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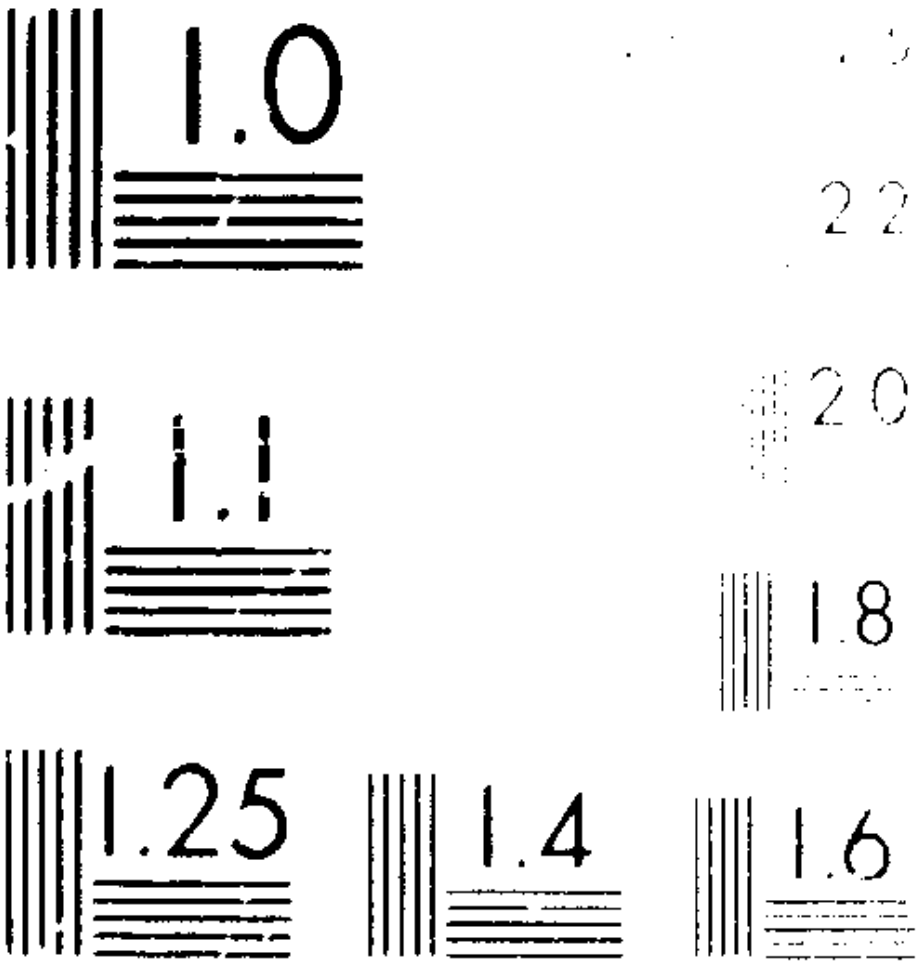
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FOOTWEAR INDUSTRY CONSULTANCY

SI/MOZ/80/801

MOZAMBIQUE

Terminal report

Prepared for the Government of Mozambique
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Marton Bérci, footwear industry consultant

United Nations Industrial Development Organization
Vienna

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Explanatory notes

References to dollars ($) are to United States dollars.

A full stop (.) is used to indicate decimals.

A comma (,) is used to distinguish thousands and millions.

The following abbreviations of organizations are used in this report:

ATIM	Assistance Technique Tannerie Megesserie
FACOBOL	Fabrica Continental da Borracha Sal
GEPCAL	Gabinete de Estudos e Projectos de Calçados
ISO	International Organization for Standardization
IULCS	International Union of Leather Chemists Society
IULTIC	International Union of Leather Technologists and Chemists
SENAI	Sistema de Ensegnamento Nacional para Aprendisagem Industrial

The following technical abbreviations are used in this report:

PU	Polyurethane
PVC	Polyvinylchloride

ABSTRACT

In order to assess the current state of the leather and leather products industry and to obtain higher productivity levels, the Government of the People's Republic of Mozambique requested assistance from the United Nations Development Programme (UNDP) under project "Footwear Industry Consultancy" (SI/MOZ/80/801), with the United Nations Industrial Development Organization (UNIDO) acting as executing agency.

Together with counterparts from the new National Directorate for Leather and Footwear, the consultant worked to develop both short- and long-term strategies for the industry. With the whole sector operating at only 20 to 25 per cent of its capacity, improvements were needed in hide collection, tannery production, shoe and leather factory administration, technology and personnel proficiency.

A two-phase reconstruction of the tannery is recommended as well as a restructuring of several factories and the general overhaul of machines and equipment. It is suggested that major new investment be delayed for several years until the sector shows improvement, with the exception of support for some of the canvas shoe factories and the new training centre. Recommendations are made for the creation of a design and pattern centre as well as for improvements in product planning and costing. Further UNDP/UNIDO assistance is requested in two project proposals.

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INTRODUCTION

A. Project background

The leather industry of the People's Republic of Mozambique consists of one tannery which uses hides from domestic buffalo and cattle.

The Mozambican shoe industry consists of 15 factories. The sector produces leather, canvas and plastic shoes. In addition, there are four leather goods factories and another two factories which produce accessories. All of these factories are controlled by the National Directorate for Leather and Footwear (presently under formation), although one section maintains its private enterprise status (see annex I for a list of factories, their products and status).

Although full operating capacity is approximately five million pairs of shoes per year, production for 1980 was expected to reach only one million pairs. Thus, with the whole sector operating at only 20-25 per cent of its capacity, assistance was required to evaluate and improve the situation.

In order to assess the current state of the leather and leather products industry and to obtain higher productivity levels, the Government of the People's Republic of Mozambique requested assistance from the United Nations Development Programme (UNDP) under project "Footwear Industry Consultancy" (SI/MOZ/80/801), with the United Nations Industrial Development Organization (UNIDO) acting as executing agency.

Through the project, footwear industry consultant Marton Bérci was attached to the National Directorate of Light Industry of the Ministry of Industry and Energy. The consultant received good collaboration from the counterpart staff, which consisted of Zacharias Sumbane, General Manager of the National Directorate for Leather and Footwear, Francisco Masquil, manager of the RITMO and Fabrica de Calçado SSS factories, Cacconi Maura, chief of the Directorate's purchasing department and Jens Erik Torp, head of GEPCAL (Gabinete de Estudos e Projectos de Calçados).

B. Objectives

Objectives were discussed at the first meeting held in the Ministry. Alterations made in the job descriptions concerned only the order of the objectives; its aims remained the same. It was expected to study the following areas:

(a) Strategy for the sector. Starting base was the government plan for 1981 and the objective was to formulate a strategy for the decadal plan (1981-1990);

(b) New factories to be established: their locations and dimensions;

(c) The role of supporting industries such as tanneries and component industries, particularly from a co-operational point of view;

(d) Theory and practice of the organization of purchase of materials, machines and spare parts. Investigation of technological problems and administrative questions having to do with planning and costing;

(e) The tooling of the shoe industry, equipment and maintenance;

(f) Theory and practice of professional training in the footwear and maintenance sectors;

(g) The establishment of a training centre (Fabrica Escola RITMO). Structure and main equipment;

(h) The project for restructuring the existing shoe and leather industry (as well as the canvas and plastic shoe factories);

(i) Possibilities of production for export. Quality level and quality control;

(j) Future assistance of UNDP/UNIDO.

In the course of the project, discussions were held with different enterprises and institutions (see annex I). In order to fulfil the stated objectives it was first necessary to evaluate existing levels in:

(a) Raw hide and skin production and transport;

(b) Material imports;

(c) Internal demand for shoes;

(d) Proficiency level of existing personnel;

(e) Technical and academic schooling;

(f) Laboratories for quality control.

RECOMMENDATIONS

1. The system of collecting hides and skins must be improved by instituting an adequate incentive mechanism. Not only collectors' but also the producers' (slaughters') interest should be stimulated.

2. Tannery production should be immediately improved by assuring availability of materials and by upgrading equipment maintenance.

3. Reconstruction of the tannery should be achieved in two steps, whereby the first stage must be a step by step development and the second one a more extensive investment programme. The first step should be implemented immediately, whereas the second one should be planned for 1985.

4. New larger investment should not take place until the trend over a period of at least three or four years shows a sure, solidly-based improvement in hide and skin collecting and leather production; both in quantity and quality.

5. The number of suppliers of chemical materials and machines is to be limited to a few reliable suppliers only, in order to ensure better service.

6. A general overhaul of the machines and equipment should be undertaken.

7. It is essential to create a design and pattern centre for the National Directorate for Leather and Footwear.

8. By compiling an inventory of lasts, old lasts are to be eliminated and new ones introduced.

9. Through balanced and integrated progress within the whole subsector, 70-80 per cent production capacity should be aimed at. Before achieving this level, new investments may be advantageous only in the training school and in some of the canvas shoe factories.

10. Daily input control should be introduced. At the outset, an adequate materials and spares inventory should take place.

11. The introduction of a "technical development cost" as a costing factor, at a 1-2 per cent level of the ex-factory selling cost, should be endeavoured.

12. A contract should be signed with the University of Maputo to perform analyses for the National Directorate for Leather and Footwear. The Directorate should purchase the valid standards from the International Organization for Standardization (ISO), or the International Union of Leather Chemists Society (IULCS).

13. The Brazilian apprentice training system called the Sistema de Ensegnamento Nacional para Aprendisagem Industrial (SENAI) should be introduced.

14. The minimum personnel for the National Directorate for Leather and Footwear as indicated in the relevant part of this report should be assured.

15. A strong centralized management system has to be maintained in the subsector for at least five or six years.

16. New equipment for the training school should be installed.

17. Follow-up actions as provided for in the draft project documents (annexes II and III) should be assured.

FINDINGS

A. Supporting industries and enterprises

1. Raw hides and skins

The supply of raw material for the leather industry varies according to livestock availability, rate of slaughter and degree of recovery of hides and skins.

In the People's Republic of Mozambique the collecting system of raw hides and skins has been nationalized. The entity responsible for collecting and commercialization is GAPECOM, the National Directorate for live animals and leather trading. GAPECOM is located at Maputo and has three regional centres: Regional Centre South (also at Maputo), Regional Centre at Beira and Regional Centre North (at Quelimane). The subdivision of collecting centres follows the country's administrative structure, so that each of the ten provinces of the State has a collecting centre (called a delegation).

The National Directorate was created in 1978 and commenced to meet its obligations. There are strict rules regulating collection and theoretically each piece of leather can only be sold to the Directorate. However, there is a great deficiency in the transport network. For example the Manica Delegation (at Chimoio) possesses one vehicle which is out of order and the Quelimane Delegation possesses four trucks, two of them being out of order. As a result the dry or dry-salted hides and skins are lying in the municipal abattoirs or in the small collecting hide and skin storehouses.

The national centre at Maputo is responsible for transporting the hides and skins from the provincial centres to Maputo where the only tannery in Mozambique is located. This centre also has significant transport limitations. However, there are stocks in the central storehouse (Maputo) because the tannery is operating at 45 per cent of its capacity (due to a lack of auxiliary materials, accessories etc., see pages 13-17) and cannot continuously absorb the total stock of hides and skins.

The following figures offer a picture of the present situation in both trade and production (for more detailed figures, see annexes IV, V and VI):

	1979	1980 (to end September)
Annual GAPECOM plan	-	78,000 (whole year)
Actual hide trade[a/]	59,600	29,500
Tannery purchase[b/]	-	45,100
Tannery production		
Chrome leather (m^2)	134,612	114,765
Vegetable leather (kg)	103,925	112,778
Vegetable leather (calculated in m^2)[c/]	31,177	33,833
Estimated total (m^2)	165,789	148,598
Pieces of hide: upper with splits and vegetable with splits (m^2)[d/]	41,400	37,100

a/ Source: GAPECOM.

b/ Source: União de Curtumes.

c/ 1 kg = 0.3 m^2.

d/ 1 hide = 4 m^2.

In connection with the above figures it should be noted that:

(a) The GAPECOM plan could be accepted as realistic since actual trade in 1977 was 77,200 pieces and in 1978 it was 88,500 pieces;

(b) Purchase by the tannery involves GAPECOM stocks from 1979 (actual trade for 1979-1980 was 89,100 hides and estimated tannery production for 1979-1980 corresponds to 78,500 hides);

(c) The enormous difference between the plan (78,000 hides) and actual trade by GAPECOM (29,500 to the end of September 1980) shows the inefficiency of the collecting system.

