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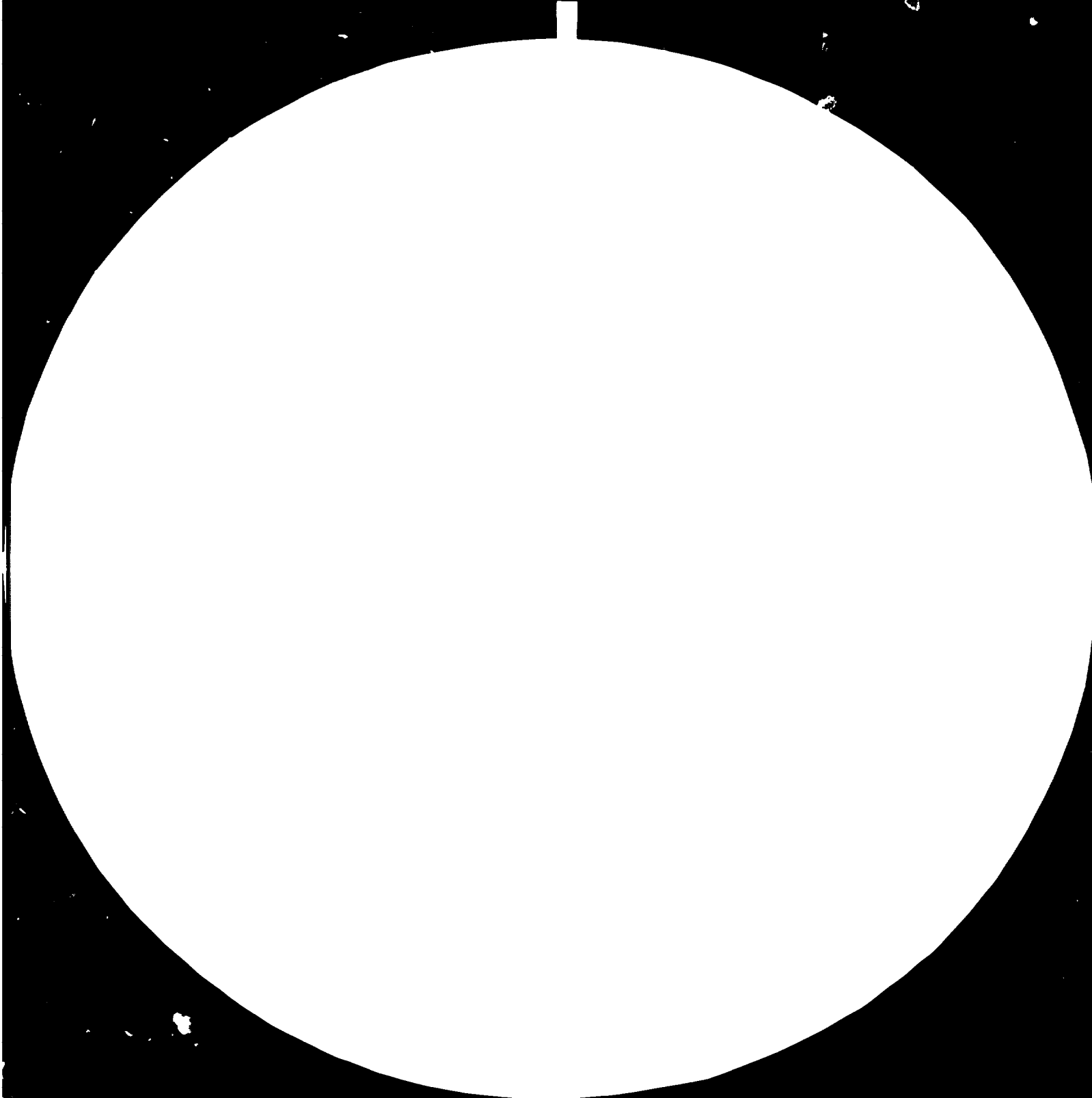
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Resolution Test Chart
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Resolution Test Chart
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Resolution Test Chart
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4 April 1979
ENGLISH

(R) ASSISTANCE TO LEATHER INDUSTRY SECTOR

PROJECT

SI/SUD/77/803

SUDAN

Terminal report

Prepared for the Government of the Sudan
by the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

Based on the work of S. Patel, leather industry adviser
for UNIDO

United Nations Industrial Development Organization
Vienna

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Explanatory notes

Reference to dollars (\$) is to United States dollars.

The monetary unit of the Sudan is the Sudanese pound (LSd). During the period of the project, the value of the Sudanese pound in relation to the United States dollar was \$1 = LSd 0.50 = Piastres 50.

A slash between dates (e.g. 1978/79) indicates a financial year.

Besides the common abbreviations and symbols, the following have been used in this report:

E.J. Tanning	Vegetable indigenous tanning
IDCAS	Industrial Development Centre of Arab States
LIC	Leather Industries Corporation

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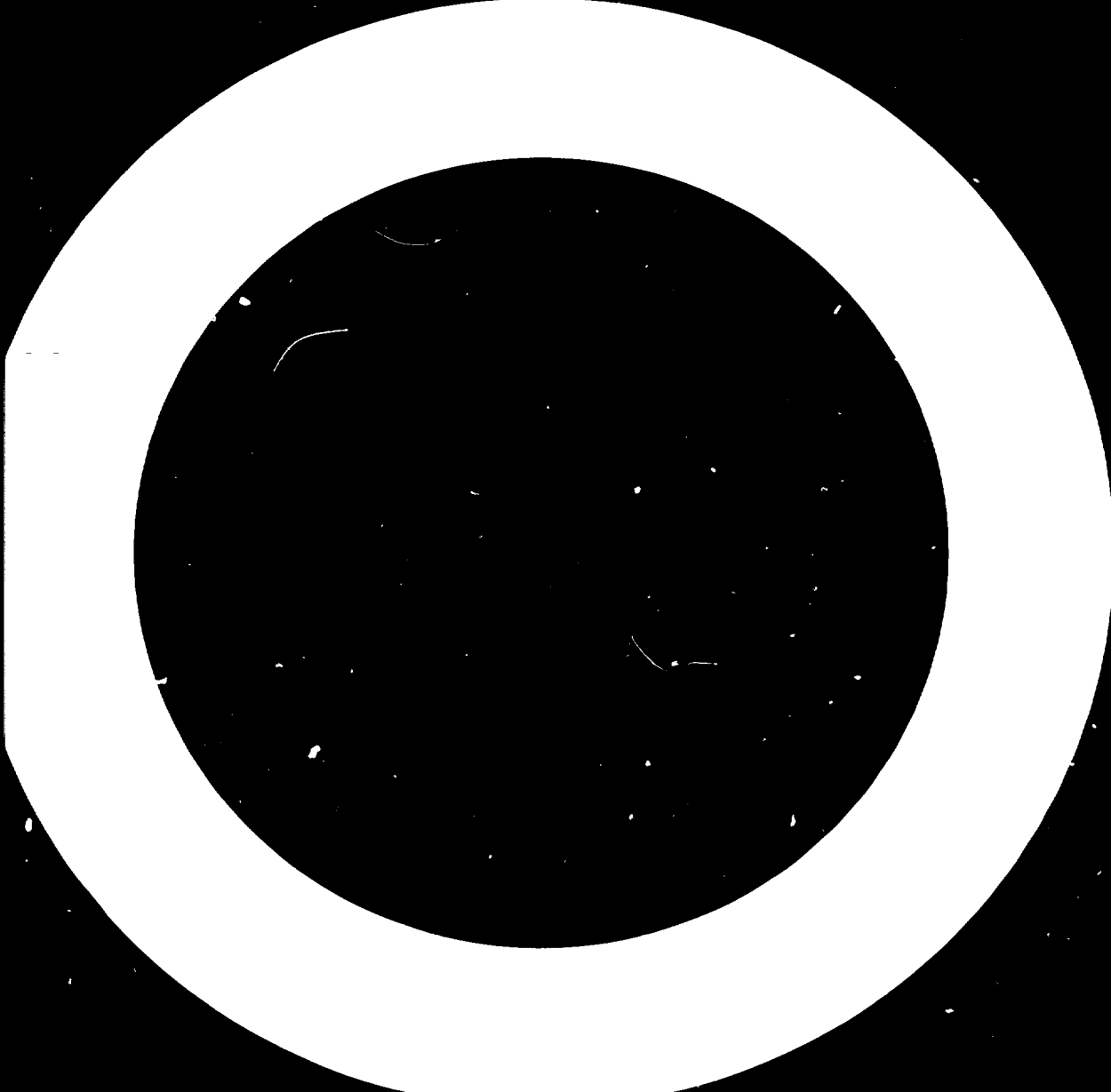
ABSTRACT

The project "Assistance to leather industry sector" was carried out following a request made by the Executive Director, Ministry of Industry, in a letter dated 15 July 1976 addressed to the Under-Secretary, Ministry of Planning, Khartoum, for a leather adviser from the United Nations Industrial Development Organization (UNIDO), executing agency for the United Nations Development Programme (UNDP). In response to a formal request from the Government of the Democratic Republic of the Sudan made in November 1976, this project started on 21 June 1978 and lasted until 19 March 1979 after having been approved by UNIDO 22 September 1977.

The principal aim of the project was to examine, under the leadership of the Managing Director of the Leather Industries Corporation (LIC), the three existing tanneries in the public sector in the Sudan, and to recommend possible methods regarding their improved operation. The project eventually involved a country-wide survey of the possible development of leather production and allied industries in the Sudan. The adviser was requested to assess the quality, quantity, variety and price at which leather and leather products could be sold on both domestic and foreign markets. This required assessment of the present and potential production capacities of existing tanneries, both within and outside of the public sector. The project budget was \$41,350.

The Sudan has sufficient resources for a sound leather products industry. At present a large part of the raw stock is exported, but given adequate technological, operational and marketing know-how much of the stock presently exported could be utilized for finished products. There is also a need for restructuring of export duties and subsidies for the leather industry products, to guarantee minimum profits.

Finally, the leather industry adviser's findings indicate the need for a team of leather experts to be requested from UNIDO to oversee the development of the leather industry in the Sudan, and to aid in the necessary centralization and rationalization of all aspects, both domestic and foreign, for its success.



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INTRODUCTION

A. Project background

The Sudan is exerting serious efforts to improve the efficiency and proficiency of its leather industry. In 1970, the Industrial Development Centre for Arab States (IDCAS) conducted an extensive and intensive survey for the leather sector in the Sudan. Based on this survey, the Government drew up a five-year plan for the development of leather and allied industries. The plan aimed at increasing the production of leather to meet the needs of local consumption, as well as increasing the export of semi-processed and finished leather and leather products.

Sudan has sufficient raw hides and skins to develop a sound leather and leather products industry. At the moment a large part of the raw stock is exported but with adequate experience in the purchasing of raw hides and skins, and in the technological, operational and marketing fields, the object of converting the raw stock to a maximum level of semi-processed and finished leather could be achieved.

Annually, 1 million hides, 5.5 million sheep skins and 1.9 million goat skins are available. Due to climatic, environmental, ante- and post-mortem conditions the raw stocks are generally thin and empty, though otherwise of good quality as far as fineness and smoothness of the grain are concerned.

Besides the three large, well equipped public-sector tanneries, there are 293 rural tanneries working in the primitive tradition. There is one small mechanized tannery in the private sector situated at Omdurman.

There are 29 registered shoe factories and numerous artisanal and small cottage units producing all kinds of footwear from high fashion to the simple traditional marcoub. Some insignificant cottage workshops make leather products from lizard, crocodile and snake skins mainly for tourist trade. By and large, with the vertical and horizontal development of the present capacities and further expansion of the leather and leather products industry based on abundant supply of raw stock, this sector can look towards the realization of happy prospects.

