



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th 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 for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

RESTRICTED

DP/ID/SER.A/1053
23 August 1988
ORIGINAL: ENGLISH

16960

ASSISTANCE FOR INSTITUTION-BUILDING
FOR INDUSTRIAL PROMOTION
DP/PNG/86/002
PAPUA NEW GUINEA

Technical report: Feasibility study for the
Foundation of a Tanning Industry*

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

Based on the work of Peter Upstone, leather expert

Backstopping Officer: W.H. Eckert, Industrial Planning Branch

United Nations Industrial Development Organization
Vienna

* This document has not been edited.

V.88-27358

Explanatory Notes

At the time of writing this report international rates of exchange were as follow 1 Kina = US\$ 1.1436
= A\$ 1.5000
= Stg 0.6089

Abbreviations:

D.P.I. Department of Primary Industry
D.E.C. Department of Environment and Conservation
D.A.L. Department of Agriculture and Livestock
N.S.O. National Statistics Office
L.D.C. Livestock Development Corporation
D.T.I. Department of Trade and Industry
ICPNG Investment Corporation of PNG
FAO Food and Agriculture Organisation
T.P.I. Tropical Products Institute - London
CFTC Commonwealth Fund Technical Co-operation

Key Words:

Papua New Guinea, PNG, agriculture, livestock, raw hides, tanning, leather goods, wet blue, reptile, crocodile, chrome tanning, vegetable tanning, cattle.

I. Abstract:

The livestock populations and slaughter figures in Papua New Guinea are assessed and the present methods of skinning, curing, collecting and selling of the hides are described and some recommendations are made to improve the quality and value of the skins.

Several possibilities are put forward both to produce wet-blue skins for export and to produce hair-on and vegetable tanned hides for use in the local leather goods market and also possibly reptile skins for local production. The financial implications of these various projects are discussed and suggestions regarding their viability.

Also included is a brief summary of the leather goods industry in the country and proposals for its expansion.

II. CONTENTS:

Explanatory notes and abbreviations:	2
I. Abstract	3
II. Contents	4
II.1. List of Figures	6
II.2. List of Tables	6
III. Summary of Recommendations	7
IV. Introduction	8
IV.1. Scope of Enquiry	8
IV.2. Form of Enquiry	8
V. General Background	9
VI. Livestock and Raw Skin Availability	10
VI.1. Livestock Population	11
VI.2. Slaughtering Facilities and Throughput	16
VI.3. Sales of Wet Salted Hides and Skins	22
VII. Tannery Proposals	25
VII.1. Introduction	25
VII.2. Medium scale tannery for the production of Wet Blue Hides	25
VII.3. Village Tanning of Hair - on Leather	35
VII.4. Small-Scale Vegetable Leather Tannery	40
VII.5. Village Reptile Tanning	49
VIII. Summary of Leather goods Projects	53
VIII.1. Small-Scale Industries, Port Moresby	53
VIII.2. Mount Hagen	53
VIII.3. Madang	53
VIII.4. Wewak	54
VIII.5. Other Leather users in PNG	54
VIII.6. General	54
IX. Financial Projections	56
IX.1. Lae	56
IX.2. Bulolo	56
IX.3. Madang	56
IX.4. Wewak	56
X. Recommendations	57

<u>ANNEX</u>	A	-	List of people and companies contacted	59
	B	-	List of possible Chemical Suppliers	61
	C	-	List of possible Machinery Suppliers	62
	D	-	List of Raw Hide and Skin Dealers in PNG	62
	E	-	List of possible Buyers of Wet Blue Leather	63
	F	-	Transport Costs	63
	G	-	The Tanning Process	64
	H	-	Effluent Treatment	67
	I	-	Testing and Quality Control of Leather	69
	J	-	Lings Cattle Hides Tannery Site	70
	K	-	Parties interested in Tanning	70
	L	-	Bibliography	71

APPENDIX Contents COMFAR evaluations

	-	Wewak Reptile Tanning	2
	-	Madang tannery	25
	-	Bulolo tannery	48
	-	Wet blue tannery, Lae (version 1)	71
	-	Wet blue tannery, combination Madang	94
	-	Wet blue tannery, Lae (version 2)	117

II.1. List of Figures

Figure	1.	Map of Slaughterhouse Locations	17
Figure	2.	Flow chart for Wet Blue Tanning	28
Figure	3.	Suggested Layout for Wet Blue Tannery	34
Figure	4.	Flow chart for Hair-On Tanning	37
Figure	5.	Flow chart for Vegetable Tanning	42
Figure	6.	Suggested Layout for Vegetable Tannery	48
Figure	7.	Flow chart for Reptile Tanning	51

II.2. List of Tables

Table	1.	General Statistics	10
Table	2.	Livestock Populations	13
Table	3.	Cattle Populations by Province	14
Table	4.	Cattle Populations by Ranch	15
Table	5.	Slaughtering Throughput - Major Abattoirs	18
Table	6.	Slaughtering Throughput - LDC - First Q. 1988	19
Table	7.	Licensed Slaughterhouses	20
Table	8.	Unlicensed Slaughtering Facilities	21
Table	9.	Exports of Wet Salted Hides and Skins	23
Table	10.	Hide Availability by Type	24
Table	11.	Actual and projected Leather usage in PNG	41
Table	12.	Imports of Leather	55
Table	13.	Imports of Leather goods and Shoes	55

III. Summary of Recommendations

- A. Commence planning for 10,000 hide wet blue tannery at Lae, so that production could commence in two years time for export.
- B. Set up small hair-on tanning unit in Bulolo and follow with leathergoods production to utilise product.
- C. Carry out market research into local sale of reptile skin products and if volume is sufficient set up reptile tanning plant in Wewak to use local crocodile, snake and lizard skins.
- D. Carry out countrywide market research into footwear and leathergoods consumption to assess the viability of setting up a vegetable tannery for local consumption. Such a unit would not be profitable alone but could be combined at Lae (or possibly at Madang).
- E. Amend Slaughter Act so that hide becomes property of the abattoir.
- F. Amend branding regulations to improve skin quality.
- G. Carry out instruction on raw hide selection and implement grading system to give increased returns on exported raw hides.
- H. Interested parties and government counterparts should visit operational units overseas and also overseas fairs to gain experience of the product.
- I. Upgrade slaughtering and curing facilities to give better quality hides.

IV. Introduction

IV.1. Scope of Enquiry

To review existing studies on leather industries in PNG, to assess potential locations for establishing tanneries and to prepare several profiles for tanneries using local hides and skins.

IV.2. Form of the Enquiry

The duration of the study was 10 weeks excluding travel time. The period spent in PNG was 20/3/88 - 25/5/88 and 7 days were spent at UNIDO, Vienna before for briefing and 2 days after for debriefing. The time in PNG was split as follow:

- 2 weeks in Port Moresby reviewing previous reports.
- 10 days in Lae consulting with interested parties
- 1 day in Goroka " " " "
- 2 days in Mt Hagen " " " "
- 5 days in Madang " " " "
- 2 days in Wewak " " " "
- 9 days in Port Moresby area " "
- 1 day in Popondetta " " " "
- 10 days collecting costings etc.
- 2 weeks compiling and typing report

A list of people contacted is included in Annex A.

V. General Background

Although Papua New Guinea is one of the largest in the Pacific Region in terms of size, covering 462,840 sq. km; it has very small population - only estimated at 3.8 million (1987). Geographically it is very diverse with high mountain areas and flat coastal plains.

