintain. Only in cases where considerations of quality are important, e.g. in carding, have we chosen the latest equipment. We should point out that these modern machines are no more difficult to operate than the older types. Appendix A gives full technical details of the mill including the methods of processing, machinery requirements, production at each stage, etc.

The total employment will be approximately 240 persons. About 6500 m^2 of floorspace will be required and the mill will have air-conditioning where required.

The total capital cost will be about US $ 2.0 million (R 1.5 million) for machinery and auxiliary equipment and US $ 0.9 million (R 0.7 million) for buildings.

4.3 Estimation of prime costs

Before explaining the basis of our estimates of prime cost and the method of calculation used we should make three general points.

First, we said above that the blanket mill had been constructed for the purpose of comparison and that it was not meant to represent in detail an actual mill. Similarly the prime cost estimates are made in order to compare the likely costs of producing blankets in Lesotho with the prices of blankets currently being supplied. They are not, nor are they intended to be, precise costings of particular products. However despite this lack of precision we consider that they can be used with some confidence for comparative purposes.

Second in presenting these prime cost estimates we indicate clearly the information and assumptions upon which they are based and show the methods of calculation used. We have also tried to structure the final estimates in such a way that the various cost elements are easy to manipulate should we (or others) wish to adopt assumptions different from our initial ones.

Third, the estimates relate to a mill which has been running for a few years. We therefore take no account of any costs associated with the establishment of the mill and its 'running in' e.g. training costs etc.

4.3.1 The basis of the prime cost calculations

We give below the information and assumptions upon which our prime cost calculations are based. The prices we use for raw materials, labour etc are those given in Chapter 3 when we discussed the general question of resource requirements. For machinery the prices are those ruling today plus the cost of transport and erection. We do not at this stage take any account of the tax allowances which would reduce some of the costs. The effect of these is considered later in Section 4.4

In allowing for the use of capital, either fixed or working, we have used a rate of interest of 14%. The current rate for loans from the commercial banks in Lesotho is between 12 and 14%. We have adopted the higher figure. When estimating the annual capital cost of a machine we have used a method that is in common use in parts of Europe. We have assumed that a machine will last for 10 years and will then have no value. We have assumed that the money capital to finance the purchase of the machine has been borrowed at 14% and that the capital is repaid in equal annual instalments over the life of the machine. The interest payable on the balance of the capital outstanding averages out over the 10-year period at 7% per annum and we have therefore made an annual charge of 17% of the initial value of the machine. It will be observed that this method makes no specific provision for the replacement of the machine at the end of the period. One could of course regard our 17% charge as consisting of 10% for depreciation and 7% as a contribution to the cost of the capital. There is room for some difference of opinion on this matter, but, as our estimate of total prime cost is divided into capital labour and other costs, it is possible to make adjustments depending on the view taken.

As far as investment in auxiliary equipment, such as trucks, bobbins, spare parts, etc. are concerned we use the same method as for machines except that we assume a life of 5 years. The annual charge is therefore 17% of the initial cost of such items.

In the case of buildings we assume a 20-year life with no value at the end of the period. Using the same method as for machines this gives an annual charge of 12%. We are assuming here that the buildings are provided by the mill company itself. However it is likely that the buildings would be provided by the Lesotho National Development Corporation and leased to the company. The Development Corporation would probably require a return of about 12% on their investment, so whether this annual charge is regarded as the payment of rent or a capital charge is not material.

Mill inventory consisting of stocks of raw material, work-in-progress and finished goods are financed at 14%.

4.3.2 Method of calculating prime costs.

Full details of the method of calculating prime costs are given in Appendix B. We give here an outline of the procedure.

We first estimate the annual costs of machinery, auxiliaries, buildings, materials (e.g. dyes, power, water etc) and labour for each step of production. For example, in the spinning stage we do this for the steps of warehouse, opening and mixing, blending, carding and spinning. For each step we have to decide on the unit that is to be the basis for costing. This differs as between the different steps. In carding it is the kg; in spinning, the spindle-hour; in weaving 1000 picks, etc. The total annual cost is divided by

the appropriate cost unit and this gives the total cost per unit for each step. This total is divided into capital, labour, and other costs. The sum of the costs of each step comprising a stage of production will give the total costs for that stage. Calculations are carried out in this way (see Appendix B) for spinning dyeing, weaving and finishing. The same method is used for overheads.

The total prime cost for a particular blanket is the sum of the costs per unit of the steps or stages necessary for the production of that particular blanket; the charge for store, inventory and mill overheads, and the cost of the raw materials. We have calculated in this way the prime costs of six representative blankets. The method and results are shown on the Product Data Sheets included at the end Appendix B.

4.4 Price comparisons - Lesotho mill and present supplies

Table 4.1 shows, for 6 representative blankets, the elements of prime cost, total prime costs, and the prices[1] for a mill in Lesotho and the prices (competitor's prices) charged by present suppliers of these blankets. All costs and prices are expressed in Rand.

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[1] In order to set a selling price for Lesotho blankets we have added 10% to the total prime cost. In estimating the latter (Section 4.3.1) we provided for the finance of inventory and assuming that our charge for machinery represents depreciation and a return on capital of 7%, the margin of 10% will provide for the finance required to service any working capital not already provided for and increase the return on the investment in machinery to 16 - 17%

Table 4.1 Representative blankets - Lesotho prime costs and prices and mill price of present suppliers. In Rand

Type of blanket	Prime Cost							Lesotho Price	Present Suppliers Price
	Capital	Labour	Others	Store and Inventory	Overhead	Raw Material	Total		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Pitso	0.82	0.55	0.72	0.29	0.18	2.62	5.18	5.69	10.08
Pitseng	0.67	0.47	0.65	0.28	0.16	2.08	4.31	4.74	6.60
Lilala (75 x 80 cm)	0.27	0.22	0.25	0.11	0.05	0.45	1.35	1.48	1.48
Lilala (110 x 115 cm)	0.46	0.35	0.41	0.18	0.10	0.95	2.50	2.75	2.97
Mona Lisa	0.49	0.27	0.72	0.31	0.18	1.99	3.96	4.35	2.84
Welwitschia	0.51	0.50	0.40	0.18	0.09	0.95	2.63	2.89	3.75

Source: Product Data Sheets. Appendix B
Table 2.5

In discussing the price differences there are some general points which it is useful to bear in mind. First, we should note the relative importance of the different categories of cost that make up the total prime cost. Table 4.2 shows the percentage shares of each cost element in this total.

Table 4.2 Percentage share of cost elements in total prime costs

Type of blanket	Capital	Labour	Others	Store Inventory and Overheads	Raw Material	Total
Pitso	16	11	14	9	50	100
Pitseng	15	11	15	10	49	100
Lilala (75 x 80 cm)	20	16	18	12	34	100
Lilala (100 x 115 cm)	18	14	18	11	39	100
Mona Lisa	12	7	18	12	51	100
Welwitschia	19	19	15	10	37	100
Average	17	13	16	11	43	100

At this stage it is interesting to note the relatively small importance of labour costs and the large percentage of total cost accounted for by raw materials.

Second, in Section 2.6 we noted that the bulk of the blankets supplied to Lesotho come from one large firm. In Section 3.1.3 we discussed the relationship between costs and output and concluded that significant cost reductions are possible provided that the production is both large and standardised. We would therefore expect this big producer to have some cost advantage over smaller units in certain product areas, but probably not in all. Similarly on the market side the power of this

large supplier to raise prices will vary in different segments of the market depending on the nature of demand and the state of competition in the particular segment concerned.

If we now look at the Lesotho prices and the competitors' prices (Table 4.1 Columns 8 and 9) we can see that the Lesotho price is below the competitors' price for the Pitso, the Pitseng and the Welwitschia. It is the same or very much the same, for the Lilala blankets and is well above for the Mona Lisa.

The Pitso and the Pitseng are both fairly exclusive fashion blankets. Together they form about 20% of the total blanket market in Lesotho, or about 140,000 pieces. Lesotho prices are considerably below competitors' prices, particularly in the case of the Pitso. The Lesotho price for the latter is R 5.69 compared with R 10.08 and for the Pitseng R 4.74 as against R 6.60. We might first question the accuracy of our cost estimates. We do not pretend that these are completely without error but the price differences are so great that any reasonable, or even quite large changes in our cost elements would not substantially alter the general picture. The most likely source of error in our estimates probably lies in our raw material cost figure. We cannot be sure that we are basing our price on the same raw material cost as that used by the competitor. However even if we add 50% to our material costs Lesotho still remains very competitive with the foreign product. Another way of looking at the matter is to compare in general terms the likely cost differences between Lesotho and the competitors - in particular, the main supplier. We consider that the competitor's capital costs are likely to be lower than those of Lesotho, partly because of the greater levels of output but mainly because of the lower depreciation charges on the old machinery in use. The competitors' labour costs are almost certainly higher than in Lesotho but we should note that such costs generally form quite a small proportion of total costs. The competitors' other costs are probably a little lower and certainly their overhead costs will be less as they are spread over a larger output.

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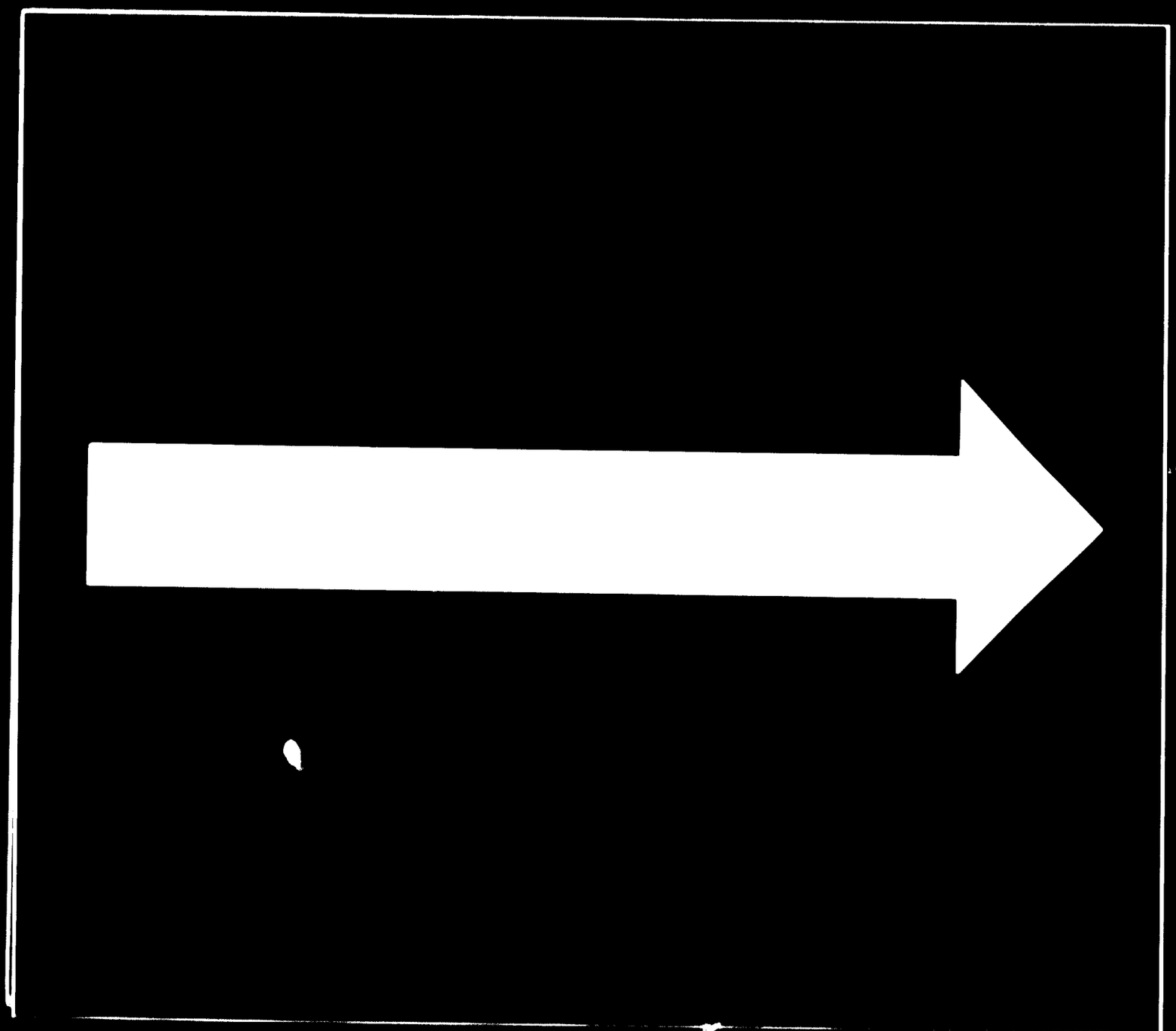