A Food and Agriculture Organization (FAO) Mission that visited the Sudan in 1975 under Project Norad TF-RAF 81 WOR for Hides, Skins and Animal By-products, East and Central African Countries (Sudan), underlined the importance of the development of this sector especially stressing the need for improvements in the treatment and preservation of hides and skins.

B. Official arrangements

The project originated with the request made by the Executive Director, Ministry of Industry, in his letter of 15 July 1976 addressed to the Under-Secretary, Ministry of Planning, Khartoum.

The expert was attached to Leather Industries Corporation (LIC) of the Ministry of Industries and was to work under the leadership of the Managing Director of the Corporation. The project budget was \$41,350. It started 21 June 1978 and terminated 19 March 1979 after having been approved by UNIDO on 22 September 1977.

The activities of the project had to be conducted by the expert single-handedly because in reality no counterpart was provided. This fact was reported to the Senior Industrial Development Field Adviser (SIDFA) during his visits to Khartoum.

C. Objectives

The purpose of the project was to examine, under the leadership of the Managing Director of LIC, the situation in the three existing tanneries in the Sudan and to recommend lines of action which could be adopted with regard to trouble-shooting and improvement of their operation.

I. FINDINGS

A. The tanneries

Leather industry in the Sudan is still in its early stage of development. With the exception of the traditional rural tanneries, no tannery existed till 1962. All the raw hides and skins were exported and even now 75 to 80 per cent are exported. The cattle hides are going mainly to Egypt and the skins find the traditional markets in Europe.

Three large and modern tanneries under public sector have been established with the object of producing leather for the developing domestic market and gradually replacing the export of raw hides and skins with the leather at various stages of processing and leather products. The country may then earn a larger amount of foreign exchange by way of value-added. The first of these tanneries, Khartoum Tannery, was established in 1962 with equipment for the production of sole and chrome upper leather utilizing both hides and skins. Much more modern, the second White Nile tannery came into production in 1975. Both these tanneries are situated next to one another in Khartoum. The third tannery, Gezira Tannery situated at Wad Medani, started production in late 1976.

Both White Nile Tannery and Gezira Tannery are huge "super" constructions with very modern equipment. Whether they are suited to the present levels of the managerial, technological, maintenance and marketing expertise in a lesser developed country like the Sudan is beside the point. One fails to understand what justified the huge capital investment in these turnkey tanneries. Whether or not the burden of capital cost on the practical level of production, to make the products profitably saleable in the international markets, is the question that the authors of feasibility study seem to have avoided. The prestigious giants have been erected without adequate understanding of the marketing channels of raw materials, without sufficient knowledge of the demands of export market and sufficient technological, and maintenance expertise in the local ranks.

As a result of the underutilization and intermittent work, several machines and drums have deteriorated beyond repair, reducing working capacity further through depreciation and other costs of these idle machines. Regardless of the reasons for underutilization of these huge capital investments it is to be regretted in view of the national economic situation and must not be allowed to continue. Further underutilization will result in more and more machines becoming unserviceable and working capital will be depleted to the point of no return.

The present situation in the three public sector tanneries is outlined individually.

1. Khartoum Tannery

Established in 1962, the tannery produces: corrected grain in smooth and patent finish, printed leathers, suede, vegetable upper, sole, insole, textile and industrial leathers from cattle hides, suede clothing, upper and lining leathers from skins and for export wet blue hides/sides, printed finished sides, crust sides and pickled skins mainly sheep.

Number of workers	435
Number of staff	<u>107</u>
Total	542

Table 1. Production for Khartoum Tannery during 1977/78

	Installed capacity		Actual production		Percentage capacity utilization
	Annual	Daily	Annual	Daily	
Chrome	4 200 000 sq ft	14 000 sq ft	1 380 991 sq ft	4 603 sq ft	} 32.9
Leather	130 000 hides	600 hides	59 270 hides	197 hides	
Vegetable	600 000 kg	2 000 kg	111 566 kg	372 kg	} 18.6
Leather	60 000 hides	200 hides	11 156 hides	37 hides	
Skins	360 000 pieces	1 200 pieces	77 756 pieces	259 pieces	21.6

The capacity utilization is low indicating low output against the total number of people employed.

The actual production during first three months of 1978/79 has further declined, giving a woeful picture. It is as follows:

Table 2. Production for Khartoum Tannery for first three months of 1978/79

Chrome leather	169 564 sq ft	Capacity utilization	16.1 per cent
Vegetable leather	-	Capacity utilization	-
Skins	3 120 pieces	Capacity utilization	9 per cent

The vegetable section has been idle a long time, much before the beginning of this project, due to the vegetable tanning extract, particularly Mimosa extract, the main tanning material used, being unavailable.

The tannery has the finishing capacity of 20,000 sq ft (350 hides) per day but it cannot be utilized due to low capacity in the wetwork sections of both liming and tanning.

For optimum utilization of the finishing capacity, it is considered necessary that liming and tanning capacities be balanced in line with finishing by having three drums in liming and three for chrome tanning. All three drums have the same 3' x 3' inside dimensions.

Similarly, the three large drums in the vegetable section need repair or replacement. They have outlived their utility. Only the woodwork will have to be replaced. All the iron parts of the existing drums can be used on new woodwork. With the addition of these drums and one splitting machine for splitting in blue, this tannery can produce 20,000 sq ft of finished leather, 2 tons of vegetable leathers and up to 1,500 wet blue skins daily with the release of one drum now being used for hides.

2. White Nile Tannery

Established 1975, White Nile is a modern turnkey tannery built at capital cost of LSd 2.5 million. It has the same production lines as the Khartoum Tannery.

Number of workers	408
Number of staff	<u>110</u>
Total	518

Table 3. Production for White Nile Tannery during 1977/78

	Installed capacity		Actual production		Percentage capacity utilization
	Annual	Daily	Annual	Daily	
Chrome	6 000 000 sq ft	20 000 sq ft	1 447 486 sq ft	4 325 sq ft	} 24.1
Leather	260 300 hides	869 hides	62 934 hides	209 hides	
Vegetable	450 000 kg	1 500 kg	37 917 kg	126 kg	} 8.4
Leather	45 000 hides	150 hides	3 791 hides	12.6 hides	
Skins	750 000 pieces	2 500 pieces	21 300 pieces	71 pieces	2.3

The capacity utilization of this tannery with a large work force is also poor.

The actual production during the first three months of the current financial year (1978/79) is even more disappointing.

Table 4. Production for White Nile Tannery during first three months of 1978/79

Chrome leathers including sheep suede, lining and insole	210 344 sq ft	Capacity utilization 14%
Vegetable leather	2 596 kg	Capacity utilization 2.3%
Skins	-	Capacity utilization -

Among the several reasons attributed to low capacity utilization, the most disturbing one is the incapacitation of the number of drums and paddles. Due to poor and faulty civil engineering in the construction of the foundation of heavy duty drums and paddles, they have sunk and tilted, causing imbalance and misalignment in the moving parts, ultimately resulting in breakage of the gear boxes and their bases, or electric motors burning due to heavy load. For this reason foundations of several heavy machines have also been disturbed. Even some pillars supporting the roof have been affected. If this situation is allowed to continue and no remedial measures are taken, it will lead to complete incapacitation of liming and tanning drums and the heavy machines.

Sinking of the floor and foundations has already reduced the capacity to 50%. The woodwork of the standing drums is drying beyond repair. This will further aggravate a deplorable situation created within four years of commissioning of the project with over-specification of machinery and construction involving a high burden of capital cost. Also, transformers supplied with the equipment have a 50 per cent load capacity with the result that the operations of the machines have to be staggered, constraining the work-flow.

The unit has never operated for even a short time at 50 per cent of its capacity. No spare parts have been supplied which were initially to be supplied, and the rubber rollers of all the wetwork machines have rapidly become patchy. All these rollers will have to be re-rubberized or replaced.

3. Gezira Tannery

Production started in late 1976; the capital cost was LSd 3 million. The production lines are by and large the same as the other units but the production is oriented to export.

It is also a prestigious turnkey project with excessive investment in equipment considered not necessary for the managerial, technical, maintenance and marketing situation prevailing in the Sudan.

Number of workers	433
Number of staff	<u>102</u>
Total	535

Table 5. Production for Gezira Tannery during 1977/78

	Installed capacity		Actual production		Percentage capacity utilization
	Annual	Daily	Annual	Daily	
Chrome	6 900 000 sq ft	23 000 sq ft	2 298 132 sq ft	7 660 sq ft	} 33.3
Leather	300 000 hides	1 000 hides	99 919 hides	333 hides	
Skins	750 000 pieces	2 500 pieces	198 710 pieces	662 pieces	26.5

The production and capacity utilization during first three months of 1978/79 for Gezira Tannery are in table 6.

Table 6. Production for Gezira Tannery for first three months of 1978/79

Chrome leather	369 519 sq ft	Capacity utilization 21.4 %
Skins	66 181 pieces	Capacity utilization 35.3 %

Though the production is dismal in relation to the capacity, the soaking is regular compared to sporadic soaking in other units.

All the three tanneries are facing the same situation: low productivity accompanied by the burden of an unproductive idle work-force, interests and overheads which may lead them to serious consequences.

The following causes have been observed to contribute to low productivity:

(a) Lack of chemicals and tanning materials. They are not imported on time: either letters of credit not established in time or when established, not conveyed timely to beneficiary (exporter) due to foreign exchange difficulty. When goods arrive, they are pledged to the banks and delay in release against payment. Prolonged delay in the clearance of goods imported on cash against documents. All this contribute to inconsistent flow of chemicals;

(b) Lack of spare parts and poor maintenance;

(c) Intermittant power shutdown for prolonged periods;

(d) Low voltage and voltage fluctuations;

(e) Recurring shortage of furnace oil for generation of steam;

(f) In Gezira and White Nile Tanneries, periodic shortages of raw hides and skins;

(g) The cumulative effect of all these causes continues the drain of working capital increasing liquidity problems.

B. Existing Operational practices

Operational systems of the tanneries were studied and the following observations were made:

(a) Hides and skins are purchased from dealers. Hides are purchased either in green state, dry salted or frame dried. The bulk is dry salted at prices fixed monthly by the Omdurman Slaughterhouse auction. The price is fixed for mixed lots without grading and selection. Tanneries for their convenience sort them into weight ranges of 1-5 kg, 6-7 kg, 8-9 kg, 9-12 kg and 12 kg and up in the case of dry salted hides and the corresponding weights in the case of green hides. But in practice they are soaked together and no record of the weight assortment could be found in the raw hides godown. It

would have been better to soak them separately or at least to soak two ranges together. This would have given the tanneries an exact idea of the quality of leather made from each range. If the hides received from different suppliers and areas or regions were soaked separately, it would have provided the information as to the differences in the quality of leather made from hides of each supplier for future reference. No such record is maintained and no critical study of this problem has been made.

By adopting this method of soaking, quality of hides and skins according to supplier and area could be identified, and the purchase policy could be guided by this record. Seasonal variation in the raw quality of lots could also be recorded to provide guidance in the adaptation and modification of the process.

The skins are purchased at the market rate per skin in small, medium and large sizes in four selections. The three sizes are purchased at one price and all these sizes are mixed without any grade ratio and even the size assortment is mixed.