It is divided into four regions - Papuan, New Guinea Mainland, Highland and New Guinea Islands, and comprises 19 provinces each with its own provincial government.

Some 80% of the population exists on subsistence farming and over 50% live in the Highland Region.

Major exports include Gold, Copper, Coffee, Cocoa, Copra and Palm Oil which in 1985 accounted for 88% of the total value.

At present there is no tanning industry in the country and there is no tradition of leather or leather goods manufacture because large livestock in any quantity is a relatively new introduction. Any cattle hides that pass through the major slaughterhouses are at present salted and exported in that state, similarly both farmed and hunted crocodile skins - of the fresh and salt water varieties - are exported in the wet salted condition.

Strenuous efforts are being made to build up a shoe making and leathergoods industry and as can be seen from the leather products import figures there is considerable potential for import replacement in this field. There is one operational unit in Port Moresby which is both a production facility and a central training unit. It employs 25 people of whom 5 are trainees and had a turnover of K93,600 in 1987.

A wide variety of products is made including Sandals, Belts, Wallets, Handbags and all manner of items for the disciplinary services. Its annual consumption of leather of all types is 8,000 sq. ft. and plans are advanced for a small d.m.s. shoe production for both military and mining use.

Other projects in leathergoods production are at the planning or implementation stage in Mount Hagen, Madang and Wewak and small quantities of leather are regularly used in the Artificial Limb Centre at Lae, Lae Sheltered Workshop, Pes Catholic Mission Leprosy Centre and various shoe repair units throughout the country, also a study has been done for a safety shoe unit in Lae.

Table 1. General Statistics

		1983	1984	1985	1986	1987
Population	million	3.5	3.6	3.7	3.8	3.8
Leather Footwear Imports	Km	N/A	2.3	2.5	2.7	N/A
Total Leather goods Imports	Km	N/A	2.8	3.2	3.4	N/A
Leather Imports	K'000	N/A	6.6	10.8	9.5	N/A
Hide Production	'000	15.1	14.5	11.6E	11.8E	11.7E
Hide Price ex abattoir	K	1-2.5	1.0-3.0	1.0-5.0	1.0-5.0	6.0-10.0
Hide Price exported	K	N/A	16.0	N/A	N/A	20.0-25.0
Hides % exported		N/A	69	76	83	84
Leather goods production	K'000	N/A	N/A	72.5	66.1	93.6

Source N.S.O. D.P.I. var.

VI. Livestock and Raw Skin Availability

VI.1 Livestock Population

A) Cattle - Cattle were introduced into PNG in some 100 years ago and in the 1960's and early 1970's their numbers rose steadily to a peak of 152,000 in 1976, since then there has been a fall until 1986 and it is anticipated that there will be a small increase over the next few years with the introduction of Grain-Livestock farming and a better utilisation of land in the Markham-Ramu valleys.

As can be seen from Table 3, the percentage of animals at large ranches is tending to increase against village and small-holding herds above the 1976 levels.

There is no specific breed most animals being a cross between zebu type cattle and Brahman or Droughtmaster from Australia and all animals are relatively disease free, the main defect to attack the skin being tick and then only around Port Moresby and in Western Province.

There is a small incidence of Screw Worm Fly - 'Chrysomia Bezziana', and also Buffalo Fly - 'Siphona Exigua' but these do not cause much skin damage.

The livestock regulations insist that cattle are branded on the hind quarter and this is a major factor in down-grading the quality of the resultant hide - in fact there are some indications of multiple branding which further down-grade the quality, and some thought should be given by the D.A.L. to altering this requirement.

B) Buffalo - Buffalo were originally introduced early this century, but the present numbers largely came from animals reintroduced some 10 years ago. Problems were encountered with eradication of T.B. and the majority of the herd was held in quarantine until 1987 when some 1,700 were slaughtered, retaining only 300-400 for breeding trials. Any other animals distributed throughout the country are mainly in village situations as draught animals.

They are disease and defect free other than the T.B. problem and if in sufficient numbers their hides would be valuable source of leather.

C) Sheep - These were introduced about 100 years ago from the S.E. Asian region and were of Priangan origin. In recent years, much effort has been put in to build up stocks to distribute to small holders and villagers. The current breeding programme is with Priangan - Corriedale cross, which are giving 100% lambing and extension officers are also trying to promote the value of the wool and the skin as part of the value of the whole animal. As yet there are not enough sheep to produce sufficient skins to be viable but if the rapid increase continues, within five years they will be of marketable quantities.

There is a big problem with screw worm fly but it is easily treated, and up to present there have not been enough skins available to analyse its effect on skin quality. Fungus growth caused by 'Dermotophilus Conolensis' may also present a problem essentially causing fleece rot, but in extreme cases may cause skin damage.

D) Goats - Originally imported around the turn of the century, until recently there was no official support for a breeding programme, however over the last two years more support has been forthcoming as small-holders are happier with the small size of the goat, compared with the large size of cattle. They are mainly mixed breeds crossed with feral Australian or New Zealand breeds and give over 100% reproduction rate. Trials are also being carried out with Angora on a small scale.

At present the number of animals is small but in the future the skins could be an additional input to any tannery with very little skin damage caused by disease.

E) Deer - Indonesian Rusa deer which were introduced to the island some 60 years ago are feral and are to be found in large migratory numbers in Western Province. They suffer from ticks, screw worm and buffalo fly to a minor extent, and until now, due to the lack of infrastructure of the area, have not been of commercial importance but projects are now being investigated to extract some 5-6,000 deer annually and the supply of hides could be a useful source of income to a project and a supply of hides to any tannery.

F) Crocodiles - Papua New Guinea is the only country not to have banned the killing of wild crocodiles, but because of the very successful conservation programme introduced in 1950's their numbers seem to be on the increase, despite the fact that 3/5 of the skins exported annually are from the wild.

There are two large commercial farms - one in Lae run by Mainland Holdings having some 25-30,000 stock and one in Port Moresby (Ilimo Farms) wholly owned by ICPNG with 5,000; as well as several smaller farms each having between 500-1,000. The annual farm kill is in the region of 10,000. The majority of the farm stock is of the fresh water variety.

Table 2

Livestock Populations

		1980	1981	1982	1983	1984	1985
Bovine	'000	130	126	123	122	121	123
Sheep	'000	2	2	2	1	1	2
Goat	'000	16	16	16	16	16	16
Buffalo	'000	-	-	-	-	2	2

Source F.A.O.

Livestock Populations

		1980	1985	1986	1987
Bovine	'000	127	111.5	110	110
Sheep	'000	2.8	4.4	N/A	8-9
Goat	'000	2-6	5.5	N/A	6-10
Buffalo	'000	2	2.7	N/A	0.6
Deer	'000	100	100	100	100
Farm Crocodile	'000	N/A	27	30	35

Source Ashworth & Assoc. D.A.L.

Table 3.

Cattle Populations by Province

Province	1976	1985	1987
Central/NCD	12,850	13,460	13,000
Oro	9,800	5,400	5,100
Milne Bay	5,500	3,200	N/A
E. Sepik	10,300	7,000	3,500
Morobe	55,250	43,500	51,600
Madang	15,050	13,590	14,500
S. Highlands	4,650	3,310	N/A
E. Highlands	13,550	3,100	3,000
W. Highlands	10,750	7,400	9,000
New Ireland	2,300	2,300	2,000
W. New Britain	1,000	3,400	5,000
E. New Britain	2,150	1,900	2,000
Others	9,600	3,990	1,300
TOTAL	152,750	111,550	110,000
% on Large Ranches	68%	60%	71%

Source - var.