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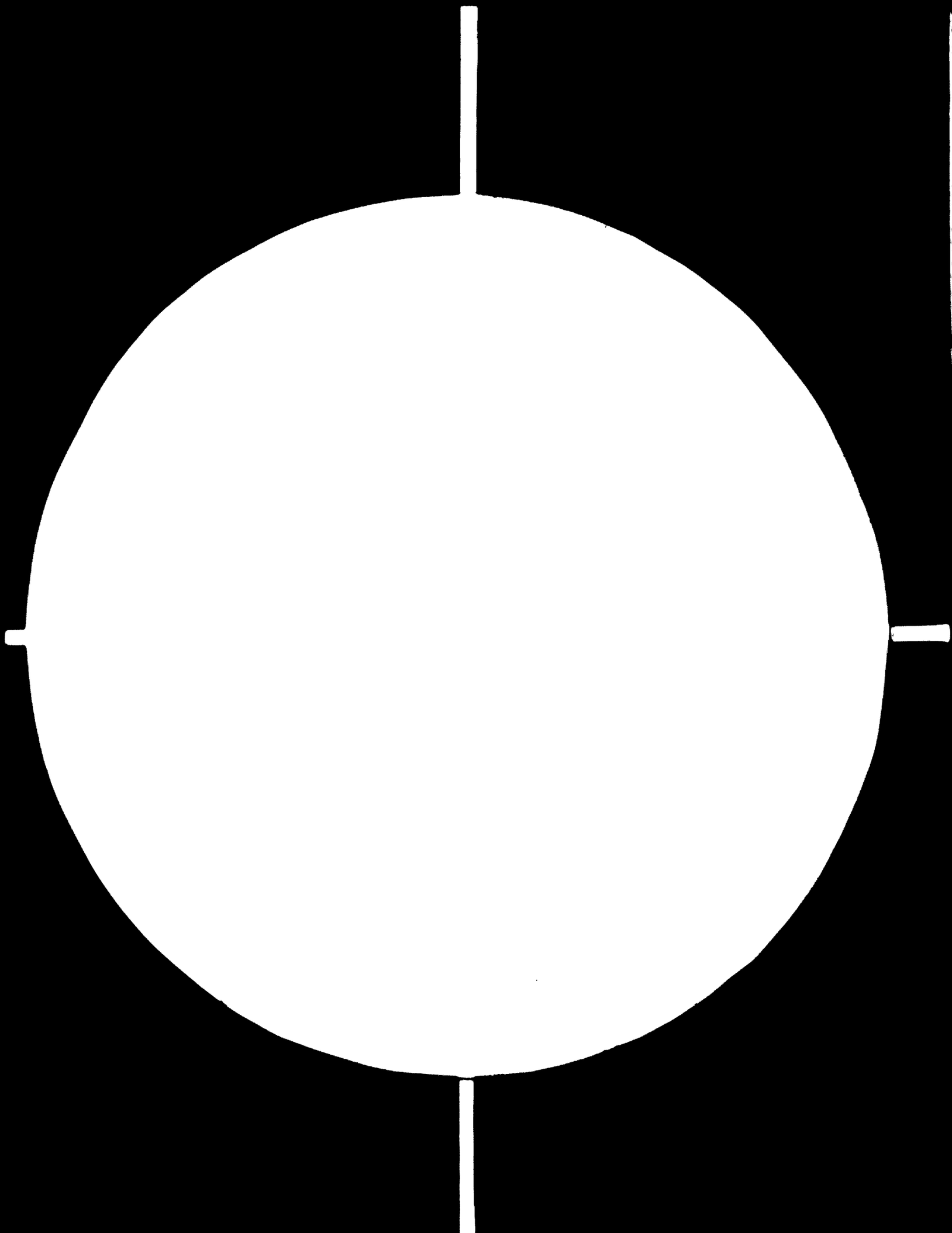
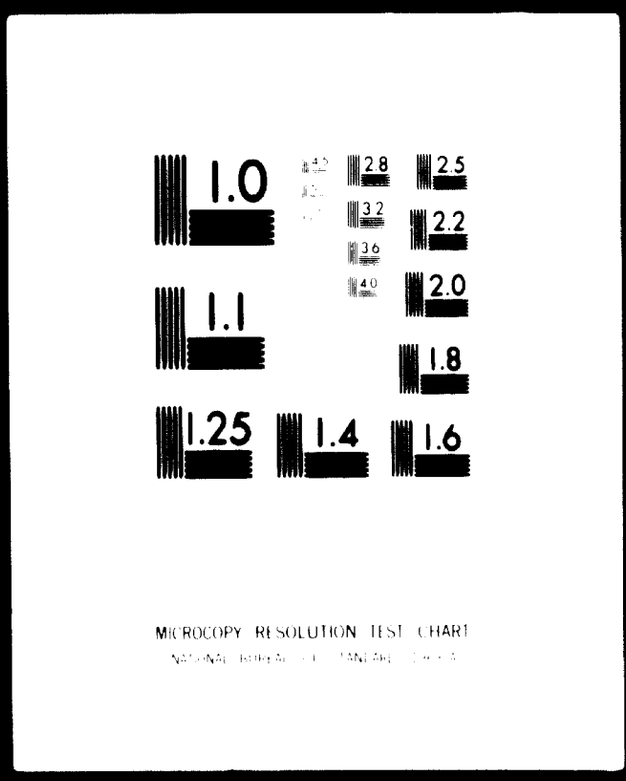




The main supplier will also have some advantage in buying raw materials at a lower cost than a relatively small unit in Lesotho, though in the case of these two particular blankets we do not think this will be very great. Overall we have little doubt that the competitors' costs are basically somewhat lower than those of Lesotho. The position is clearly one where the main supplier is charging a very high price for these two blankets (especially for the Pitso) in relation to their cost. He is able to do this, first, because there is very little, if any competition in this section of the blanket market, and second, both these blankets are in keen demand because of the prestige and exclusiveness which they are thought to confer on their owners.

The Lilala is also a fashion blanket but in a much lower price-range than the two types we have discussed above. The Lilala range accounts for about 25% of the total market, equivalent to 175,000 blankets. In the smaller size of 75 x 80 cm the Lesotho price is the same as the competitors', i.e. R 1.48. The Lesotho price for the larger size of 110 x 115 cm is slightly lower than that of the imported product - R 2.75 compared with R 2.97. Our general view of the relative costs of production in Lesotho and outside it would be much as outlined above when we discussed the Pitso and the Pitseng. Possibly Lesotho would have some advantage here as its wages are lower and labour costs are a higher proportion of total costs for the Lilalas as compared with the two higher-priced fashion blankets. The present supplier will certainly have lower raw material costs due to his ability to buy rayon, the main raw material for these blankets, at a lower price than Lesotho but this advantage is reduced somewhat as raw materials form a lower proportion of total costs than the average. It seems to us that the main supplier makes only a modest profit on the Lilalas. Although there is little competition from other producers the price is kept fairly close to the cost of production largely because of market considerations. The Lilala is designed as a cheap substitute for the more expensive fashion blanket and is bought by the mass of people in Lesotho who cannot afford the latter. A higher price could be charged by the main supplier but he finds it more profitable in these market conditions to sell the larger quantity at the lower price.

The Lesotho price for the Mona Lisa is about 50% above the competitors' price and even sizeable changes in our cost elements do not make much difference to the situation. If, for example, we reduce Lesotho's raw material cost by one half and all other costs by one quarter Lesotho is even then not quite competitive. We have chosen the Mona Lisa as typical of the domestic blanket section of the market. These types of blanket account for about 20% of the Lesotho market, equivalent to 140,000 pieces but here we have to take into account the very much larger market for these same blankets outside Lesotho. The total market for domestic blankets within the SACU is probably at least 2.5 million, the bulk of which is supplied by one firm. With a market of this size the major producer can reap the economies of long production runs and product standardisation, and he can take full advantage of his power as a large buyer of raw materials and other inputs. In this situation it is not surprising to find that a relatively small producer in Lesotho cannot match the prices quoted for domestic blankets.

The market for Grey blankets has similar characteristics to that for domestics. There is a large market within the SACU and the same economies are available to the major supplier. We have not analysed a representative Grey blanket and hence have not estimated the costs of production but we are confident that a mill in Lesotho could not produce at a price to match the imported product.

The Welwitschia shawl is typical of the shawls sold in Lesotho. The Lesotho price of R 2.89 is appreciably below the competitors price of R 3.75. It seems likely that the costs of this product in Lesotho are closer to the competitors' costs than is the case with any of the other products considered. The main supplier's buying advantages are counterbalanced to some extent by the fact that the cost of raw materials forms a smaller part of total costs than is usual. On the other hand labour costs are a relatively high proportion of total costs and this works to the advantage of Lesotho with her lower wages. Present suppliers are charging appreciably above costs for this product although the margin is well below that applied to the Pitso

and the Pitseng. This is a section of the market where the major supplier has keen competition from other producers and this may well explain these lower prices.

Shawls are part of the section of the blanket market which we call Rugs and Shawls in Chapter 2. This section accounts for about 15% of the total market, equivalent to 105,000 pieces. We have not analysed or costed a representative rug but we think that the position would be much the same as for shawls. Most of the products in this section seem likely to have a greater than average share of labour costs and a reduced raw material component and both these factors operate to the advantage of Lesotho.

In comparing these prices we have not so far taken into account the effects of the tax allowances referred to in Section 3.7. These are a utility and transportation allowance of 15% of their cost and a citizen wage allowance equal to 10% of the wages or salary paid to Lesotho citizens. We have already seen that labour costs are a relatively small proportion of total costs. On average a reduction of 10% in them would reduce total prime costs by less than 1%. Similarly payments to utilities and for transportation are relatively unimportant and a 15% allowance would only have a very small effect on total cost. We do not therefore consider that these allowances for utilities, transport and labour will change in any way the conclusions made earlier.

4.5 The feasibility of blanket manufacture in Lesotho

4.5.1 General consideration

In the previous section we concluded that the costs of producing blankets in Lesotho are likely to be above the costs of the present suppliers, the excess varying as between the different products. It therefore seems that a mill could not operate profitably in the Kingdom.

However, even in this situation, it might be suggested that a mill in Lesotho could operate at a profit given the prices currently being charged by the present suppliers. If, for example, a mill was established in Lesotho and was able to sell 600,000 blankets consisting of say, 400,000 fashion blankets, shawls and rugs and 200,000 domestics and greys; and, if the prices of the fashion blankets rugs and shawls were raised above the selling prices previously discussed (Table 4.1 column 8) but kept below the competitors' price, whilst the latter's price was matched for domestics and greys; then, given these assumptions, a mill could make a handsome profit, for the profits on the 400,000 would more than offset the losses on the remaining 200,000.

Unfortunately this happy situation is not likely to prevail. A mill in Lesotho will not be able to gain such a large share of the total market nor will it gain so great a share of the presently profitable fashion, shawls and rugs section. There are several reasons for this view. First, such a small mill could not produce all the varieties of blanket required in Lesotho. It would have to confine its production to a limited number of qualities and thus would not be able to 'cover' the whole market. Second, and to some extent allied to our first point, consumers in Lesotho have attachments of varying degrees of strength to the present products. A new mill could hope to break down some, but not all, of the preferences. In this connection it would clearly help if the leading trading company were to transfer the production of its registered designs to the new mill but we do not think that this would significantly change the position. Third, it is almost certain that the entry of a new firm into the Lesotho market would result in some price reductions by the main supplier and as its costs of production for all the types of blanket are below those of a Lesotho mill it could, if it so wished, undercut the latter on every product. Already Lesotho cannot compete on domestics and greys

accounting for about 35% of the total market. A small reduction in the prices of the Lilala range and about a 25% reduction in the prices of shawls and rugs would increase this proportion to 75%, and if the main supplier chose to reduce the price of the Pitseng by 30% then in 90% of the market the Lesotho mill would not be competitive in price. We have so far been concerned with the market in Lesotho but even if we say that the new mill could sell within the SACU the same considerations apply.

Our conclusion is that whatever is the reaction of the present supplier to the establishment of a mill in Lesotho the new plant will not be able to gain a profitable share of the market.

4.5.2 The possible effects of varying the mill size

We have pointed out the difficulties which a blanket mill in Lesotho would face. We would like now to consider if constructing a plant of a different size would be likely to reduce these difficulties. In Section 3.1.3 we discussed the question of the relationship between costs and scale of output. We decided to base our estimates on a mill producing about 600,000 blankets a year. If we built a larger mill producing, say 1 million blankets, costs of production might be 6 - 8% lower than those of the smaller unit. If the mill was larger still, say at 2 million, costs might fall by about another 2 - 3% These larger mills would clearly be in a better position to compete with the dominant supplier in the SACU but they would still be at some disadvantage because they would lack the ability to buy raw materials as cheaply as this very big producer does.

However the main problem in establishing a larger mill would, we think, be on the market side. We discussed the total size of the blanket market in the SACU in Section 2.6.2. Total sales were around 12.7

million pieces in 1973. We anticipate a fall in demand in 1974 and 1975 to between 12 and 12.5 million. In 1976 total sales should be just over 13 million and are likely to be approaching 14 million in 1977. We noted in the same section that there is ample capacity to satisfy demand at the 1973 level of 12.7 million. In fact it seems likely that the full capacity of the present blanket industry is rather greater than this figure, probably around 13 million. In addition we mentioned earlier that Pep Stores, a trading group within the SACU, are to set up a blanket factory. This factory, producing 1 million pieces, will be in full operation in 1976. So this means that in 1976 there is likely to be surplus capacity as consumption will probably be about 13 million whilst the industry could produce about 14 million and this imbalance is likely to persist into 1977. We do not think that in this situation it would be of advantage to have a larger mill in Lesotho. Competition is bound to be very keen and the entry of a new firm would make it still keener. Furthermore the larger the new firm was the greater would be the disturbance in the market and the fiercer would be the reaction of the main supplier.

Our view then is that there would be no advantage in building a larger mill in Lesotho, for any advantages gained on the cost side would be more than counterbalanced by market disadvantages.