The above conclusions demonstrate quantitative and capacity problems. The main danger, however, is the loss in quality: about two thirds of the hides are exposed to the tropical climate without being under the control of GAPECOM or without being transformed into finished products by the tannery.

The collection of caprine skins seems to be impossible at the moment due to the wide scattering of these animals throughout the provinces. The collected amount from January 1980 to the end of September 1980 was 8,094 goatskins (note that FAO's estimation for Mozambique for 1975 was 290,000 skins [1/]).

1/ Food and Agriculture Organization of the United Nations, Agricultural Commodity Projections, 1970-1980.

The expert and the counterpart staff consider that first priority should be given to the improving of hide collection, and to improvement of the tannery in order to assure the free flow of hides from slaughter to finished leather. In addition to a five per cent use of buffalo, the crossbred zebu is the typical bovine animal used in hide production. It provides a middle level of hide quality. About 30 per cent of the hides come from individual slaughterers, village slabs and local butchers. Flay cuts are numerous, curing is often long delayed, ground drying is frequent. In many cases hides are left in their raw state for days. The product is naturally low grade and runs a high risk of putrefaction. The remainder (70 per cent) comes from unmechanized municipal abattoirs. Flay marks are present to some degree. The storehouses of the Directorate delegations or collectors are sometimes in the immediate neighbourhood of abattoirs and generally not far from them.

In the three municipalities visited (Quelimane, Chimoio and Beira), the washing, curing, fleshing and salting of hides was carefully carried out. After six days salting, hides are dried by suspension (air-drying) for seven or eight days. There has been grading of hides introduced by the Directorate (extra, I, II and III quality) in which the extra class (2-3 per cent) is faultless and the first class (about 65 per cent) has a croupon without faults. The hides coming to the tannery directly from Maputo only wet-salted, the rest are dry-salted or dried.

It should be mentioned that the Centre organizes twice-a-year regional courses for flaying, curing and salting.

2. Tannery União Curtumes

This is the only tannery in Mozambique and therefore of importance (there is no export or import of leather). The area of the upper leather plants is about 3,800 m^2. Based on the factor of 25 hides per year, per m^2 of floor space[2/] this corresponds to about 95,000 hides per annum or about 300,000 m^2 of upper leather. There is a disproportion in the plant working areas; the beam house and liming plant are large and the preparation plant is well-dimensioned, whereas the drying and finishing plants are very small. The layout of the whole upper leather plant is remarkably weak because of the location and ground design of the buildings. The vegetable tanning plant is

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2/ United Nations publication, the interrelationship between parameters of the leather industry.

the most primitive in the production complex. The maintenance shop does not have the capacity to fulfil its task and there is practically no laboratory. The weakness of the factory is apparent mainly from the point of view of production quantity. As seen in annex VI, the quantities fluctuate considerably. For example, in 1979 the minimum monthly level was 7,132 m^2 upper leather and in 1980 it was 5,531 m^2. The maximum levels were 15,704 m^2 and 26,256 m^2 respectively.

The technological process seems to be suitable, and adjusted to the genuine material properties of the hides. This is due to the experienced technical leader and to regular visits by foreign technicians. The effectiveness of the technological process has been established by a detailed checking of the soaking and liming process, which was found adequate.

An extensive check on finished and semi-fabricated upper leather revealed that the thickness of leather was reliable throughout. As the FACOBOL factory possesses one dynameter of the Zwick type, many samples were submitted to physical analysis: fullgrain side, corrected side, hunting suede side and a suede split. The samples submitted for analysis produced results corresponding to ISO standards. The external properties do not compare with desired levels, not only because of raw hide defects but also due to the uneven quality of the material. This results from the long lying-in period of the semi-fabricates and is often due to the lack of adequate lubricants or other materials and to the wrong working procedures in finishing. As general faults, for example, the unevenness of the ground coating and inefficient drying before plating can be cited.

The quality of the splits and overall quality of the vegetable-tanned leathers is not acceptable. The qualitative and also the quantitative deficiencies could result from various factors, principally including:

(a) Lack of auxiliary materials (for example, at the moment there is no soaking and liming done due to the lack of sodium sulphide);

(b) Maintenance deficiencies (for example the shaving machine, a Turner 1800, has not been in operation for six months due to the lack of band knives, vacuum dryers and accessories);

(c) Unexacting demands by shoemakers because of the scarcity of finished leather;

(d) Organizational weakness in the whole structure of the factory. It should be noted that the Directorate for Leather and Footwear has started to concern itself with the introduction and details of an elementary administrative and management structure.

Next the problem of upper leather capacity will be examined, on the assumption that all equipment is in order and all materials are available. The soaking and tanning drums, type Valero, are modern and new. The other liming facilities are 10-15 years old. Most of the machines are of well known manufacture and in good condition (see table 1).

Table 1. Existing machinery for the production of upper leather at União Curtumes

Manufacturer	Machine type	mm
Turner	Fleshing	2 800
	Shaving	1 800
	Shaving	800
	Splitting	1 800
	Vibretta	
	Staking	
	Buffing (Fulminosa type)	1 800
	Brushing	
Mercier	Fleshing	1 600
Moenus	Splitting	2 600
	Staking	
	Measuring (non-electronic)	
Arenco	Summying	
Trockentechnik	Vacuum drying	
Bouhon	Frame-drying machine with drying tunnel	
Krause	Hydraulic plating	
Bouhon	Coating machine with drying tunnel and cooler	

In an earlier evaluation made by Assistance Technique Tannerie Megesserie (ATTM) (France) the total soaked material has been calculated in surface leather. The capacity was estimated at 250,000 m^2 per year. One must accept the implied restrictions in this document: for example, only 230 working days were calculated, on the basis of one shift and with a manpower capacity con-

sidered to be 70 per cent that of the European worker (this is due to climatic conditions). However, by operating the finishing plant in two shifts, the capacity could be increased to a level of 300,000 m^2 per year.

The Ministry's plans for the hide and leather shoe production are given in table 2.

Table 2. Projected production of hides and leather shoes, 1980-1990

	1980	1981	1985	1990
Live animals, bovine (1,000 pieces)	1 243	1 261	1 371	1 625
Approximate offtake rates (per cent)	4	4	6	8
Hides (1,000 pieces)	47	50	79	134
Leather shoes (1,000 pairs)	705	750	1 135	2 010

Comparing planned hide production to actual hide trade (see annex IV) the projections of the Ministry seem to be more realistic than those of CAPECOM. The assumption that each hide produces 15 pairs of shoes is also realistic and in the present report the above figures for leather shoes will be used. The required surface of finished leather will be:

	m^2
1980	176,000
1981	187,000
1985	297,000
1990	502,000

The estimated capacity of the tannery of 300.000 m^2 corresponds to the level required for 1985. Hence, the reconstruction of the tannery can be projected in two general phases: (a) first stage, up to 1985, and (b) second stage, 1986-1990.

At least two major problems contribute to the opinion that the first stage must be realized through a step-by-step development of the tannery complex. First, there is the issue of raw hide collection. It is closely related to the national problems of transportation and to this extent it cannot be expected that the leather industry will be given first priority. Second, there is the problem of education of professional personnel, from apprentice to management

level and including engineers (for details see section E). Additional problems to be dealt with include administration, the purchase of initial stocks of reliable material and accessories and the establishment of quality control. Purchasing is also a national problem due to shortages of foreign exchange. The first stage involves only slight modifications to the buildings (a rough sketch was given to the counterparts) and the purchase of a vacuum-drying and a plating machine and other implements and utensils.

In the second stage, output must be increased by 70 per cent. It will suffice to begin planning work in 1983, to develop two alternatives by 1985, and to start construction of the finally selected version in 1986. During this period the technical manager and the chief engineer of the Directorate and/or the factory must contribute to the planning work.

It is difficult to evaluate the changes which may be forthcoming during the period 1981-1983. If the collection and production plans and other recommendations are followed through, they will provide the basis for major investment, as indicated in the following alternative proposals:

First alternative

(a) The vegetable-tanning plant remains in the same place but will be reconstructed;

(b) A completely new chrome upper-leather factory is to be established close to the old one at Matola;

(c) The old chrome-tanning plant is to be transformed by reconstruction into a plant for processing caprines, splits and game skins.

Second alternative

(a) Similar to the first alternative but also including production of whole splits;

(b) The whole chrome upper-leather factory is to be enlarged by reconstruction and investment and to be used only for side leather production;

(c) A new middle-sized factory for caprines, game skins and eventually pig skins is to be established in the northern part of the country (in the region of Quelimane).

To repeat, new investments should not take place until the trend of a period of three to four years indicates a solidly-based improvement in hide and skin collection, leather production (both quantity and quality) and leather footwear production.

3. Component industries

This part of the report will survey the situation of the main footwear components such as soles, textiles, upper materials, plastic lining materials and general materials other than leather.

Rubber soles, heels and other rubber components

There are two factories in which articles made of rubber are produced.

UFA (União Fabril da Mozambique) is the second-largest producer controlled by the Directorate and is a considerable rubber goods producer. The natural rubber is brought from Singapore, the synthetic rubber (Petroflex) from Brazil. In most of the mixtures the application is 80 per cent natural and 20 per cent synthetic rubber.

At the moment the factory is working at 50 per cent capacity because of the lack of natural rubber. There was no possibility to control quality except by organoleptic methods. The material seems to be good and the only complaints have to do with the unevenness of the thickness. The vulcanizing plant is equipped only with 50 x 50 cm size press-plates. This represents a very small surface and thus a good cutting yield cannot be obtained. Unit soles, sheets for out-soles and heels are also manufactured. UFA has a daily production of 3,000 pairs of vulcanized canvas shoes. The rubber mixtures for this production are also made there.

FACOBOL (Fabrica Continental da Boracha Sal) is a private factory and the largest controlled by the Directorate. In addition to the rubber articles manufactured by UFA, FACOBOL produces tubes for various purposes, e.g. for bicycles. There are 12 vulcanizing presses of 50 x 50 cm size and 12 of 80 x 90 cm size, which is the normal size for sole plates. However, the sizes of the press plates and the press cylinder are not well proportioned so that the pressure is not equally distributed on the whole surface, which results in unevenness in quality and thickness.

There is also extensive production of rubber boots (worker's boots). The daily production of vulcanized textile shoes is 6,000 pairs, produced by 100 direct vulcanizing machines.

The factory has a small physico-mechanical laboratory equipped with a durometer, a dynameter, an abrasometer and other apparatus, but quality control is poor and the apparatus are seldom used. Through organoleptic control, the materials seem to be acceptable.

Wooden components

The production of wooden heels and heel pieces is significant within the Directorate. Mozambique has a large variety of trees and two types are mainly used in the shoe industry: a very light wood (the local name is umpapua) and a hard one (a type of pine). Both are good raw materials for mechanical processing.

SIACO is one of the producers. This factory also has a prefabricating section for welted rubber soles (the welt is produced here). The wood plant is well equipped; for example, it has an automatic profiling machine.

SSS FILIAL is the other factory with a well-mechanized but small wood processing plant. The same materials are used as in SIACO.

Orders for soles and other components are only accepted when accompanied by a pattern and/or design.

While the SIACO and SSS FILIAL factories supply components for the whole subsector, a private but Directorate-controlled factory (NELFA) has a very small wood-processing plant and produces wooden components only for its own needs.

Textile upper materials

These materials are produced at TEXTAFRICA (Chimoio), one of the biggest textile factories in Mozambique (4,500 workers). Production consists of four types of canvas in about 20 different colours but because of lack of dyestuffs, the factory presently produces only two colours. The four types of canvas are of good quality, the cotton is good and production procedures are also effective. The type of canvas used in shoe manufacture is not the best for the purpose. The type called "Polainito" would be better, but in the past, the Directorate has ordered the lower quality generally referred to as "Lona". As tested by the expert in the FACOBOL laboratory, "Lona" corresponds to textile shoe upper material for general use, whereas "Polainito" corresponds to textile sport shoes.

To summarize in regard to component industries, the statement should be made that the internal plants of the Directorate and the external plant (TEXTAFRICA) are important production units and must be supported and strengthened.

