



**TOGETHER**  
*for a sustainable future*

## OCCASION

This publication has been made available to the public on the occasion of the 50<sup>th</sup> anniversary of the United Nations Industrial Development Organisation.



**TOGETHER**  
*for a sustainable future*

## DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

## FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

## CONTACT

Please contact [publications@unido.org](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)

17725

Distr.  
RESTRICTED

IO/R.113  
14 September 1989

UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

FEASIBILITY STUDY ON THE PRODUCTION  
OF SHOE COMPONENTS

US/CPR/88/165

THE PEOPLE'S REPUBLIC OF CHINA

Technical report: findings, conclusions and recommendations for  
the improvement of locally supplied shoe components\*

Prepared for the Government of the People's Republic of China  
by the United Nations Industrial Development Organization

Based on the work of Otto Kloetzer,  
consultant on shoe components

Backstopping officer: U. Loeser, Feasibility Studies Branch

\* This document has not been edited.

## ABSTRACT

### I US/CPR/88/165

Feasibility Study on the Production of Shoe Components  
Technical Report on a Field Mission in July 1989.

### II Summary of the Project Objectives

To expand the Chinese shoe industry vertically by producing components and auxiliaries from local raw materials and minimize the need for imports.

To enable the Chinese Government and the Shanghai Leather Corporation to decide on the types of components to be produced.

### III Summary of the Findings and Conclusions

The production of components is decentralized at present and takes place to a great deal in factories scattered around Shanghai. Material problems, lack of last standardization and transportation problems lead to uncertain deliveries and large stocks. The SLC wants to improve the situation by centralizing components production.

### IV Summary of Recommendations

The recommendations deal with research projects to improve fibre board and leather board materials, standardization of last, give hints for further investments in the last and rubber factory.

The preparation of statutes and by-laws for a joint venture company producing shoe components before looking for a joint venture partner is also recommended.

Explanatory Notes

US\$ 100	= 372 RMB (official rate);
Y RMB	= Yuan RENMINBI (Chinese Currency); Exchange rates at the Shanghai Exchange Transaction Centre (where enterprises with foreign capital can change money) varied between 6.8 and 7.0 RMB for 1US\$
PRC	= People's Republic of China
LTC	= Leather Technology Centre
SLC	= Shanghai Leather Corporation
SCC	= Shoe Components Company
SLSF	= Shanghai Leather Shoe Factory
TPR	= Tripartite Review
CIA	= Chief Technical Adviser
MPD	= National Project Director
p.a.	= per annum (yearly)

Table of contents Page

Abstract	1
Explanatory Notes, Table of Contents	2
Introduction	3
I. Recommendations	4
II. Findings and Conclusions	5 - 10

Annexes

- I Terms of Reference
- II Factories visited
- III People met
- IV Potential Joint Venture Partners
- V List of Components to be improved or newly developed

Introduction

On 17 November 1987 a Tripartite Review Meeting was held to discuss the project "Assistance to the Leather Technology Centre Shanghai", US/CPR/85/130.

The meeting stressed the need for improved lasts and footwear components especially for shoes exported from China. The meeting recommended to ask UNIDO to assist in a feasibility study about the possibilities to improve the production of lasts and components both in quality and quantity.

A project document titled:

"Feasibility Study on the Production of Shoe Components"

US/CPR/88/165, was signed in 1988.

The project was financed by UNIDF funds supplied by the Federal Republic of Germany. The total budget is US\$ 62.500 (excluding support costs).

The duration of the project is 3 month.

The feasibility study was subcontracted to the Hungarian Leather and Footwear Research Institute in Budapest. The subcontracter was guided by the former CTA of the project US/CPR/85/130 and by the former NPD of this project for one month and three month respectively.

A mission to Shanghai for data collection took place in July 1989. All data were supplied by the General Manager of the SLC and his staff.

RECOMMENDATIONS

Before starting the footwear components company or starting joint venture negotiations the following activities which are obligatory for a successful operation should be started:

- A project to standardize the back part of lasts.  
The project should include next to lasts for the local market lasts for the European and North American market.  
A draft project proposal for UNIDO assistance has been worked out by project US/CPR/85/130, "Assistance to the Leather Technology Centre" in November 1988 and sent to the SLC for consideration.
  