If this is our view it may be asked: "How is the Pep stores' venture going to survive and how do the other small plants in the SACU manage to exist?" As far as the new entrant is concerned we cannot yet say that it will be successful but it starts off with the great advantage of controlling outlets for its products. It can secure the share which Lesotho would find so difficult to gain. The other four small producers with annual outputs ranging from 0.8 to 1.2 million blankets have been established for some considerable time. We think they overcome some of their disadvantages as compared with the big producer by specialising on a relatively narrow range of products, or competing in other ways, such as on service or delivery. Certainly one of them appears to concentrate

on shawls and rugs, but we cannot see any way in which Lesotho could emulate their policies. Additionally it is not uncommon for a dominating producer to tolerate other small firms within an industry in order to preserve the semblance of competition. It was in fact suggested to us that this was the case in the blanket industry within the SACU but we have no evidence on the matter.

4.5.3 The use of quantitative restrictions, tariffs and subsidies

It may be suggested that the use of one or more of the above methods might enable a blanket mill to operate profitably in Lesotho. Before we look at these possibilities it may be useful to outline the benefits and some of the costs which would result from the successful establishment of such a mill. If we assume that 600,000 blankets were produced and sold in Lesotho instead of being bought from a foreign supplier then the consumer would be able to buy some blankets at lower prices. However the net gain would be very small amounting in total to about R 200,000, about 20 cents a head or 33 cents per blanket. We should note that the domestic production of blankets would involve a fall in the prices of some blankets and an increase in the price of others. The prices of the Pitso and Pitseng, together accounting for about 20% of the market, and the only excessively priced imported blankets, would fall. On the other hand the prices of domestics and greys would rise considerably. These account for 35% of the market and are costly to produce domestically relative to the imported product. Against any gain to consumers must be set the loss due to a reduction in choice as a single mill in Lesotho could not produce the present variety of blankets. A mill in Lesotho would provide employment for about 230 Basotho and this would clearly be of benefit. The economy of Lesotho would gain as domestically-produced goods replaced imports. Making reasonable assumptions about the product-mix 600,000 blankets would cost about R 2.5 million if imported and R 2.3 million if produced in Lesotho. The saving on imports would not however amount

to the full R 2.5 million. To produce R 2.3 million of blankets in Lesotho would probably require about R 1.5 million of imports (fibres, materials, etc). Thus the net gain would amount to R 1.0 million. Naturally if the production of the Lesotho mill fell below the 600,000 then this gain would be correspondingly reduced. Finally, Lesotho would benefit from the external economies arising from the establishment of the mill. These effects are difficult to measure but include the development of industrial skills and knowledge, possible growth of ancillary services, etc.

As we consider the various measures which might render blanket production profitable it may be helpful to bear in mind the nature and extent of the benefits referred to above.

Quantitative restrictions

We have seen in Section 4.5.1 that a mill in Lesotho is not likely to gain a profitable share of the blanket market. One way to ensure that it did do so might be to use some form of administrative control. Quantitative restrictions on the movement of domestic products (i.e. goods produced in any territory of the SACU) within the area of the SACU are not permitted. However it was suggested to us that conditions might be attached to a trader's licence requiring him to buy some proportion of his total purchases from the domestic mill. The legality of this course of action would need to be investigated but we will assume that it would be possible to impose such conditions. The question then arises as to what share of the total market should be allocated to the local mill. It would not be feasible to distinguish between different types of blanket and allocate those which are profitable to the domestic mill and give the less profitable to the foreign supplier. If traders were required to make all their purchases from the Lesotho mill then prices would certainly rise as the mill was faced with a captive market and it would not be long before the consumer was not only paying more for his blankets

but he would also be suffering a serious diminution of choice, and probably of quality. Additionally such a restrictive policy would raise problems with persons crossing the border on shopping expeditions; would result in an increase in illegal importation of blankets, and would use valuable and scarce administrative resources. If traders were required to obtain, say, half their requirements from the mill; and, as we have said, it was not possible to specify the composition of this half, then the policy would not achieve its aim of ensuring the profitability of the mill in Lesotho.

Tariffs

A second course of action which might be pursued would be to impose a tariff on imported blankets. It is possible, under the terms of the Customs Union Agreement, for Lesotho to do this in order to protect a new industry and enable it to meet competition from other producers within the customs area. Such protection cannot normally be for more than eight years. Again, as with quantitative restrictions, it would not be possible to have a tariff which differentiated between the different types of blanket. If a tariff was applied it would have to apply to all blankets. The objective of a tariff would be to ensure that the domestic mill gained a sufficient share of the market to operate profitably and it would do this by raising the price of imports. We should note that this will inevitably result in increased prices for all domestically-produced blankets - indeed this is partly the objective. The question then is, what whould the level of the tariff be? At present prices (see Table 4.1) the only product which is clearly uncompetitive with foreign imports is the Mona Lisa. (We take this blanket as typical of the domestics and greys). Its Lesotho price is R 4.35 compared with the import price of R 2.84. In order to make Lesotho competitive a tariff of 36% would be required.

If however the foreign supplier reduced his price by 10% then 52% would be needed and this level would be applied to all blankets. There is no doubt that the prices of all blankets would increase considerably behind this tariff wall to the detriment of the consumer. These increases would bear particularly hard on the poorer consumers e.g. the cheaper blankets such as the Mona Lisa and the Lilala range would become much more expensive. Thus the tariff policy would bring losses to the consumer, but it is also doubtful if it would ensure a profitable share of the market unless the tariffs were set at very high levels. We should also note the high administrative costs involved and the fact that smuggling would be encouraged which might prove difficult to control given Lesotho's long border.

Subsidies

A final possible course of action would be for the Government of Lesotho to subsidise the mill over and above any tax allowances that are already given. We fully appreciate that this raises a number of wider policy issues beyond the scope of this report but for the moment we will assume that it is possible. This immediately raises several questions. What form should the subsidy take? How effective is it likely to be and what will it cost? In Lesotho's situation it is not likely to be to her advantage to reduce the cost of capital. If labour was subsidised to the extent of 100% it would reduce the price of the average blanket by about 12% but we do not think that this would enable a mill in the Kingdom to gain a profitable share of the blanket market. The cost of such a subsidy would depend on the composition of the blankets produced but assuming a total figure of 600,000 and making reasonable assumptions about the product-mix it would be about R 211,000.

Another alternative would be to give an open subsidy to the mill. This would involve a commitment to make up any deficit between revenue and expenditure. Apart from the effects such a subsidy might have on efficiency, it is extremely difficult to say how much this subsidy would turn out to be. If the present main supplier were to cut his prices very considerably and the Lesotho mill was to gain only a very small share of the market then the subsidy could easily rise to well over R 0.5 million. A less vigorous reaction by the foreign firm and a larger share gained by the domestic mill might reduce the figure to around R 100,000. In this situation we cannot think that it would be desirable for the Government of Lesotho to enter into such an open-ended commitment and in any case much wider issues of economic policy are raised if subsidies of this type are to be employed.

We have briefly examined the use of quantitative restrictions, tariffs and subsidies as possible methods of ensuring the viability of a blanket mill in Lesotho. All the methods involve the use of scarce administrative skills and resources. None are likely to encourage efficient production. Quantitative restrictions and tariffs may not achieve their aims, and if they do, the cost to the consumer will be very high and the saving in imports will be small. Subsidies are likely to involve an open-ended commitment which we think cannot be accepted. For these reasons alone we do not consider that it would be desirable to use any of these methods. In addition there is a basic objection to all these courses of action. They all seek to make profitable a mill which basically has costs above those of its competitors. This might be acceptable if in the long run its costs would be reduced but we do not think, in the circumstances, that this will be possible and we do not think that it would generally be in the interests of Lesotho to artificially support such an enterprise. Furthermore a blanket mill in Lesotho faces a particularly difficult market situation and we cannot at the moment forsee any amelioration of the position.

4.6 Conclusion

In order to determine the feasibility of blanket production in Lesotho we estimated the likely costs of production and from these costs we derived prices which we compared with those of present suppliers. In some cases Lesotho prices were well below those of the imported product, in others about the same, and in one important section of the market they were considerably above. These differences can be explained by a combination of market and cost factors but our overall conclusion was that Lesotho will have somewhat higher costs than her competitors, the difference varying as between the products concerned. Given this cost situation and bearing in mind the presence of a dominating supplier the viability of a blanket firm in Lesotho depends on whether it can obtain a profitable share of the market. Even if the price reaction of the major producer is relatively slight we do not think that such a share of the market can be gained and if the established firm were to cut prices drastically then a firm in Lesotho would be doomed to failure. Nor do we consider that the use of controls, tariffs or subsidies would be effective or desirable in this case. We therefore conclude that it would not be feasible to establish blanket production in Lesotho.

4.7 Other development possibilities in the field of textiles

In the course of conducting our enquiries into the feasibility of blanket production it has occurred to us that there may be other possibilities in the textile field which might be more promising than the field we have just looked at. We do not have time, nor have we been requested, to look at these in detail but a brief outline of them is given in Appendix D.

APPENDIX A

TECHNICAL DETAIL OF BLANKET MILL

APPENDIX A

TECHNICAL DETAIL OF BLANKET MILL

1. SPINNING

1.1 Weft yarn - count requirement

In order to produce 600,000 blankets a year, equal to 880,000 kg yarn a year, the following quantities of weft yarn counts are needed:

Table A.1 Weft yarn - count requirement

	Ton/year in yarn counts below			
	Nm 1	Nm 2	Nm 4	Nm 6
Lilala	-	-	120.2	-
Pitseng	-	-	130.4	-
Pitso	-	-	58.2	-
Mountain	55.2	-	-	-
Domestic	177.6	-	-	-
Acrylics	-	39.1	-	-
Travelling rugs	98.0	-	-	-
Travelling shawls	-	-	-	38.0
Greys	169.4	-	-	-
Total ton = 880 ton/year	494.2	39.1	308.8	38.0
Production in kg/h = about 160 kg/h	91.5	7.2	57.2	7.1

The spinning mill is designed to work on three shifts equal to 5400 h/year

1.2 Warehouse

Consumption of raw material for weft yarn is about 880 ton/year. The main part of raw material is bought from overseas and because of transport time it is advisable that the warehouse should be able to take five months storage, or 370 tons. 60% of floor space occupied by material; storage height is 4 m; density of material is 0.2, and total floor space is 800 m^2. In the storage we recommend one combined clamp and lift truck and one very simple baling machine. Three workers per shift are expected to work here. The warehouse is working on two shifts only.

1.3 Opening and mixing

Because of the output of the machines used here, only two-shift operation is necessary, of 3600 h/year. Here we need two Willey machines (Fearnaught). Production is 4 - 600 kg/h. Suitable machinery can be obtained from:

a. Fearnaught, UK
b. Rolando, Italy
c. La Roche, France

1.4 Dyeing

We assume that 800 tons of raw material a year is dyed on a three shift operation i.e. 5400 h/year. We get a production of about 150 kg/h. If we assume that the time for an average machine cycle is three hours, we get a batch-weight of 450 kg. It is suitable to have two machines each about 250 kg per batch, coupled together. Price for two machines inclusive of two extra material carriers is

US $ 150,000 (Longclose UK). Laboratory equipment, US $ 15,000. Drier for the dyed material inclusive of hydroextractor is US $ 46,000 (Petrie McNaught UK).

1.5 Blending

A two shift operation, 3600 h/year. After initial teazing and dedusting of the raw material, the blending is done manually by arranging the components of the raw material in layers on top of each other on the floor. The material is then manually put through a Fearnaught (Willey machine equipped with a hopper feed and oiling equipment). From the Willey machine the material is transported pneumatically into bins. Finally the material will be passed into similar bins situated in front of the woollen cards. Cost for the machine consisting of the hopper, deduster, Fearnaught, emulsion spray, bins and piping is US $ 110,000. The makers of this equipment are:

Rolando,	Italy
Spencer & Halstead,	UK
Duesberg Bousson,	Belgium

The production is 4 - 600 kg/h.

1.6 Woollen carding

As yarn is of Nm 1, 2, 4 and 6, Two cards are necessary, one for Nm 1 and 2, and one for Nm 3 - 6. The production of the first card is theoretically 110 kg/h and the number of good ends is 96. The card for fine yarn, Nm 3 - 6, will produce up to 100 kg/h and has 132 good ends. The production per hour or per card follows in the table below:

Table A.2 Carding

	Card with 96 good ends		Card with 132 good ends	
	Nm 1	Nm 2	Nm 4	Nm 6
Lilala			308.8	
Mountain	55.2			
Mona Lisa etc.	177.6			
Acrylics	92.0	39.1		
Rugs, shawls	169.4			38.0
	494.2	39.1	308.8	38.0
	533.3 ton or 99.0 kg/h		346.8 ton or 64.2 kg/h	

It should be observed that the cards are not completely utilised on three shifts, 5400 h/year.

1.7 Woollen spinning

Table A.3 Woollen spinning production

Yarn Count Nm	Twist r/m	Spindle speed r/min		Efficiency	Production kg/sph	Production kg/h	Necessary Spindles	Sph pa kg yarn
		at 30 m/min	Practically					
1	75	2250	2250	0.70	1.26	91.5	73	0.79
2	100	3000	3000	0.70	0.63	7.2	12	1.59
4	145	4350	3500	0.75	0.27	57.2	210	3.70
6	175	5250	3500	0.75	0.15	7.1	48	6.70
							343	

Three machines with each 120 spindles are necessary.

The three spinning machines with spindles on only one side will have the following properties:

Gauge 165 mm; Ring diameter 127 mm; Tube length 600 mm; net cop weight
Maximum spindle speed is restricted by maximum delivery speed, 30 m/min.

Suitable machines can be obtained from:

Carniti,	Italy
Gaudino,	Italy
Duesberg Bousson,	Belgium
Tatham,	UK

The spin bobbins will be used directly at the weft spooling machines in the weavery.