4. Import of components, materials and equipment

The chemical materials are imported by INTERQUIMI and the machines and mechanical accessories by INTERMETAL. Formerly the external sources of supply were very large, and in the factories one can see the whole range of suppliers represented. In the tannery the suppliers were Bayer, BASF, Hoechst, Geigy, Sandoz etc. from Europe, in addition to various suppliers from Asia (Japan) and South Africa. In the shoe factories (including injected shoes) one can see, for example, polyvinylchloride (PVC) granulates from Japan, Macao and Singapore, rubber from Brazil and Singapore, celular rubber plates from Macao, various heels from Portugal, many polyurethane (PU) unit soles from Portugal, Singapore etc. All of the above-cited materials are from manufacturers of good reputation.

The same can be said of the machines and accessories. As verified, the machines of the tannery were supplied by seven or eight European enterprises of good reputation. The injection moulding equipment is also good (Desma, Mazda, Sintex-Taiwan), as are the footwear machines (British United, United Shoe Machines, Ferrari, Cerim, Pegazo, Schoen, Sincron, Albeko, Moenus, Blanchi, Fortuna, Alfa, Rinaldo, Sigma, Pfaff, Adler, Singer, Pedersen etc.).

This impressive range of machines was mainly purchased during the colonial period by private owners. INTERQUIMI and INTERMETAL have to some degree maintained the relationship to outside suppliers, but today the deciding factor is the availability and type of foreign exchange.

The Directorate is faced with great difficulties. For example there are quantities of old materials purchased three to five years ago which have already lost their quality (PU soles, celular rubber soles, Lepton-yellow). On the other hand there are limitations in purchasing possibilities and in planning for purchase (see section C). It is necessary that the number of suppliers be limited in chemicals as well as in machinery, to ensure better service and guarantees from those remaining.

The administrative steps followed in importing do not seem very sophisticated. They are:

(a) Order submitted by the factory;

(b) Approval by the Ministry (original document rerouted to the factory with a copy to INTERQUIMI or INTERMETAL);

(c) Approval by the bank, according to the priority order given by the Minister's Council.

It was not possible for the expert to verify the situation regarding orders for sodium sulphide and a splitting band-knife, in which the tannery has been waiting for supplies for a year and for three months (from the ordering date respectively.

B. Shoe and leather goods industries

1. Shoe industry

In connection with this section, annex VII offers data on the number of machines used in each factory, as well as production and employment figures.

Equipment

The type of equipment used in each leather-shoe factory corresponds to the factory's state of mechanization (mechanized, semi-mechanized, artisanal). The ages of the machines vary considerably, from fairly new ones (2 to 3 years) to very old machines (12 to 15 years), but with overall repairs and proper maintenance they could serve for the next 5 years.

There is a general imbalance in the type and number of machines. Sewing machines are everywhere in abundance, whereas other closing room equipment is scarce. The most poorly equipped section of the factories is that of prefabrication; for example, only 2 out of 15 factories have splitting machines and only 3 possess marking machines. Both shortages are significant, the first for its impact on quality level and the second for its effect on organization.

The injection moulding and the vulcanizing equipment are good and the prefabrication of rubber and PVC unit soles and heels is well done.

Design, tooling, lasts

Most of the factories have a designer but these are workers without professional or other education. They have learned a kind of "know-how" from the former owners, so that the patterns are made in an empirical way. Cutting patterns are made only of carton; metal bound or zinc sheet patterns are unknown. The sizing system used is generally in French sizes, and pattern makers use size 42 for men and size 37 for women in models.

The only existing instruments are old pantographs, except at FACOBOL where there is an English grading machine (not functioning). The models are copied from good but old magazines (Moda in Pelle, Footwear and Leather-Goods etc. from 1974/75) and there are many good models (at RITMO, ZAURITA, UFA, FACOBOL).

The graded patterns, however, do not fit and this can be seen in the lasting department, where the uppers often do not correspond with the lasts. It is absolutely necessary to create a designing pattern cutting centre for the Directorate and to provide this centre with adequate equipment. The manner in which this can be accomplished is described in section D, subsection 4.

Tooling generally is weak and clicking and cutting tools are old. Since the factories (with the exception of two) do not have maintenance shops, the tools are not sharpened regularly. With most of the clicking and cutting machines out of order, the cutting is generally done by hand. Spares and tools for machines (for example, special attachments for pulling over and lasting machines) are not available.

Design, tooling and maintenance are strongly linked, so that it is difficult to make separate recommendations for tooling. In the factories there are both wooden and plastic lasts, but the latter exist in greater quantity. The wooden lasts are old, worn out and partly deformed. There is an immediate need to eliminate most of them, and the remainder should be replaced in the next two or three years. To solve the problem of lasts, an inventory should be made and then a requisition for new supplies should be presented.

Maintenance

There are maintenance departments only at FACOBOL and UFA. Both possess medium-level equipment. A third such department is under formation close to the Directorate and will serve as its maintenance centre. All three are staffed with locksmiths, electricians, mechanics, carpenters and bricklayers. There is, however, a large disparity in equipment, so that while the FACOBOL and UFA shops are acceptable, that of the maintenance centre is poor. It should be noted that these three are not sufficient to solve the maintenance problems of the Directorate factories.

Capacity, production, productivity

As seen in annex VII the estimated production capacity in a year is about 837,000 pairs of leather shoes and about 3,000,000 pairs of canvas and plastic shoes. This is a rough estimate and was made on the basis of 230 working days, one shift and on the assumption that all machines are in working order. By employing two shifts, canvas shoe production could be easily increased, so that total capacity could reach five million pairs.

Production capacity reached in 1980 will be approximately 41 per cent in leather shoes and 34 per cent in canvas shoes, or 35 per cent of total capacity. Reasons for such poor performance are various, with the main ones being: lack of finished leather, lining material and adhesives; machine stoppages due to shortage of electricity; lack of spares and maintenance (in the northern provinces); or shortages of spares and maintenance (elsewhere).

It is difficult to find production figures, but one can use as a base the sales figures of ENCATEX, the enterprise responsible for all shoe trade. These figures can be considered equivalent to the production level because:

(a) No stocks exist in the factories, shops or in ENCATEX, the market immediately consuming all production;

(b) The footwear administration and the ENCATEX management estimate at a maximum ten per cent the quantity of shoes escaping ENCATEX control.

Thus, for the purposes of this report, production quantity will be analysed on the basis of shoe sales, as seen in annex VIII.

In leather shoes a strong increase is seen from 1975 (96,431 pairs) to 1978 (524,575 pairs), at which point a remarkable decrease begins with expected production for 1980 at between 260,000 and 340,000 pairs. This decline can be attributed mainly to the decrease in finished leather production. During the period from 1975 to October 1980, the lowest production per month was 1,993 pairs, and the highest was 63,238 pairs per month.

The same fluctuation can be observed for canvas shoes, although it is not as pronounced. The minimum production per year was 419,730 pairs; the maximum was 650,660 pairs. Monthly production ranged from a minimum of 1,343 pairs to a maximum of 90,108 pairs, although these figures represent extremes, monthly distribution being better than that of leather shoes. Plastic shoe production cannot be analysed though the main problems seem to be in material purchasing and electricity supply.

Highest yearly production (1978) for all shoes totals 1,289,379 pairs, which represents about 33 per cent of full operating capacity.

Considering the above figures and the number of employees engaged in shoe production, productivity is low. For 1980, if all types of shoes are counted together, it would be two or three pairs per man/day. A productivity analysis has not been attempted because at the present stage it would serve no purpose. It should be mentioned that the factory layouts are generally correct, but the transport systems are poor. This question is to be analysed by the Directorate

as soon as the factories are running at close to full capacity. At the moment in all factories, trolley transportation is used only for stocking of lasts and semi-fabricates.

Manpower apparently is available in abundance, but the factories need specialized manpower in technology, mechanics (technicians and specialized workers at many levels), design, administration, department supervision etc. The ability and discipline of the workers seem to be good. Through the gradual introduction of professional training, one could expect to obtain an improvement in specialized manpower in two to three years.

2. Leather goods industry

The factories which were inspected are semi-mechanized ones. All of them are also working at 20 to 30 per cent capacity due to lack of materials and breakdown of machines. The total number of employees in four factories is 143. Total monthly production is about 3,000 bags and 3,000 to 5,000 belts. Materials used are textile, fibre plates, leather and artificial leather. The belts are made mostly of leather. Handbags, driver bags, textile purchase sacks, cases, suitcases and different fashion bags are produced, the last in great variety and in a few cases at European standards. The equipment is generally old; only the fibre case pressing machines, stitching machines and textile cutting machines are modern.

As the internal market is very large, not only travelling cases but also more expensive leather bags can be sold locally. These factories should be improved.

C. Planning and related activities

1. Technology and technical descriptions

Since no technical descriptions were found in the factories, the expert considered it useful to provide some information in this regard. The following is derived from the course which he held on the factory management.

The starting point of planning, purchasing, tooling and production is the technical description and it must be followed up by an adequate system of administration which will permit costing to be evaluated and short term projects of a given factory or enterprise to be determined.

Generally the technical description is made by the technology section. It is based on data and working techniques drawn up and provided by the pattern cutting department. After making and approving a new pattern, two essential documents are developed:

(a) A detailed qualitative and quantitative description of the materials, ornaments and other items to be used, all calculated in terms of one unit (i.e. pair) of the new style. This document is to be distributed to the technology section, costing section and purchasing section;

(b) A detailed description of each working operation. This document is given to the technology labour section. (The stitching instructions must be detailed.)

In annex IX a sample technical description is given to facilitate the introduction of a minimally effective system into the factories of the Directorate.

Based on the above-mentioned documents the technology section prepares five to ten pairs of shoes and presents the samples to the chief pattern maker, chief supervisor and production supervisor. In the meantime the purchasing, sales and personnel sections offer their criticisms. After discussions the production supervisor accepts the documents and the pattern enters into the production programme. Without this elementary system it would be impossible to manage and control planning, purchasing, costing and production within the Directorate.

2. Basic administration: costing

By summarizing the data of several patterns from the above-mentioned documents the purchasing and personnel sections will respectively be able to make more advantageous purchases and draw up personnel organization plans. In addition the costing section will be able to collect more effective data. The documents which the expert reviewed in the factories are presently not sufficient to do this efficiently.

It would be helpful to draw up inventories of the basic materials and subsidiary items requested, and to oblige the factories to submit reliable data based on daily inputs. It would also be important to keep a detailed shoe production list, as present data on output is approximate and in need of improvement.

In annex IX, the data necessary to enable the costing section to compute a reliable price structure is marked with an asterisk. Though it is not intended here to enter into the details of costing problems, it should be mentioned that

manpower cost represents a high percentage of the ex-factory sales price. In two cases examined, it was 25 per cent and 21 per cent respectively, whereas the same factor in eastern Europe is generally below 10 per cent. Low productivity is responsible for this discrepancy.

It was suggested to the managers of the Directorate that they introduce a one to two per cent technical development cost as an ongoing costing factor. The purpose of this would be to create a fund for the technical development of the Directorate over the next few years.

D. The National Directorate for Leather and Footwear

1. Progress to date

As the Directorate was started only a few months ago, no great progress could be expected to date. The project counterparts make up the greater part of the Directorate's leadership. They have contacted many foreign partners and also possess some of the plans made before the Directorate was formed. These plans are being studied in order to find the best solutions for current problems.

2. Organogram

The Directorate's present and provisional organization is shown in annex X. In annex XI an organogram is presented which corresponds to the projected tasks and size of the Directorate. This organizational plan can only be fulfilled in two to three years as the Directorate for the moment has only two university-trained staff employees (economists) and two trained technicians (both working in the nationalized factories).

Considering the situation observed in the factories (i.e. the scarcity of materials, problems of foreign exchange and specialized manpower), one can support a strong centralized managing team as shown in the organigrams. A strong, regulated hide collecting system would also be valuable. Since the internal demand is large (all shoes and other leather products are absorbed instantaneously) emphasis should be put on quantitative production for a period of two to three years. Simultaneously, it is suggested that the quality level should be improved through the introduction of an incentive sy tem.