Table 4 -

Large Cattle Populations by Ranch

Ramu sugar - Ranches at Gusap, Leron, Munum, Narakapor - total cattle head - 16,000.

Agricultural Bank - Ranches at Yaraba (3,000) Zivasing (6,500) Sugu (800), Huris (700), Bogia (1,000), Rigo (2,000) total cattle head - 14,000.

Investment Corp. of PNG - Ranch at Jimi River, total cattle head - 6,000.

L.D.C. - Ranches at Erap (1,500), Baiyer River (3,400), Lannakalana (900), Zuguru (600), total cattle head - 6,400.

Markham Farming (Collins and Leahy) - total head - 5,000.

Dumpu Cattle Ranch - total head - 5,500.

Mountain View Estates (Atlas Steel Pty) - total head - 4,000.

Koitaki Plantations (ANGCC) - total head - 3,000.

Sasiang Pty - total head - 3,000.

Rumion Pty - total head - 3,000.

Kanosia Estates Pty (SIPEF) - total head - 3,000.

Elcom (Yonki) - total head 1,500.

PNG Forest Products (Bulolo) - total head 1,600

D.A.L. - small units around country - total head 1,000.

Total large ranch cattle population - 73,000.

VI.2. Slaughtering Facilities and Output

The seven major slaughter houses in the country are run by the Livestock Development Corporation and account for 90% of the official slaughtering see Table 5. They appear to operate fairly efficiently although well under capacity, with only Lae killing a viable number.

Their facilities are adequate for their throughput although sometimes their chiller capacity is a restriction.

The technique used in removing the skin from the carcass could in many cases be improved by the introduction of vertical skinning from start to finish instead of partially skinning as a trolley which is not only more difficult but harder work because it involves much bending down. This improvement could in most cases be introduced fairly quickly and cheaply by installing simple steps and platforms as are in use at Lae.

In general more care should be taken when flaying using sharper knives and trimming off more fat, to give a higher quality hide with fewer cuts and damage to the flesh.

Once the hide has been removed from the carcass it is generally piled and salted and the effectiveness of this curing varies greatly from unit to unit.

A major problem exists, that, under the Slaughter Act the hide remains the property of the seller and not the slaughterhouse making a centralised collection and curing system very difficult to manage; and some thought should be given to amend this, so that the seller is fairly compensated for the skin but it can be retained by the slaughterhouse which will then have more incentive to flay the skin properly and to salt and store the skin under better condition.

In the meantime, in some units, the amount and distribution of salt applied should be improved and storage conditions upgraded so that surplus liquids drain away properly and there is an adequate air flow around the skins.

There are some 20 other licensed slaughterhouses in the country which are generally run by Plantations, Missions or Local Government - these are listed in Table 7. The throughput in these units is very small and the facilities available for good flaying restricted, however the quality of the cured hide being offered for sale could be improved greatly by better salting and storage.

Small unlicensed slaughtering facilities also exist in the more remote areas where cattle are killed only for local consumption and the supply of hides available from these is an unknown quantity but could be a useful additional source. Table 8.

At present, other than cattle and pigs from which no skins are produced, few other animals pass through the slaughterhouses although with the scheduled build up of the sheep and goat stocks this number should increase dramatically over the next five years.

Crocodiles are farmed and the killings amount to 40% of the skins exported annually, the remaining 60% comes from wild killings.

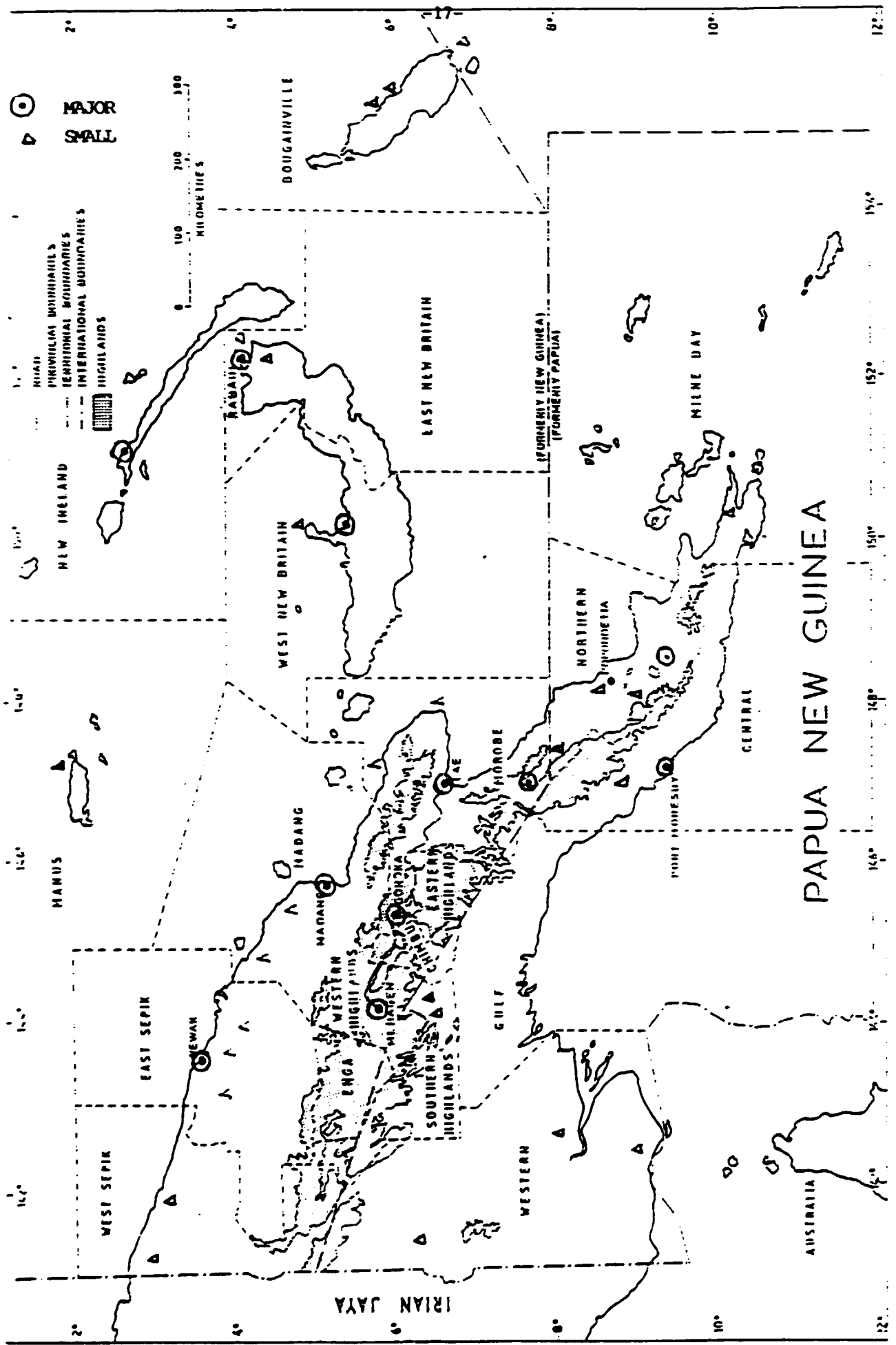


FIGURE 1: SLAUGHTER HOUSE LOCATIONS

Table 5. Slaughter Numbers of Major Slaughterhouses

	Owner	1964		1965		1966		1967	
		Cattle	Other	Cattle	Other	Cattle	Other	Cattle	Other
Goroka-Tameliki	LLC	1,056	-	386	-	70	3	1,154	30
Lae-Central	"	6,105	-	5,717	2	5,917	1	4,438	1
Madang-Sagalau	"	792	-	765	-	808	-	862	-
Mount Hagen-Korn Farm	"	806	-	573	2	706	-	1,060	15
Port Moresby-Tiaba	"	1,751	-	1,531	8	1,329	2	2,042	
Rabaul-Kurakakaul	"	278	-	299	-	425	-	429	1
Wewak-Warriman	"	454	-	N/A	-	N/A	-	259	-
Kavieng	Prov.Govt.	245	-	317	-	238	-	248	-
Bulolo	Plant	364	-	281	-	507	-	248	-
Kimbe	Prov.Govt.	N/A	-	151	-	97	-	87	-
Yareba	Ranch	635	-	464	-	203	-	400-500	-
Vanimo	Mission	65	-	60	-	103	-	60	-
Others		1,918		1,061		646		546	
TOTAL		14,474		11,606		11,606		11,706	

Other slaughterings include sheep, goat, buffalo, deer and totals from smaller units.