- A joint committee of the chemical, -textile, -paper- and leather industry to work on the development of thermoplastic material from locally available natural fibres (linnen, jute, hamp etc.) for insoles and stiffeners. The development of hot melt cement in rods should be included into the programme. The activities of the joint committee could lead to a reduction of imports.
  
- A project to improve the production of leather board taking in consideration the recommendations of Unido project DG/CPR/88,070 "Leather Board".
  
- Status and by-laws of a joint venture company should be drafted jointly by SLC and SLSF and get preliminary approval by the relevant authorities to ease negotiations with potential foreign investors.
  
- Investments in the last factory for a set of instruments to measure the lasts and for machinery to produce hinged lasts.
  
- Investments in the rubber factory to buy new equipment for the production of resin rubber sheets.

## II FINDINGS AND CONCLUSIONS

### 1.0 The Present Situation in General

At present the production of shoe components in Shanghai is decentralized except for shoe lasts, shanks and metal accessories. Each shoe factory produces its own components. This is mostly done by affiliated factories in suburbs and counties around Shanghai.

Without any standardization of last the variety of components is very large. They frequently do not fit the last good enough for quality footwear.

Transportation problems are another factor causing uncertainties in deliveries and result in interruptions in shoe production or extreme stocks in the shoe factories.

Beside these circumstances the production of components is hampered by the lack of good material for some of the components.

The SLC wants to improve the present situation by centralising the production of some components. Main concern of the SLC is to increase the export of footwear by 10% p.a. In 1988 the export of leather shoes by SLC was 5 million pairs. The total production of leather shoes of the SLC in 1988 was approximately 19 million pairs. It is planned to increase production by 8% p.a.

#### Total Production 1988 Exports

	<u>Million Pairs</u>	
Men's shoes	5.6	0.56
Ladies shoes	6.1	1.50
Children shoes	3.1	0.30
Sport shoes	4.2	2.64

### 1.1. The Material Situation

Lasts and heels: raw materials for the production of plastic lasts and heels are available.

Unit soles: available are rubber soles and imitated leather soles (80% PVC, 20% natural rubber).

The imitated leather soles have a bad finish due to inappropriate equipment.

Insoles: two types of cellulose fibre soles and synthetic soles from non-woven material are available, but of poor quality. For export production Texon material is imported.

Stiffeners (counters and toe puffs): are available from non-woven synthetic fibre material (solvent activated)

Cutting dies: except for one set of equipment to produce double edged dies from steel strips (installed at the LTC) all dies are made by traditional forging.

Shanks: high quality steel for the production of shanks is available. The production capacity is large enough. High quality steel shanks are seldom used because of the price (High quality 0.36 RMB, low quality 0.05 RMB per piece).

PU- Unit soles are not available because chemical components are only partly available. Therefore the production of PU - Unit soles depends on imported chemicals. Available injection machines (Desma and of Japanese origin) have been found idle.

Leather soles are available in small quantities only. The quantity of locally made sole leather is negligible.

Insoles and stiffeners from leather board are available but the leather board is of inferior quality.



It can be concluded that joint efforts of the chemical-, paper -, textile -, leather- and shoe industry are needed to overcome deficiencies of the materials necessary for the production of some important components (sole, insoles, stiffeners).

## 1.2. The Equipment Situation

Lasts: The Shanghai Last Factory is in the process of buying some additional equipment from another last factory in China. After the conclusion of the purchase the Shanghai Last Factory is able to produce steel plated plastic hinged lasts in sufficient quantities. A first sample of a hinged last was presented. What the factory still needs is a set of instruments to measure the last and expertise from international experts how to standardize the back part of the lasts.

Unit Soles: The rough finish of the imitated leather soles is caused by too low pressure of the vulcanizing presses. Further more the surface of the resin rubber sheets is very small. Equipment for the production of 1 m<sup>2</sup> resin rubber sheets is needed.

Insoles and Stiffeners: Leather board for insoles and stiffeners needs improvement. The surface of the material is too rough and small particles break out of the parts when moulded. At a first glance it looks as if the grinding of the leather shavings is insufficient. Fibre board from non-woven synthetic fibre material is solvent activated. This is not acceptable. Working with this material is hazardous and unhealthy. Thermoplastic materials should be developed and the material producers equipment adapted accordingly.

## 2.0 The Scope of a Components Factory

Based on the planned production of the SLC the feasibility study should look for the smallest possible economically viable unit. Chances to sell components to other provinces are limited.