3. Organizational issues and steps

There may be many organizational possibilities but only a few are realistically accessible to the Mozambican footwear and leather industry. The following principal suggestions can be made:

(a) It is important to first establish a development strategy out of which the main activities should grow. The first step could be, for example, the improvement of the administrative sector, though meanwhile not neglecting other activities. The second step would be to improve the equipment and its maintenance. The third would be to commence professional training at all levels. The fourth may be the improvement of production organization in the factories;

(b) It is important to explore already existing resources, because they are present in abundance. This can be started immediately through an internal exchange of experiences, since working standards differ greatly from factory to factory;

(c) In introducing foreign ideas, equipment and processes, into the existing system, the ability of the system to adapt must be considered. Those ideas which are most adaptable will meet with the greatest success. Priorities in increasing order are as follows: capital, material, technology (know-how), equipment, soft-ware. The last three are strongly coupled.

The Directorate, which is in agreement with the above, is working on improving the central storehouse and developing a central maintenance department and a training centre.

4. New projects and restructuring

The management of the Directorate is conscientious and careful about deciding on new projects. The case of the tannery was thoroughly discussed in section A and that of the leather shoe industry in section B. In both cases, it is considered essential to increase operating capacity without new investments. However, since the demand for canvas shoes is larger, one can consider as justifiable any new investments in this area. A round table PVC injection machine with eight work stations or two with four stations each could be installed:

(a) In the MANICA factory in Beira;

(b) In the UFA factory, by shifting the leather shoe facilities to ZAURITA.

The expert's opinion was in favour of version (b), the reasoning being that it is not practical to operate factories with a mixed profile, particularly in light of the existing difficulties resulting from weaknesses in the factory management. One could also expand the capacity of MANICA, maintaining the existing profile of leather shoes with moulded soles. In this case UFA would produce only canvas shoes.

ZAURITA is the most adequate factory in which to create the starting point for "quality" (fashion) leather shoe production, and in which to install the Directorate's designing pattern making department. As another possibility, the pattern making department could be installed in the training centre.

All these plans can be realized without any essential alteration in present production. If alternative (b) is chosen, leather shoe production will increase by 70,000 to 100,000 pairs per year (if MANICA acquires new injection moulding equipment), whereas canvas shoe capacity will increase by about 1,000,000 pairs at UFA. It should be noted that the private factory, FACOBOL, will install new injection moulding equipment with a round table system (6 stations) next year.

All of these restructuring alternatives were discussed several times with the counterparts, with the expert presenting recommendations, designs and proposed equipment layouts.

Although some factories in the footwear and leather industry are organizationally weak and of low productivity, the Directorate has chosen not to close down any of them. The objective in this case is, insofar as possible, to retain trained personnel already working in these factories. It was agreed by the expert that this policy is correct.

E. Professional training, supporting institutions

Lack of qualified staff is one of the weak points in the industry. The educated or trained staff in the Directorate is composed of two economists (only one has graduated), two chemists and one electrician. Most of the employees have only completed four years of elementary school and can read, write and calculate. Among these there are about 20 persons who already have four years or more of experience in the factories. (They will be referred to as "factory-trained personnel".) There are no apprentices in the factories.

In terms of future possibilities, the schooling situation is as follows:

1. University of Maputo, Chemical Faculty

This Faculty has 12 students enrolled at the moment, of which three will graduate next year. One of them will stay with the university staff, the other two will have to go to the Federal Republic of Germany for specialized training. The balance (nine students) will attend evening courses and will obtain their degrees after five years, but as these students were sent to the university by

other factories, they are not available. The plan for the coming year is to enrol 150 to 200 students in this faculty. The first large group of engineers will graduate in 1986/87.

The faculty is well equipped with the newest physico-analytical test equipment and has agreed to perform analyses for the Directorate on the basis of temporary or permanent contracts. However, for guidance, the Directorate must supply standardized descriptions of the analyses (examples: dyestuffs, adhesives, rubber, plastics), and should purchase standards for leather, shoes and component products from ISO or the International Union of Leather Technologists and Chemists (IULTIC). The faculty has also agreed that two technicians from the Directorate can work together with university personnel on such analyses.

2. The Industrial Institute (Instituto Industrial)

The Industrial Institute has four sections: Chemical, Mechanical, Electrical and Civil Construction. At the end of this scholastic year they will graduate as middle level technicians: 19 chemists, 27 mechanics and 25 electricians. The opinion expressed by the Director of the Institute was that no one would be available for the leather and shoe industry, because the distribution is made by the Planning Committee of the State and there are more basic industries which need educated people.

One of the arguments which the Directorate of Light Industries might make in favour of having graduates placed in the shoe and leather industry could be that the value of the raw hides and skins collected each year (without added value) is already about two million dollars.

As seen above, the recruitment possibilities for trained personnel are limited for the Directorate of Leather and Footwear. It is therefore necessary to explore the possibilities for obtaining expertise and training from external sources (through UNIDO or co-operant contracts), particularly at the higher levels of skill. At the same time, the Directorate should look at internal sources for the recruitment of personnel at lower levels of specialization.

3. Minimum of trained personnel

Table 3 examines the minimum of trained personnel needed by the Directorate, together with possible methods of recruitment. The list of externally trained experts required was given to the counterparts. Proposals for future assistance are given in annexes II and III.

Table 3. Minimum of trained personnel needed by the footwear and leather industry

Job description and level	Position and/or place of employment	Source and date	
		External personnel	National personnel
Management			
1 economist	Directorate centre	UNIDO or co-operant contract (6 months), as soon as possible	From 1985
2 economists (operation)	1 general director and 1 director of the training school	UNIDO (3 months), as soon as possible	From 1985 (additional training in Europe)
Engineering			
1 engineer (chemical)	Adviser to the tannery, trainer in the school and school labour chief	UNIDO or co-operant contract (2 years), as soon as possible	From 1986
1 engineer (mechanical)	Adviser in all factories, trainer in the school and maintenance department chief	UNIDO or co-operant contract (1 year), as soon as possible	From 1986
1 shoe designer	Chief of pattern section and trainer in the school	UNIDO (1 year), as soon as possible	From 1985
Middle technician			
2 chemists (operation)	UFA	-	(Additional training from 1983)
2 chemists	1 in the tannery and 1 in the school laboratory and trainer in the school	-	(University training from 1982)
4 electricians	Central maintenance department	-	From 1982
4 mechanics	Central maintenance department	-	From 1982
5 mechanics	Central maintenance department	Co-operant contract or UNIDO (1 year), as soon as possible	From 1984 (continuously, as needed)
1 civil engineer	Central maintenance department	-	From 1982

Factory-trained personnel			
1 person	Department chief at ZAURITA	-	From March 1981
1 person	Department chief at factory training centre	-	From March 1981
18 persons	Remain at the present jobs plus training from apprenticeship into factories	-	From May 1981
Apprentices			
Minimum of 20 persons at start	4 hours in factories plus 4 hours in training school per day	-	From May 1981
Specialized workers			
14 workers from several factories each year	2 months in FEIRENSE (stitching)		
	2 months in SSS FILIAL (sole stitching)		
	2 months UFA and FACOBOL (canvas stitching)		
	2 months MALER (sole stitching)	-	From January 1981
	2 months FACT. ORTHOPEDIC (childrens shoes)		
	2 months UFA (workshop)		

4. The training centre (school factory RITMO)

One of the Directorate's first objectives was to create a centre for training. The factory RITMO was selected to be reconstructed for this purpose. The factory building has two parallel halls; the right side is operating as a factory and the left side was destroyed by fire and is being rebuilt. The whole ground floor is earmarked to be a factory whereas the first floor will be the training centre.

The structure of the factory was designed in a manner that it will have a mixed production profile (leather and canvas shoes for men and women made by different technologies). Because of the added training element, operating capacity will not exceed 70 per cent. The factory training school design and

list of machines and instruments were discussed several times with the counterparts. The ultimate decision will be made by the Government but the version proposed by the expert is to be seen in annexes XII and XIII (machine list and factory layout).

The RITMO layout consists of the factory, lecture halls, a library, room for training and demonstration equipment, chemical and physical laboratory, handwork shop and pattern department. The list of equipment is shown in annex XII. It should be mentioned again that, as overall policy, only ideas which are realistically adaptable should be introduced. Thus, it is suggested that the school start with training at the apprentice level and should consist of 20 to 30 apprentices and their trainers.

Though the laboratory equipment is not sophisticated, it should be sufficient for the first 10 years, for quality control and training. The physico-mechanical section contains all the facilities for examining leather and other shoe materials and products, according to ISO standards. The chemical section has the capacity to carry out basic examinations with more complex ones to be undertaken in the university laboratory.

Concerning the apprentice school programme the expert recommended that the Brazilian System called SENAI (Sistema de Ensegnamento Nacional para Aprendisagem Industrial) be introduced. This system is well drawn up, applies to all industrial sectors, including leather and shoes, and is written in Portuguese. The contents of the entire 15 parts, including the first two chapters for shoemaker's training (cutting, prefabricating etc.), were left with the counterparts. The correspondence commenced by the expert with this Brazilian school is to be continued by the Government (Ministry of Light Industries) since the entire material can only be obtained through official channels.

Through the introduction of a practical training programme of this nature, 80 per cent of the training can take place in the training centre. For the remainder, apprentices will have to go temporarily to other factories.

Further steps in the development of the school will depend on the number of graduates and the date of their graduation from internal schools.

5. Maintenance training

The Directorate has projected the establishment of a maintenance centre. Though a maintenance centre presently exists, the equipment and buildings do not correspond to the task at hand. The room is small and a rational organization of

the heavier machines cannot be achieved. The Directorate must choose another, more suitable building.

Present training can be continued in 1981 by sending four mechanics or apprentices from UFA and PACOBOL to the maintenance centre for two months each.

Annex I

ENTERPRISES, FACTORIES AND

Av. Ho Chi Minh No. 1629 Telephone No. 30652 Maputo

Name of factory	Address	Type of production
Footwear APOLO	Av. Romão F. Farinha No. 75, 2º	Footwear leather
Footwear RITMO	Av. das F.P.L.M. No. 1277	Footwear leather
Footwear ZAURITA	Av. Zedq. Mang 1281	Footwear leather
UNICUM Lª.	Est. Matola Km 12	Leather
FACOBOL	Av. Angola No. 129	Rubber
FEIRENSE	R. Paiva Conceiro, 18	Leather
MAIER	Parcela No. 432	Leather
NEIFA	Av. Angola No. 1790	Leather
PRE-CALÇADO	Av. das F.P.L.M. 1564/1572	Components/ footwear
SIACO MOÇAMBIQUE	Av. F.P.L.M. 1548	Components/ footwear
SSS, Ldª.SEDE	Av. F.P.L.M. 1322/30	Leather
SSS, FILIAL	Av. Tanzania 140	Leather
UFA, SARL	Av. 1º de Maio s/nº	Rubber/ leather
INCALA	R. 7 Setembro 418/428	Rubber
MANICA	R. Ale Tejo 1151/1167	Leather
DIPLOMATA	Av. Filipe S. Magaia, 381	Suitcases

INSTITUTIONS VISITED

Location	Province	Ownership
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Matola-Rio	Maputo	Mixed
Maputo	Maputo	Private
Maputo	Maputo	Private
Matola	Maputo	Semi-private
Maputo	Maputo	Private
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Quelimane	Zambezia	Semi-private
Beira	Sofala	Semi-private
Maputo	Maputo	Semi-private

AGOLIPE	Quelimane	Rubber
CENTRO ORTOPÈDICO	Av. 24 de Julho, 1282/1286	Orthopedic material
ARTEL	Av. 1º de Maio, 1128-3º	Leather suitcases
ARTES DE CURTUMES	Av. das F.P.L.M. 1564	Suitcases, belts and bags
ROCHA AND CERQUEIRA	Av. Karl Marx No. 1470/1476	Suitcases, belts and bags
CASA TEXAS	Av. Eduardo Mondlane 2655/2619	Suitcases and other items
ENCATEX	Av. 24 Julho	Commercial
EMPRESA COMERCIAL DE GADO E PELES		Commercial
EMPRESA COMERCIAL DE GADO E PELES		Commercial
EMPRESA COMERCIAL DE GADO E PELES		Commercial
EMPRESA COMERCIAL DE GADO E PELES		Commercial
INSTITUTO INDUSTRIAL	R. de Resistencia, 44	Teaching
UNIVERSITY OF EDUARDO MONDLANE	Av. de Moçambique, KM 1, 2	Teaching
F. QUIMICA	Av. de Moçambique, KM 1, 2	Teaching

Quelimane	Zambezia	Semi-private
Maputo	Maputo	Private
Maputo	Maputo	Semi-private
Maputo	Maputo	Semi-private
Maputo	Maputo	Private
Maputo	Maputo	Private
Maputo	Maputo	National
Maputo	Maputo	National
Quelimane	Zambezia	National
Beira	Sofala	National
Chimoio	Sofala	National
Maputo	Maputo	National
Maputo	Maputo	National
Maputo	Maputo	National

Annex II

DRAFT PROJECT DOCUMENT: PREPARATORY ASSISTANCE

Title: Preparatory Assistance; Shoe Machinery Maintenance

Number: DP/MOZ/81/XXX Duration: Six months

Primary function:

Secondary function:

Sector (Gvt. class.): UNDP class. and code:

Subsector (Govt. class.): UNDP class. and code:

Government implementing agency: Ministry of Industry and Energy

Executing agency: United Nations Industrial Development Organization (UNIDO)

Estimated starting date: August 1981

Government inputs: _____ UNDP inputs: US$ 41,900

Signed: _____ Date: _____
On behalf of the Government

_____ Date: _____
On behalf of the Executing Agency

_____ Date: _____
On behalf of UNDP

PART I - LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article I, paragraph 1 of the Assistance Agreement between the Government of the People's Republic of Mozambique and the United Nations Development Programme, signed by both parties on 15 September 1976.