Source D.F.I./L.D.C.

Table 6

Slaughtering Numbers of LDC Slaughterhouses

First 1/4 - 1988

Goroka - Kamaliki	242
Lae - Central	1198
Madang - Sagalau	214
Mt Hagen - Kornfarm	232
Pt Moresby - Tiaba	425
Rabaul - Kurakakaul	122
Wewak - Warriman	39

TOTAL	2472
	=====

Total countrywide slaughter - 2754

Table 7.

Licensed slaughterhouses excluding LDC

Name	Location	Operator	Average Annual Slaughter
Tamat	Lorengau-Manus	Provincial Govt.	2
Tigak	Kavieng-New Ireland	" "	268
Dylup	Dylup-Madang	Dylup Plantation	31
Bainyik	Maprik-E. Sepik	Sepik Agric. College	68
Vudal	Rabaul-E. New Britain	Agric. College	8
Bulolo	Bulolo-Morobe	PNG Forest Products	346
Kerei	Arawa-N. Solomons	Provincial Govt.	6
Nahavio	Kimbe-W. New Britain	" "	12
Mamba	Kokoda-Oro	Plantation	50
Yareba	Safia- "	Agricultural Bank	310
Popondetta	Popondetta-Oro	Popondetta Agric.Col.	107
Awaba	Awaba-Western	Mission	35
Ossima	Vanimo-W. Sepik	Mission	66
Sugu	Kagua-S. Highlands	Agricultural Bank	N/A
Gila Gila	Alotau-Milne Bay	Plantation	N/A
SPLS	Urmo-E. Sepik	D.A.L.	N/A
Wiru	Pangia-S.Highlands	Agricultural Bank	N/A
Sialum	Sialum-Morobe	Provincial Govt.	not open yet
Feldsbach	Pinschhafen-Morobe	Mission	175
N.S.A.F.	Kieta-N. Solomons	Plantation	N/A
Wandumi	Wau-Morobe	"	N/A
Lotogam	Kimbe-W. New Britain	"	N/A
Popondetta	Popondetta-Oro	Provincial Govt.	due to open Aug./88

Table 8

Unlicensed Slaughtering Facilities

(ie those not licensed to sell meat, because they do not meet the minimum hygiene requirements or are not completed).

Bogia	-	Madang Province
Talasea	-	W.New Britain Province
Tapini	-	Central Province
Aitape	-	W.Sepik Province (1 local council, 1 mission)
Angoram	-	E. Sepik Province (not operating)
balimo	-	Western Province
Koroba	-	S.Highland Province
Kiunga	-	Western Province

VI.3.

Sales of Wet Salted Hides and Skins

From the late 1970's until 1987 there was only one company dealing in raw hides in Papua New Guinea, and that was Lings Cattle Hides operating from Lae. They regularly exported in the region of 10,000 wet salted hides annually, mainly to Hong Kong, and they were paying K2-5 per hide from the butchers (1986).

At the beginning of 1987 Pacific Wholesale Freezers of Lae entered the market and the maximum price per hide rose to K10 depending on the quality of flaying and the average hide weight. - those from Lae and Mount Hagen in general being heavier than those from Port Moresby or Wewak. In 1987 Lings share of the market dropped to 5,700, with PWF exporting around 5,000.

Both companies supply salt to the slaughterhouses and pay LDC K2.0 for storage and K1.5 for labour of salting per hide, on top of the K6.5 - 10.0 they pay the butcher. Lings now only sell to Hong Kong, and PWF to UK at an average price of US\$1.00-1.40/kg. They both export without any further trimming and grading of the hides either by quality or weight, so that the price obtained overseas is very low. It would seem sensible that even a basic selection into the International weight ranges, together with minimal trimming should be introduced because that would give an immediate increase in sales value.

At present the organisation of LDC is in a state of flux due to the government's stated policy of privatisation and it remains to be seen whether the abattoirs remain in semi-government hands or in private hands.

The export of crocodile skins is better organised as it has been carried out since the 1950's and the value of the skin is higher giving greater incentive to market it. The majority of skins is exported to France and Japan at an average price (1987) of K16/inch/belly width.

60% of the skins exported are wild crocodile and the remaining 40% are from farms. A selection is made based on the number of cuts in the skin and I, II and III grades are exported, although the price paid for III grade is low and possibly more value would be gained by tanning locally.

A list of the main exports of skins is included in Annex D and the number and value of hide and skin exports is given in Table 9.

Table 9. Number and Value of Exports of Wet Salted Cattle Hides and Crocodile Skins

	1964		1965		1966		1967	
	Kg	K'000	Kg	K'000	Kg	K'000	Kg	K'000

Total								
Cattle Hides-No	10,100		10,500		9,800		9,800	
Hong Kong	230,341	142.85	230,561	129.27	165,158	130.03	101,735	82.78
United Kingdom	-	-	-	-	160	0.08	88,070	36.03
Singapore	-	-	-	-	39,533	27.70	-	-

	NO	K'000	NO	K'000	NO	K'000	NO	K'000

Crocodile-Fresh	21258		20174					
Water								
France		998.43		949.89		1,425.85		837.06
Japan		711.96		834.98		571.29		655.71
Singapore		-		0.67		70.29		25.36
Others		7.91		-		0.66		-
Crocodile-Salt	4770		4668					
Water								
France		272.40		290.66		236.98		199.36
Japan		291.85		230.70		161.26		160.22
Singapore		-		0.11		8.46		0.91
Others		5.84		62.85		0.29		-

Others - include Hong Kong, Taiwan, Thailand, Australia.

Source: National Statistics Office, D.E.U.

Table 10

Breakdown of Hides Available by Type (1)

	1981	1987
	—	—
Bulls	4.4	3.1
Cows	24.2	25.4
Heifers	12.6	13.5
Steers	55.0	56.3
Heavy Calves	2.9	1.6

VII. Tannery proposals - the basic processes are discussed in Annex G.

VII.1. Although the availability of cattle hides is not large, there are various possibilities for tannery operations within the country and these are discussed in following sections. The question of effluent treatment is one factor which is gaining importance worldwide, particularly now that chrome is recognised as a toxic waste and this question will be dealt with in a separate section. (See Annex H).

The quantity of crocodile skins available would make a medium reptile tannery a possibility but the difficulty of one company obtaining all the skins and the relatively low add-on price of wet blue tanned skins compared with the high raw value makes it less interesting. Although taken to the finished stage would increase its value 5 times.