Table A.4. Spinning department - Investment in machines, auxiliaries and buildings

Process	Machines, spares			Auxiliaries						El. machine power installed kW
	Type	Nos	Total cost US $	Type	Nos	Total cost US $	m^2	s/m^2	Total cost US $	
Warehouse				Lift truck	1	6000	800	130	104000	5.0
				Baling m/c.	1	3000				
Opening, mixing	Fearnaught	2	64000	Transport		3000	300	130	39000	32.8
Blending	Blending	1					200	130	26000	29.8
Bins	Bins	2	90000							
Carding	Card	2	481000	Condenser bobbins	2000	24000	300	154	46200	59.7
Spinning	Ring frames 343 spindles	3	149625	Spinning tubes	10000	35000	900	154	138600	100
Dyeing	Overpressure dyeing m.	2	150000	Included						
	Lab dring m.	1	15000	in machine		-	150	140	21000	50.0
	Dryer	1	46000	price						
	Total		995625			71000	2650		374800	277.3

2. WEAVING

2.1 Production details

Production 600,000 blankets (units of different size and construction 5400 h/year, 3 shift operation)

Table A.5 Weaving - Production details

1. Fashion Blankets	1 Width ready m	2 Length ready m	3 Units per year	4 Warp threads	5 million picks	Threads /cm warp	Threads /cm weft
1.1 Lilala	0.75	0.80	20600	675	30	9	18
	0.75	1.00	5800	675	12	9	18
	0.85	0.90	20600	765	33	9	18
	1.00	1.10	33300	900	66	9	18
	1.15	1.20	15800	1035	32	9	18
					224		
	1.30	1.35	21300	1170	52		
	1.50	1.60	8000	1350	23		
1.2 Pitseng	1.55	1.65	84000	1770	252	11.4	18.2
1.3 Pitso	1.55	1.65	36000	1770	115	11.4	19.3
1.4 Mountain	1.50	1.60	30000	1200	48	8.0	10.0
					490		
2. Domestic Blankets							
2.1 Mona Lisa	1.52	2.03	60000	608	54	4	4.4.
2.2 Swallow etc	1.50	2.00	24000	608	21	4	4.4
2.3 Comfy	1.50	2.00	12000	608	14	4	6
2.4 Acrylics	1.50	2.00	24000	1200	43	8	9
					132		
3. Travelling							
3.1 Rugs	1.5	2.00	45000	900	54	6	6
3.2 Shawls	1.5	1.5	45000	825	37	5.5	5.5
					91		
4. Greys	1.50	2.00	90000	600	72	4	4

The production of blankets can be split in 2 categories, maybe 3, depending mainly on fabric width. It is not practical to make all fabric widths on looms of the same width in reed. The ready width of fabrics varies in the table above between 0.75 and 1.55 m. As a practical compromise and without proper investigation we suggest 2 widths in reed of the looms, 130 cm and 190 cm. A complication is if blankets with fringes on all 4 sides are to be made. In this case extra width in reed in necessary for the fringes, but with 190 cm in reed it is probably possible to make the 150 m ready width. For the prime cost calculation this assumption is satisfactory. Another problem is the number of looms equipped with jacquards, dobby or tappet shedding. Even here an investigation is necessary before a mill is built, but with some reasonable assumptions the prime cost calculation can be made.

2.2 Storage for warp and weft yarns

The warp yarns are probably bought from overseas in the form of crosswound packages and arrive in wooden or cardboard boxes. Due to long transport we estimate that a storage space for warp yarn corresponding to 5 months consumption is advisable. 70 ton cotton yarn is consumed per year. 5 months correspond to 30 ton.

Weft yarn will be stored in boxes and here about 2 - 4 weeks storage is sufficient as weft yarn is made in own spinning mill. Maximum weft in storage is about 7.0 ton. All yarn together about 40 tons at most. Storage on shelves 2 - 3 in height. Area necessary 350 m^2.

2.3 Warping and storage of beams

The warping can be done on a very ordinary horizontal, section warper with a fixed creel for about 400 crosswound warp yarn packages. The number of sections per warp is decided by total number of warp threads per warp and the practical upper limit for the width of one section on the warper. A modest warper will have a machine speed of 300 to 400 m/min and an efficiency of 12% with the simple creel suggested. Production per hour is 0.12 x 400 x 60 = 2900 m/h effectively (in the form of one section). From Table A.5 we take figures in column 2 and multiply with corresponding figure in column 3 and get the length of each type of fabric as demonstrated in the table below.

Table A.6 Warping requirement

Type of Blanket	Total length A (2 x 3. Table A5)	Sections in warp B	Machine hours A x B ÷ 2900
Lilala	16500	3	17
	5800	3	6
	18500	3	19
	36600	3	38
	28500	3	29
	19000	3	20
	28800	4	39
	12800	5	22 (190)
Pitseng	138600	6	287
Pitso	59400	6	123
Mountain	48000	5	83
Domestic	193800	5	334
Acrylics	48000	5	83
Travelling rugs	90000	5	155
Travelling shawls	67500	5	116
Greys	180000	5	310
	991800		1681

One warper will cope with the production in about one shift operation The storage of warp beams in beaming racks of paternoster type. The warp beams can be standardised and about 20 beams in storage should be sufficient.

2, racks, each 10 beams each
Necessary area inclusive of storage 220 m^2

2.4 Weft-preparation (winding of super cops)

70 spindles, cost US $ 39200 (Muschamp UK)
Necessary area inclusive storage of weft boxes
Number of boxes 200; cost US $ 5000. Simple shelves cost US $1000
Required area for weft winding machines and storage of 150 boxes weft yarn is 100 m^2 100 m^2

2.5 Looms

The question of type of weaving equipment is always debatable. Sophisticated machinery like rapier looms are not economical in countries with low wages as in Lesotho. Furthermore true selvedges are not obtained on these machines. Many considerations speak for using ordinary shuttle looms, which are cheap, easy to repair and maintain. A loom will work at different speeds depending mainly on width in reed and equipment used for shedding. Of course, the material in warp and weft yarn is also of prime importance. Three shift working i.e. 5400 h/year.

Table A.7 Weaving - loom details

Fabric	Width in reed m	Equipment for shedding	Speed picks /min	M picks per year	Efficiency of looms	Number of looms
Lilala	1.30	Jacquard	110	224	0.7	10
Pitseng Pitso	1.90	Jacquard	100	490	0.7	23
Mountain Domestic	1.90	Dobby	100	132	0.7	6
Travelling	1.90	Tappet shedd.	100	91	0.7	5
Greys	1.90	Tappet shedd.	100	72	0.7	4
				1009		48

All these looms have 4 x 4 shuttle boxes.

There is a choice between tappet and dobby shedding. The use of dobby has advantages in connection with a change of fabric construction as compared with tappet shedding. Dobbies are, on the other hand, more expensive. In the prime cost calculation we have counted with 34 jacquard and 14 dobby looms.

The preparation of the warp beams is simple as the warp yarn is coarse and there are few ends per beam. We suggest that all preparation is made by hand and consequently only simple racks are necessary for operations like drawing-in (of the warp threads through the eyes of the healds); drawing ends through the reed; putting on fallers (dropwires) for warp-stop-motion etc. The tying on of warp beams at the looms should also be made by hand.

2.6 Winding

From warping we get remnants, about 20% of total production, 0.2 x 70 ton/year = 14 ton/year need rewinding. A simple, hand-operated winding-machine will produce about 1 kg warp yarn per h, spindle. Daytime operation 1800 h/year. 12 spindles will give the smallest winding machine (e.g. Schlafhorst, W. Germany, type BKN US $10000.

Table A.8 Weaving department - Investment in machines, auxiliaries and buildings.

Process	Machines			Spares, Auxiliaries			Floor space		
	Type	Nos.	Total cost US $	Type	Nos	Total cost US $	m^2	m^2	Total cost US $
Storage	Truck	1	6000	Shelves	-	1500	350		45500
				Storage	2	3000			
Warping and Warp preparation	Warper, creel	1	20000	Warp beams	30	2800			
	Transport		2000	Beam truck	1	2900	220	158	34800
				Frames, prep		2000			
Weft prep.	70 spindles		39200	Shelves, boxes		6000			
				Trucks		3000	150	158	23700
Weaving	Jacquard looms								
	130 cm	10	84000	Ass harness	12	7800	1100	158	174000
	190 cm	24	210000	" etc	30	21000			
	Dobby 190 cm	14	94000	"	8	10500			
	Transport		8060						
	Erection		14400						
	Domestic loom	1	2700						
	Winder, sample	1	500						
Winding	Winder		12000						
			565400			60500	1820		278000

3. FINISHING

3.1 Finishing requirement

The blankets sold in Lesotho are generally of low quality. In spite of this fact most blankets have an edging (braid) attached to the blanket on all four sides. Only greys and some mountain blankets have an overstitching along the two shorter sides to prevent fraying; at the long sides the bare selvedge was left untouched.

Only a restricted number of finishing techniques are necessary for this kind of blanket and listed in the table below. This table has only been erected as a basis for prime cost calculation.

Table A.9 Estimate of blankets to be finished

1 Type of blanket	2 Total sale in blankets per year	3 % of total sale per blanket size	4 Blanket size m x m	Sale in m per year	Sale in m/year per type
1. Lilala	150,000				
		14	0.75 x 0.80	16,800	
		4	0.75 x 1.00	6,000	
		14	0.85 x 0.90	18,900	
		22	1.00 x 1.10	36,300	
		16	1.10 x 1.15	27,600	
		11	1.15 x 1.20	19,800	
		14	1.30 x 1.35	28,300	
		5	1.50 x 1.60	12,000	167,900
2. Pitseng	84,000	-	1.55 x 1.65	-	138,600
3. Pitso	36,000	-	1.55 x 1.65	-	59,400
4. Mountain	30,000	-	1.50 x 1.60	-	48,000
Domestic except Acrylics	96,000	-	1.50 x 2.00	-	192,000
Acrylics	24,000	-	1.50 x 2.00	-	48,000
Trav.rugs	45,000	-	1.50 x 2.00	-	90,000
shawls	45,000	-	1.50 x 1.50	-	67,500
Greys	90,000	-	1.50 x 2.00	-	180,000
					991,400

3.2 Finishing routines

Table A.10 Finishing routines

Routine		1	2	3	4	5	m/year	ton/year
Soaping		-	X	-	-	-		
Milling	cents/kg	-	X	-	-	-	107.400	100
Scouring	cents/kg	X	X	X	X	-	811,400	691
Drying	cents/kg	X	X	X	X	-	811,400	691
Raising	cents per m; round	X	X	X	X	X	991,400	-
Steam, Brush	cents per m; round	X	X	X	X	X	991,400	-
Shearing	cents per m; round	-	-	X	-	-	48,000	-
Edging	cents per m of edge	X	X	X	-	X	833,900	-
Fringes	cents per m of fringe	-	-	-	X	-	157,500	-
m/year		498500	107400	48000	157500	180000		
		Lilala Pit-seng Domes-tic (ex. Acry-lics)	Pitso Moun-tain	Acry-lics	Travel-ling rugs & shawls	Greys		

Soaping - A very simple foulard. Speed 25 m/min, efficiency 0.2, giving Mm/year 1.1 Mm/year on 2 shift operation, 3600 h/year. Only 0.1 Mm/year needed. 1 machine on 2 shifts is necessary because milling is on 2 shifts.

Milling - Milling time (cycle time) 2.4 h/batch of 30 units = about 50 m/batch. 3600 h/year. 1.5 machines necessary, say 2 machines as amount of milling can increase with changes in weft-composition. A reserve of $\frac{1}{2}$ machine needed.

Scouring - Cycle-time 4 h/batch. 120 units per scouring machines (about 170 kg/batch). Length of one unit 1.4 m. About 7 machines working on 2 shifts necessary.

Drying - About 650 ton blankets have to be dryed per year. With 10% reparation and refinishing we get 715.000 kg per year. If the drying machinery (stenter frame) works on 2 shifts (3600 h/year) and the cloth has a moisture quotient of 0.65, we get 0.65 x 715,000 = 465,000 kg water per year to be evaporated. If the efficiency of the drying machine is 0.7 the machine must have a drying capacity of 185 kg/h. A stenter frame will evaporate about 13 kg/m^2, h 185 : 13 = 15 m evaporation length. The length of a section is generally 3 m. We need consequently 15 : 3 = 5 layers or 2 sections with 3 layers each (equal to 6 layers in total).

Raising.

About 1 Mm/year to be raised. 2 shifts = 3600 h/year. Production per hour = 276 m/h. Machine speed 15 m/min, efficiency 0.7 and each blanket needs averagely 2.5 rounds in a raising machine.

Table A.11 Raising

1 Type of blanket	2 Nos. of rounds	3 m per year per type	2 x 3 m/year
Lilala	2	167,900	335,800
Pitseng	4	138,600	554,400
Pitso	5	59,400	297,000
Mountain	3	48,000	174,000
Domestic Acrylics	3	48,000	144,000
Travelling	4	157,500	630,000
Greys	2	180,000	360,000
			2,500,000

1.1 machine necessary, say 2 machines

A grinding machine for grinding card wire on rollers in the raising machine necessary.

Steam and brushing

About 1 Mm per year to be steamed and brushed. Machine speed 20 m/h; efficiency 0.6; 2 shift = 3600 h/year. On two shifts we need 0.25 machines; this is to say one machine will be busy about 1000 h/year.

Shearing

In finishing Table A.9 only 48,000 m per year blankets need shearing, one time on each side. A very simple shearing machine is necessary; speed 25 m/min, solid rest, one cylinder, efficiency 0.3. Operation time per year is (48,000 x 2) : (25 x 0.3 x 60) = 250 h/year. It is difficult to say how many blankets need steaming as it depends entirely on fibre length of material used.