PART II.A - DEVELOPMENT OBJECTIVES

The aim of the project is to improve the performance of the entire shoe industry sector through systematic maintenance of machinery and equipment and to provide preparatory inputs for a large-scale technical assistance programme scheduled to be started after completion of this project.

PART II.B - IMMEDIATE OBJECTIVES

The immediate objectives of the project are:

1. To provide a base for the improvement of production capacity and product quality through improved maintenance procedures for equipment, systematic spare parts ordering and supply and assistance in the repair of broken down equipment.

2. To prepare for the starting up of a large-scale technical assistance project by assisting in the ordering of the equipment for a Footwear Pilot Plant as recommended through project SI/MOZ/80/801.

PART II.C - SPECIAL CONSIDERATIONS

Not applicable.

PART II.D - BACKGROUND AND JUSTIFICATION

The livestock in Mozambique is estimated at 1.2 million cattle and 0.9 million goats (the latter is a FAO estimation made in 1975). The offtake rate for cattle is about four per cent and there is no data for goats. Actual hide trade was 59,600 pieces in 1979 and 29,500 pieces in 1980 (to end of September) and that of skins was 8,094 pieces in 1980 (to end of September). The problems concerned with collection and quality

of raw hides can be solved by improving transport and setting an incentive system for slaughter houses. The curing of collected hides and skins is acceptable when controlled by GAPECOM. The only Mozambican tannery lacks material supply (mainly chemicals and subsidiary materials), maintenance and management.

There is a considerable demand in the country for footwear, especially for canvas shoes. The existing shoe industry consists of 15 semi-mechanized factories; full operating capacity is estimated at one million pairs of leather shoes and three million pairs of canvas and plastic shoes produced per year, but due to disorganized and inadequate maintenance and unskilled labour, output is about 25 to 35 per cent of the total capacity. The 2,400 workers employed in the shoe factories and the green labour available need training, which involves creation of suitable facilities and use of experts. The other major problem is the insufficiency of managerial staff, both technical and administrative-economic.

The project SI/MOZ/80/801 has clearly identified machinery maintenance as the number one problem area, and as a first stage of a further technical assistance programme a shoe machinery maintenance engineer should be engaged.

PART II.E - OUTPUTS

1. Increased capacity without investment due to improving the condition of production equipment.
2. Organized maintenance network and activity in shoe factories.
3. Proposals on and assistance in ordering machines for the training centre, taking into consideration local requirements, conditions, prices and suppliers.
4. Established spare part stock and ordering system.

PART II.F - ACTIVITIES

The activities of the project are listed separately in the job description enclosed as appendix II.

PART II.G - INPUTS

1. Government inputs

The Government will provide a counterpart to the UNIDO Shoe Machinery Maintenance Engineer, local transport facilities, suitable office accomodations and secretarial services.

2. UNIDO inputs

Shoe Machinery Maintenance Engineer — Duration: Six months.

(a) Assistance in setting up an inventory system for machines, equipment, spare parts, ordering spare parts and auxiliary materials for production equipment;

(b) Assistance in repair of broken machines and putting them into operation;

(c) Advice on an adequate maintenance system at both the Directorate and factory level;

(d) Assistance in selecting and ordering equipment for the training centre.

PART II.H - PREPARATION OF WORK PLAN

The work plan for the project will be elaborated by the Shoe Machinery Maintenance Engineer in co-operation with his counterpart during the first month of the project. The agreed-upon work plan will be attached to the project document as annex and will be considered as part of that document.

PART II.I - PREPARATION OF THE FRAMEWORK FOR EFFECTIVE PARTICIPATION OF NATIONAL AND INTERNATIONAL STAFF IN THE PROJECT

The activities necessary to produce the indicated outputs and achieve the project's immediate objectives will be carried out jointly by the national and international staff assigned to it. The respective roles of the national and international staff will be determined by their leaders by mutual discussion and agreement at the beginning of the project and set out in a 'Framework for Effective Participation of National and International Staff in the Project'. The agreed-upon framework will be annexed to the project document and will be reviewed from time to time. The respective roles of the national and international staff shall be in accordance with the established concept and specific purpose of technical co-operation.

PART II.J - INSTITUTIONAL FRAMEWORK

The project will be attached to the National Directorate for Leather and Footwear which is being formed under the National Directorate of Light Industries of the Ministry of Industry and Energy

PART II.K - PRIOR OBLIGATIONS AND PRE-REQUISITES

The project document will be signed by the resident representative on behalf of UNDP, and UNDP assistance to the project will be provided subject to UNDP receiving satisfaction that the pre-requisites in this document have been fulfilled, or are likely to be fulfilled. When anticipated fulfillment of one or more pre-requisites fails to materialize, UNDP may, at its discretion, either suspend or terminate its assistance.

PART II.L - FUTURE UNDP ASSISTANCE

The project is designed to function as a first part of a larger technical assistance project to the footwear industry sector. Subject to availability of funds it is expected that a project entitled 'Footwear Industry Development' will be started as recommended by project SI/MOZ/80/801 immediately after completion of this preparatory phase.

PART III - SCHEDULES OF MONITORING, EVALUATION AND REPORTS

The project will be subject to evaluation in accordance with the policies and procedures established for this purpose by UNDP. Due to the short duration of the project no tripartite review or technical reviews are scheduled to take place.

Project progress and technical reports will be prepared by the expert in accordance with the UNDP Policies and Procedures Manual.

UNIDO

PROJECT BUDGET/REVISION

3. COUNTRY	4. PROJECT NUMBER AND AMEND	5. SPECIFIC ACTIVITY
The People's Republic of MOZAMBIQUE	DP/MOZ/81/XXX	31.7.D

10. PROJECT TITLE

Preparatory Assistance;
Shoe Machinery Maintenance

15 / 10 / 11 PROJECT PERSONNEL EXPERTS / Post title	16. TOTAL m/m	16. TOTAL $	17. 1981 m/m	17. 1981 $	18. 1982 m/m	18. 1982 $	19. m/m	19. $	20. m/m	20. $
11.01 Shoe Machinery Maintenance Engineer	6	35,300	5	29,000	1	6,300				
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
11-99 SUBTOTAL:	6	35,300	5	29,000	1	6,300				

21. REMARKS

UNIDO

PROJECT BUDGET/REVISION

2. PAD NUMBER

1. PROJECT NUMBER DP/MOZ/81/XXX		16. TOTAL		17. 1981		18. 1982		19.		20.	
		m/m	$	m/m	$	m/m	$	m/m	$	m/m	$
12.01	OPAS Experts										
13.00	Support Personnel										
14.00	Volunteers										
15.00	Experts Travel		900		750		150				
16.00	Other Personnel Costs Travel in Europe		2,000		---		2,000				
17.01	Locally hired Experts										
17.02	Locally hired Experts										
19.00	Total Personnel Component	6	38,200	5	29,750	1	8,450				
20.	SUBCONTRACTS										
29.00	Total Subcontracts Component										
30	TRAINING										
31.00	Fellowships										
32.00	Study Tours, UNDP G. Training/Meetings										
33.00	In-service Training										
34.00	Group Training (non-UNDP)										
35.00	Meetings/Consultations (non-UNDP)										
39.00	Total Training Component										
40.	EQUIPMENT										
49.00	Total Equipment Component										
50.	MISCELLANEOUS										
51.00	Operations — Maintenance										
52.00	Reports		1,500		---		1,500				
53.00	Sundries		2,200		2,000		200				
55.00	Hospitality (non-UNDP)										
59.00	Total Miscellaneous Component		3,700		2,000		1,700				
99.	GRAND TOTAL:	6	41,900	5	31,750	1	10,150				

Form PBD.1/Rev.2/Add.1/Rev.1 (2.79)

JOB DESCRIPTION

DP/MOZ/81/XXX/11-01/31.7.D

Post title: Shoe Machinery Maintenance Engineer

Duration: Six months

Date required: August 1981

Duty station: Maputo, with travel within the country and Europe

Purpose of project: As a follow-up to the mission carried out by the footwear industry consultant under project SI/MOZ/80/801 between 12 October 1980 and 9 January 1981 surveying the actual situation of the leather and leather products subsector in Mozambique, to assist the shoe industry in resetting production machines and equipment presently out of order, to enable the manufacturing units to better utilize their capacities.

Duties: The expert will be attached to the National Directorate of Leather and Shoe Industries which is controlled by the National Directorate of Light Industries of the Ministry of Industry and Energy, and will collaborate with the managements of shoe factories involved.
The expert will specifically be expected to:

1. Set up an inventory system and organize the storing of machines, equipment, working tools and spare parts, including storage procedures.
2. Commence repair of broken equipment and recommend a list of spare parts, with specifications to be obtained immediately and for later continuous maintenance.
3. Train the local counterparts in trouble shooting concerning production equipment and ongoing maintenance.
4. Prepare a recommendation for a maintenance system with special reference to organization, scheduling of preventive check-ups, consideration of equipment and tools required for maintenance.
5. Analyse the manpower needed to run the suggested maintenance system, recommend adequate training programmes.
6. Identify the capacity of manufacturing units, indicate machinery and subsidiary requirements for eliminating bottlenecks in production.
7. Assist in and advise on selection of appropriate machinery and equipment for the training centre to be established. This selection will include travel to Europe, visits to selected suppliers and preparation of final list in UNIDO Head Office in Vienna.

The expert will be expected to prepare a final report, setting out his findings and recommendations for the Government on further action which might be taken.

Qualifications: Extensive experience in shoe machinery maintenance, wide knowledge of sources and suppliers of production equipment and spare parts for footwear manufacturing. Consultancy experience in the shoe technology, organization and inventory control.

Language: English; working knowledge of Portuguese is required.

Background information: The Mozambican leather and leather products industry is controlled by the National Directorate of Leather and Shoe Industries, which belongs to the National Directorate of Light Industries of the Ministry of Industry and Energy. Most of the factories in this subsector are nationalized, some of them with limited private interest. The Mozambican leather industry consists of one factory which uses cattle and buffalo hides solely of domestic origin, and all leather produced is used in the local shoe industry.

The Mozambican footwear industry consists of fifteen factories mainly situated at Maputo but with a few important units in the north of the country. Leather shoe production is nearly 300,000 pairs/year and canvas and plastic footwear production is 1.1 million pairs/year. Total operating capacity is estimated at about one million pairs of leather shoes and three million pairs of canvas and plastic shoes per year. One of the dominant reasons for this low capacity use is the lack of maintenance and shortage of spare parts which is due to the lack of a proper maintenance system.

Proposals exist for structuring and re-organization of the existing shoe industry. As an important part of the project the Government is giving serious consideration, with the help of international organizations, to starting a training centre for shoe industry personnel, which would be equipped with new machinery. Assistance is needed in selecting types of equipment and suppliers, evaluating prices offered and ordering machinery for the training centre. The task of first importance is to establish and start up an adequate maintenance system in order to increase productivity.