Some discussions have taken place between ICPNG and a S.E. Asian company to start a crocodile tannery and trials are to be carried out over the next 12 months tanning two batches of 500 skins each in Malaysia to confirm the acceptability of the product and there are also plans to increase Ilimo Farm crocodile population to 20,000 over the next few years.

A list of people or firms interested in tanning is given in Annex K.

VII.2. Tannery for the production of wet blue hides

A. Main Points	-	Wide Availability	-	10,000/annum
	-	Location	-	Lae
	-	Raw Hide Price	-	K20
	-	Selling Price	-	K3.0/kg
	-	Labour involved	-	15
	-	Capital investment	-	K754,200
	-	Processing	-	Chrome tanning to wet blue stage
	-	Expected footage	-	35 sq ft/hide
	-	Working days	-	250/annum
	-	Total process time	-	7 days - raw - samm.

B. It is suggested that the tannery processes from raw to the wet blue - chrome tanned stage as there is a ready market worldwide for this class of material, rather than to continue processing to the finished stage which would involve much larger capital expenditure, much more technical and quality control and a much greater sales/marketing effort.

A list of possible countries and companies who would be interested in wet blue leather is included in Annex E.

C. In this profile the annual availability of hides is taken to be 10,000 which is the number easily obtained from the major slaughterhouses (excluded those that would be taken up if projects in 7.3 and 7.4 were initiated). It is probable that this number would increase as the existence of a tannery became known and people became aware of the value of a hide.

Also if the proposed venison scheme in Western Province became viable a further 5-6,000 hides could be added to the production.

Assuming there to be 250 working days per year this would initially give a daily throughput of 40 hides.

D. Lae is taken to be the ideal location for such a unit because the slaughterhouse in Lae has the biggest throughput, reducing transport costs and also salting and curing costs as the hides could be processed fresh, and also because it has the best transport links with other slaughtering centres.

E. Processing details - to take the processing to the wet-blue tanned stage would involve the following :- see Fig 2 for Flow Chart.

Washing by paddle to remove salt, blood, dirt etc, with water only - time involved 1 hour only.

Soaking by paddle to return the hide, as near as possible to the condition that it came off the animal and to reverse the dehydration process caused by the salt. This normally takes 4-24 hours with water and a wetting agent depending on condition of hide.

Liming - this is a combination of unhairing and a modification of the fibre structure for subsequent tanning operations. A combination of lime and sodium sulphide is generally used which pulps the hair for easy removal. This generally takes up to 24 hours in a drum running intermittently.

Fleshing and unhairing - is done mechanically on a machine with a bladed cylinder.

Deliming, Bating, Pickling and Tanning - these processes are normally done one after the other in a drum - the first three are to ensure that the skin is in the correct condition and acidity for the tanning to occur successfully and involve the use of ammonia sulphate, an enzymatic bate, salt and acid and take 4-6 hours followed by an overnight stand in pickle. Tanning with basic chrome sulphate causes crosslinking of the protein fibres to convert the pelt into leather and then mild alkali such as sodium bicarbonate is used to fix the process. Usually this takes 6-8 hours, with an overnight stand and a further 1 hour run together with an antimould agent to protect against bacterial attack during storage and shipping in the wet state. After tanning the leather is piled for a minimum of 24 hours to complete the tanning reaction.

Sammying - a mechanical process to squeeze out excess water and to flattens the skin prior to weighing and packing.

At all stages where the hides are piled awaiting processing they should be covered with polythene to prevent drying out and control is essential to ensure a uniform product. (See Annex I)

F. Machinery and Equipment

The following machinery and equipment would be required to maintain the production:-

Paddles - for the washing and soaking of the hides. The size to be around 1500 mm deep and 2400 mm long with three phase, 5 HP motor to drive paddle at 15-20 rpm.

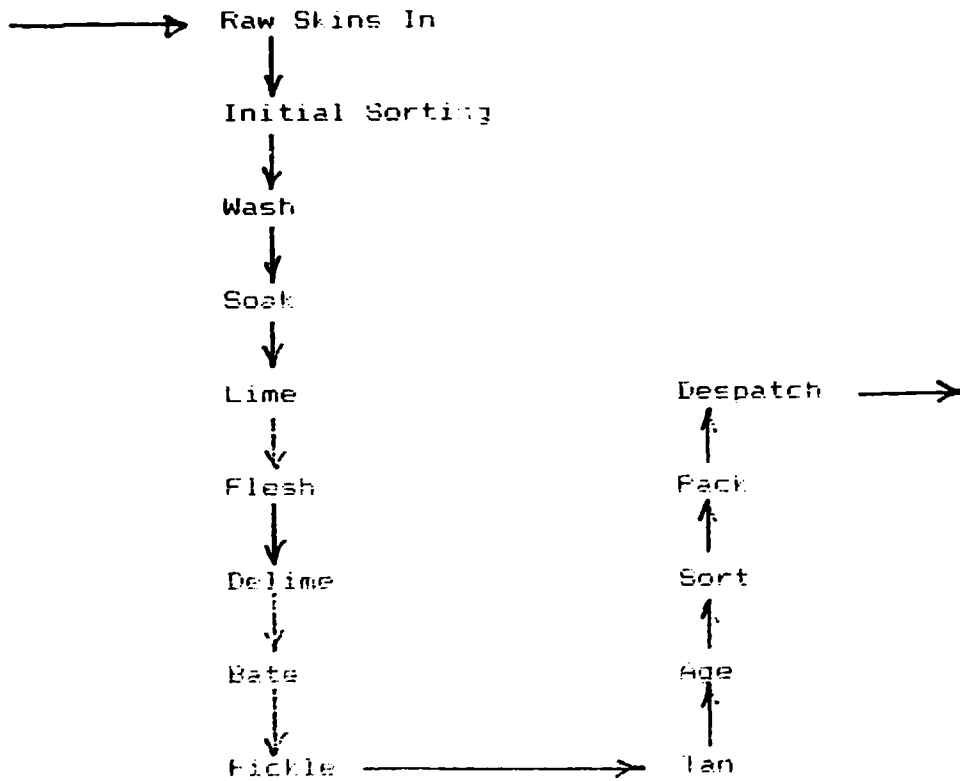
Drum - the liming, deliming, bating, pickling and tanning. The size should be approximately 2400 mm diameter and 2100 mm width powered by a three phase 15 HP motor with variable speed gearing and direct belt drive.

Fleshing Machine - to be able to deal with whole hides, the working width should be 2700 mm, but could be of fairly basic mechanical or hydraulic operation with three phase 20 HP motor.

Sammying Machine - as above should have a 2700 mm working width, hydraulic operation with three phase 20 HP motor.

Additional Equipment - One set of industrial scales to weigh up to 1500 kg, one set of scales for chemical weighing up to 200 kg, mixing vessels and funnels into drums, overhead gantries, quality control and testing equipment and water pump. Possible suppliers are included in Annex C.

Figure 2 Flow Chart for Wet Blue Tannery



The quantity and cost of the machinery is estimated to be :-

	Quantity	Motor Capacity	Cost (K)
Paddle	2 No	5 HP	6,000
Drum	4 No	15 HP	20,000
Fleshing Machine	1 No	20 HP	38,000
Sammying Machine	1 No	20 HP	58,000
Civil Engineering for drums and paddles	Lump	sum say	5,000
Scales and Additional equipment	Lump	sum say	7,000

N.B. Second hand equipment would cost about 60% of new.