Chances to export components are zero.

## 2.1 The Production Programme

- Lasts, heels and top-pieces
- Patterns
- Cutting and perforating dies
- Unit soles from rubber and imitated leather sheets
- Insoles
- Stiffeners

The production of lasts, heels and top-pieces must not necessarily be included in the production programme of the components factory if close co-ordination between both can be achieved without it.

For the purpose of the feasibility study the production of lasts, heels and top-pieces should be excluded.

## 2.2 The Location of the Components Factory

There is no need to construct a new building for the components factory as plenty of lately erected buildings are available. Due to the scarcity of building sites all buildings are multi-storey buildings. Unfortunately most of the buildings have only a floor bearing load of 500 kg/m<sup>2</sup>. From the many buildings visited a recently erected factory building of the Shanghai Leather Shoe Factory seems to be the most suitable. Distances to the last factory and most of the shoe factories are close. Further more the Shanghai Leather Shoe Factory, being the largest shoe factory in China, has also experienced management and workers for the production of components, has bought already 20 machines for components production and used to be a partner in a joint venture company until recently when the joint venture company was taken over by the Animal-by-products Corporation.

The Shanghai Leather Shoe Factory operates since 1983 a components workshop for rubber unit soles and heel tops employing 154 workers. which they want to incorporate into the planned component factory.

### 2.3 The Structural Organization of the Components Factory

As legal and economic conditions of a 100% Chinese enterprise differ considerably from an enterprise with foreign participation (joint venture) the feasibility study should elaborate both alternatives.

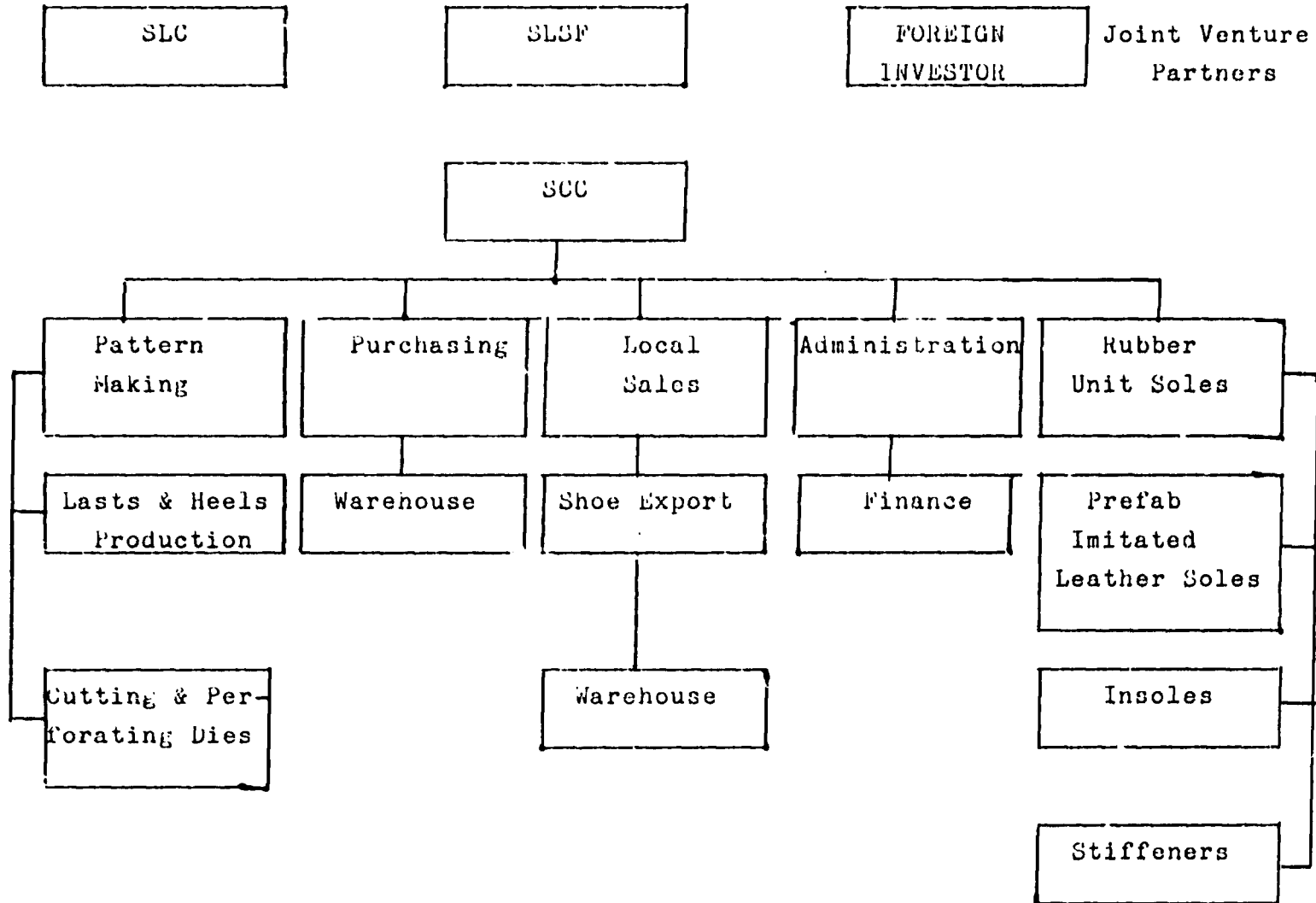
The joint venture type of an enterprise has more freedom in its operations. It can export and import directly. On the other hand it faces higher labour costs, rent for the buildings and it has to balance its spendings of foreign currency with its earnings of foreign currency.