Annex III

DRAFT PROJECT DOCUMENT: SHOE INDUSTRY DEVELOPMENT

Title: Shoe Industry Development

Number: DP/MOZ/81/XXX Duration: Eighteen months

Primary function:

Secondary function:

Sector (Gvt. class): UNDP class. and code:

Subsector (Gvt. class): UNDP class. and code:

Government implementing agency: National Directorate for Leather and Footwear

Executing agency: United Nations Industrial Development Organization (UNIDO)

Estimated starting date: August 1981

Government inputs: _____ UNDP inputs: US$ 465,550

Signed: _____ Date: _____

On behalf of the Government

_____ Date: _____

On behalf of the Executing Agency

_____ Date: _____

On behalf of UNDP

PART I - LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article I, paragraph 1 of the Assistance Agreement between the Government of the People's Republic of Mozambique and the United Nations Development Programme, signed by both parties on 15 September 1976.

PART II.A - DEVELOPMENT OBJECTIVES

The long-term objectives of the project are to improve the operating capacity of the existing production units and improve the quality of the products through training of management, supervisors and work force and through the establishment of functioning management controls.

PART II.B - IMMEDIATE OBJECTIVES

The immediate objectives of the project are:

1. To improve design and pattern cutting technology in order to satisfy market needs and technical requirements.

2. To systematize and improve material, tooling and component ordering and establish a well functioning storekeeping system.

3. To establish management control systems for the entire footwear industry including cost accounting, work-in-progress control, stock and order control, product specifications and work performance evaluation.

4. To establish a pilot centre for training of shoe industry personnel at different levels.

PART II.C - SPECIAL CONSIDERATIONS

Not applicable.

PART II.D - BACKGROUND AND JUSTIFICATION

The livestock in Mozambique is estimated at 1.2 million cattle and 0.9 million goats (the latter is an FAO estimation made in 1975). The offtake rate for cattle is about four per cent and there is no data for goats. Actual hide trade was 59,600 pieces in 1979 and 29,500 pieces in 1980 (to end of September) and that of skins was 8,094 pieces in 1980 (to end of September). The problems concerned with collection and quality of raw hides can be solved by improving transport and setting an incentive system for slaughter houses. The curing of collected hides and skins is acceptable when controlled by CAPECOM. The only Mozambican tannery lacks material supply (mainly chemicals and subsidiary materials), maintenance and management.

There is considerable demand in the country for footwear, especially for canvas shoes. The existing shoe industry consists of 15 semi-mechanized factories; full operating capacity is estimated at one million pairs of leather shoes and three million pairs of canvas and plastic shoes produced per year, but due to disorganized and inadequate maintenance and unskilled labour, output is about 25 to 30 per cent of the total capacity. The 2,400 workers employed in the shoe factories and the green labour available need training, which involves creation of suitable facilities and use of experts. The other major problem is the insufficiency of managerial staff, both technical and administrative-economic.

The project SI/MOZ/80/801 has clearly identified machinery maintenance as the number one problem area, and as a first stage of a further technical assistance programme a shoe machinery maintenance engineer should be engaged.

As a second stage for this assistance programme an integrated technical assistance project should be launched. It is obvious that one of the main reasons for the poor performance of the Mozambican shoe industry is the lack of skilled employees on all levels. A pilot plant is therefore urgently needed for the training of skilled manpower, supervisors and management.

PART II.E - OUTPUTS

1. Improved design and pattern cutting to satisfy fashion and technological requirements.
2. Systematized and improved tooling (especially lasts) and component supply for shoe factories.
3. Proposals, recommendations on establishing an adequate administration and storekeeping system.
4. Organized technical preparation for production, technological and working standards and quality control techniques.
5. Trained managerial staff in the key controlling positior in the shoe factories and Directorate.
6. Recommendations for follow-up and preparation of medium and long-term plans concerning techno-economic development.

PART II.F - ACTIVITIES

The main activities of the project are the following:

1. Conduct shoe designing and pattern making course and provide extension services for the various shoe factories in designing and pattern making.
2. Study the present administrative system and elaborate recommendations for its improvement.
3. Prepare recommendations for improved storekeeping as well as raw material, equipment and components ordering procedures.
4. Prepare recommendations and samples for the technical preparation for production, product specifications, technology specifications, working standards and quality control systems for the shoe factories.
5. Prepare syllabi and conduct training courses for supervisors and management staff in the footwear pilot plant.
6. Prepare medium and long-term development plans for the Government's consideration.

PART II.G - INPUTS

1. Government Inputs

The Government will provide the following counterparts to the international experts:

- General Manager for the Directorate;
- Planning Adviser for Management of the National Directorate for Leather and Shoes;
- Chief Designer (Directorate or factory level);
- Technical Manager for the Directorate;
- Purchasing Head of the Directorate.

Furthermore, the Government will provide suitable office accomodations for the project, secretarial services and support personnel and establish and equip the training centre as recommended and specified in the terminal report of project SI/MOZ/80/801. The Government is responsible for providing the trainees for the training programmes under the project and supplying candidates for fellowship training, who will be selected by the international team leader. The maintenance and operating costs of the project vehicle are payable from Government funds.

2. UNDP/UNIDO Inputs

Experts	Duration
Shoe Manufacturing Expert - International Team Leader	18 months

(a) Advise on administration and storage systems and assist in their implementation;

(b) Organize the technical preparation for production (technology, time standards, scheduling etc.);

(c) Assist in starting up the training centre and developing of training programmes;

(d) Advise on material purchasing and quality control;

(e) Assist in establishing a quality control laboratory, putting the equipment into operation, starting up the laboratory's activity;

(f) Train counterparts in the technical managing of shoe production;

(g) Co-ordinate the work of the international team.

Shoe Designer and Pattern Cutter — 9 months

(a) Organize the Design and Pattern Cutting Centre at Directorate level;

(b) Assist in updating the last and tool inventory;

(c) Introduce new range of products meeting local market requirements, prepare new patterns for standardized components;

(d) Replenish orders for components;

(e) Train counterparts in pattern cutting and range building techniques, grading and quality control of tools.

Shoe Industry Administration Expert — 6 months

(a) Recommend organization flow charts for the Directorate and the most important shoe factories;

(b) Assist in organizing in-factory administration, records and inventory system;

(c) Advise on storekeeping, accounting and costing procedures;

(d) Advise on an incentive system in order to improve productivity and quality;

(e) Train counterparts in economic and administrative management.

	Duration
Shoe Industry Training Expert	6 months (2 x 3 m/m split mission)

(a) Evaluate training needs and facilities, advise on organizational steps to be taken in order to establish a continuous training system;

(b) Recommend in-plant training programmes for operators, instructors and supervisors;

(c) Prepare syllabi and training schedules, introduce the skill-analysis training method;

(d) Carry out training courses for instructors and supervisors, follow up on operators training;

(e) Assist in running the training centre.

Training

Fellowship training of two nationals	$ 27,000
Study tours	$ 35,000
	$ 62,000

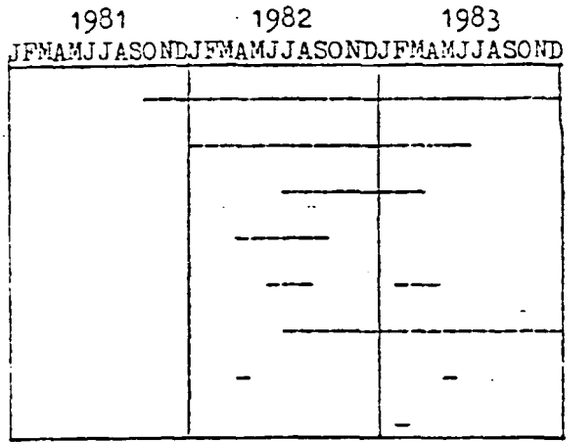
Equipment

The equipment for the training centre pilot plant will be provided by Government funds.

Laboratory Equipment (quality control) (appendix II)	$ 80,000
Design and Pattern Cutting Centre (appendix II)	$ 33,000
Library material and audio-visual aids (appendix II)	$ 17,000
Project vehicle	$ 7,500
	$ 137,500

PART II.H - WORK PLAN

Bar Chart



A detailed work plan for the project will be prepared by the International Team Leader supervising the international staff assigned to the project, in consultation with the general manager of the Government implementing agency, the National Directorate for Leather and Footwear. This will be done at the start of the project and brought forward periodically. The agreed-upon work plan will be attached to the project document as appendix I and will be considered as part of that document.

PART I. - PREPARATION OF THE FRAMEWORK FOR EFFECTIVE PARTICIPATION OF NATIONAL AND INTERNATIONAL STAFF IN THE PROJECT.

The activities necessary to produce the indicated outputs and achieve the project's immediate objectives will be carried out jointly by the national and international staff assigned to it. The respective roles of the national and international staff will be determined by their leaders, by mutual discussions and agreement, at the beginning of the project, and set out in a framework for effective participation of the national and international staff of the project. The framework, which will be attached to the project document as annex, will be reviewed from time to time. The respective roles of the national and international staff shall be in accordance with the established concept and specific purposes of technical co-operation.

PART II.J - INSTITUTIONAL FRAMEWORK

The project will be attached to the National Directorate for Leather and Footwear which is being formed under the National Directorate of Light Industries of the Ministry of Industry and Energy.

PART II.L - PRIOR OBLIGATIONS AND PREREQUISITES

The project document will be signed by the resident representative on behalf of UNDP, and UNDP assistance to the project will be provided subject to UNDP receiving satisfaction that the prerequisites in this document have been fulfilled, or are likely to be fulfilled. When anticipated fulfilment of one or more prerequisites fails to materialize, UNDP may, at its discretion, either suspend or terminate its assistance.

PART II.M - FUTURE UNDP ASSISTANCE

Subject to the findings and recommendations of the mid-term review and availability of funds, continuation of the project may be considered.

PART III - SCHEDULES OF MONITORING, EVALUATION AND REPORTS

1. Tripartite Monitoring Reviews, Technical Reviews

The project will be subject to periodic review in accordance with the policies and procedures established by UNDP for monitoring project and programme implementation.

2. Evaluation

The project will be subject to evaluation,in accordance with the policies and procedures established for this purpose by UNDP. The organization, terms of reference and timing of the evaluation will be decided by consultation between the Government, UNDP and UNIDO.

3. Progress and Terminal Reports

Project progress reports, in accordance with the UNDP Policies and Procedures Manual, will be prepared by the International Team Leader every six months and submitted to the UNDP resident representative and UNIDO.

A draft terminal report will be prepared by the International Team Leader in consultation with the General Manager of the National Directorate for Leather and Footwear, approximately four months before the scheduled completion of the project. UNIDO will complete the final version of the terminal report and distribute it to all the parties concerned with the project, in accordance with the instructions given in the UNDP Policies and Procedures Manual.

PART IV - PROJECT BUDGETS

(a) Project budget for the UNDP contribution is attached.

(b) Project budget for the Government's contribution is to be prepared.