G. Labour requirements - this proposal is based on the whole operation being nationally run at the end of the second year of operation. An expatriate technician would be employed for the first two years, however before that it is recommended that the national technician should spend one year at a tanning school abroad, so that he is aware of the processing involved before work starts and he should then work with the expatriate technician. An expatriate foreman should be employed for fifteen months to train a national both in the machine and drum work involved but also in personnel management.

H. Breakdown of the labour requirements is as follows:-

	No.	Duration	Remuneration/a K'000
Manager	1		14
Expatriate Technician	1	2 yrs.	28
National Technician	1		10
Expatriate Foreman	1	1 yr. 3m.	20
National Foreman	1		7
Accountant	1		8
Secretary	1		5
Production Workers	10		

Skilled/unskilled labour rates are based as Department of Labour and Employment minimum rates at 1.1.88.

Fringe benefits for expatriate labour including housing, travel, transport etc. are taken to be K72,000/annum total.

The labour requirement during start-up and the initial production period is shown below. It is assumed that it will take one year to set up during which time the national technician will be overseas training. Production in the first year will be 80% and full production will be achieved in year 2.

	Start-up year	Production year		3
		1	2	
Manager	1	1	1	1
Expatriate technician	0.5	1	0.5	-
National technician	overseas	1	1	1
Expatriate foreman	0.25	1	-	-
National foreman	0.25	1	1	1
Accountant	0.5	1	1	1
Secretary	0.25	1	1	1
Production workers	1	10	10	10

I. Chemical usage and costs

Assuming an annual throughput of 10,000 Hides of average weight 20 kg giving a total weight of 200,000 kg.

A list of possible chemical suppliers is included in Annex B.

Chemical	% Required	x 1000 Kg Usage	K Cost/Mt	K Total
Wetting agent	1	2	1,600	3,200
Lime	2	4	230	920
Sodium Sulphide	4	8	580	4,640
Ammonium Sulphate	1	2	460	920
Enzyme Bate	0.5	1	1,000	1,000
Salt	10	20	239	4,780
Sulphuric Acid	1	2	600	1,200
Basic chrome sulphate	10	20	1,400	28,000
Sodium bicarbonate	1	2	360	720
Antimould	0.1	0.2	2,520	504
TOTAL COSTS				45,884

J. Utilities:-

Water - Water Usage	% Required	'000 litre Daily Use	'000 litre Annual Use
Washing	1,250	10	2,500
Soaking	1,250	10	2,500
Liming	500	4	1,000
Fleshing	250	2	500
Washing	250	2	500
Delime/Bating	250	2	500
Pickling	125	1	250
Tanning	125	1	250
Sub Total		32	8,000
General	Say	5	1,250
TOTAL		37	9,250

At a cost of K0.55/1000 litre = K5100/annum

Power - Total machine load = 110 HP = 82 KW
 Additional light and power say 5

KW

TOTAL 87 KW

Assuming the power factor to be 0.75 then the total current consumed over one year would be 87 x 8 hrs x 250 days x 0.75 = 130,500 KWH.

Electricity charges @ K0.149/KWH

.. Annual cost of power = K19,450

K. Land and Building Requirements

It is estimated that 2 acres (0.8 Ha/8000 sq m.) of land would be required to accommodate the building, effluent disposal and storage facilities, and the building size should be 7,000 sq ft. (650 sq m.).

A suggested floor plan is shown in Figure 3.

If possible the site near the existing slaughterhouse in Lae would be preferred, as there would be minimal transport involved in obtaining the majority of the hides.

Land prices in Lae are K15/m²,

8000 m² would cost K120,000

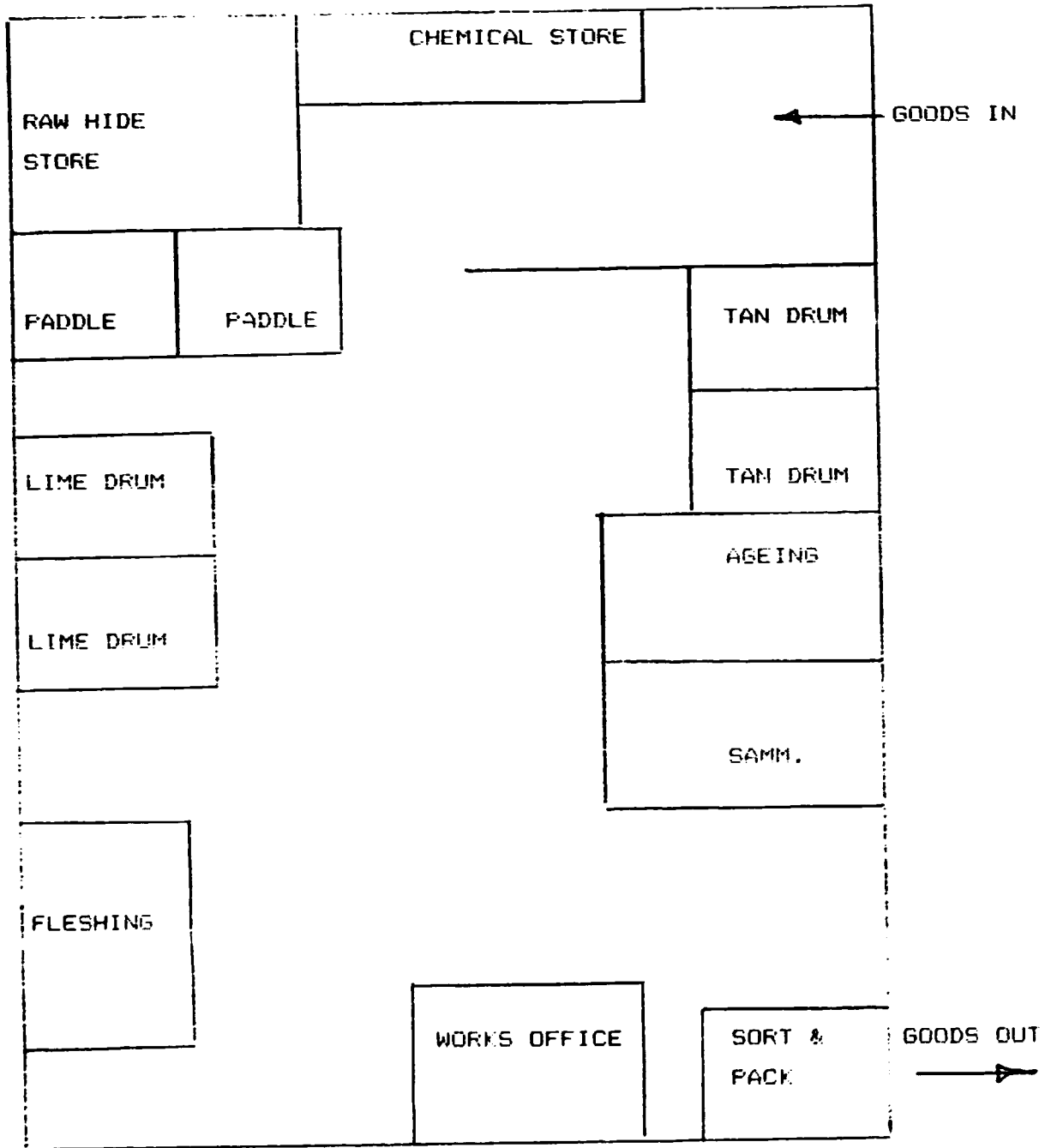
Building prices are K500/m²

650 m² would cost K325,000

The type of effluent treatment plant is discussed in Annex H but it is estimated to have a capacity of 265m³.

Alternative costings would be possible if the property at Lings Cattle Hides was available. See Annex J.