No proper hide record is maintained and it is difficult to get immediate information of the quantity and value of hides and skins on a given day. A daily hide and skin receipt system is shown in annex II, form 1. With such a record the management can see what raw stock they have and can plan with regard to soaking and purchases;

(b) The hides are issued according to lot but once soaked and passed through liming, there is no record of their whereabouts. All the lots are mixed as required, and the hides from blue or crust are taken for finishing without any record. No record of the flow of hides is kept and there is no control of cost and quality and footage yields. There is no lot card or flow card system through which the complete record of cost and quality are maintained or controlled, and lots are finished within their process cycles. There is no instant record for the goods under process and, therefore, no control over inventory. Piles and heaps of either wet blue or crust leather are seen all over the tannery yards without anyone realizing this reflects not only inefficiency, but also blocking of working capital. Moreover, without any system, the input/output ratio of hides within a predetermined process cycle cannot be maintained or controlled. A process cycle of one month under Sudanese methods for chrome leather from hides is considered reasonable. Within this period the lot must be finished. No more hides must remain as "work-under-process" other than the hides soaked during the process cycle.

The introduction of lot or process cards is suggested. Forms are shown in annex II, 3, 4 and 5. In one system the cost centre starts from raw hide and is carried through to finished leather. In another system the lot ends at the wet blue stage. The hides are measured and selected into two or three standardized selections. First, when enough hides are accumulated in one particular selection, a lot is made out on form 5 and issued for further processing, and thus the differences in quality of leather made from each wet blue selection could be determined and standardized that would eventually help the Management have control over the quality of leather and the efficiency of the production personnel. Second, since the lot is already measured in blue, a check can be kept on trimming. It has been observed that the trimming of hides is carelessly done causing a large loss in area. Roughly $1\frac{1}{2}$ to 2 sq ft of usable leather per hide is wasted by careless trimming. Also the trimming should be carried out after shaving and not after dyeing as it is done now. In this way chemicals

taken on shaved weight can be saved. At the present rate of production in Khartoum Tannery alone roughly LSd 25,000 per year could be saved;

(c) It was found that splitting in lime, splits are thrown away as waste. This is a needless waste, particularly in view of the heavy burden of overhead cost. It was suggested that splitting should be done in blue, and even if it is done in lime for technological reasons, splits should be chrome tanned and converted into splits suitable for industrial gloves for which there is a ready market in the developed countries. They can be finished into pigmented cheap uppers or lining. It was estimated that hides over 20 sq ft give a split yield of roughly 20 per cent of their area if the grain side is to be finished into 1.6 to 1.3 mm leather. Large quantities of chrome splits are exported by many developing countries for industrial gloves. Countries like Pakistan are exporting the finished gloves. If they are free from butcher cuts, the larger ones are also used as a base for lamination with PVC or other similar plastic foils. The rising trend of the high cost of raw hides is forcing the tanneries in Europe to make maximum use of splits as upper leather. In fact, the manufacture of industrial gloves at the Omdurman shoe factory from not only splits, but also from ultimate leftovers from skins should be studied by LIC;

(d) Chemicals are not drawn against the lot. They are drawn on a general indent by the section in charge without mentioning the lot against which it is drawn, nor is it debited to the lot. This does not accord with process control and costing. It was suggested that all the chemicals be drawn on a prescribed form (see annex II, forms 3 and 9) strictly against lot. Entry of the issue should not only be made in the bin card but also in the financial store ledger. No chemicals could be issued if lot number is not mentioned. In the event of accidental wastage or spillage, a supplementary indent will be made and countersigned by the technical manager. The weighings of pelts and chemicals are done in a haphazard and casual manner. In a given lot five to ten pieces are weighed and averaged to calculate the total weight. The result is misleading. If this practice has to be adopted for convenience, at least 50 per cent of the lot should be weighed. Similarly, the accuracy of the balances should be checked before chemicals are weighed. Errors may always be found and can occur in platform dial balances if these are not regularly cleaned. In the present situation, the foolproof weighing device is the ordinary arm or pan balances for bulk chemicals. Sensitive balances are used for weighing dyes or pigment mixtures where a small quantity of one or the other component makes for a variation in shading. Bin cards are used in these tanneries but not kept up to date. A revised bin card is suggested (annex II, Form 6)

(e) Calculation mistakes are common and there is no check as to the chemicals that are drawn against a set order or formulation;

(f) There is no proper inventory control of chemicals. The chemicals are imported against tender submitted by the chemical manufacturers and the lowest bidder takes the order for the year irrespective of the quality and the technician's preference. Once the chemicals arrive, the use of the remainder of a similar product supplied by some other competitor during previous year is ignored. A first come first out principle is not followed. This results in an accumulation of stocks which under severe climatic conditions deteriorate in quality and become unusable. This causes loss, blocks capital with a high bank interest and burdens production cost.

A chemical inventory control has been suggested (see annex II, form 11). If followed it will keep the management of the tanneries informed of the regular

consumption of their stocks and make it easier for them to decide to import chemicals for the next period. The statement on the prescribed form is to be prepared every month:

(g) The importance of process control is not recognized and appreciated. It depends on the section-in-charge whether to check or not to check conditions of temperature, pH, Baume, strength, float length, exhaustion etc., at the set formulation or fixed recipe. The chemists have no hand in process control nor do they have any clear idea as to what they are supposed to do regarding process control. It was suggested that the importance of the chemists' position be granted, and they should be guided to check all the conditions laid down for the processes. After checking, each chemist would enter his findings into a process control register kept in his custody and signed by the technical manager or the competent officer in-charge. Variations would be discussed and recorded;

(h) No stagewise quality control is practised. As there is no lot card system, the work flow is uncontrolled. What is received by one section is passed on to the other without critically assessing the condition of the pack each receives. It was suggested that at least 20-25 per cent of the pack be checked by the receiving section and the results put on the lot card, if there is any variation in quality coming from the previous section. By adopting this system of stagewise quality checking, standard quality can be maintained and further improved;

(i) There is no independent final quality controller who also does the final selection of finished leather. Before issuing into sale, the subjective selection of finished leather is made without critically evaluating the quality from every angle as it is normally done by an independent final quality controller cum selector. Because at this stage all the processing defects become evident, the quality controller while making his selection takes the note of those defects and daily brings them to the notice of the technical manager in writing. If the downgrading of leather becomes persistent the technical manager takes appropriate measures. Both the number of pieces and sides, and the measurements of each selection are recorded in each lot card, or into an appendix before delivering to the sale godown;

(j) There is no record of how many hides or sides have moved daily from one stage to another in the tannery. If a method is adopted it will keep the workers aware of the flow of stocks from stage to stage and the management informed of the daily performance of the tannery from soak to sale. They can then be aware of any bottle-necks and can take appropriate measures to remove the causes. A working form is suggested in annex II, forms 12 and 13;

(k) The tanneries have a need for performance and efficiency checks. The whole idea of industrial and commercial establishments is to make a profit by rational and economic utilization of the resources. The entrepreneurs have a system by which they monitor or keep their hands on the pulse of the financial affairs of their organization and remain abreast of these activities in terms of profit and loss, or financial accounts. Without this information nobody knows which way the business is moving. Appropriate remedial measures need to be taken in time before it is too late in the event of adverse situation. The periodic, often monthly, profit and loss, or financial, statements should be prepared to cover complete information on cost and return. The whole statement is analysed objectively and compared with the previous statements. The information is assessed and evaluated, and reasons are determined both for profit and loss so that strategy can be worked out. Quarterly, the results

are reconciled with the financial books as the overheads and labour costs are posted for estimations over a given period. Variations are determined and passed on to the costing section for future reference.

A graph of profit and loss should be prepared and kept in the office of the managing director so that he is kept informed of commercial results. A guiding form in annex II, form 14 is presented as a model of monthly profit and loss statements. This is the real and effective instrument by which the management is guided for the control of finance and the performance of tanneries. This work is done by the costing section or cost accountant posted in each unit under the overall control of the finance controller who centrally controls the finances of the whole corporation, and who is directly responsible to the managing director.

Another advantage of this system of monthly profit and loss is the control it gives over the undesirable and chaotic accumulation of goods in "work-under-process" and the checking of input/output of raw stocks and their movements;

(l) At present the raw hide stock is purchased by the employee purchasers of each tannery at prices settled between the purchasing committee of each tannery and the hide merchants and on the basis of the ceiling prices fixed by the purchase committee chaired by the managing director of the corporation. There is no check on the quality of purchase and the purchaser is not accountable for it, by and large. The supplier is not responsible for the wrong selection and assortment made by the purchaser, on the principle of caveat emptor. In a public sector like others the purchaser's sense of responsibility is influenced by the work and performance of other employees in the organization. He is not accountable for bringing what is not wanted. This method of purchase is not free from flaws and in situations where raw hide cost adds greatly to the cost of production, the purchase of raw hides becomes a major factor in making or breaking a tannery. It should therefore, be emphasized that instead of existing practices, the responsibility for quality supply should be placed on the supplier himself so that he can be made accountable, and money can be withheld from him in event of faulty supply.

In the case of the Sudan the appointment of agents, possibly a countrywide network, would be the best way to purchase raw hides. They could work on a commission basis and supply the stocks at the prices given to them. The agents may be paid monthly or fortnightly and through the system of lot cards their performance could be judged and accounted for. If a countrywide network of agencies is not practicable at this stage, a few big raw hide merchants in or around Omdurman could be appointed collectively for all the tanneries or selectively for each tannery. This is how it is done in all developed and developing countries where the leather industry is well established;

(m) The processing methods in the tanneries are conventional according to the textbook. The products are chrome upper corrected grain, plain and printed and some quantity in antique finish with high shine urethane-nitro season. Some vegetable uppers and insoles are pigmented. In the sole very little is done as there is a limited market. Also some quantity of textile, industrial and belting leathers is produced. Wet blue hides and sides for export have not yet been established on regular basis. Egypt, as the biggest foreign buyer of hides, prefers to buy in raw for economic reasons of its own.

As regards skins, preferences emphasize the processing of sheep skins over goat skins. They are converted mainly into pickled and less in to wet blue and crust for export. Some skins are finished into suede clothing, lining and uppers.

Almost all the finished leathers are intended for the local market. The quality is generally good considering the raw stock available, though the finished leathers tend to be weak and loose in strength which can also be attributed to the inferior quality of the raw hides.

In the field of technical know-how, much is still left to be desired. The tanneries are manned by qualified technicians having basic university degrees with technical training mainly in England. They do have sound training of full-time courses, but due to lack of experience on the factory floor they are still inadequate in broader technical perspectives. They have been entrusted prematurely with the responsibility of managing big tanneries with sophisticated equipment and with handling raw stock of diverse quality. Due to lack of experience, their vision for making and manipulating towards better and fuller utilization of generally poor raw stock is limited. To make leather is one thing, but to make it economically and to the requirements of the market is another. Know-how also covers costing, operational and organizational activities, along with results and goal orientation. This involves knowledge of the market and creation of new lines as trend-setters.

The young qualified technicians capable of learning and achieving results have been entrusted with a job of high responsibility without having gone through the rigours and discipline of the experienced guide and teacher. Willingness to get work done and perseverance to motivate people to achieve goals are required. It is the accomplishment of results that will persuade them as individuals and as a coherent team to desire to do better that will eventually take the form of actions and results. This will finally enhance and widen their experience into what is called "know-how". They still need nurturing and training in all the aspects of leather trade by professional guidance through a "task-force" team of experts which will assist them in putting the leather industry on line. UNIDO can provide such team of experts well versed in all the departments of leather trade including maintenance.

Moreover, there is a big technological gap between the first and second ranks working as section in charge, foremen or supervisors. Their technical competence is poor and restricted. They do not understand the chemical processes and as a result they frequently make inconsistent applications. Each foreman with a little knowledge is secretive to his counterpart and keeps things to himself as a matter of personal jealousy. Each has little knowledge of the implications of inappropriate practices and inconsistent applications regarding the necessary standards. They still tend to stick to the old practices of "rule of thumb" because there is no systematic and scientific process control carried out by the tannery laboratory.