Edging

0.83 Mm per year need edging of some kind. The main part of the blankets need edging, either in form of narrow strip of material, e.g. knitted fabric or lace attached to the edges of the blanket (811,400 m m/year) or overstitching along the cut edges of the blanket to prevent fraying (18?),000 m).

Table A.12 Edging

Type	Size m x m	Blankets per year	Edging in m per: Blanket	year	
Lilala	0.75 x 0.80	21,000	3.1	65,000	
	0.75 x 1.00	6,000	3.5	21,000	
	0.85 x 0.90	21,000	3.5	73,500	
	1.00 x 1.10	33,000	4.2	138,600	
	1.15 x 1.20	16,500	4.7	77,600	
	1.30 x 1.35	21,000	5.3	111,300	
	1.50 x 1.60	7,500	6.2	46,500	
Pitseng	1.55 x 1.65	84,000	6.4	537,600	
Pitso	1.55 x 1.65	36,000	6.4	230,400	
Mountain	1.50 x 1.60	30,000	6.2	186,000	
Domestic Acrylics	1.50 x 2.00	120,000	7.0	840,000	2.33 Mm/year
				2.3 Mm/year	

Travelling rugs have generally fringes on the two short sides (in some cases just overstitching of short sides). Travelling shawls have fringes all round.

Fringes:

Travelling rugs	45000 x 3 m/unit	= 135000 m with fringes
Travelling shawls	45000 x 6 m/unit	= 270000 m with fringes
	Totally	405000 m per year

Overstitching

Greys	90000 m x 3 m/blanket =	270000 m overstitching per year
Some travelling rugs	20000 m x 3 m/blanket =	60000 m overstitching per year
	Totally	330000 m overstitching per year

Edging takes 3 - 4 min/blanket, 150 x 160 cm; of 110 m/h, worker
Overstitching takes 2 min/blanket
Fringes take 15 min per shawl
Fringes take 7 min per rug

Edging 2,300,000 : 110 = 210000 man h/year. 1800 h/year, worker.
210,000 : 1800 = 12 workers totally or 6 per shift, 2 shift operation.

Overstitch 330,000 m : 90 m/h = 3600 h/year or 2 workers, one on each shift

Fringes 405,000 : 24 = 16,900 h/year or 10 workers, 5 on each shift

Workers per shift

Edging	6 workers/shift
Overstitch	1 worker/shift
Fringes	5 workers/shift
Total	12 workers/shift

Table A. 13 Average length of blankets in different finishing groups.

Type of Blanket	1 length m	2 blankets per year		1 x 2 m/year	Finishing groups I	II	III	IV	V
Lilala	0.80	20600		16480	X				
	1.00	5800		5800	X				
	0.90	20600		18810	X				
	1.10	33300		36630	X				
	1.15	24800		25520	X				
	1.20	15800		18960	X				
	1.35	21300		28755	X				
	1.60	8000		12800	X				
Pilseng	1.65	84000		138600	X				
Pitso	1.65	36000		59400		X			
Mountain	1.60	30000		48000		X			
	2.00	60000							
Domestic	2.00	24000	96000	192.000	X				
	2.00	12000							
Acrylic	2.00	24000		48000			X		
Rugs	2.00	45000		90000				X	
Shawls	1.50	45000		67500				X	
Greys	2.00	90000		180000					X
				987255					

Average length of all blankets	1.65 m
Average length of blankets in finishing group I	1.50 m
Average length of blankets in finishing group II	1.63 m
Average length of blankets in finishing group III	2.00 m
Average length of blankets in finishing group IV	1.75 m
Average length of blankets in finishing group V	2.00 m

Table A.14 Finishing Department - Investment in machines, production and costs

Process	Machines	Investment in machines US $			Production Mm/year	Machine h per year	Unit for prime cost	Machine cost per year $	Nos of workers 2 shift	Salary per man-hour US $	Total cost for labour pa US $
		Machines	Auxiliaries and spares	Total							
Soaping	1	19,000	4,700	23,700	0.107	360	m	4,499	2	0.54	1,944
Milling	2	21,400	2,000	23,400	0.107	5,350	m	4,178	2	0.54	1,944
Scouring	7	92,400	7,100	99,500	0.811	19,200	m	17,625	8	0.54	7,776
Drying	1	40,000	2,500	42,500	0.811	3,300	kg	7,475	4	0.54	3,888
Raising	2	36,000	7,000	43,000	0.991	3,950	m x times	8,010	8	0.54	7,776
Steam, brush	1	7,000	1,000	8,000	0.991	1,000	m	1,460	1	0.54	972
Shearing	1	10,800	3,500	21,300	0.048	250	m	4,071	1	0.54	972
Grinding	1	6,000	1,000								
Edging	6	11,400	1,000	12,400	2.300	210,000	m edge	2,208	12	0.54	11,664
Overstitch	1	1,200	250	1,450	0.330	3,600	m edge	271	2	0.54	1,944
Fringes	6	1,500	-	1,500	0.405	169,000	m edge	355	10	0.54	9,720
Transport		-	10,000	10,000				2,700	4	0.54	3,888
		246,700	40,060	286,750				52,852	54		52,488

Machine cost per year: Calculation based on 10 years depreciation time, 14% interest; Auxiliaries = 5 years use

Buildings: 825 m^2, $ 130/m^2, 107,250 $

Table A.15 **Laboratory Report**

	Pitso	Welwitschia	Mona Lisa	Pitseng	Lilala
Weight g/m^2	563	302	569	551	578
Weave	$\frac{1}{3}$ twill	Plain	Plain	$\frac{1}{3}$ twill	double cloth
Warp count Tex	56	134	47	66	43
Weft count Tex	240	134	1036	345	246
Warp ends/inch	29	23	10	29	23
Weft ends/inch	49	24	11	48	55
Composition	11.8% cotton (warp) 80.4% wool 7.8% nylon	57/43 wool/acrylic	5.2% cotton (warp) 6.2% wool 2.2% nylon 86% viscose cotton	12.5% cotton (warp) 27.2% wool 54.9% viscose 5.1% nylon	7.6% polyester 3.2% wool 89.3% viscose
Micron of non-wool component	21 μ nylon	21 μ acrylic	17 μ (cotton viscose)	25.2 μ viscose	25.3 μ viscose
Denier	3.5	3.25	2.5	5.0	5.0

APPENDIX B

PRIME COST CALCULATIONS

APPENDIX B

PRIME COST CALCULATIONS

1. Spinning Department - Basis for prime cost calculation

1.1 Warehouse, unit of cost is kg. 880 ton/year, 2 shift

Capital cost for:

		US $/year	US cents/kg
Buildings	800 m^2 x $ 130/m^2 = $ 104,000; 20 years 14%;	12,480	1.86
Machines	$ 9,000; 5 years 14%;	2,430	
Labour	3 workers/shift x 2 shifts x 1800 h/year, worker x $ 0.54/h;	5,832	0.67
Material	Gasoline	1,000	0.12
			2.65

1.2 Opening, mixing; unit of cost kg; 880 ton/year, 2 shift

Capital cost for:

Machines	$ 67,000; 10 years, 14%	11,390	
Buildings	$ 39,000; 20 years, 14%	4,680	
		16,070	1.82
Labour	5 workers/shift; 2 shift 5 x 2 x 1800 x 0.54	9,720	1.10
Material	Oil		2.40
Electricity	Machines 32 kW 32 x 0.04 x 3600 x 0.02	922	
	Light 800 m^2 x 0.005 W/m^2 x 5400 x 0.02 c/kWh	432	
	Steam	1,000	
		2,354	0.27
			5.59

	US $/year	US cents/kg
1.3 **Blending, bins**; unit of cost kg; 880 ton/year, 2 shift		
Capital cost for:		
Machines $ 90,000; 10 years, 14%	15,300	
Buildings 200 m^2 x $ 130/m^2, $ 26,000, 20 years, 14%	3,120	
	18,420	2.09
Labour 2 workers/shift, 2 shifts, 2 x 2 x 1800 x 0.54	3,888	0.44
Material		
Electricity		
Light 200 m^2 x 0.04 W/m^2 x 5400 h/year x $0.02/kWh	864	
Power 30 x 0.4 x 3600 x 0.02	864	
Air conditioning 200 x 0.01 x 3600 x 0.02	576	
Steam	500	
	2,804	0.32
		2.85
1.4 **Carding** 300 m^2 ($ 154/m^2) 880 ton/year, 3 shift (not completely, 80% of 5400 h/year). Unit kg.		
Machines $ 481,000, 10 years 14%	81,770	
Buildings $ 46,200, 20 years 14%	5,544	
	87,314	9.92
Labour 3 workers/shift, 3 shifts 3 x 3 x 1800 x 0.54	8,748	0.99
Material		
Condenser bobbins $ 24,000; 5 years, 14%	6,480	0.74
Electricity		
Light 300 x 0.04 x 5400 x 0.02	1,296	
Power 60 x 0.8 x 0.8 x 5400 x 0.02	4,147	
Air conditioning 300 x 0.04 x 5400 x 0.02	1,296	
Steam	750	
	7,489	0.85
		12.50

		US $/year	US cents/sph
1.5	**Spinning** 880 ton/year. 3 shift, 5400 h/year 2,257,000 sph/year; Unit = cents/spindle hour		
	Capital cost for:		
	Machines $ 149,625, 10 years, 14%	25,400	
	Buildings $ 138,600, 20 years, 14%	17,000	
		42,400	1.70
	Labour 5 workers/shift, 3 shift 5 x 3 x 1800 x 0.54	14,580	0.60
	Materials		
	Tubes $ 35,000, 5 years, 14%	9,450	0.42
	Electricity		
	Light 700 x 0.04 x 5400 x 0.02	3,888	
	Power 107 x 0.7 x 5400 x 0.02	8,090	
	Air conditioning 900 x 0.04 x 5400 x 0.02	3,888	
	Steam	1,000	
		16,866	0.75
			3,47

Yarn

Nm 1	3.47	cents/sph	x 0.79	sph/kg	= 2.74	cents/kg yarn
Nm 2	3.47	"	x 1.59	"	= 5.53	"
Nm 4	3.47	"	x 3.79	"	= 12.85	"
Nm 6	3.47	"	x 6.79	"	= 23.3	"

1.6 Spinning Department - Summary of prime cost calculation

Costing area	Quantity per year	Unit used	Prime cost in US cents per unit				Notes
			Capital	Labour	Others	Total	
1.1 Warehouse	880 t	kg	1.86	0.67	0.12	2.65	
1.2 Opening Mixing	880 t	kg	1.82	1.10	2.67	5.59	
1.3 Blending	880 t	kg	2.09	0.44	0.32	2.85	
1.4 Carding	880 t	kg	9.92	0.99	1.59	12.50	
1.5 Spinning	880 t	spindle /h	1.70	0.60	1.17	3.47	1.

1.

Nm	Spindle h per kg	Prime cost in US cents/kg			
		Capital	Labour	Others	Total
1	0.79	1.33	0.49	0.92	2.74
2	1.59	2.70	0.96	1.86	5.52
4	3.70	6.29	2.22	4.34	12.84
6	6.70	11.39	4.02	7.84	23.25

The whole spinning process

Yarn count	Prime cost in US cents/kg			
	Capital	Labour	Others	Total
1	17.02	3.69	5.62	26.33
2	18.39	4.16	6.56	29.11
4	21.98	5.42	9.03	36.43
6	27.08	7.22	12.54	46.84

2. Dyeing Department - Basis for prime cost calculation

Dyeing 800 ton/year. Unit of cost is kg			US $/year	US cents/kg
Capital cost for:				
Machines, 2 machines + 2 extra carriers				
Lab. 1 machine	$ 15000			
Dryer	$ 1500			
	$ 4000			
Building 150 m²; $140/m²	$ 21000;	10 years 14%	35,879	
	$ 2000;	20 years 14%	2,520	
			38,390	4.80
Labour 4 workers x 1800 h/year, $ 0.54/h			3,888	0.49
		$		
Light 150 m² x 0.02 w/m² x 5400 x 0.02 =		350		
Power 50 x 0.6 x 5400 x 0.02		3250		
Ventillation 150 x 0.03 x 5400 x 0.02		500		
Steam for ventillation		1000		
		5100		0.63
Water 60 l/kg mat 8 c/m³			3,840	0.48
Steam heating water (60 x 90) : 600	4.5 kg steam		33,600	
Steam drying	2.5 kg steam		37,440	
	7.0 kg $ 6/ton			4.68
				11.08

Cost for	Dyestuff	Chemicals	Total	
Light shades	8	3	11	c/kg
Medium shades	16	3	19	c/kg
Dark shades	25	3.5	28.5	c/kg
Medium dark	21.5	3.5	24.0	c/kg

We calculate with average medium shades

	Capital	Labour	Chemical Dyes	Others	Total
	4.80	0.49		5.79	11.1
Light shade	4.80	0.49	11.0	5.79	22.1
Medium shade	4.80	0.49	19.0	5.79	30.1
Medium dark	4.80	0.49	24.0	5.79	35.1
Dark shade	4.80	0.49	28.5	5.79	39.6

3. Weaving Department - Basis for prime cost calculation

	US $/year	US cents/kg
3.1 Storage of warp and weft yarn		
800 ton/year, 2 shift		
Unit for calculation is kg		
Capital cost for:		
Buildings 350 m^2 x $ 130/m^2, $ 45,500, 20 years, 14%	5,460	
Trucks, shelves $ 7,500; 5 years, 14%	2,025	
	7,485	0.94
Light, steam	1,000	0.13
Labour 1 worker/shift, 2 shifts 1 x 2 x 1800 x 0.54	1,944	0,24
		1,31