Figure 3 Suggested floor plan for wet-blue tannery



VII.3. Village tanning for hair-on leather

This project was proposed by a large company who are slaughtering in the region of 300 cattle annually, and who saw this as a means of developing a village based leather goods industry

Assuming the slaughter figure and an average size of hide of 35 sq ft this would give a monthly production of 850 sq ft which would be sufficient to develop a useful production of belts, coasters, table mats and other small leather goods possibly together with seat covers and the like which could be sold within PNG.

A. Main points	-	Hide Availability	-	300 /annum
	-	Location	-	Bulolo
	-	Raw Hide Price	-	K10
	-	Cost of Production price	-	K1.30/sq ft
	-	Labour Involved	-	1
	-	Capital Investment	-	K24,350
	-	Processing	-	Chrome tanned with hair on
	-	Expected Footage	-	35 sq ft/hide
	-	Total process time	-	10 days

B. Tanning process

Washing and soaking as in the medium tannery in Lae followed by a thorough scouring all in a paddle to produce a really clean hide. Fleshing could be carefully done by hand over a beam with a knife.

Pickling and tanning with chrome sulphate as in 7.2. before ageing for at least 24 hours. Then, if necessary, the hides could be retanned before fat-liquoring. Pickling, tanning and retanning and fat-liquoring would all be done in a drum.

The hides would then be struck out by hand to flatten the skin and remove excess water before lightly pegging out to dry.

Finally the hides would be dry drummed with damp sawdust to condition and soften then before buffing the backs to clean them up. A flow chart is included in Fig. 4.

C. Machinery and Equipment

The following machinery and equipment would be required.

- Paddle - for the washing, soaking and scouring of the hides. The size to be approx. 1500 mm deep and 1500 mm long with a three phase 5 HP motor.
- Drum - for the pickling, tanning, retanning and fat-liquoring. The size should be approx. 2400 mm diameter and 1800 mm wide with a three phase 15 HP motor.

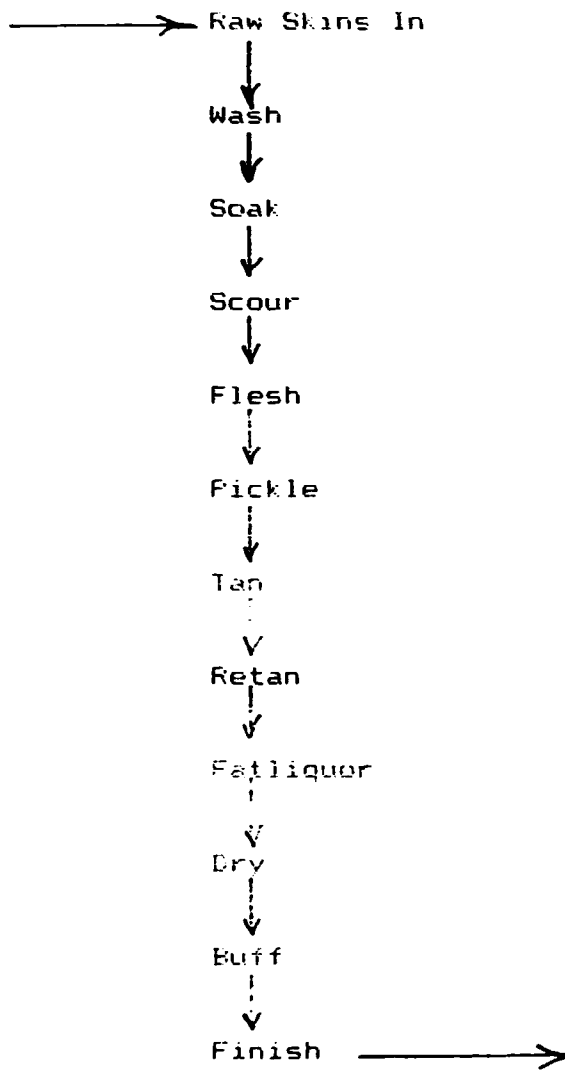
- Fleshing - Wooden Beam and Fleshing knife.
- Striking Out - Stainless Steel Inclined Table and Plastic bladed setting tool.
- Drying - Wooden Frames with pegs.
- Dry Drum - Similar size to the tanning drum with three phase 5 HP motor.

Additional equipment - one set of industrial scales to weigh up to 300 kg, one small set of scales to weigh chemicals, mixing vessels and testing materials.

The quantity and cost of machinery is estimated to be :-

(K)	Quantity	Motor Capacity	Cost
Paddle (local made)	1 No	5 HP	2,000
Drum (local made)	1 No	15 HP	4,000
Dry Drum (local made)	1 No	5 HP	3,500
Additional wooden equipment (local made)		lump sum-say	1,000
Additional equipment - scales etc.		lump sum-say	3,000
Civil Engineering of drums and paddles		lump sum-say	2,000
Total			K15,500

Figure 4 Flow chart for Hair-on Process



D. Labour requirements - as this proposal would be run in conjunction with the company's other operations it is envisaged that once the initial training period was completed, the whole process could be run with one additional skilled worker.

Labour Costs 1 Skilled Worker K3,750/annum

E. Chemical usage and costs :-

Assuming an annual throughput of 300 Hides with an average weight of 20 kg. Total weight 6,000 kg.

Chemical	% Required	Kg. usage	Cost/Kg.	Total Cost K
Wetting agent	1	60	1.57	94
Detergent	2	120	1.57	188
Salt	20	1,200	0.24	288
Sulphuric Acid	0.25	15	0.60	9
Formic Acid	0.75	45	0.84	38
Basic chrome sulphate	3	180	1.40	252
Sodium Bicarbonate	1	60	0.36	22
Neutral Syntan	3	180	1.20	216
Fat	10	600	1.20	720
Antimould	0.1	6	2.52	15
TOTAL COST				1,842

F. Utilities :-

Water -	Water Usage	% Req'd.	'000 litre Annual Use
	Washing	1000	60
	Soaking	1000	60
	Scouring	400	24
	Pickling	100	6
	Tanning	100	6
	Fatliquoring	100	6
	Sub Total		162
	General		24
	TOTAL		186

At a cost of K0.55/1000 Litre = K102/annum

Power - Total machine load	=	25 HP	=	19 KWH
Additional light & power		say		2 KWH
		TOTAL		21 KWH

.. Nominal cost of power say K600/annum.

G. Land and Building Requirements

It is assumed that this project would be integrated with existing operations, so that no additional funding in terms of land or buildings would be required.

Effluent would be treated in accordance with the guidelines laid down by D.E.C. A nominal tank volume of 10m³ is assumed.

VII.4. Small scale vegetable tannery

This proposal is to set up a small tannery capable of producing the majority of the domestic vegetable leather requirements, by using the output from one slaughterhouse of about 850 Hides/Year.

Assuming a footage of 35 sq ft/hide this would give an annual throughput of 29,750 sq ft.

The actual and projected leather usages by the various leathersgoods projects and leather users in PNG are shown in Table 8, but for this tannery to work efficiently it is necessary that all buyers try to specify standard products so that not too diverse a production is necessary. It is not envisaged that this unit would produce either sole leather or chrome tanned leather as this would involve excess capital expenditure for machinery.