The best way to rectify this situation is through in-factory training and self-teaching through having weekly meetings attended by all the production and maintenance staff and chaired by the technical manager. The general manager may attend to give his views whenever necessary. In this meeting everyone brings out his complaints, difficulties and observations. The technical manager studies the situation and can explain the causes of defects in leather and how to avoid them, causes of bottle-necks and how to remove them, and so on. In this way everyone not only remains careful and vigilant but is also trained in matters of manufacturing, quality control, maintenance etc. The day to day situations and their solution by collective thinking through such regular meetings serve as in-factory training and as a self-teaching medium. The minutes of the meeting can be noted for the record, for future reference by the management;

(n) There is no record of the processing carried out in the past, nor of changes made from time to time for one reason or another. Experience of the past

with regard to the adaptation of the process in accordance with changing situations, climatic variations, and altering of the recipes as and when necessary with unavailable or inadequate supplies of materials, are not permanently recorded, nor are shade matching and finishing formulations. Without such a record, variation in leather quality and shades can occur. The importance of such a record must be emphasized. In such record all the recipes and observations may be entered. Any changes made thereafter may also be recorded. Similarly, shade matching in dyeing and finishing can be entered in detail giving a number to each shade, and leather in different shades can be sold according to the shade number. This register would be kept in the laboratory and could be used for future reference. Even trivial matters could be recorded and in the course of time serve as a sound and reliable book of reference and experience.

While staying at the tanneries and frequently visiting them advice was given in technical, commercial and maintenance matters. Technical discussion with staff concerned was provided. Advice with regard to laboratory equipment was given and the list of equipment prepared for UNIDO assistance. Specification for wet blue hides and better measurement method was provided. Working forms in annex II were explained to the technical managers. Addresses of importers in Europe were given when asked.

C. Imports

Except for sea salt, all the Sudanese tanneries' chemicals are imported. Imports are made through import licences issued by the Ministry of Industries. Issuance of licences largely depends on the availability of foreign exchange. Importation of industrial raw materials is given priority. Sometimes imports are delayed for a considerable time due to a delay in the transfer of letters of credit.

All the chemicals are purchased through tender on a yearly basis. This is considered to be a good practice in so far as the chemicals of generic nature are concerned but the proprietary products offered by different manufacturers may not be similar in working properties and in quality. They may be similar in theory but are not necessarily the same in practice and in result. Thus, to import such proprietary products as syntans, fatliquors, binders, auxiliaries etc., against tender may not be a correct policy. It is the choice of the technologist according to his experience that matters. It is not good to curtail his freedom of choice and to tie him to products because they are cheaper. He can be answerable for quality only when he is given materials of his choice.

The periodic change of materials is also not desirable from the quality point of view. A process is set and it should not be changed till a better one is established. There is no harm in preferring cheaper generic chemicals,

because they can be easily analysed in the laboratory, and a little variation in the active content can be acceptable. For example, sodium sulphide from China with comparatively little more iron content than usual is the cheapest grade available, because its iron content has no harmful effect on leather.

There are inordinate delays in the arrival of chemicals to the tanneries resulting in recurring shortages and consequent stoppages of work. Chemicals can remain uncleared in Port Sudan when imported on cash against documents for months, which harms their quality making them unusable at times.

There is a custom duty on leather chemicals ranging from 15 per cent to 45 per cent. It is said this duty is refunded to the government tanneries on application, but this could not be verified from the record. This preferential treatment must be considered a discouragement to the establishment and expansion of a high potential leather industry in the private sector. It is also reported but could not be verified through customs office, that all the newly sanctioned industries are exempt from payment of customs duty for five years for industrial raw materials.

D. Maintenance

The level of maintenance is poor and this area is completely neglected though it is as important as the other fields in the tannery. The modern and sophisticated machinery are at the mercy of untrained, unqualified and ill-equipped hands. Planning and organization in maintenance management is conspicuous by its absence. Numbers of machines are standing idle and the situation is further aggravated by low production. Machines are deteriorating and will continue to do so till they finally become inoperative. The whole approach in maintenance is neglect till breakdown. The principle of "prevention is better than cure" or "a stitch in time saves nine" is not recognized. An after breakdown repair system is in practice. The result of the system is long down times of production and very high maintenance costs, a larger rate of wear and tear on machines and longer maintenance time. Moreover this system needs very many parts that are costly and most of the time are not available due to import constraints. In this case the planned preventive maintenance system is advised. Through a preventive system the machines are under constant check, the reasons for repair and replacement can be ascertained, and regular repair can be identified and its frequency recorded for future reference through

repair and history sheets of individual machines. Parts requirements can be planned in the light of experience and the possibility of either obtaining or manufacturing parts locally can be tested. (The parts are classified as consumable and those having short, medium and long lives.)

A preventive maintenance system would cover inspection of the condition of the machinery on a daily basis by the operators and fitters, and would involve periodic detailed inspection by the higher maintenance staff. Records of such inspection could be maintained on a prescribed form. This form would help shape a maintenance plan.

Prevention is the measure which reduces wear and tear. It includes daily and periodic cleaning, daily and periodic lubrication, use of anti-rust agents (very important for wetwork machinery) and removal of problems.

Repair is the removal of the consequences of wear and tear. An inspection and prevention record would show the nature and recurrence of repairs, and would allow planning for the requirements of spare parts according to wear and tear.

Many parts for the tanneries can be made locally if a well equipped centralized workshop under competent control is organized. The workshops of the tanneries would be replaced by this workshop which is well balanced and more fully equipped. The engineer of this workshop could also serve as the maintenance engineer of the corporation tanneries. If a sufficient maintenance system is not introduced, the modern and expensive machinery of these tanneries will meet premature ends. This point cannot be emphasized too many times.

Drums shall never be left empty. Once dried and wood shrunk, the situation becomes beyond repair.

Inventory and cost control of the spare parts and maintenance are as important as they are in the leather processing.

Store Register, Bin card for individual machine, purchase order and goods received note, parts requisition and issuing vouchers and note for materials returned to the store are the documents necessary for spare parts movement and control.

II. ECONOMICS OF SUDANESE TANNERIES

A. Costing

The existing costing system is not in accordance with those practiced elsewhere. Therefore, the performance and efficiency of the tanneries could not be readily determined. Costing is the indicator of the financial activities of production and serves as an intelligence agency to monitor and check the cost of production and factors affecting it. With the help of efficient costing, the management not only know the financial aspects but also can better determine the prices of leather for the local market and their competitiveness for exports.

In the present situation where Sudanese public sector tanneries have been initiated with high capital inputs, the production costs bear no relation to the prices at which the leather should be marketed to induce larger domestic consumption and to increase the volume of exports. Since the new tanneries are over-capitalized and have low capacity utilization, the costs of production are high. This neutralizes the benefit of favourable domestic raw prices. The trend of depressing the raw prices to compensate the high cost of production in other areas will discourage, in the long run, the primary producers to improve the raw quality and to bring it into the market.

Typical costs of production of the two tanneries at present capacity utilization and at 60 per cent utilization are compared in tables 7, 8 and 9 to illustrate the differences in the cost of production and to decide the prices at which leather can be sold in the domestic and export markets if the units are operated at the maximum capacities, which in the practical sense should be 70 per cent utilization. The cost structures of the two tanneries have been worked out with the object that they illustrate two extremes - one in a comparatively better position and the other is worst of all the three units. Though the expenditure data were collected with all possible care with the help of the responsible people in account sections, they could not be verified. They are, however, considered fairly accurate. For the sake of simplicity and brevity many cost items in overheads have been consolidated, as have the wages and salaries of workers and management. However, a guiding typical cost of production for various stages of the process is given in annex III.

The raw costs of hides and sheep skins have been derived through the following conversions:

1 kg dry salted hide = 2.70 sq ft

price per kg = LSd 0.28

Frame dried sheep skin

Average 1 skin = 0.30 kg = 7 sq ft

Average 1 kg frame dried skin = 8.75 sq ft

Raw price per skin = LSd 1.18 election I, II, III

Availability mix 20 % small

40 % medium

40 % large

Table 7. Hides: Manufacturing cost at Gezira Tannery

	At actual production 1977/78 LSD per sq ft						At 60 per cent capacity utilization LSD per sq ft					
	Finished	Percentage	Crust	Percentage	Wet blue	Percentage	Finished	Percentage	Crust	Percentage	Wet blue	Percentage
Raw	0.104	34.1	0.103	38.0	0.103	46.2	0.103	43.6	0.103	48.3	0.103	56.0
Chemicals	0.050	16.5	0.038	14.0	0.033	14.8	0.050	21.2	0.033	17.9	0.033	17.9
Wages and salary	0.045	14.9	0.039	14.4	0.026	11.7	0.025	10.6	0.021	9.9	0.015	8.1
Overheads	0.072	23.8	0.063	23.2	0.046	20.6	0.040	16.9	0.035	16.4	0.025	13.6
Deprecia- tion	0.032	10.6	0.028	10.3	0.015	6.7	0.018	7.6	0.015	7.0	0.008	4.5
Manufactur- ing cost/ sq ft	0.302		0.271		0.223		0.236		0.213		0.184	

Table 8. Hides: Manufacturing cost at White Nile Tannery

	At actual production 1977/78 LSD per sq ft						At 60 per cent capacity utilization LSD per sq ft					
	Finished	Percentage	Crust	Percentage	Wet blue	Percentage	Finished	Percentage	Crust	Percentage	Wet blue	Percentage
Raw	0.103	25.0	0.103	26.0	0.103	33.9	0.103	36.8	0.103	41.0	0.103	49.5
Chemicals	0.050	11.4	0.038	9.6	0.033	10.9	0.050	17.9	0.038	15.1	0.033	15.9
Wages and salary	0.123	27.5	0.106	26.8	0.071	23.4	0.053	18.9	0.046	18.3	0.031	14.9
Overheads	0.099	22.8	0.086	21.7	0.063	20.7	0.043	15.4	0.037	14.7	0.027	13.0
Depreciation	0.073	16.3	0.063	15.9	0.034	11.2	0.031	11.1	0.027	10.8	0.014	6.7
Manufacturing cost/sq ft	0.443		0.396		0.304		0.280		0.251		0.203	

Table 9. Sheep skins: Manufacturing cost based on Gezira Tannery

	At actual production 1977/78 LSd per sq ft						At 60 per cent capacity utilization LSd per sq ft			
	Finished	Percentage	Crust	Percentage	Wet blue	Percentage	Crust	Percentage	Wet blue	Percentage
Raw	0.168	45.4	0.168	51.06	0.168	60.86	0.168	65.11	0.168	72.41
Chemicals	0.045	12.16	0.034	10.33	0.029	10.50	0.034	13.18	0.029	12.50
Wages and salary	0.052	14.05	0.042	12.76	0.024	8.69	0.018	6.97	0.011	4.74
Overheads	0.084	22.7	0.067	20.36	0.046	16.67	0.030	11.62	0.020	8.62
Depreciation	0.021	5.67	0.018	5.47	0.009	3.26	0.008	3.10	0.004	1.72
Manufacturing cost/sq ft	0.370		0.329		0.276		0.258		0.232	

From these three tables the prices can be determined at which the leather can be sold in the local market is at 15 per cent profit yield plus some allowance for tax if any. With a guiding model of 15 per cent profit and a 5 per cent tax contingency, the hide leather can be sold at an average price of LSd 0.500 per square foot at 60 per cent capacity utilization. The present average sale prices range from LSd 0.42 to LSd 0.46 depending upon the ratio of the product mix. With production at 70-75 per cent, which could be normal with the existing equipments, the average sale price could be further reduced. This would prove a big inducement for the use of leather rather than substitutes and would contribute greatly towards increased sales. The price would be comparable with the so-called artificial leather, which is retailed at LSd 0.25/0.26 per square foot.