3.2. **Warping** 70 ton/year; Unit, Machine hour

0 Type	1 width m	2 length m	3 Units per year	4 Threads per warp beam	5 Sections	6 $\frac{2 \times 3 \times 5}{2900}$	7 Machine h per 100 m warp	8 $2 \times 3 \times 4 \times 10^{5}$
Lilala	0.75	0.80	20600	675	3	17	0.10	11.1
	0.75	1.00	5800	675	3	6	0.10	3.9
	0.85	0.90	20600	765	3	19	0.10	14.1
	1.00	1.10	33300	900	3	38	0.10	32.9
	1.10	1.15	24800	990	3	29	0.10	28.2
	1.15	1.20	17800	1035	3	20	0.10	19.7
	1.30	1.35	21300	1170	4	39	0.14	30.8
	1.50	1.60	8000	1350	5	22	0.14	17.2
Pitseng	1.55	1.65	84000	1770	6	287	0.21	245.3
Pitso	1.55	1.65	36000	1770	6	123	0.21	105.1
Mountain	1.50	1.60	30000	1200	5	83	0.17	57.6
Domestic	1.50	2.00	96000	608	5	334	0.17	117.8
Acrylics	1.50	2.00	24000	1200	5	83	0.17	57.6
Rugs, travelling	1.50	2.00	45000	900	5	155	0.17	81.0
Shawls, "	1.50	1.50	45000	825	5	116	0.17	55.7
Greys	1.50	2.00	90000	600	5	310	0.17	108.0
						1681 machine h/year		985.8 Unit cents/ machine h

		US $/year		
Capital cost for:				
Machinery	$ 20000; 10 years, 14%	3,400		
Transport	$ 2000; 5 years, 14%	540		
		3,940	234	
Buildings	220 m^2 x $ 154/m^2, $ 33880 20 years, 14%	4,171	248	482
Labour	2 x 1800 x 0.54	1,440	86	
Light	220 m^2 x 0.04 x 3600 x 0.02	634		
Power	4 x 1681 x 0.02	135		
Air conditioning	220 x 0.04 x 5400 x 0.02	950		
Steam		1,000		
		2,719	161	
			729	

3.3 Warp preparation, daytime operation

			US $/year	$/beam of 1000 threads
Warp beams	2800			
Beam trucks	2900	5 years, 14%	2,079	
Preparation frames	2000			
Storage, 2 frames	3000	10 years, 14%	510	
	10700		2,589	2.59

Beam length is 1350 m; = 740 beams/year;
assume 1000 beams/year
Average number of threads/beam 1000. If
work on day-time, 1800 h/year we need:

Hand healding and reading in	500 ends/man h
Hand twisting	600 ends/man h
Warp-droppers	1000 droppers/man h

Labour cost

3 persons day time for work above
1 transport worker

3 x 1800 x 0.40 (women)	2,160	
1 x 1800 x 0.54 (transport)	970	
	3,130	3.13
		5.72

3.4 Weft preparation 2 shifts, unit Nm x kg

			US cent/Nm x kg
Machines	$ 39200	10 years 14%	6,664
Boxes, trucks shelves	$ 9000	5 years 14%	2,430
			9,094
			0.47

1 Nm	2 ton/year	1 x 2 ton
1	492.2	492.2
2	39.1	78.2
4	308.8	1235.2
6	21.7	130.2
		1935.8

Buildings

150 m^2 x $ 158/m^2; $ 23700; 10 years, 14%	4,028	0.21

Labour cost

3 x 2 x 1800 x 0.40	4,320	
1 x 2 x 1800 x 0.54	1,944	
	6,264	0.32
Electricity etc.	1,000	0.05
		1.05

3.5 Weaving, 3 shifts, unit 1000 picks
Totally 1009 M picks/year

		US $/year	US cents/ 100 picks
Capital costs for			
Machinery	$ 486200 10 years 14%	82,660	
Accessories	$ 39300 5 years 14%	10,610	
Buildings		93,270	9.24
1100 m^2 x $ 158/m^2; $ 174000, 20 years 14%		20,880	2.07
		US $/h	
Labour costs. Weavers	24 per shift	0.54	
Tuners	2 per shift	4.00	
Warp changing	1 per shift	0.54	
Cleaning	1 per shift	0.40	
		US $/year	
24 x 3 x 1800 x 0.54		69,984	
2 x 3 x 1800 x 4.00		43,200	
1 x 3 x 1800 x 0.54		2,916	
1 x 3 x 1800 x 0.40		2,160	
		118,250	11.71
Light	1100 x 0.04 x 5400 x 0.02	4,752	
Power	48 x 0.75 x 5400 x 1.1 x 0.02	4,277	
Air conditioning	1100 x 0.04 x 5400 x 0.02	4,752	
Steam		1,000	
		14,780	1.47
			24.49

Jacquard weaving $ 500/pattern:
Pattern will live 1 year
25 M picks/patters = 2.00 cents/1000 picks

3.6 Winding. Daytime, 18 spindles,
Unit c/g warp yarn

Capital cost for:		
Machines $ 12000 10 years 14%	2,040	
30% of 70 ton/year is rewound = 20 ton/year		
Per kg warp yarn (70 ton/year)		
Labour		2,90
1 x 1800 x 0.54	972	1.39
		4.29

Machine is placed in weaving area

3.7 Weaving Department - Summary of prime cost calculation

Costing area	Quantity per year	Unit used	Prime cost in US cents per unit used			Total	Notes
			Capital	Labour	Others		
2.1 Yarn storage	800 t	kg	0.94	0.24	0.13	1.31	
2.2 Warping	1681	Machine - h	482	86	161	729	1.
2.3 Warp prep.	1.0 M threads /year	cents per 1000 threads	2.59	3.13	-	5.72	2.
2.4 Weft prep	$1935_3 \times 10^3$	Nm x kg	0.68	0.32	0.05	1.05	3.
2.5 Weaving	1009 M picks per year	1000 picks	11.31	11.71	1.47	24.49	For jacquard 2.00 extra 4.
2.6 Winding of warp yarn	70 t	kg	2.90	1.39	-	4.29	5.

1. Machine hours per 100 m warp for

Lilala	0.75 - 1.15 m width	0.10
	1.30 - 1.50 m width	0.14
Pitseng		0.21
Pitso		0.21
Mountain		0.17
Acrylics		0.17
Rugs, shawls		0.17
Greys		0.17

2. If number of ends in warp is 1770 the total cost is 572 x 1.770 = 1012 cents/beam.
If the beam is 1350 m and blanket length is 1.65 we get
(1012 x 1.65) : 1350 = 1.24 cent/blanket

3.

Nm	Capital	Labour	Others	Total
1	0.68	0.32	0.05	1.05
2	1.36	0.64	0.10	2.10
4	2.72	1.28	0.20	4.20
6	4.08	1.92	0.30	6.30

4. If a blanket has 11.8 picks/cm and is 165 cm long the total number of picks is 1947 picks/blanket. Total cost is for a jacquard weave (24.49 + 2.0) x 1.94 = 51.4 cent/blanket

5. If there is 0.121 kg warp in a blanket we get 0.121 x 4.29 = 0.5 cent/k

4. Finishing Department - Basis for prime cost calculation

The details of labour, materials, capital costs and lighting and ventilation are given in Appendix A, Section 3.

Table B.1 below gives the processing costs in finishing and Table B.2 shows the finishing costs for selected blankets.

Table B.1 Finishing - Processing costs in US cents

Cost Factor	Soaping and milling cents/kg	Scouring cents/kg	Drying cents/kg	Raising cents/kg per round	Steam & brush cents/m per round	Shearing cents/m per passage	Edging cents/m of edge	Over-stitch cents/m of stitch	Fringing cents/m of fringe	Trans-port etc cents/m
1. Labour										
a. direct	3.08	1.12	0.55	0.31	0.05	0.56	0.51	0.58	2.38	-
b. indirect and supervision	1.33	0.37	0.18	0.10	0.02	0.13	0.17	0.19	0.79	0.39
2. Materials										
							Braiding yarn			
a. chemicals	2.20	2.20	-	-	-	-	3.00	0.80	-	-
b. steam, water and electricity	0.82	3.75	1.41	0.03	0.01	0.01	0.001	0.001	-	-
3. Overheads	0.75	0.72	0.21	0.05	0.01	0.07	0.20	0.13	0.10	0.05
4. Capital costs										
a. machinery	8.67	2.56	1.07	0.32	0.05	2.37	0.09	0.08	0.08	0.27
b. Buildings	0.78	0.56	0.45	0.12	0.05	0.45	0.02	0.01	0.01	-
5. Lighting & ventilation	0.14	0.10	0.08	0.02	0.01	0.08	0.001	0.001	0.001	-
Total costs	17.77	11.38	3.95	0.95	0.20	3.67	3.99	1.79	3.36	0.71
Production										
m/year	107,400	811,000	811,400	991,400 m raised 2,500,000	991,400 m brushed 2,000,000	48,000 m sheared 172,000	2,300,000 m of edging /year	330,000 m of over stitching /year	405,000 m of fringe /year	991,400
kg/year	100,000	691,000	691,000							

Table B.2 Finishing costs of selected blankets

	Blanket quality and finishing group				
	Mona Lisa 1	Pitseng 1	Lilala 1	Pitso 2	Welwitschia 4
Size cm x cm	152 x 203	155 x 165	75 x 80	155 x 165	160 x 165
Size m^2	3.08	2.55	0.60	2.55	2.64
Weight kg	1.75	1.48	0.36	1.52	1.44
Soaping and milling	-	-	-	27.01	-
Scouring	19.91	16.84	4.09	17.29	16.38
Drying	6.91	5.84	1.42	6.00	5.68
Raising	5.78	6.27	1.52	7.38	6.27
Steam and brush	0.81	0.66	0.32	0.32	0.66
Shearing	-	-	-	-	-
Edging	28.33	25.53	12.36	25.53	-
Overstitch	-	-	-	-	-
Fringing	-	-	-	-	7.72
Transport	1.44	1.17	0.56	1.17	1.17
Total finishing costs US cents per blanket	63.18	56.31	20.27	84.70	37.88

5. Overheads

5.1 Inventory. Unit kg

Spinning

Raw material storage

		US ¢
Max	370 ton raw material	
Wool	93 ton @ ¢ 2.1/kg	195,000
Rayon	240 ton @ ¢ 1.2/kg	288,000
Acrylics	17 ton @ ¢ 1.5/kg	25,000
Nylon	20 ton @ ¢ 1.65/kg	33,000
		541,000

	US ¢
	(0 - 541,000)
Average storage is 50% of 541,000	270,000
Material corresponding to 4 days production in the mill, corresponding to 20 ton material @ ¢ 2.00/kg	40,000

Probable inventory is ½ x 540,000 + 40,000 or US ¢ 310,000

Weaving

Process

			US ¢
Storage	0.6 x 30 = 18 ton warp yarn,	price ¢ 2.90/kg	52,000
	0.5 x 70 = 35 ton weft yarn,	price ¢ 1.50/kg	52,000
Warping, warp preparation	2 ton warp yarn	price ¢ 2.90/kg	6,000
Weft winding	1.5 ton weft yarn	price ¢ 1.50/kg	2,000
Weaving, 48 looms	2.6 ton weft yarn	price ¢ 1.50/kg	4,000
	0.3 ton warp yarn	price ¢ 2.90/kg	1,000
	4000 units,	price ¢ 6.00/kg	24,000
			141,000

Finishing

		US ¢
Grey cloth storage	1 weeks production 12000 units 12000 x ¢ 7.00/unit	84,000

Finished goods storage

100,000 units maximum @ ¢ 8.5/unit	(850,000)
Probably normal storage is 50% of maximum	425,000

Summary: Storage in US ¢

	Average	Maximum
1. Spinning including raw material storage	310,000	580,000
2. Weaving	141,000	141,000
3. Finishing	84,000	84,000
4. Finished goods	300,000	425,000
	835,000	1,230,000

(14%)
835 x 0.14 = ¢ 116,900/year

116,900 : 800,000 kg = 14.61 cents/kg

Add 50% for contingencies = 22 cents/kg

5.2 Storage of finished goods. Unit - blanket

Unit - blanket. Daytime operation
About 100,000 blankets to be stored as a maximum
Volume of one blanket averages 0.015 m^3;
Storage 3.5 m high; 60% of floorspace in shelves.
100 blankets per m^2 floorspace. 1000 m^2 storage area

Capital cost for:

Building

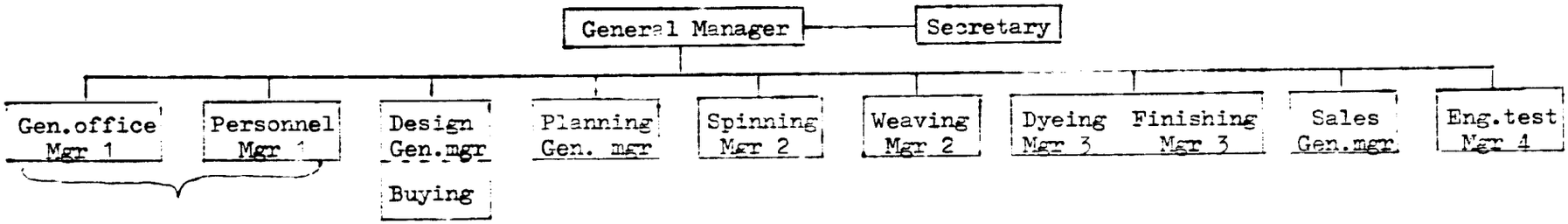
1000 x ¢ 130/m^2 = ¢ 130,000 20 years, 14% ¢ 15,600/year

Labour 4 persons
4 x 1800 x 0.54 ¢ 3,900/year
19,500

600,000 blankets a year = 3.25 cents/blanket

Materials 2.00

5.25 cents/blanket



Bookkeeping;
Econonic planning;
Costing;

5 persons report to General Manager: Mgr 1; Mgr 2; Mgr 3; Mgr 4 and Secretary

			Annual Salary US $	
General Manager			14,500	
Manager 1			7,200	
Manager 2			12,000	
Manager 3			12,000	
Manager 4			12,000	57,700
Secretary				2,000
Office clerks	Main office	4	7,400	
	Spinning, weaving	2	Under department overhead	
	Dyeing, finishing	2	Under department overhead	
	Engineering testing	1	1,800	
	Porters	3	2,400	
	Cleaners	2	1,300	
	Shops, Eng.	6	13,000	
	Shipping, general storage	7	28,000	54,700
			Total	114,400

	US $/year	US cents/kg
Personnel - as above	114,400	
Buildings		
200 m^2 x $130/$m^2$ = S 2600, 20 years, 14%	3,100	
Auxiliaries		
S10,000, 5 years, 14%	2,700	
	120,200	15.00

Product Data Sheet No. 1.