UNIDO

PROJECT BUDGET/REVISION

Appendix I

3. COUNTRY	4. PROJECT NUMBER AND AMEND	5. SPECIFIC ACTIVITY
MOZAMBIQUE	DP/MOZ/81/XXX	31.7.D

10. PROJECT TITLE

Shoe Industry Development

15 10. 11 PROJECT PERSONNEL EXPERTS / Post title	16. TOTAL		17. 1982		18. 1983		19.		20.	
	m/m	$	m/m	$	m/m	$	m/m	$	m/m	$
11-01 International Team Leader	18	113,400	12	75,600	6	37,800				
02 Shoe Designer/Pattern Cutter	9	56,700	6	37,800	3	18,900				
03 Shoe Ind. Administration Expert	6	37,800	6	37,800	-	---				
04 Shoe Ind. Training Expert	6	37,800	3	18,900	3	18,900				
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
11-99 SUBTOTAL:	39	245,700	27	170,100	12	75,600				

21. REMARKS

UNIDO

PROJECT BUDGET/REVISION

PAGE

2. PAD NUMBER

3. PROJECT NUMBER	16. TOTAL		17. 1982		18. 1983		19.		20.	
	m/m	$	m/m	$	m/m	$	m/m	$	m/m	$
12.01 OPAS Experts										
13.00 Support Personnel										
14.00 Volunteers										
15.00 Experts Travel		5,850		4,050		1,800				
16.00 Other Personnel Costs		4,000		---		4,000				
17.01 Locally hired Experts										
17.02 Locally hired Experts										
19.00 Total Personnel Component	39	255,550	27	174,150	12	81,400				
20. SUBCONTRACTS										
29.00 Total Subcontracts Component										
30. TRAINING										
31.00 Fellowships		27,000		9,000		18,000				
32.00 Study Tours, UNDP G. Training/Meetings		35,000		14,000		21,000				
33.00 In-service Training										
34.00 Group Training (non-UNDP)										
35.00 Meetings/Consultations (non-UNDP)										
39.00 Total Training Component		62,000		23,000		39,000				
40. EQUIPMENT										
49.00 Total Equipment Component		137,500		120,000		17,500				
50. MISCELLANEOUS										
51.00 Operations — Maintenance		5,000		3,000		2,000				
52.00 Reports		2,500		---		2,500				
53.00 Sundries		3,000		2,000		1,000				
55.00 Hospitality (non-UNDP)										
59.00 Total Miscellaneous Component		10,500		5,000		5,500				
99. GRAND TOTAL:	39	465,550	27	322,150	12	143,400				

Appendix II

LIST OF EQUIPMENT FOR THE DESIGN AND LABORATORY CENTRE

1. Design and pattern cutting centre

1 pattern vice
1 pattern shear
1 pattern binding machine
200 kg binding strip
1 heavy pattern hole punching press
1 pattern binding moulding machine
1 Linham pattern grading machine
300 kg pattern board
1 pattern buffing machine
1 double pattern stud attaching machine
Tools and Accessories

2. Central laboratory for testing

1 dynameter Zwick 500 Dan + spare parts
1 cutting machine type Labor
1 lastometer
1 fleximeter
1 abrasimeter
1 lupa binocular
1 UV-lamp
1 chronometer
5 thickness gauges
1 permeometer
1 durometer
1 elexometer "De Mattia"
1 viscosimeter
2 thermometers
1 air-conditioner
1 planimeter
1 piltester
3 laboratory tables (6 m - 3 stores)

2 Bains-Marias

1 pH-meter

1 calculator (Casio FX-101)

2 balances (1 analytical + 1 tara)

2 stoves

3. Standards, books, library equipment, audio-visual aids

4. Project vehicle

Estimated prices for machinery and equipment including freight

	Estimate ($)
1. Design and pattern cutting centre	33,000
2. Central laboratory for testing	80,000
3. Standards, books, library equipment, audio-visual aids	17,000
4. Project vehicle	7,500
Estim. Total	137,500

Annex IV

PLANNED AND ACTUAL COLLECTION OF HIDES AND SKINS

Type	Actual 1979	Planned 1980	Actual September 1980	Planned 1981
Bovines	59 613	78 023	29 514	71 793
Caprines			8 094	5 580
Game skins			4 008	10 785
Total	59 613	78 023	41 616	88 158

Source: CAPECOM.

Annex V

BUYING OF HIDES FROM JANUARY TO OCTOBER 1980

Month	Bovines	Caprines	Buffalo	Game
January	2 985[a/]	469	-	-
February	3 025	164	4 394	-
March	5 650	1 587	-	87
April	3 077	169	4	-
May	7 777	447	3	-
June	2 383	1 951	55	-
July	7 725	2 495	8	-
August	3 327	493	1	-
September	4 732	814	-	-
October	3 082	977	3	-
Total	43 763	9 566	4 468	87

Source: União de Curtumes de Moçambique, LDA.

a/ Unit = pieces.

Annex VI

PRODUCTION DATA OF UNIÃO CURTUMES

Month	1979		1980	
	Chrome tanned (m^2)	Vegetable tanned (kg)	Chrome tanned (m^2)	Vegetable tanned (kg)
January	14 375	8 289	6 867	4 817
February	11 892	7 431	26 256	6 924
March	8 547	11 563	11 209	16 682
April	13 329	9 281	5 531	8 133
May	15 704	10 444	10 570	15 722
June	7 132	4 989	7 788	14 937
July	7 883	13 485	15 718	12 786
August	8 788	1 960	11 736	8 187
September	10 385	5 386	7 482	12 647
October	14 190	11 597	11 603	11 693
November	12 399	1 356		
December	9 984	5 940		
Total	134 608	191 721	114 760	112 778

Source: União Curtumes.

Annex VII

DATA RELATING TO SHOE FACTORIES

Factory	Degree of mechanization	Number of machines				Total	Out of order[a/]	Total employees	Production to October 1980 (in 1,000 pairs)	Estimated capacity per year (in 1,000 pairs)
		Cutting and pre-fabrication	Clicking and pre-fabrication	Closing	Making and finishing					
RITMO	Semi-mechanized		4	18	11	40	13	147	41.4	60.0
ZAURITA	Semi-mechanized	5	3	9	9	26	8	152	34.6	80.0
UFA Leather shoe	Semi-mechanized	7	4	24	8	43	20	483 including rubber	23.0	69.0
UFA Canvas	Mechanized	3	-	36	62 (vulc)	101	-	plant and canvas	345.0	700.0
APOLO	Semi-mechanized	8	3	22	11	44	17	267	46.0	161.0
SSS Lda	Semi-mechanized	8	3	32	12	55	19	182	87.0	115.0
SSS FILIAL	Semi-artisanal	2	1	6	5	14	2	82	30.0	34.5
NELFA	Semi-mechanized	5	3	11	11	30	4	115	46.0	46.0
MALER	Semi-mechanized	5	2	14	10	31	13	79	6.0	84.0
FACOBOL Leather Shoe	Mechanized	6	8	24	16	54	54	500 rubber and canvas	Being relocated	90.0
FACOBOL Canvas	Mechanized	2	-	50	100 (vulc)	152	-		700	1 400.0
FEIRENSE	Semi-artisanal	-	2	7	3	12	4	31	5.0	5.0

MANICA	Mechanized	5	5	12	8
INABOL	Artisanal	1	-	-	-
CHINELOS DO PLANALTO	Artisanal	-	1	5	1
AGOLIPE	Semi-artisanal	2	1	8	8
INCALA	Mechanized artisanal	-	4	-	5 M Inj
Total					

a/ Or stops because of lack of electricity or material.

b/ Leather: 1,300, rubber, plastic and canvas: 963.

c/ Leather: 837.5; canvas and plastic: 3,052.5.

30	14	48	23.0	70.0
+ Desma				
1	1	Ø	Ø	150.0
7	7	8	2.0	3.0
19	19	49	Ø	23.0
9	9	30	Ø	800.0
669	204	2 263[b]	1 389	3 890.0[c]

Annex VIII

SHOE PURCHASE (ALL TYPES)

Month	1975			1976			1977			1978			1979			1980		
	Canvas	Leather	Plastic	Canvas	Leather	Plastic	Canvas	Leather	Plastic	Canvas	Leather	Plastic	Canvas	Leather	Plastic	Canvas	Leather	Plastic
Jan.	39 058	9 598		43 427	4 451		17 127	7 589		1 345	14 528	36 204	6 976	16 611	1 860	26 227	6 865	8 040
Feb.	44 083	10 881		34 536	6 959		16 349	12 188		38 154	31 911	33 024	34 604	49 393		55 840	14 994	
March	41 418	11 184		27 353	3 107		14 776	12 268		60 507	40 595	27 512	69 341	28 613		42 454	19 651	
April	50 269	12 599		44 956	11 288		9 105	15 104		47 241	44 662	3 600	40 873	34 447		60 275	28 404	
May	19 088	7 928		53 593	12 539		14 953	15 055		90 108	59 046	9 924	37 552	32 097		68 087	19 465	
June	9 780	6 380		39 677	9 868		16 772	19 739		69 092	54 250		45 585	27 825		27 268	16 227	
July	40 210	3 945		55 376	12 610		29 790	22 027		21 418	40 349		32 631	25 417		11 679	15 166	
Aug.	31 058	4 395		48 168	10 546		66 300	47 972	1 502	89 392	63 238		47 573	39 388		95 113	25 505	20 525
Sept.	33 802	5 227		50 980	9 674		71 111	52 850	44 568	58 586	42 100		38 817	27 003		42 534	22 169	
Oct.	46 137	6 498		24 924	1 993		67 570	48 708	13 488	84 395	47 245		28 719	30 778	15 864	73 722	24 719	
Nov.	35 166	9 341		14 492	3 751		66 280	45 926	29 448	38 709	48 578		32 215	24 711	22 068			
Dec.	49 161	8 455		9 766	3 582		65 258	44 475	35 424	51 715	38 073		27 180	19 029				
Total	419 730	96 431		447 248	90 368		455 391	343 901	124 430	650 662	524 572	110 264	442 066	355 312	39 792	503 199	193 165	28 565

Source: ENCATEX.

Annex IX

TECHNICAL DESCRIPTION (SAMPLE)

No. of the description

Product: Pumps, genuine leather

Last: Standard No. Fashion No.

Size: 5 1/2

A. Materials	Unit	Mat. All.	Unit price	One pair
Upper: Anilin nappa side leather 1.2-1.5 mm, blue	dm^2			
Heel covers: Anilin nappa side leather 1.2-1.5 mm, blue	dm^2			
Lining: sheep lining 0.8-1.0 mm russet	dm^2			
Counterpocket: velvet split 0.8-1.0	dm^2			
Sole: sole leather 3.5 mm	dm^2			
Sock: sheep lining, 0.8-1.0 mm, blue	dm^2			
Welt:	-			
Insole: Texon 2.2 mm	dm^2			
Heels: PA, 6 = 500 kg/cm^2	pair			
Toe puff: Punter	dm^2			
Counter: C-800	dm^2			
Steel shank: PP granulate	dkg			
Heel underlay: PA, black	pair			
Ornament:	-			
Buckle:	-			
Findings: (thread, adhesives etc.)	dkg			
Packing: carton, export quality	one price			
Material costs				*

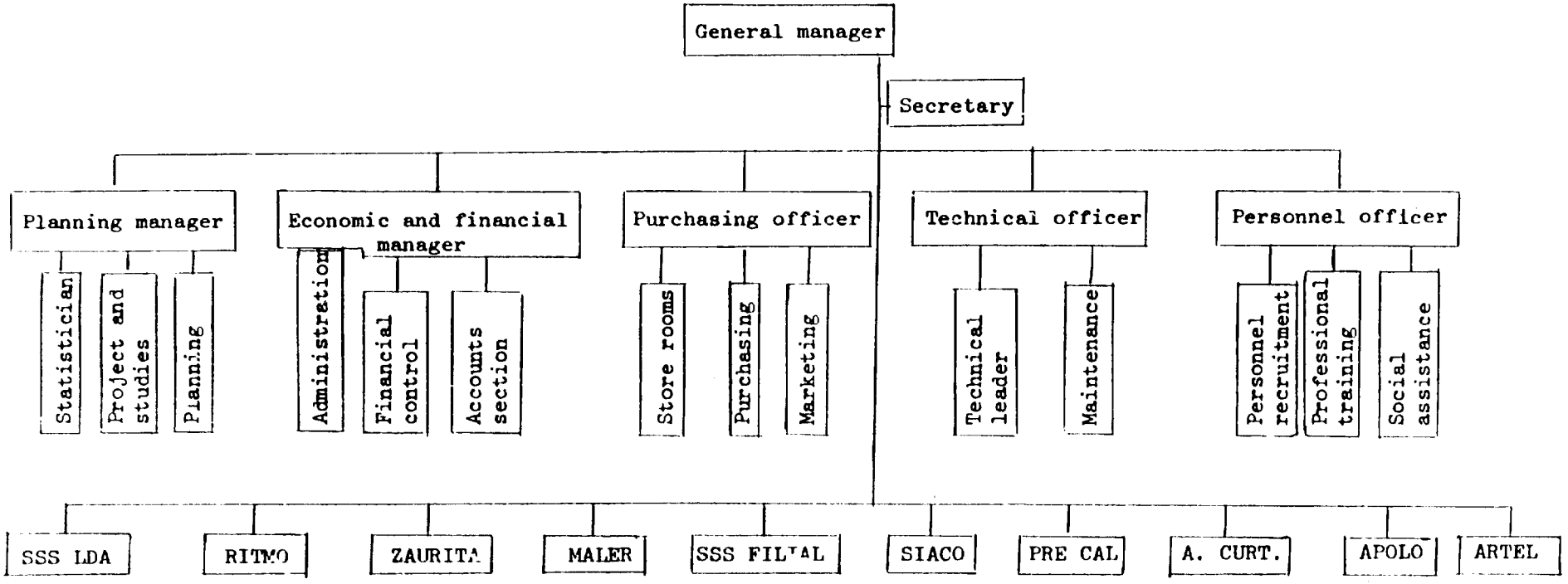
Technical instructions:

B. Wages	Wage group	Minutes per pair	Wage per 100 pairs ($)
B_1 Cutting			
Leather cutting	10	3.14	9.51
Lining cutting	6	0.98	2.70
Upper marking	4	0.45	1.15
Counterpocket cutting	5	0.17	0.46
Sock cutting	7	0.14	0.40
Lining marking	4	0.21	0.60
Sock marking	4	0.12	0.28
B_1 Total			*
B_2 Clicking			
B_2			*
B_3 Closing			
B_3			*
B_4 Outsole processing			
B_4			*
B_5 Making			
B_5			*
B_6 Bottoming			
B_6			*
B_7 Finish			
B_7			*
B. GRAND TOTAL (Wages)			

Technical instructions

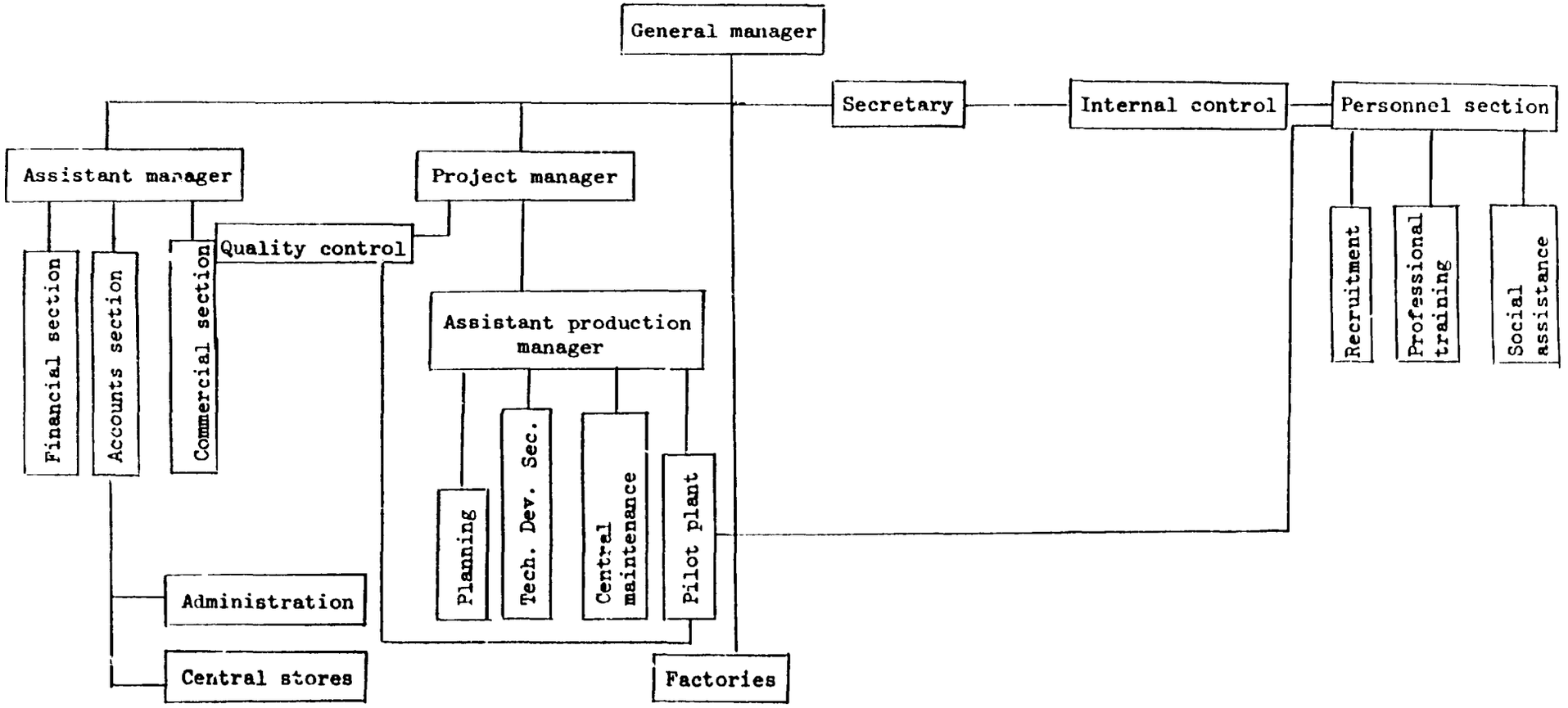
Annex X

PROVISIONAL ORGANIGRAM OF THE DIRECTORATE



Annex XI

ORGANIGRAM OF THE DIRECTORATE (PROPOSAL)



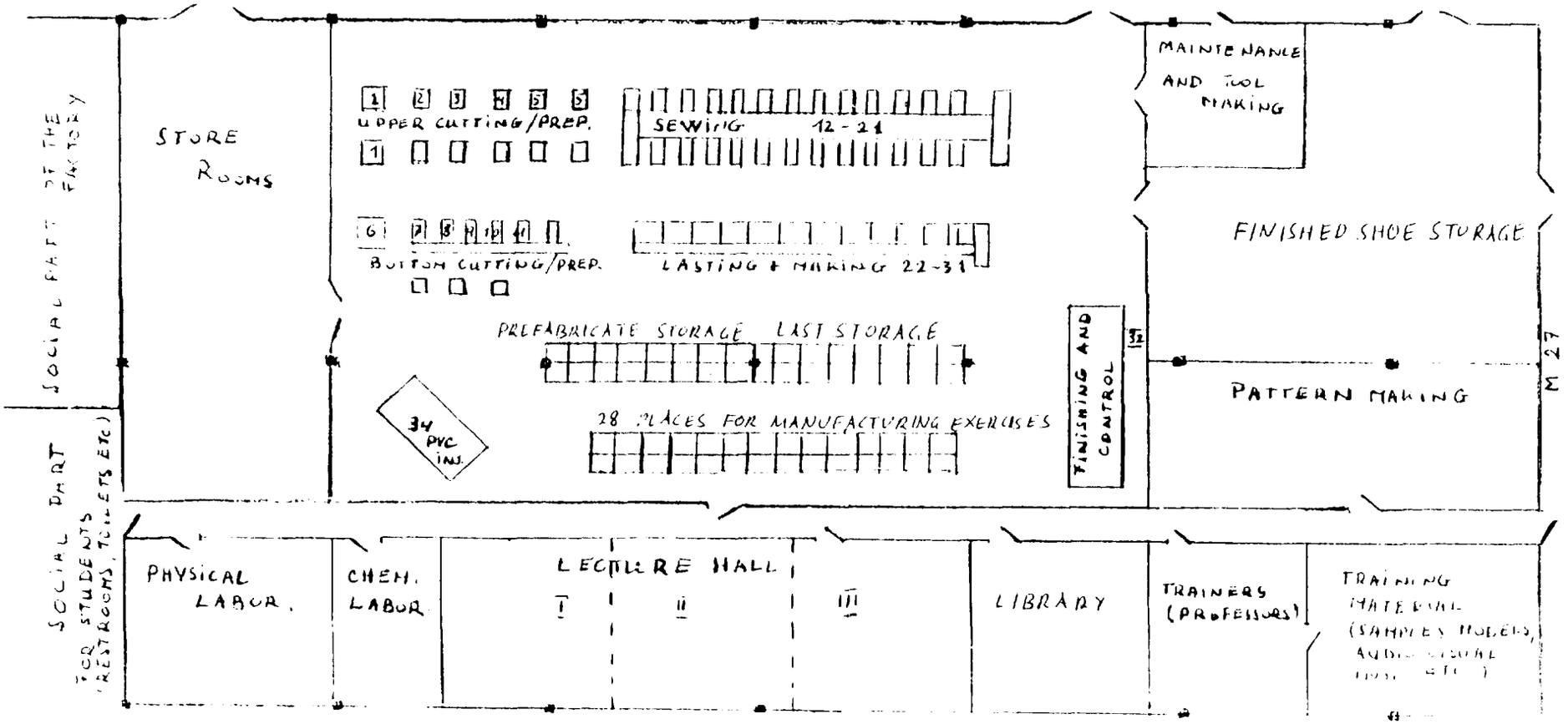
Annex XII

PROPOSED MACHINERY LIST FOR PILOT PLANT (RITMO)

Item	Description	Estimated price ($)
1.	2 hydraulic swing-arm clicking machines	6,000
2.	1 band-knife splitting machine	13,000
3.	1 upper stamping machine	3,500
4.	1 marking machine (stamp sock)	4,500
5.	2 upper skiving machines	3,000
6.	1 hydraulic cutting machine (bridge)	6,000
7.	1 bottom part splitting machine	2,500
8.	1 automatic counter skiving machine	6,600
9.	1 counter moulding machine	11,500
10.	1 sole and insole moulding machine	6,600
11.	1 sole prefinishing machine	5,200
12.	4 two-needle flat-bed sewing machines	8,000
13.	8 single-needle flat-bed sewing machine	16,000
14.	1 seam rubbing machine	5,000
15.	1 thermo folding machine	4,600
16.	4 single-needle post-bed sewing machines with trimming attachment	10,000
17.	4 single-needle post-bed sewing machines	10,000
18.	2 cylinder-bed binding machines	4,500
19.	1 two-needle heavy cording machine	2,000
20.	1 stapling machine	2,400
21.	1 eyeletting machine	5,000
22.	1 backpart moulding machine	4,000
23.	1 forepart lasting machine	22,000
24.	1 side lasting machine	17,600
25.	1 heelseat lasting machine	19,000
26.	1 toe scouring machine plus filter unit	6,200
27.	1 upper roughing machine plus filter unit	4,000
28.	1 sole attaching machine	6,000
29.	2 sole stitching machines	5,000
30.	1 universal heel attaching machine	6,500
31.	1 hot air ironing machine	1,400
32.	1 spraying chamber	3,600
33.	1 air compressor	4,500
34.	1 PVC injection moulding machine (2 stations)	20,000
	Total	255,700

Annex XIII

PRELIMINARY PILOT PLANT LAYOUT (RITMO)



Annex XIV

JOB DESCRIPTION

Post title:	Footwear Industry Consultant
Duration:	Three months
Date required:	As soon as possible
Duty station:	Beira, with travel within the country
Purpose of project:	To assess the actual situation of the leather and footwear industry and to recommend measures to obtain higher productivity levels and strengthen the competitive capacity of the country's shoe manufacturers.
Duties:	The consultant will be attached to the National Directorate of Light Industries of the Ministry of Industry and Energy, collaborating with the work team having the responsibility of conducting a general survey of the leather and footwear industry. The consultant will specifically be expected to make a study of the following particular areas and make recommendations for the actions to be taken: 1. The product development and tooling of the shoe industry; 2. The production technology, machinery and equipment and their maintenance; 3. The role of supporting industries such as tanneries and component industries, particularly from the co-operational point of view; 4. Quality control; 5. Training of personnel at all levels; 6. Shoe industry costing; 7. Programming and organizing the supply of "inputs" for the sector; 8. Estimate the possibilities of production for export; 9. Propose organizing directives and methods of work at the level of unit production. The consultant will also be expected to prepare a final report setting out his findings and recommendations for the Government.
Qualifications:	Extensive experience in shoe industry planning, product development, production technology, quality control, labour training and costing.
Language:	English; working knowledge of Portuguese is required.
Background information:	The Mozambican leather industry consists of one factory which utilizes hides from buffalo and cattle, primarily of domestic origin. Ninety five per cent of the leather produced is used in the national shoe industry.

The Mozambican shoe industry consists of twenty factories, mainly situated in Maputo, but with a few but important units in the north of the country. The sector produces leather, canvas, and plastic shoes (in that order of importance) totalling 1.5 million pairs in 1978. Installed capacity, however, is approximately 5 million pairs per year. At short and medium term the most important problem of the sector is the necessity for technical assistance.

Proposals exist for restructuring the existing shoe and leather industry, including proposals for new factories. Assistance is needed to evaluate technology and machinery, prices offered and type of technical assistance required.

The National Directorate of Light Industries will provide a team of technicians to co-ordinate the fulfilment of the described duties.