The sale of leather and its price in the export market are dependent on the fluctuating situations of supply and demand. These are cyclic but at the maximum level of production the present cost levels for wet blue and crust are favourable for greater sale and for penetration. In the export markets one has to compete at the global level and price is a big factor. As guiding example, f.o.b. and c and f costings for wet blue and crust, both sides and sheep skins, have been worked out at 60 per cent capacity utilization for the Gezira Tannery.

Conversion:

Wet blue unsplit hides	2.2 sq ft per kg
Wet blue sheep skins	11 sq ft per kg
Crust sides different thickness	11 sq ft per kg
Crust sheep skins	25 sq ft per kg

The truckage to Port Sudan and ocean freight have been furnished at LSd 20 and \$300 per ton respectively.

Table 10. Costs based on Gezira Tannery

	Wet blue LSD per sq ft		Crust LSD per sq ft	
	Hides	Sheep skins	Sides	Sheep skins
Manufacturing cost	0.184	0.232	0.213	0.258
Truckage to Port Sudan	0.009	0.002	0.002	0.001
Export duty 15 per cent free at shore (FAS) and development tax 5 per cent f.o.b. (Works out 19.66 per cent on f.o.b.)	0.059	0.081	0.053	0.093
Forwarding charges 2.5 per cent f.o.b. invoice	<u>0.007</u>	<u>0.010</u>	<u>0.007</u>	<u>0.012</u>
Total cost f.o.b.	0.259	0.325	0.280	0.364
Ocean freight	<u>0.063</u>	<u>0.013</u>	<u>0.015</u>	<u>0.006</u>
Total cost c and f/sq ft	0.327	0.338	0.295	0.370

Note: For calculation purposes it was assumed that export prices obtained for wet blue cow hides and sheep skins were LSD 0.30 (\$0.60) f.o.b. and LSD 0.42 (\$0.84) c and f respectively per sq ft and for crust sides and sheep skins were LSD 0.31 (\$0.62) and LSD 0.48 (\$0.96) c and f respectively per square foot.

Against the costs shown in table 10, in the present world market the following prices for Sudanese wet blue and crust materials could possibly be obtained:

Wet blue unsplit hides	\$0.60-\$0.61 per sq ft
Crust sides	\$0.62-\$0.64 per sq ft
Wet blue sheep skins	\$70-\$74 per dozen (\$0.84 per sq ft)

Prices for goat skins can be worked out in the same manner with the conversion factors for sheep skins for transport and ocean freight.

The potential prices for Sudanese goat skins would be:

Wet blue	\$40-\$42 per dozen
Crust	\$0.58-\$0.60 per sq ft

Basically, the grain of goat skins is good and flat but it is often damaged by scratches and the flesh side is veiny. Improvement in raw hides could bring much higher prices for this material.

B. Incentives

There is no export incentive for leather in any real sense. After devaluation of the Sudanese pound, a 25 per cent "exchange rate" incentive has been introduced which is given to anyone who surrenders the foreign exchange or earns it through export. In real sense, it is a form of exchange rate and not export subsidy, though it serves indirectly as some incentive. But this exchange rate incentive is almost neutralized by the burden of an export duty and a development tax which combined come to 20 per cent. Thus, the exporter of leather earns a net incentive of only 5 per cent. There is no other subsidy for the export of goods made in the Sudan.

In fact this export duty of 15 per cent is a penalty on value-addition because it increases with the value. Therefore, it discourages the manufacturers of leather and leather products. Why should one go a stage further in terms of value-addition when one is going to be taxed more and consequently the product will become more costly in world market in competition with the products offered by other developing countries enjoying better incentives and subsidy facilities?

In fact to encourage and induce the tanners, the policy has suggested in such a manner that it becomes less advantageous for the export of raw hides and skins and more favourable for the export of leather and products in greater or enhanced value-added form. The following table of duties versus subsidies confirms this point.

Table 11. Duties versus subsidies
(Percentage)

	Export duty	Incentive subsidy
Raw hides and skins	30	-
Pickled	15	10
Wet blue	0-5	25
Crust	-	25
Finished	-	25
Leather products	-	25

Duties and subsidies should be reviewed from time to time as the industry makes technological and commercial progress. This subsidy should not be mixed with the existing exchange rate and the misuse of nil-value licensing or import should be watched in hide and skins export in the private sector. This could be an added advantage to the exporter.

Though for the first five years a sanctioned tannery is exempt from the payment of custom duties on chemicals (this could not be verified) and spare parts, as a policy there is no refund system for the custom duties paid on chemicals used for the leather exported. In several developing countries, the refund rates are fixed per unit for each stage.

There is no export credit scheme in the Sudan. By such schemes bank loans are given at a reduced rate of interest against confirmed export orders.

C. Marketing

In the local market, consumption is the sole purpose of all production. This is the concept of marketing. It demands the acceptance of consumer orientation by the whole organization of the production unit. The interconnected activities of all the participating sections of the manufacturing unit are aimed at the ultimate objective of selling the product for customer satisfaction. It is a mutually beneficial activity between the seller and buyer, and it ultimately grows into a specialized field. To successfully carry out marketing requires the objective and systematic collection, recording, analysis, interpretation and reporting of information about existing situations and future potentials, promotional strategies and tactics. All those are, by and large, missing in the marketing activities of the public sector tanneries in the Sudan, whether for local sale or for export. This area and its development must be taken care of side by side with the planning of tanneries.

Local sale is conducted by the tanneries on their premises with the exception of Gezira Tannery, that has an ineffective sales office in Omdurman. It is a shop where the customers from all over the country come to buy, and is, in fact, a distributional sales office, rather than promotional office with an objective. There is no interplay between customers and the various sections of the tanneries with an eye to enlarging the circle of sales, both horizontal and vertical. Horizontal sales, mean enlarging the size and volume of sales by finding new customers and markets. Vertical sales mean enlarging sales by creating new products suited to the local conditions, and also to changing fashions and trends. Nobody in the sales sections of the tanneries has any idea of the present and potential consumption of leather in the country. Sales mean that what is made is sold whenever a customer turns up. The objective approach is lacking because there is no marketing department in the sense it should be.

Satisfaction of the customer is not considered important, nor is it objectively ascertained. Since the leather in the Sudan is mainly available from the three public sector tanneries, the sale attitude is monopolistic and casual. There is no liaison between the customers and sales except in case of the Bata liaison that is taken care of by one technical manager sitting in LIC. but this is done without any real promotional objectives.

The shoemakers in the Omdurman market say that they prefer to use leather, provided they get regular supplies and provided there is not much difference in price compared with artificial materials. They all appreciate the quality of leather. Since they buy their requirements in small quantities, it is uneconomical for them to go all the way to the tanneries. For this reason they are compelled to buy from the leather merchants at very high prices. Generally, the merchants make a profit around LSd 0.20 per sq ft, which comes to 38 per cent to 40 per cent.

It is imperative that in order to maximize the production of the tanneries, positive steps in marketing be adopted. The possibility of going to consumers should be considered by opening sales depots in the main cities or towns of the provinces in the Sudan which are easily and economically accessible. This will eliminate middlemen. The leather could then be sold more cheaply. Wherever sales depots are not practical, the merchants may be given sales discounts or commissions at progressive rates with increases in the volume of sales. They could sell at factory prices plus the cost of transport.

The local sales should also be centralized under the Commercial Department or under one of the technical managers of LIC. The customers could then be divided into three categories, namely, industrial, like Bata, Larco etc.; artisanal (semi-mechanized); and rural. Their requirements could then be studied and estimated.

The total requirement of upper leather is estimated to be 16 million sq ft annually. The share of industrially produced leather is estimated to be 9 million sq ft annually, and the balance is supplied by rural tanneries. With the urbanization of the rural population and with general awareness, there is a definite trend towards the consumption of industrially produced leather, even in traditional marcoubs which are now being produced by mechanized factories in increasing quantities. Marcoubs with patent leather uppers are popular because they need no polishing. Moreover, considering the cutting value of rural tanneries, leather made from damaged and defective skins will have much the same price as industrially produced leather.

The combined demand for upper leather by Bata and Larco is 5.5 million sq ft annually, provided they get regular supplies and are not let down by the tanneries. Their capacities for making leather shoes are largely utilized by the consumption of artificial leather because leather in full quantities is not available. Bata has a programme of making leather footwear that consumes roughly 15,000 sq ft of upper leather daily. Under this programme the production capacities of the tanneries are designed so that one tannery gears up its production for Bata and Larco and the other two tanneries cater for the rest of the market. Thus, 50 per cent of the tanneries' hide capacities will be engaged for the local demand which is increasing roughly at the rate of 20 per cent per year.

The sale of sole leather is estimated to be around 200,000 kg, annually, and the same quantity can be consumed in the manufacture of belting. Textile and industrial leathers are made in Khartoum Tannery. The capacities of vegetable tanning is much larger here than actual consumption. The avenues for possible export of sole and industrial leather to Egypt should be examined.

Due to grain damage and scratches the scope of full grain leather is limited. It is possible that hides having lesser grain damage can be tried for the new popular "vegetable look" upper leather. Therefore, all the leather produced is basically in corrected grain. Of the total upper leather, 25 per cent can be finished in plain with hair cell print with normal water-based lacquer emulsion season or PU/Nitro season to give high shine patent effect and an easy care finish. The percentage of plain leather can be increased by a judicious selection in wet blue and by manipulating the retannage allowing for effective deeper buffing. It is estimated that the quantity of plain leather can be increased up to 45 per cent. The rest is finished in medium to heavy prints. There is a growing popularity of hunting suede as is found in the uppers of safari boots. If properly made and supplied according to demand, it will reduce the quantity of embossed leather, though with effective marketing for export the embossed leather has a big outlet as uppers for work, farm and army boots. The printed leather can also be given a full grain printed look with two-tone effect, and with small prints like sand blast, it can be used for uppers of popular training shoes and cheap football boots (shoes) for children and youths. The hunting suede made from ultimate reject sides can be tried for another cheap and popular article, the jogger shoe. Vegetable tanned sides also allow for deep buffing to make pigmented sandal uppers or can be naturally heavily embossed with designs like South American embossed sandal uppers.

Very good nappa and suede clothing, and uppers and linings can be developed from sheep and goat skins. Even the heavy goat skins can be tried for shrunk grain leather and for weave-laced uppers gaining popularity in countries of warmer summers and less rain. Soft shrunk grain goat skins can find consumption in leather goods articles like belts and bags. Heavily scratched but thick goat skins can be tried into uppers after grain snuffing and goat grain print, or even buff calf grain print. Ultimate rejects from skins can be converted into industrial glove leather; the gloves can be made locally with little capital even on a cottage basis.

There is 10 per cent excise duty on leather. It increases the shoemakers' cost of production and discourages them from using leather in preference to imported artificial leather. As the revenue from this source is not great, it can be recovered by enlarging the customs duty on artificial leather and the raw materials used in plastic footwear. In the wake of imminent wage and salary increases under job evaluation and classification, the already high cost of production will go higher against interest in the consumption of real leather footwear, an ideal wear for foot health and comfort. The customs duty is also against the interest of the leather industry which is still in infancy and needs support.