Name of product: Pitso

Width 155 cm ; Length 165 cm; Fringes No ; Weight 1.50 kg

WARP: Ends/cm 11.4 ; Totally 1770 ; Count Nm 28/2; Material Cotton

Yarn length/blanket 174 cm ; Warp shrinkage 5% ; Warp weight 0.22 kg

Warp yarn price $/kg 2.92 ; Cost of warp yarn c/blanket 64.2

WEFT: Picks/cm 19.3 ; per blanket 3185 ; Count Nm 4 ; width in reed 170cm

Woven weight per blanket 1.35 kg

Material:

	%	weft weight	kg weft yarn	Price $/kg	cost blanket c	Totally cents
1. Wool	91	1.35 kg	1.23	1.89	232	
2. Nylon	9	1.35 kg	0.12	1.00	19	251
3.						

Loss in spinning 10% ; Wt. weft raw mat.1.49kg; Total cost weft c/bl. 276.1

Loss in finishing 5% ; Finished wt weft material/blanket 1.28 kg

Manufacturing cost:	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Spinning	29.67	7.32	12.19	49.18
Dyeing (Medium dark)	6.48	.66	40.22	47.36
Weaving (Jacquard)	44.37	40.99	5.74	91.10
Finishing	26.26	23.02	35.42	84.70
Store, inventory				38.25
Mill overhead				22.50
Raw material				340.3
Total	106.78	71.99	93.57	673.39

Breakdown of weaving cost: Woven weight/blanket 1.57 kg

	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Storage	1.48	0.38	0.20	2.06
Warping	1.76	0.31	0.59	2.66
Warp preparation	0.80	0.96	-	1.76
Weft preparation	3.67	1.73	0.27	5.67
Weaving	36.02	37.30	4.68	78.00
Winding	0.64	0.31	-	0.95
Total	44.37	40.99	5.74	91.10

Product Data Sheet No. 2

Name of product: Pitseng

Width 155 cm ; Length 165 cm; Fringes No ; Weight 1.43 kg

WARP: Ends/cm 11.4 ; Totally 1770 ; Count Nm 28/2 ; Material Cotton

Yarn length/blanket 174 cm; Warp shrinkage 5% ; Warp weight 0.22 kg

Warp yarn price ¢/kg 2.92 ; Cost of warp yarn c/blanket 64.2

WEFT: Picks/cm 18.1 ; per blanket 2990 ; Count Nm 4 ; width in reed 170cm

Woven weight per blanket 1.27 kg

Material:

		%	weft weight	kg weft yarn	Price ¢/kg	cost blanket c	Totally cents
1.	Wool	31.2	1.27	0.40	1.89	76	
2.	Nylon	5.8	1.27	0.07	1.60	11	187
3.	Viscose	63.0	1.27	0.80	1.25	100	

Loss in spinning 10% ; Wt. weft raw mat. 1.40kg; Total cost weft c/bl. 205.7

Loss in finishing 5% ; Finished wt weft material/blanket 1.21 kg

Manufacturing cost:	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Spinning	27.91	6.88	11.47	46.26
Dyeing (Medium dark)	6.10	0.62	37.83	44.55
Weaving (Jacquard)	41.85	38.57	5.43	85.85
Finishing	11.24	14.61	30.46	56.31
Store, inventory				36.71
Mill overhead				21.45
Raw material				269.90
Total	87.10	60.68	85.19	561.03

Breakdown of weaving cost: Woven weight/blanket 1.49 kg

	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Storage	1.40	0.36	0.19	1.95
Warping	1.76	0.31	0.59	2.66
Warp preparation	0.80	0.96	-	1.76
Weft preparation	3.45	1.62	0.25	5.32
Weaving	33.82	35.01	4.40	73.23
Winding	0.64	0.31	-	0.95
Total	41.85	38.57	5.43	85.85

Product Data Sheet No. 2

Name of product: Lilala (75 x 80) cm

Width 75 cm ; Length 80 cm ; Fringes No ; Weight 0.40 kg.

WARP: Ends/cm 9.1 ; Totally 6[illegible] ; Count Nm 28/2 ; Material Polyester

Yarn length/blanket 84 cm ; Warp shrinkage 5% ; Warp weight 0.04 kg

Warp yarn price $/kg 1.50 ; Cost of warp yarn c/blanket 6.0

WEFT: Picks/cm 21.7 ; per blanket 1736 ; Count Nm 4 ; width in reed 88cm

Woven weight per blanket 0.38 kg

Material:

	%	weft weight	kg weft yarn	Price $/kg	cost blanket c	Totally cents
1. Nylon	3.5	0.38 kg	0.013	1.60	2.1	
2. Viscose	96.5		0.367	1.25	45.9	48.0
3.						

Loss in spinning 10% ; Wt. weft raw mat. 0.42kg Total cost weft c/bl. 52.4

Loss in finishing 5% ; Finished wt weft material/blanket 0.36 kg

Manufacturing cost:	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Spinning	8.35	2.06	3.43	13.84
Dyeing (Medium dark)	1.82	0.19	11.32	13.33
Weaving (Jacquard)	21.72	21.23	6.29	49.24
Finishing	3.09	5.07	12.11	20.27
Store, inventory				14.05
Mill overhead				6.00
Raw material				58.40
Total	34.98	28.55	33.15	175.13

Breakdown of weaving cost: Woven weight/blanket 0.42 kg

	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Storage	0.39	0.10	0.05	0.54
Warping	0.40	0.07	0.14	0.61
Warp preparation	0.15	0.18	-	0.33
Weft preparation	1.03	0.49	0.08	1.60
Weaving (Jacquard)	19.63	20.33	6.02	45.96
Winding	0.12	0.06	-	0.18
Total	21.72	21.23	6.29	49.24

Name of product: Lilala (110 x 115) cm

Width 110 cm ; Length 115 cm ; Fringes No ; Weight 0.84 kg

WARP: Ends/cm 9.1 ; Totally 1000 ; Count Nm28/2 ; Material Polyester

Yarn length/blanket 121 cm ; Warp shrinkage 5% ; Warp weight 0.09 kg

Warp yarn price $/kg 1.50 ; Cost of warp yarn c/blanket 13.5

WEFT: Picks/cm 21.7 ; per blanket 2500 ; Count Nm 4 ; width in reed 127

Woven weight per blanket 0.79 kg

Material:

		%	weft weight	kg weft yarn	Price $/kg	cost blanket c	Totally cents
1.	Nylon	3.5	0.79	0.028	1.60	4.5	99.8
2.	Viscose	96.5	"	0.762	1.25	95.3	
3.							

Loss in spinning 10% ; Wt. weft raw mat. 0.87 ; Total cost weft c/bl. 109.8

Loss in finishing 5% ; Finished wt weft material/blanket 0.75 kg

Manufacturing cost:	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Spinning	17.36	4.28	7.13	28.77
Dyeing(Medium dark)	3.79	0.39	23.53	27.71
Weaving (Jacquard)	32.4	31.11	9.14	72.65
Finishing	6.4	9.1	19.8	35.30
Store, inventory				23.73
Mill overhead				12.60
Raw material				123.30
Total	59.95	44.88	59.60	324.06

Breakdown of weaving cost: Woven weight/blanket

	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Storage	0.83	0.21	0.11	1.15
Warping	0.58	0.10	0.19	0.87
Warp preparation	0.31	0.38	-	0.69
Weft preparation	2.15	1.01	0.16	3.32
Weaving (Jacquard)	28.27	29.28	8.68	66.25
Winding	0.26	0.13	-	0.39
Total	32.40	31.11	9.14	72.65

Name of product: Mona Lisa

Width 152 cm ; Length 203 cm ; Fringes No ; Weight 1.63 kg

WARP: Ends/cm 4.0 ; Totally 608 ; Count Nm 28/2 ; Material Cotton

Yarn length/blanket 213 cm ; Warp shrinkage 5% ; Warp weight 0.093 kg

Warp yarn price $/kg 2.92 ; Cost of warp yarn c/blanket 27.0

WEFT: Picks/cm 4.7 ; per blanket 954 ; Count Nm 1 ; width in reed 170 cm

Woven weight per blanket 1.62 kg

Material:

		%	weft weight	kg weft yarn	Price $/kg	cost blanket c	Totally cents
1.	Wool	6.6	1.62	0.11	1.89	21	211
2.	Nylon	2.3	1.62	0.04	1.60	6	
3.	Viscose	91.1	1.62	1.47	1.25	184	

Loss in spinning 10% ; Wt. weft raw mat. 1.78kg; Total cost weft c/bl. 232.1

Loss in finishing 5% ; Finished wt weft material/blanket 1.54 kg

Manufacturing cost:	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Spinning	27.57	5.98	9.10	42.65
Dyeing (Medium dark)	7.78	0.79	48.26	56.83
Weaving	15.87	12.95	2.06	31.09
Finishing	12.55	15.76	34.87	63.18
Store, inventory				41.10
Mill overhead				24.45
Raw material				259.10
Total	63.77	35.48	94.29	518.40

Breakdown of weaving cost: Woven weight/blanket 1.71 kg

	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Storage	1.61	0.41	0.22	2.24
Warping	1.75	0.31	0.58	2.64
Warp preparation	0.34	0.41	-	0.75
Weft preparation	1.10	0.52	0.08	1.70
Weaving	10.80	11.17	1.40	23.36
Winding	0.27	0.13	-	0.40
Total	15.87	12.95	2.06	31.09

Product Data Sheet No. 6.

Name of product: Welwitschia

Width 160 cm ; Length 165 cm ; Fringes all sides; Weight 0.80 kg

WARP: Ends/cm 9.1 ; Totally 1140 ; Count Nm 6 ; Material Wool/Acrylic

Yarn length/blanket 185cm ; Warp shrinkage 10% ; Warp weight 0.45 kg

Warp yarn price ₵/kg - ; Cost of warp yarn c/blanket -

WEFT: Picks/cm 10.3 ; per blanket 1700 ; Count Nm 6 ; width in reed 190cm

Woven weight per blanket 0.54 kg

Material:

	%	yarn weight	kg material	Price ₵/kg	cost blanket c	Totally
1. Reused wool	57	0.99 kg	0.57	1.00	57	113 cents
2. Acrylic	43	0.99 kg	0.43	1.30	56	
3.						

Loss in spinning 10%; weight raw mat. 1.09kg; Total cost c/bl. 124.3

Loss in finishing ≈ 10% ; Finished wt material/blanket 0.80 kg

Manufacturing cost:	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Spinning	26.81	7.15	12.41	46.37
Dyeing (Medium dark)	4.75	.49	29.49	34.73
Weaving	25.88	22.94	3.30	52.12
Finishing	8.4	34.6	7.0	50.0
Store, inventory				22.85
Mill overhead				12.00
Raw material				124.30
Total	65.84	65.18	52.2	342.37

Breakdown of weaving cost: Woven weight/blanket 0.99 kg

	Cost in US cents/blanket			
	Capital	Labour	Others	Total
Storage	0.93	0.24	0.13	1.30
Warping	1.51	0.27	0.51	2.29
Warp preparation	0.70	0.85	-	1.55
Weft preparation	2.20	1.04	0.16	3.40
Weaving	19.23	19.91	2.50	41.63
Winding	1.31	0.63	-	1.94
Total	25.88	22.94	3.30	52.12

APPENDIX C

PERSONS SEEN IN LESOTHO

APPENDIX C

PERSONS SEEN IN LESOTHO

The names of persons whom we saw in Lesotho in the period 11 - 27 September 1974 are given in the order in which we met them.

United Nations Development Programme.

B. W. Taylor - Resident Representative
C. Klein

Planning Office

N. Ncholu - Assistant Secretary, Sectional Head
Mrs. Moonyane - Assistant Secretary
S. Montsi - Director

Lesotho National Development Corporation

Ph. K. H. Bechtel - Managing Director
J. Creed - General Manager
S. S. Rapeane - Assistant Project Manager

Ministry of Commerce & Industry

Mr. L. B. Monyake - Permanent Secretary
Mr. J. von Gyldenfeldt - Industrial Planner

Bureau of Statistics

Mr. Borotho
Mr. P. Marress

Frasers (Pty) Ltd.