As chances to export components do not exist the component factory has to be paid by its customers (the shoe factories) in exportable footwear. As surplus in foreign currency can be exchanged in RMB through the Shanghai Exchange Transaction Centre at a rate which fluctuates between 6.7 and 7.0 RMB for one US\$ as compared with 3.72 RMB (the official exchange rate), a joint company with foreign exchange earnings might be able to compensate higher labour costs and rents.

It is therefore that the following organization chart includes a shoe export department.

The three joint venture partners recommended are the Shanghai Leather Corporation SLC, owner of the last factory, the Shanghai Leather Shoe Factory, SLSF, China's largest shoe factory, owner of the building, machines, experienced management and workers and a foreign partner with technical know-how and able to export shoes.

Shoe Components Company (Joint Venture)  
Structural Organization Chart



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

23 August 1988

**JOB DESCRIPTION**  
US/CPR/88/165/11-51/J14101

- Post Title:** Consultant (Shoe Components)
- Duration:** One Month
- Date Required:** April 1989
- Duty Station:** Shanghai with travel within the country as required
- Purpose of Project:** To enable the CPR Government and the Shanghai Leather Corporation to decide on the types, quality and quantity of shoe components to be produced, with particular reference to site selection and to the location of one or several manufacturing plants.
- Duties:** The expert will be attached to the Shanghai Leather Research Institute within the Shanghai Leather Corporation and provide technical and economic background information and services in co-operation with the sub-contractor's team. The expert will be specifically expected to:
1. Visit with the sub-contractor's team the various existing shoe component producers to familiarize himself with the present product range and production technology, and to prepare a short list of a new improved range and technology outline;
  2. Provide contacts with suitable joint venture and/or technical and management partners who may be interested in co-operating in the manufacture and marketing of shoe components within the follow-up project.

The expert will also be expected to prepare a technical report setting out his findings and recommendations to the counterpart organization on further actions which might be taken.

**Qualifications:** Senior footwear industry expert with sound knowledge of the component market and with several years of experience in the international shoe industry. Previous experience in the CPR shoe industry is necessary.

**Language:** English.

**Background Information:** The People's Republic of China has fairly rich resources of hides and skins and has experienced a long history in the development of the leather industry. The leather industry consists of more than 50 important tanneries. The main leather manufacturing centres are in Beijing, Tientsin, Guangzhou, Szechuan, and the most important one, in Shanghai.

In the Chinese shoe industry manual processes are still prevalent. The total footwear production is estimated at 750 million pairs, out of it some 200 million pairs (26.7 per cent) are made of leather. The shoe export amounts to about 15 million pairs but the manufacturers experience significant problems because of the rather poor design of their products. Now the mechanization of the shoe manufacturing is of great interest - with special reference to closing and making rooms - which cannot be accomplished without the introduction of new working methods, technologies and production control techniques.