Export. Export of leather is in the developing stage and it follows the same marketing philosophy as domestic marketing. A beginning has been made which can be judged from the following table that shows trends for export during the last three years:

Table 12. Export trends

	1975/76	1976/77	1977/78
<u>Hides</u>			
Wet blue sides/hides	15 000 sq ft	75 494 sq ft	227 365 sq ft
Crust retanned sides	25 000 sq ft	66 979 sq ft	120 665 sq ft
Finished-printed/plain/ vegetable	27 500 sq ft	240 475 sq ft	44 500 sq ft
<u>Sheep skins</u>			
Pickled	106 300 pieces	60 413 pieces	130 607 pieces
Wet Blue	5 480 pieces	-	24 000 pieces
Finished: suede/lining	1 460 sq ft	1 300 sq ft	-
Retanned crust	720 sq ft	-	41 374 sq ft

Goat skins

Pickled	-	-	-
Wet blue	-	-	-
Retanned and vegetable crust	13 000 sq ft	97 000 sq ft	50 000 sq ft
Goat and sheep skin suede	-	133 000 sq ft	-

During the current year the performance is reported to be much better than in previous years, but the tanneries are facing shortages of hides, skins and chemicals that could hurt exports.

Since the developed countries are facing difficulties in the availability of men willing to work in the dirty conditions of the tanneries, and in highly expensive effluent treatment to meet the ecological and environmental regulations that demand high labour cost, they are shifting to obtain semi-processed and ready to finish leathers from the developing countries. Moreover, the Sudan can capitalize on the new trend in the developed countries to find new sources for leather, as well as making greater demands on other African sources.

Prerequisites for penetration into the export markets are still not recognized and followed in the Sudan. They are:

- Frequent personal contacts with importers
- Quick response through telex and cables to inquiries
- World market study and trends through commercial trade journals
- Frequent advertisements in all trade journals
- Follow up and feedback on previous orders and supplies
- Invitation to the importers to send their technicians to conduct trials according to their requirements
- Participation in all major trade fairs besides Paris
- Quick submission of samples and supply
- Competitiveness and quality
- Prompt or timely shipment according to contract
- Foreign visits free of regulatory and bureaucratic injunctions and inhibitions
- Earnestness in finding new markets other than traditional ones
- Independent negotiating capability of the person in charge of exports
- Knowledge of what is made from Sudanese semi-processed leather

The export orders are presently executed either by first accepting the orders and making goods for shipment, or by maintaining production irrespective of orders in light of experience and continuous offering of overstock for prompt shipment. The latter alternative is followed by all major exporters in the developing countries. Having stocks in hand the production costs are known that give a better margin for price manoeuvring. It also enables the tanneries to maintain production and cost at desired levels. The tanneries should keep the export department informed of the stocks they have and keep the cost of production regularly worked out by the costing section.

The whole world is a market for semi-finished and finished leathers. What matters is the drive and effort to find markets: what to export to where. With experience the picture becomes clear for a continued development for export. Each country has specific requirements according to its specialization and popularity of its product lines:

East European Countries - wet blue and chrome retanned skins

Federal Republic of Germany - Wet blue and chrome retanned and vegetable crust skins and finished leathers, particularly nappa and suede sheep for garment and embossed sides for heavy boots

France - for wet blue skins and possibly for vegetable crust

Italy - for wet blue and crust hides and skins

Japan - for vegetable and chrome retanned skins

Other Asia - for crust sides and finished embossed

Pakistan - wet blue hides

Scandinavia - wet blue skins, particularly sheep skins

Spain - for wet blue and crust skins, growing along the Italian pattern

United Kingdom of Great Britain and Northern Ireland - for wet blue, crust (both chrome retanned and vegetable) hides and skins and embossed finished leather for heavy farm and work boots

United States of America - for wet blue and chrome retanned skins

Non-oil producing Middle East countries like Jordan, Lebanon etc., are also potential markets for finished leathers.

Egypt can be considered as a potential market particularly, as a start, for wet blue and retanned crust from hides, now that Egyptian-Sudanese operation in leather production is in the offing. In that event there is also the possibility of exporting all types of technical leather. Sudan can fulfil all conditions for this co-operation.

With experience gained in what the importing countries are making from Sudanese semi-processed leather and with technological confidence, there is a great possibility of exporting finished sheep skin garment leathers and lining leather from scratchy goat skins. Export of pickled skins can continue till export of further value-added leather is solidly established.

The channel for export in each country should be judiciously selected - the criterion is to find a party in each country who is a specialist in the distribution of a particular type of leather and has wide contacts and respect for the trade.

III. UTILIZATION OF MATERIALS

A. Hides and skins

The Sudan is the largest country in Africa, and one of the richest in the continent in animal resources and in extensive potential for the agricultural sector. The following table expresses the livestock population along with hides and skins production, and their target projections at the end of the current plan period in 1982/83.

Table 13. Livestock and percentage of hides and skins production

	Present position			Target 1982/83		
	Livestock	Hides and skins	Percentage off-take	Livestock	Hides and skins	Percentage off-take
Cattle	15 332 000	1 092 400	6.9	18 905 000	1 795 900	9.5
Sheep	15 918 000	5 523 500	34.7	22 132 000	7 347 800	33.2
Goat	12 116 000	1 938 500	16.0	15 000 000	2 400 000	16.0
Camels	2 828 000	87 668	3.1	3 104 000	139 600	4.5

These figures should be read with caution. They are largely based on estimates like human population that, depending on the source, vary from 16 million to 20 million.

Most of the livestock (roughly 70 per cent) is owned by the nomads. Hence, the herds are reared under nomadic conditions. Nomads keep livestock as expressions of wealth, prestige and social status. The quality of hides and skins is generally bad due to bad husbandry, and bad flaying and curing. Inherently good in substance and quality, with fine grain, the raw stock is substantially down-graded often to the extent of as much as 30 per cent owing to avoidable defects caused by sheer neglect and carelessness. Animals are generally flayed ineptly by uninitiated people, resulting in deep cuts on hides and skins which render them almost useless. The animals are mostly flayed on the ground with unsuitable pointed knives with the intent of getting as much fat and meat as possible, cutting too close to the hide making deep gouges. Careless flaying results in hides of irregular trim and pattern. Moreover, the grain is often

damaged by reckless branding on the best part of the hide and by bush and thorn scratches, horn rakes, tick bites, pox etc. The raw stock is also widely depreciated in quality due to putrefaction, and attacks by beetles and other infestations accompanied by substandard curing, preservation and storage. Primitive practices of ground drying of hides and skins under the direct sun instead of in the shade by frame drying is common in the distant parts of the country and it is having disastrously adverse effects on the quality. It is estimated that 70 to 80 per cent of the hides and skins come from the rural areas after a large inestimable quantity is lost through defective flaying and curing.

The net result is very poor raw stock. This is the vital area for the success of the leather industry. Poor quality of raw hides and skins does not give a great margin for improvement and diversification. It also limits the maximization of the export of both semi-finished and finished leather, and creates problems for the utilization of the ultimate left-overs which will increase with greater capacity utilization.

As to the quality of hides and skins, the best come from the Blue Nile, Gezira and White Nile Provinces because they are mostly irrigated agricultural areas. The stock animals are not transhumant and have enough food, fodder and better husbandry. As far as flaying and curing are concerned, the hides and skins coming from the Omdurman slaughterhouse are best but their quality in general varies because the animals are brought to the slaughterhouse from the distant areas of all the surrounding provinces. The majority of hides and skins have the usual defects, brand marks, ticks, scratches and other injuries. Moreover, the animals have grown weak, after being herded long distances for many days which affects hide quality.

Omdurman slaughterhouse is the only slaughterhouse actually now working out of about 150 slaughterhouses all over the country under the supervision of a Hides and Skins Improvement Centre working under the Animal Resources Section of the Ministry of Agriculture. This Centre is also responsible for the improvement of hides and skins with a manager and his office in Omdurman and 60 to 70 hide officers and 150 workers stationed all over the country. The Centre is ineffective due to lack of funds and organization.

It is estimated that 50 per cent of the hides and skins are derived from Khartoum, Omdurman and the aforementioned agricultural provinces. The rest come

from desert and semi-desert areas with bushes and thorny vegetation except the southern provinces that get rain and where the hides are mostly dried. The quality varies from good suspension drying to poor ground drying under sun. The hides and skins from the southern provinces do not come to Omdurman market in large quantities. Besides many hides and skins from the southern provinces being ruined, they also find their way to the markets in the neighbouring countries.

Though improvement of hides and skins that largely go along with animal health is a colossal task in this vast country having limited resources and the large quantity of livestock traditionally held by people leading migratory life, it can be done through the following measures:

(a) Intensifying curative and preventive measures against animal diseases and controlling infections through veterinary extension service and research;

(b) Integration of livestock with crop production schemes and establishment of sizeable animal and crop production projects and animal fattening;

(c) Establishment of stock routes and holding yards to facilitate marketing;

(d) Establishment of modern abattoirs for meat packing with attached feeding and fattening ranches;

(e) Reactivation and revitalization of the extension service of hides and skins improvement centre by providing modern tools, implements and transport vehicles so that they can also serve as effective mobile units for the demonstration of better flaying and curing methods;

(f) Through regular programmes on the radio, making the primary producers aware of the monetary benefits they can derive for themselves and the country by better flaying and curing.

There is no official standard for commercial grading of hides and skins. In other countries, for instance, the skins are graded into sizes and selections. Similarly the hides are graded into weight ranges and selections. Each selection has a price differential and the sizes and weight ranges have different prices according to the demands. The tanneries purchase all hides at one price and the skins also are purchased at one price, preferring the so called "large". In export the hides are selected into 90 per cent firsts and 10 per cent seconds. All are packed mixed. Sometimes they are packed mixed in a selection of 70 per cent firsts, 20 per cent seconds and 10 per cent thirds, but there is no established practice. Similarly, the skins are also selected into 90 per cent firsts and 10 per cent seconds, and they are sold (exported) at prices according to different weight ranges per dozen skins. The sheep skins have the following ranges:

Kg per dozen

20 - 22
24 - 26
29 - 31
30 - 32
32 - 34
34 - 36

Heavier weights get better prices and the f.o.b. prices obtained during 1977/78 ranged from \$43 per dozen for lightest, and \$55 per dozen for the heaviest. The sheep skins are frame dried.

The case dried goat skins are exported in the following weight ranges:

Kg per dozen

10 - 12
12 - 14
17 - 19
18 - 20
20 - 22

The lighter bring less price than the heavier. The prices obtained during the same year ranged from \$14 to \$28 per dozen.

The selection of 90 per cent firsts and 10 per cent seconds has no meaning. Through experience the foreign buyers have the exact idea about the Sudanese hides and skins coming from the exporters with whom they have long business relations. Giving allowance for the risk factor for the unrealistic grading being 90 per cent firsts, the importers know what they are getting for the prices they pay. It is, therefore, a recognized fact that as the grading is unrealistic, the buyers will purchase from Sudan only when there is shortage from other sources, or there is a problem with prices. Export of hides and skins during the years 1976/77 and 1977/78 was:

Table 14. Exports and values

Description	1976-77 (pieces)	1977-78 (pieces)	Total value	
			1976-77	1977-78
Sheep skins	3 417 348	3 264 762		
Goat skins	1 417 190	1 028 974	\$US 15 934 235	\$US 13 449 322
Hides dry salted	344 222	153 661	plus	
Hides frame dried	54 251	-		
Hides pickled	1 000	23 315	£589 291	

Countries for export in 1977-78 were mainly the Federal Republic of Germany, Italy, Spain and the United States of America for skins, Spain being the major buyer. The hides mainly went to Egypt under barter trade.