Mr. Sampson
Mr. Brown

Collier & Yeats

Mr. N. Yeats
Mr. Clarke

Barclays Bank International Ltd.

J. A. Bamber - Lesotho Manager

Standard Bank

G. M. Tabor - Chief Manager for Lesotho

Sewerage and Water

Mr. Wilson
Mr. Ashford

Lesotho Electricity Corporation

Mr. Green

Department of Labour

P. R. Sekhomo - Labour Commissioner

C. Housham - Architect
James Lou

Livestock Board

Dr. Phororo
Dr. Macqui
P. Radford - Animal Production Advisor
Dr. Wacher

Income Tax Office

Mr. Brake

Ministry of Finance

Mr. E. Waddington

Royal Lesotho Tapestry Weavers

Henrik Thogersen - Managing Director

APPENDIX D

FUTURE TEXTILE POSSIBILITIES IN LESOTHO

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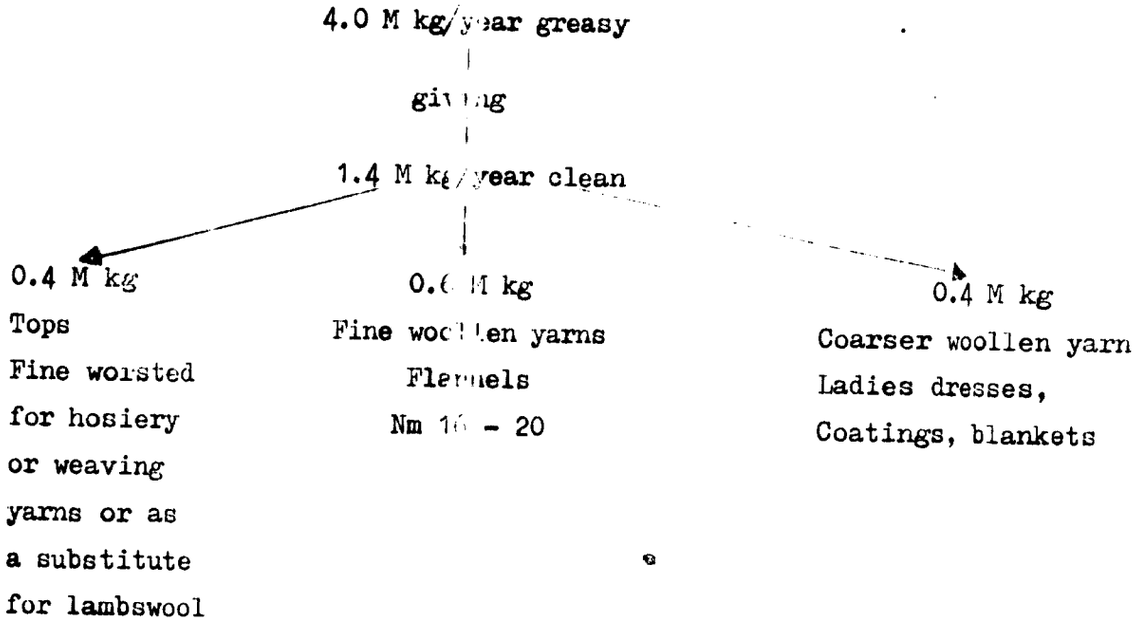
FUTURE TEXTILE POSSIBILITIES IN LESOTHO

1. Introduction

If a country is to develop new industries then it is obvious that they should be based upon any advantages which that country possesses. Lesotho is fortunate in producing a very fine and good type of wool and she has the advantage of low wages. It might be worthwhile to investigate the possibility of developing some textile industry on the basis of these two advantages, though an important limiting factor is likely to be the relatively small amount of wool available in relation to the requirements of economic textile processing. Lesotho might scour its own wool and the clean wool might then be subsequently processed into tops and yarns. We give below a very brief outline of the possibilities and include some basic facts on the processes involved. Before any decision is taken much more thorough investigation would be required and if such an investigation was to take place it is essential that all the aspects are considered as a whole for the individual possibilities are all related one to the other.

2. Wool production

The present wool production is assumed to be around 4.0 M kg/year which if scoured would yield 1.4 M kg clean. The clean wool is suitable for the uses shown below:



It would be necessary to establish more precisely what the actual production of wool is, what the composition of the clip is and how it is likely to change as a result of the recent introduction of classing in Lesotho.

3. Scouring

The quantity of wool to be scoured is 4.0 M kg. This amount could be scoured on a 4' (120 cm) wide, 5 bowl conventional wool washing set which would have a production on this low yield wool of 1500 kg/h greasy; yielding 525 kg/h clean. At a working efficiency of 75% this would require 3600 h per year to process which is equal to 2-shift working, 5 days per week, or preferably 3-shift working, $3\frac{1}{2}$ days per week.

For maximum economy a wool washing plant should have sufficient work available to permit 3-shift working on a 5 - 7 day basis. Further economies are gained by using a 6' (180 cm) wide machine as the increased production (about 50% more) from this machine more than compensates for the extra cost (about 20%) more. There has, of course, to be sufficient wool available for the wider machine to give 3-shift working.

The costs involved in a wool washing installation must include the costs of a steam raising plant, water supply with possible pretreatment such as softening or clarification, the effluent may require treatment before discharge to a river, drain or soakaway and laboratory and testing facilities would have to be provided.

The cost of the complete plant, buildings, labour and materials will be approximately:

1. Machinery costs

	US $
Services	115,000
Wool washing and drying	250,000
Pneumatic conveyors and storage bins	12,000
	377,000

2. Building costs

Area required for machinery	1782 m^2	
Area required for storage	500 m^2	
Area required for boiler	160 m^2	
	2442 m^2	
2442 m^2 @ 130 $/$m^2$		317,500

3. Labour costs per year (3600 h)

Direct and indirect, 28 workers, 50,400 h @ 0.54 $/h	27,220
Overheads at 20% of labour costs	5,440
	32,660

4. Material costs, per year

	US ¢
Chemicals	11,000
Water and effluent 28,000 m^3 @ 0.20 ¢/m^3	5,600
Steam 4 M kg @ 6 ¢/1000 kg	24,000
Electric power, light, ventilation	11,750
	52,350

Wool washing costs per kg clean wool. Based on 10 years depreciation on machinery and 20 years depreciation on buildings at 14% interest. Production 1.4 M kg clean per year

Capital costs	7.30 US cents
Labour costs	2.34 US cents
Material costs	3.75 US cents
Total costs	13.39 US cents per kg clean
=	4.68 US cents per kg greasy

The cost for scouring compares favourably with the wool scouring charges of Gubb & Inggs Ltd. of Uitenhage, SACU. Their charges for scouring wool as shown in their Tariff No. 18, of 1 September 1974 is:

For wool yielding up to 35% 8.40 SA cents per kg greasy
= 11.00 US cents per kg greasy

However, as many of the cost factors used in the above calculations are estimates it would be necessary to carry out a more accurate costing before any decision could be made to proceed on these lines.

Please observe that no labour for sorting is included in costs mentioned above.

4. Top making

Of the 1.4 M kg clean wool, 0.4 M kg is suitable for the manufacture of tops which might be exported. We give below a rough idea of the costs etc. involved:

Top making. 400,000 kg wool for top making

Production 140 kg/h. Which is the smallest industrial unit we recommend

1 shift - 250,000 kg
2 shifts - 500,000 kg
3 shifts - 750,000 kg

Total cost of machinery and auxiliaries
$ 530,000 + 20% $ 640,000

Cost of machinery and auxiliaries - Top making plant (from scoured wool)

Description	No. of machines	Machine price US $	Total machine price US$	Cost of auxiliaries US$	Notes
1. Storing of scoured wool					
2. Wheeled hand carriage	3	100	300		
3. Opening machine	1	23,400	23,400		
4. Carding	2	120,000	24,000	1,000	30 cans 1200 x 1000mm
5. Gilling GN5-15		17,900	17,900		
GN5-15		17,900	17,900		
GN5-20		17,900	17,900		
				9,000	300 cans 900 x 600 mm
6. Combing PB27LC	8	19,000	150,000		
7. Gilling GN5-15		17,900	17,900		
GN5-24		21,800	21,800		
				4,000	20 containers
8. Shelves in storage				8,000	wheels for handling and transport of bobbin to storage.
			507,100	22,000	

Total floor area 2,400 m^2
Cost of building incl. airconditioning etc. $370,000
Number of workers (incl. 1 manager) 15 - 25 (15 is European standard)

Power	about	60 kW
Light	about	90 kW
Air conditioning	about	90 kW
		∑240 kW

5. Fine woollen yarns

About 0.6 M kg of the clean wool is suitable for the manufacture of fine woollen yarns in Nm 14 - 20 and it might be worthwhile investigating the feasibility of producing such yarns. It is possible that there is a market for these either within the SACU or outside it. Semi-worsted spinning is likely to be more economic than traditional woollen methods for the production of such fine counts. A comparison between the two systems is given below:

Comparison of woollen and semi-worsted system of spinning

0.6 M kg/year wool for fine woollen yarn
Nm 16, 5400 h (3 shifts), 110 kg/h

0.4 Mkg/year wool
Nm 6, 5400 h (3 shifts), 74 kg/h

Capital expenditure		Woollen system 1000 US $	Semi-worsted 1000 US $
Blending		.125	.103
Carding		.125	.250
Gilling		-	.234
Spinning	Nm 16	.855	.855
	Nm 6	.135	.135
		2.240	1.577
Building		3400 m^2	3400 m^2
Power		675 kW	610 kW
People employed		24	25

6. Coarser woollen yarns

The remainder of the clean wool, about 0.4 M kg, is suitable for the coarser woollen yarns used in ladies dresses, coatings, etc. Possibly this wool could be spun into yarn in Lesotho or alternatively it could be exported as is now the case.

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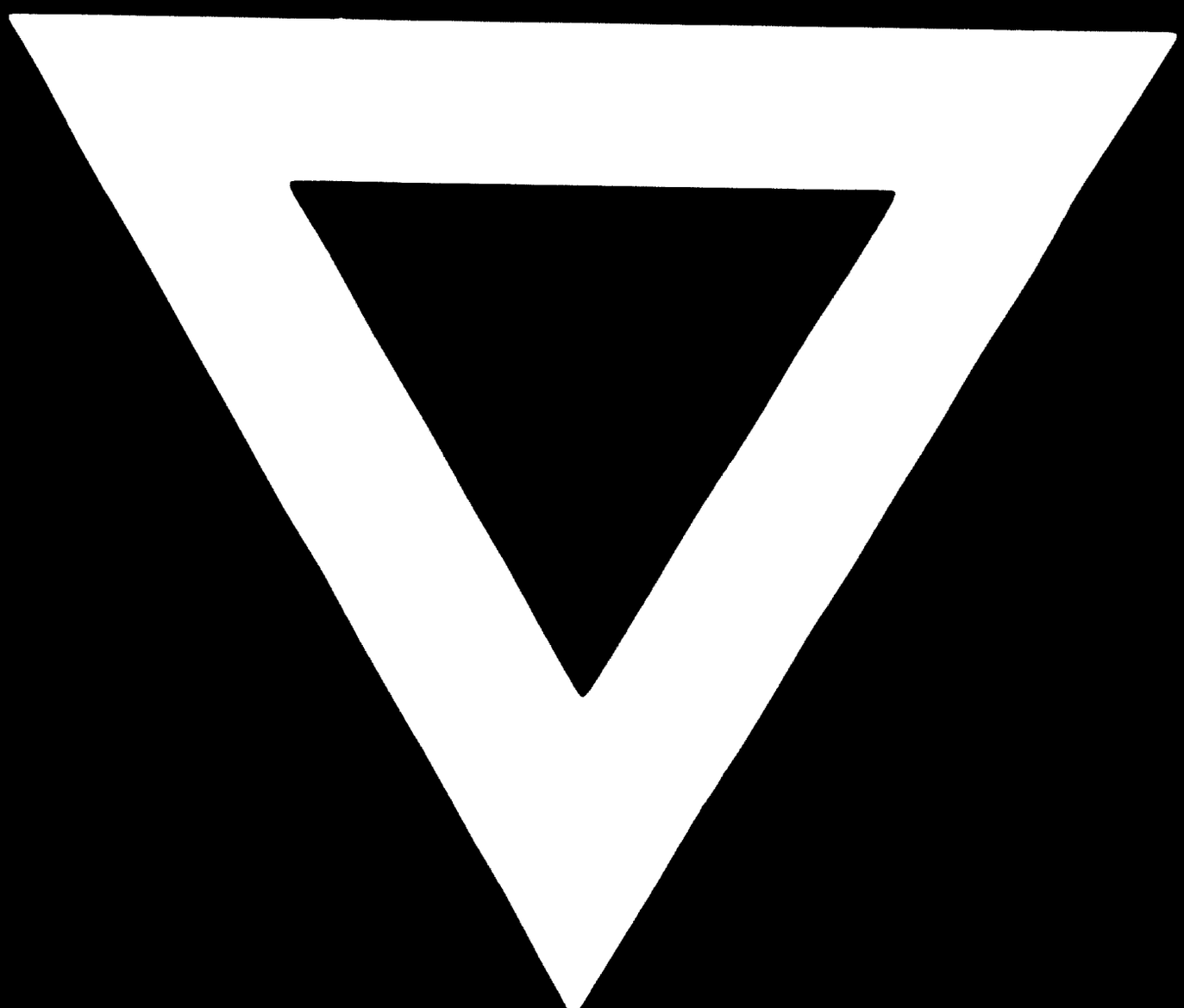

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