Both the leather and footwear industry lack modern technical know-how, adequately trained personnel - especially in management, technology and product development. Technical information supply, training and re-training of specialists from industrial plants, i.e. transfer of up-to-date know-how would be of great assistance to the Chinese leather and leather products industry and enable it to meet the local demand as well as the requirements of the national economy of the People's Republic of China.

One of the country's most important leather and leather products manufacturing centres is located in Shanghai. In order to assist this

industrial sector in improving the quality of products manufactured, as well as to increase the efficiency and productivity in the manufacturing units, a laboratory was established under project DP/CPR/80/007 which is currently being expanded into a Leather Technology Centre under projects DP/CPR/83/004 and US/CPR/85/130

Factories visited

Shanghai Leather Shoe Factory  
Shanghai Last Factory  
Bao Ji Ladies Shoe Factory  
Shanghai Athletic Shoe Factory  
Shanghai Metal Parts Factory  
Shanghai Leather & Rubber Factory  
Shanghai Leather Chemical Factory  
Shanghai Luggage Factory  
Shanghai Leather City Effluent Treatment Plant



People met

Cao Yongchang	Dep. Director 2. Bureau Light Industry Shanghai
Zhao De Zheng	General Manager, Shanghai Leather Corporation
Jiang Guo Ru	Finance Department, " " "
Cheng Chang Doo	Equipment Department, " " "
Ji Ren	Technology Department" " "
Cheng Guo Hui	Price Controller, " " "
Zhang Zhi Xiong	Purchasing Department" " "
Ma Wei Min	2. Bureau Light Industry Shanghai
Jiang Shou Hua	Dep. Director, Shanghai Leather & Rubber Factory
Xia Xiao Ming	Technical Chief, Dong Hua Leather Products
Hui Jei Ping	Director Shanghai Athletic Shoes Factory
Gao Minggi	Dep. Director Shanghai Leather Shoes Factory
Li Jiage	Technical Manager Shanghai Leather Shoes Factory
Wu Yu Jian	Dep. Director Hong Guang Tannery
Dong Rui Tang	Dep. Manager, Shanghai Leather & Rubber Factory
Xue Yu Sheng	Dep. Director, Nanjing Coordinating
Hu Cai Xin	Committee for Development of Chemicals
Wang Jin Shun	Director, Nanjing Xiong Wen Paper Factory
Tang Cheng Guo	Director, Nanjing Liu He Plastic Factory

Potential Joint Venture Partners

Korea Shoeparts Co  
Kasan Free Export zone  
658-10 Bongain Dong  
Masan  
South Korea

Hong Kong International  
Shoe Material Ltd  
601 New World Office building  
(West Wing), 20 Salisbury Road  
Tsimhatsui  
Kowloon/Hong Kong

Sam Moo Corp.  
205-4 Mang Mi-dong  
Ham-Ku  
Pusan  
South Korea

EMHART  
Footwear Material Group UK LTD  
P.O.BOX 206  
97 Hildyard Road, Belgrave  
Leicester LE 45 FG  
England

Kaohsing Shoepart Co Ltd  
46 HWA Chung Road  
TA FA IND District  
Kaohsing Hsien  
Taiwan

Expool ConsorZio  
Via Respighi,8  
I- 63023 FERMO (AP)  
Italy

Taiwan Shoeparts Co Ltd  
B12-11 Standard Fty  
Building  
K.E.P.Z.  
Kaohsing  
Taiwan

Gras & Kieffer Gmbh  
Blockbergstrasse 139  
D - 6780 Pirmasens  
  
Caty Societe Nouvelle  
B.P. 16,26300 Bourg-De  
Peage/France

CCE PAO Industrial Co.Ltd  
No 96-12 Chunkung Road  
PEI DIST TAICHUNG  
Taiwan

Chamberlain Phillips International  
P.O.BOX 50,8 Notre Dame Mews  
Northampton NN1 2BG  
U.K.

List of Components  
to be improved or newly developed

Lasts	plastic lasts from mixed high and low density polyethelene, hinge(spring) type, partly or fully iron plated.
Cutting dies	steel strip bend, double edged
Insoles	made from leather board with backerboard or plastic back-part, for sandales with skeleton on the bottom side, footbeds for casual shoes
Stiffeners	made from leather board or bonded fibre coated with thermoplastic resins
Welts	from leather and PVC
Pre-finished soles from resin rubber sheets	with smooth finish