Official grading as in other exporting countries of hides and skins is urgently required. Typical of all the hides and skins in developing exporting countries, the raw stocks are collected from the butchers scattered all over the country by the small dealers or largely by the exporters through their purchasing organization in the interior. The major traders and exporters pay butchers and small dealers in advance to ensure the supply and to satisfy them that their hides and skins have been bought. The advance payment serves as guarantee. There are independent butchers and dealers who would also prefer to sell their stock to those who are prepared to pay more. By and large, all exporters have their own organized network of purchasing stations in the interior with warehouse facilities, and purchases are made continuously regardless of the market trends - domestic or export.

The tanneries largely purchase their requirements, particularly skins, either from these big exporters and merchants or from the dealers who bring the green hides direct from the Omdurman slaughter house. The dry salted hides are purchased from big merchants as well. A certain number of hides and skins also

come from butchers and small merchants in the interior. Tanneries cannot depend on the meagre and uncertain source of supply. They could purchase their requirements by organizing the network of commissioned agents in the main producing centres in the interior as well. This would also ensure the supply of quality hides.

Hides and skins requirements of the tanneries must be fulfilled. Banning or drastically curtailing of export of hides and skins is not a solution because it will continue to be the main foreign exchange earner. Measures can be introduced to enable the tanneries to obtain their requirements, and after meeting them the rest of hides and skins could be exported. A responsible body having its members from the relevant ministries and the hide trade could be constituted. The tanneries would place their demands to this body for a period at the prices fixed by the body. After it is ascertained that the demands have been met, the body could recommend to the licensing authority for the issue of the export licences of hides and skins for that period. The tanneries would keep record of the quality of hides and skins supplied by each supplier or exporter. Whoever supplies inferior stock would be asked to compensate for them, otherwise he would not be issued an export licence for future exports or would be black listed for a certain period. This is the best compromise between the interests of the tanneries which must run to maximum capacities in the national interest, and equally important foreign exchange earnings by the export of hides and skins. It is expected that both the parties, the tanneries and the exporters, will co-operate with each other with open minds and national spirit.

B. Laboratories and Research and Development

All the tanneries have laboratories and experimental drums as formalities. But they are not suitably balanced and are lacking in many essential chemical reagents. Even basic means, like pH papers, are not available most of the time. The chemists are fresh graduates from the university and have no idea about the chemical processes of the tannery and what they are expected to do. They are by and large uninitiated and without direction towards a positive programme. The net result is that there is no daily process control system or any programme for development work.

The request for assistance to UNIDO for laboratory equipment and reagents has been made, and upon their arrival the laboratories will be in perfect position to carry out the development research which is, in any case, essential for progress. Research and development means:

Materials and time saving

Safer and simple processing

Quality improvement

Diversification of production line and better utilization of inferior raw stocks and by-products

New shades development and adaptation of new finishing systems

Use of less water by recycling

Trial, application or adaptation of new processes and systems introduced by the chemical manufacturing firms by remaining in touch with their application departments and their literature and other trade journals of practical nature

Adoption of indigenous products to established or new processes

The work of such nature emphasizes the laboratories be manned by well qualified research-minded leather technologists who can work in harmony with technical managers. Since the three tanneries are under one controlling organization, it would be ideal if research and development work is entrusted to one centralized laboratory working as a 'think-tank' for all. The Leather Institute is ideally placed and it can serve this purpose, if the possibility of its attachment with the Leather Corporation is considered. At the moment this has not been done.

C. Private Sector Industrial and Rural Tanneries

There is one newly started mechanized tannery in Omdurman called the Salim Tannery, and it is producing the same type of finished leather as the public sector tanneries. It has all the major equipment but is unbalanced. The capacity is estimated to be 2,000 sq ft of finished leather per day but it produces 1,000 sq ft with emphasis on processing the inferior raw stock. It also quality was found to be comparable with that of big tanneries. It also processes some pickled skins for export. The owner is a raw hide merchant and looks forward to the tannery's enlargement with experience.

In the rural sector, after getting information through several competent sources, it was estimated that there were about 298 tanneries scattered over the country but mainly in the provinces of Darfur, Kordofan, Kassala, Blue Nile and Northern. There are 40 tanneries located in the tannery area of Ondurman. The majority of the tanneries are small units and in some areas the operations are concentrated in compounds having a number of tanneries. The tanning is typically traditional craft and as found elsewhere the methods are essentially the same with little adaptation to Sudanese tradition. The working tools and sequence of operations are the same and tanning is done in the infusion of the ground husk of indigenous tanning materials. The quality of leather produced typically depends on the skill put into the individual operation and the tanning speed is enhanced by workers trading upon the stock in pits.

No correct figures of the consumption of hides and skins by this sector was available but estimates were made through law of averages from the figures gathered from here and there. This sector consumes lower grade hides and skins which was estimated to be 500,000 cattle hides, one million each of goat and sheep skins, and 50,000 camel hides annually. The leather is used for rural footwear marcoubs and sandals, and articles of household like mats, belts, water containers etc.

This sector is neglected even though one of the objects of the Leather Institute was to impart training in the improvement of rural tanning methods. Nyala Tannery under the Ministry of Agriculture is being constructed with the object of introducing improved techniques, hand tools and auxiliaries, and limited mechanization to the rural tanneries. It will serve as a base and nucleus for the development of the rural tanning sector so that it can not only improve the quality of leather but also be capable of exporting vegetable crust leather along the lines of several Asian and African countries. With Nyala Tannery as a base and Leather Institute or a hides and skins improvement centre as the training medium, a strategy could be drawn by the small scale industries sector towards the development of rural tanneries so that small units can develop and expand in evolutionary or sequential manner as they acquire experience in technology and marketing. In developing countries where the leather industry has made great progress (India, Pakistan, or Nigeria, for example), the beginning was made by such tanneries. Through experience in processing and marketing, and with the government's support and encouragement,

the small units developed into larger ones with initial export of vegetable crust, then added to it the wet blues. Now they are on the threshold of exporting not only chrome-retanned and semi-chrome dyed crust but also finished leather. They learned to utilize the left-overs for making clothing and bag leathers and the ultimate rejects for making industrial gloves having unlimited markets. Incidentally, most of the tanners were and still are the hide and skin merchants. They initially went into tanning line to utilize the left-overs of their raw stocks from export. Now they purchase hides and skins for consumption in their own tanneries.

Even LIC should plan to develop the production of vegetable crust skins for export in its Omdurman Tannery. It could also serve as a guiding example to the cluster of rural tanneries in its vicinity and could even help them in export marketing.

With improved techniques and government support this sector has great potential for sequential development, horizontal and vertical, for home and export markets.

IV. MARKETING OF LEATHER PRODUCTS

A. Leather footwear

Twenty nine shoe factories are officially registered in Sudan, and it is estimated that there are about 14,000 artisanal shoemakers and an unknown number of rural cobblers making marcoub and indigenous sandals.

Out of the registered factories only one is now in public sector. Bata was in the public sector till the middle of 1978. Now it is a joint venture with Bata International holding 51 per cent and LIC 49 per cent shares. Bata has the controlling interest. It has been named Bata Sudan Ltd., with its first aim of raising output to 6.5 million pairs this year and by 1980 to 8.5 million pairs. Fifty per cent of the output is planned to be leather footwear.

The total capacities of the footwear factories and the production for the years 1976-77 and 1977-78 are as follows:

Table 15. Factory capacities for footwear and actual production

Description	Annual capacities pairs	Production - pairs			
		1976-77	Percentage of capacity	1977-78	Percentage of capacity
Leather foot- wear	10 860 000	4 350 800	40.0	4 796 700	44.1
Plastic shoes	6 960 000	3 547 940	50.9	3 305 972	54.6
Canvas - rubber	3 621 000	3 122 480	36.2	3 345 516	38.3
Beach sandals	30 000 000	9 348 420	31.1	9 937 960	33.1

Besides production shown in the table above, the traditional casual type marcoub and sandals called shegeyana are made all over the country by the rural shoemakers that are generally made from poor quality rural tanneries leather. Because reliable information was not available, after discussions with people connected with shoemaking and the marketing and statistical department, a fair guess of the annual production would be 3.25 million pairs of marcoub and 2.5 million pairs of shegeyana sandals. Marcoub are also made in the mechanized factories and artisanal workshops, and are popular in the urban sector.

As the controlling interest of Bata is now in the hands of Bata International, it is being entirely managed in typical Bata fashion. The privately owned footwear factories were started haphazardly in an amateurish way by young business people, mainly in Omdurman, with no knowledge and experience of shoe production. All try to imitate Bata and even hire Bata's technical and commercial staff. Except for Bata, and the other big and well organized Larco, all these factories function in their own way without any programme of designing, quality control and marketing. Most of them concentrate on simple and quick selling footwear like beach sandals, plastic and canvas shoes and sandals from imported materials.

Sudanese are fashion loving and footwear wearing people. Despite hot weather most of the year, those who can afford it keep a pair or two of closed shoes along with sandals. Climate is a big factor in shoe wearing habits, but closed shoes are becoming increasingly popular. The shoe wearing trend in the neighbouring Arab countries like Egypt and Saudi Arabia is also having an influence in Sudan. Moreover, Bata's influence in trend setting is now becoming evident.

Most of the leather upper shoes are unlined Derby constructions and in ladies shoes, the strapped sandal. Leather uppered marcoub are also produced in factories with cemented PVC, neolite rubber or tyre soles. Shoes and particularly safari boots in hunting suede now being introduced by Bata are being widely accepted, and, in keeping with neighbouring African countries, they will find their acceptance among tourists and foreign residents in Sudan.

Leather shoe constructions are generally on cement lasted principles. Men's shoes have PVC injected and DMS vulcanized rubber and PVC soles, while sandals have cemented PVC and microcellular rubber soles. Ladies sandals in general have polyurethane cemented soles.

Except for Bata and Larco, there is a lack of awareness of the value of designing which is essentially a creative skill that effectively utilizes leather of different types, textures and qualities. From the quality of the shoes seen in the shops and factories particularly of Bata and Larco, it can be hoped that men's injected moulded footwear and ladies' strapped sandals with polyurethane soles find markets in Middle East countries at this stage. With imaginative designs and constructions even printed leather in distinctive

prints, soft texture and shrunk grain can be used not only in footwear but also in leather goods. Sides with scratches scattered apart can be produced in full grain 'vegetable-look' water repellent leather requiring no polish, which has become increasingly popular for nearly all types of shoes, but in particular for fashionable walking shoes, leisure footwear and boots in Californian construction. Sides with punched designs could be tried in punched uppered shoes. Leather with small prints could be extensively used either alone or in combination with plain leather in training shoes and cheap football boots with injection moulded PVC soles. From the hunting suede, made from thick splits and extensively grain damaged sides, training or jogger shoes can be made. Such footwear once standardized in quality can find big markets for export. Even closed uppers have the possibility of being produced by several Asian countries. Similarly, closed uppers of printed leather can be exported to Europe for farm and work boots.

Shrunk grain leather from heavy goat skins with scratches can be used for soft uppers, bags and cases. Soft plain leather from scratchy material is used in several countries in weaved (interlaced) uppered shoes for domestic and export markets. Interlaced closed uppers as such are also being exported to America and Europe.

Sandals must be made with good quality. If they are made and developed with natural light-coloured vegetable uppers and leather soles with embossed prints of Sudanese motifs on the lines of similar sandals made in India and Pakistan they could have big markets in Europe, America and the Middle East.

At present, Sudanese leather footwear has also cheap non-leather uppers and, therefore, their production of real leather shoes is in the region of 60 per cent. The reason is the non-availability of enough leather, particularly plain, and its high price is due to low production in the tanneries. The value and quality of real leather against artificial leather in terms of foot comfort and health is generally appreciated even by ordinary shoemakers. The craftsman making marcoub in the Omdurman market from inferior rural tanneries leather also prefers good leather of mechanized tanneries provided he gets it cheaper and at more or less the price of cheap leather in terms of cutting value. He is conscious of the price and cutting yield.

The development and diversification of leather and leather footwear quality essentially depend, in the long run, upon the improvement of the basic material: the hides and skins.

Omdurman Leather and Footwear Factory is the only such factory now in Sudan under the public sector. It is a type of artisanal workshop making badly designed and badly made shoes for army officers. The production is 'off and on' pattern, making 100 to 125 pairs a day. It gets contracts for the army boots, but its capacity hardly meets the contract orders, which total some 50,000 to 55,000 pairs per year. The shoe factory is in a shambles and on the brink of disaster. The same is the case with the attached old tannery working with an old Ruston diesel engine. As suggested earlier in this report it would be better utilized for the production of vegetable crust skins for export.

B. Leather products

No information on the quantity of the production of leather goods was available from anywhere. They are handmade goods mainly ladies' handbags, cases and purses made from lizard, snake, and crocodile skins tanned largely in the Khartoum tannery.

Some insignificant suitcases made from rural leather were seen in Omdurman bazaar

Though good garment leather, both in nappa and suede, is made in small quantities in the tanneries, leather garments are not produced because the internal market does not exist due to unfavourable weather conditions. There is a potential for the development of this area provided a training and commercial section is organized in the leather utilization section of the Leather Institute.

'Rustic' furniture nappa leather is another possibility for introducing to the furniture market. The scratchy hides are suitable for this type of leather.

V. CONCLUSION AND RECOMMENDATIONS

The leather industry adviser's findings indicate that due to low capacity utilization, the public sector tanneries in the Sudan are over capitalized in terms of high overheads, are overmanned and over-staffed, and are drifting towards a liquidity crisis of no return. All cash resources should be assessed and extra injections of working capital should be arranged so the various units can work at an economic level of at least 60 per cent capacity.

The foregoing generalized problem results, at least partly, from the weak hold the Leather Industries Corporation (LIC) has over the tanneries in financial and efficiency matters. An entrepreneurial and commercial approach should be adopted through having a strong and demanding central finance controller who should be, above all oriented in the management of finance and financial results: the profits.

The performance of each unit in the tanneries should be assessed every month in terms of profit and loss. All the activities of the units should be reviewed in a monthly efficiency and evaluation meeting attended by the general manager, and technical manager of each unit, under the chairmanship of the Managing Director of the LIC or finance controller of LIC.

A trouble-shooting and problem-solving meeting of the production and maintenance staffs should be held every week to serve as in-factory training to narrow the technological gaps between various levels of technical staff. This could reverse the trend towards disrepair found in the tanneries. Immediate attention should be given to the tilting drums and consequent damage to machinery in the White Nile Tannery.

If the requisite working capital cannot be mobilized to operate the tanneries at the proper level of production, they should be offered for Joint Venture to foreign parties who can bring expertise in purchasing, manufacturing, maintenance and marketing along with capital equity participation. UNIDO could be asked to help find parties.

Besides effective systems of costing, efficiency evaluation, and inventory control detailed in the body of this report, there is a need for stricter control in recruitment of labour and personnel. Salaries of management and non-productive staff should not exceed 35 per cent of total labour wages.

Official standards for leather and leather products should be made to conform to needs for both domestic and foreign markets. As a result, LIC and the Ministry of Agriculture should study methods for improvement of products from local and artisanal sources.

The 10 per cent excise duty on local leather sales and the 15 per cent export duty on leather products should both be abolished. This would improve competition for marketing in domestic and foreign markets, and as a consequence direct sales could be used with an eye to trade fairs, and a centralization of sales depots. Such centralization could then enhance quality and design innovations.

Finally, for operational improvement and further development, and to train local ranks in all the departments of tannery activities, i.e., purchase of hides and skins, chemicals, technical know-how, process and cost control, maintenance, marketing, and laboratory use, an expert team should be requested from UNIDO. The team should work for a period of at least two and a half years, and should be comprised of:

- (a) A chief leather industry adviser;
- (b) A leather technologist;
- (c) A maintenance engineer;
- (d) A raw hide and skin expert;
- (e) And a cost accountant.

Annex I

JOB DESCRIPTION

Post title: Leather Industry Adviser

Duration: Nine months

Date required: As soon as possible

Duty station: Khartoum; with travel within the country

Purpose of project: To examine the situation in the three existing tanneries and advise on lines of action which could be adopted with regard to trouble-shooting and improvement of operations

Duties: In co-operation with counterpart personnel under the leadership of the Managing Director of the Leather Industries Corporation, Ministry of Industry, the expert will be specifically expected to:

1. Assess the quality and quantity of hides and skins available for industrial production of leather.
2. Ascertain the quantity, quality and variety of leather footwear and of leather products.
3. Assess the quality, quantity, variety and price at which leathers produced locally could be sold on the domestic market and on foreign markets.
4. Ascertain the present production capacity of existing tanneries.

The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further actions which might be taken

Qualifications: Senior leather industry technologist with extensive experience in the operation and management of tanneries with knowledge of technical and economical matters concerning the leather industry. Experience in market assessment. Experience in developing countries an asset

Language: English

Background information: The country is exerting serious efforts in order to improve the efficiency and proficiency of the leather industry

In 1970, IDCAS conducted an extensive and intensive survey for the leather sector in the country. Based on this survey, the Government drew up a five-year plan for the development of the leather and allied industries. The plan aimed at increasing the production of leather to meet the needs of local consumption as well as to increase the export of semi-processed and of finished leather and leather products

The annual production of hides and skins is estimated at:

- 1.00 million cattle hides
- 3.00 million sheepskins
- 2.00 million goat skins
- 0.04 million camel hides

Approximately 15 per cent of these raw materials are tanned locally in two industrialized tanneries, approximately 10 per cent are tanned in rural tanneries and some 75 per cent are exported as raw hides and skins.

Annex II

MODEL FORMS FOR OPERATIONAL
PRACTICES CONTROL

Form 1

Stock Position of Raw Hides

As on 19

Description	Previous Balance	Fresh Receipt	Soaking	Balance
<u>Cow Hides</u> Green/Fresh Dry Salted Frame Dry				
<u>Sheep Skins</u> Small Medium Large				
<u>Goat Skins</u> Small Medium Large				
Total				

Store Keeper

Form 2

Lot Card

Lot No. _____

Supplier
Region
Curing
Weight Range
Selection
Raw Cost

No. of hides
Raw weight
Soak weight
Pelt weight
Shaved weight
Starting date
Finish date

Cost control				Cost	Transfers
Materials	Indent No.	Qty.	Value		
				Raw	<u>To sole</u>
				Materials	No. Hides Weight
				Labour	<u>Wet Blue for Export</u>
				Overheads	No. of Hides/sides Footage
				Total	<u>Crust for Export</u>
					No. of sides Footage
					<u>Final Finish</u>
					No. of sides Footage
Tech. Manager				Cost Accountant	P.T.O.

Form 4

Lot Card unto Wet Blue

Lot No.

Supplier

Region

Curing

Raw Weight

Soak Weight

Pelt Weight

Date	Process	Wages	Receiver's Signature
	Soaking Liming Tanning		

Particulars of Raw Hides

Weight Range & Selection	No. of Hides	Value
Total		

Signature Incharge Raw Hide

P.T.O.

Form 5

Wet Blue Selection

Grade	No. of Hides	Footage	Percentage
I			
II			
III			
Damaged			
Total			

Raw Cost per Sq. ft. _____

Incharge Wet Blue Godown _____

Costing _____

Form 6

Lot Card After Wet Blue

Lot No. _____

Wet Blue Selection	Requirements			Starting date	Completion date
	Finished Quality	Colour	Thick-ness		

Measurement

	Wet Blue	Finish	Loss	Grain	-%	+%
No. of Hides						
No. of sides						
Area sq.ft.						

Processing

Section	Receiring Date	Receiver's Signature	Remarks
Dyeing & Retanning			
Pasting			
Finishing			
Sales Codown			

Tech, Manager

Costing

Form 7

Yield Statement

Leather Article	Selection	No. of sides	sq.ft.	Actu- AL %	Std. %	Variance	
						-%	+%

Selector

Tech. Manager

Costing

Form 3

CHEMICAL INDENT FORM

Chrome Section

Liming & Tanning

Date : _____

No : Sr. No. to be printed

Lot No. _____

Store Keeper

Pelt Weight : _____

Please Supply the Following :-

Description	Quantity	Ledger Folio	Rate	Value

Foreman

Form 9

Chemical Indent Form

Chrome Section

Retanning - Dyeing etc.

Date : _____

No. sr.No. to be printed

Lot. No. _____

Store Keeper

Shaved weight _____

Please supply the following :-

Description	Quantity	Ledger Folio	Rate	Value

Foreman.

Form 12

Form for Stagewise Daily Issue-Chrome

Date ; _____

Description	No. of Pieces	Footage	Remarks
Raw Hides for Soaking			
Issues From : Wet Blue			
Shaving			
Dyeing			
Drying and Crust for Finishing			
Issue to Sale Godown			

Prepared by :

Technical Manager

Form 13

Form for Stagewise Daily Issue-Vegetable Leather

Date : _____

Description	No. of Pieces	Kgs./ footage	Remarks
Soaking			
Issue :- From Liming to Tan yard			
For finishing			
For Pigmenting			
For Industrial Leather			
To Sale Godown			

Prepared by :

Technical Manager

Income Statement (Costing)

For The Month Ended _____

	Current month	Position upto last month	Up-to-date position
RE TURNS:			
Production-Local			
Production-Export			
Misc. Production & Sales & Service			
Refunds & Rebates			
Total Returns			
COSTS :			
Direct materials consumed			
Direct wages consumed			
Rejection Allowance (Estimated)			
1. PRIME COST			
Indirect wages & salary Paid			
Overheads			
Spare Parts consumed			
2. FACTORY COST			
Packing material consumed			
Freight outward (estimated)			
Selling commission (estimated)			
Export commission (estimated)			
Export Expenses : Ins., Freight etc. Estimated			
3. DISTRIBUTION COST			
COST TO MAKE & SELL (1 + 2 + 3)			
TOTAL RETURNS			
TOTAL COSTS			
PROFIT/LOSS			

Annex III

GUIDING MODEL OF TYPICAL COST OF PRODUCTION TO
VARIOUS STAGES OF PROCESS OF HIDES

	Finished		Crust		Wet Blue	
	LSD per sq ft	Percentage	LSD per sq ft	Percentage	LSD per sq ft	Percentage
Raw Hides	0.103	43.45	0.103	48.35	0.103	56.28
Chemicals	0.050	21.10	0.038	17.84	0.033	18.03
Labour wages	0.017	7.17	0.013	6.10	0.009	4.91
Staff Salary	0.008	3.37	0.008	3.75	0.006	3.27
Depreciation	0.018	7.59	0.015	7.04	0.008	4.37
Machinery Maintenance	0.003	1.26	0.003	1.40	0.002	1.09
Building "	0.001	0.42	0.001	0.47	0.001	0.54
Interest	0.020	8.44	0.016	7.51	0.010	5.46
Fuel	0.003	1.26	0.002	0.93	0.001	0.54
Electricity	0.004	1.68	0.004	1.87	0.003	1.64
Water	0.001	0.42	0.001	0.47	0.001	0.54
Effluent Treatment	0.001	0.42	0.001	0.47	0.001	0.54
Office & Other	0.008	3.37	0.008	3.75	0.005	2.73
Expenses including Packing						
Total Cost per sq ft	0.237		0.213		0.183	