A. Main Points	-	Hide Availability	-	850/annum
		Location	-	Madang
		Raw Hide Price	-	K20
		Sales Price	-	K2.75/sq.ft.
		Labour Involved	-	12
		Capital Investment	-	K600,500
		Processing	-	Vegetable tanned
		Expected Footage	-	35 sq ft/Hide
		Total Process Time	-	2-3 weeks

Table 11. Actual and Projected Leather Usages within PNG annually

	1987	Projected
Small Scale Industries - Pt Moresby -		
Sole Leather	-	-
Lt. Veg. Leather	7,000 sq ft	10,000 sq ft
Chrome Leather	4,000 sq ft	6,000 sq ft
Madang project -		
Sole Leather	-	400 kg
Lt. Veg. Leather	-	2,500sq ft
Chrome Leather	-	4,500 sq ft
Mount Hagen project -		
Sole Leather	-	400 kg
Lt. Veg. Leather	-	2,500 sq ft
Chrome Leather	-	4,500 sq ft
Various shoe repairers, sheltered workshops and artificial limb centre - estimated.		
Sole Leather	50 kg	50 kg
Lt. Veg. Leather	1,000 sq ft	1,000 sq ft
Chrome Leather	1,000 sq ft	1,000 sq ft
Lae safety shoe project -		
Chrome Leather	-	37,000 sq ft

B. Tanning Process -

The processing for this project involves complete processing from the raw skin to the finished product.

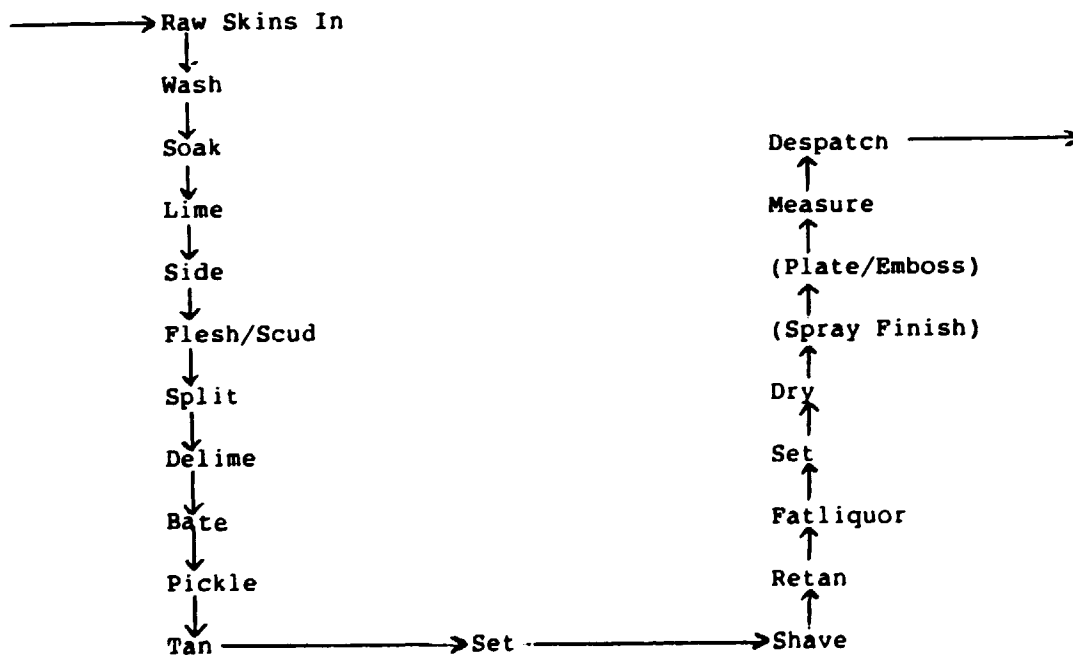
Washing, Soaking and Liming would follow a similar process to that used in the Lae unit using a paddle throughout. At some stage whether initially or after liming the hides would be cut into sides to make them more manageable and after liming would be fleshed and scudded by hand over the beam.

Deliming, Bating, Pickling and Tanning would then proceed using modern 'rapid-tan' type production methods in a drum.

After setting by hand, the sides would be shaved prior to Retanning and Fatliquoring, and then well drained, set out again and nailed out to dry.

Any dyeing and finishing necessary would be by hand spraying and plating at the end, prior to measuring, sorting and despatch.

F5 Flow Chart for Vegetable Tannery



C. Machinery and Equipment

The following machinery and equipment would be required for this type of project :-

Paddle - for the processing up to liming. The size should be 1500 mm deep and 2100 mm wide fitted with a three phase 5 HP motor to rotate paddle at 15-20 rpm.

Siding - Wooden trestle and knife - Trestle should be 2400 mm long.

Fleshing - Wooden beam and Fleshing knife.

Drum - for the processing delime to tanning, also for the retanning and fatliquoring. The size should be approx. 2400 mm diameter and 1800 mm wide with a three phase, variable speed 15-20 HP motor.

Setting Out - Stainless Steel Inclined Table with Plastic bladed tool.

Shaving Machine - 600 mm working width mechanical machine.

Drying - Wooden Frames and Nails.

Spraying - Hand Spray Gun and Booth, Compressor and Drying Frames.

Plating/Embossing Machine - Hydraulic with approx. 1200 mm x 600 mm plate size.

Measuring Machine - Pinwheel type machine 1500 mm working width.

Additional Equipment - Industrial scales up to 500 kg, industrial scales up to 100 kg for chemicals, mixing vessels and testing equipment etc.

The quantity and cost of machinery is estimated to be:

	Quantity	Motor Capacity	Cost (K)
Paddle (local made)	1 No	5 HP	3,000
Drum (local made)	1 No	20 HP	4,500
Shaving Machine	1 No	15 HP	15,000
Hand Spray Equipment	1 No	-	300
Plating Machine	1 No	10 HP	30,000
Measuring Machine	1 No	0.5HP	10,000
Compressor	1 No	0.5HP	600
Additional wooden equipment (local made)	lump	sum say	2,000
Additional equipment - scales etc.	lump	sum say	5,000
Civil engineering for drums, paddles, other machines.	lump	sum say	2,000

Secondhand prices are quoted here.

D. Labour Requirements

As there is a parallel proposal for a leather goods production unit at Madang it is assumed that there would be a joint manager appointed responsible for both productions so only half the cost would be attributable to the tannery, similarly for clerk and driver. It is recommended that a national technician be appointed well in advance so that arrangements can be made for overseas training, and then he could return in time to start production with the expatriate technician who would be on contract for 1 year. An expatriate foreman would also be employed for the first year to train a national foreman and the rest of the labour force. It is envisaged that the unit would be in full production by the end of the first year.

A breakdown of the labour requirements is as follows:-

	No.	Duration	Remuneration/an K'000
Manager	1/2		7.00
Expatriate technician	1	1 yr.	(28.00)
National "	1		10.00
Expatriate foreman	1	1 yr.	(20.00)
National "	1		7.00
Secretary	1/2		2.50
Skilled labour	2		7.50
Unskilled "	4		12.00
Driver/handyman	1/2		1.38

It is assumed that the cost of the expatriate labour would be met by overseas aid.

E. Chemical Usage and Costs

Assuming an annual throughput of 850 hides at 20 kg. each = 17,000 kg.

Chemical	% Required	Kg Usage	Cost/Kg	Total Cost K
Wetting Agent	1	170	1.57	270
Lime	2	340	0.23	78
Sodium Sulphide	4	680	0.58	394
Ammonia Sulphate	1	170	0.46	78
Enzyme Bake	0.5	85	1.40	119
Salt	10	1,700	0.24	408
Sulphuric Acid	1	170	0.60	102
Vegetable tan extract	10	1,700	1.20	2,040
Antimould	0.1	17	2.52	43
Auxiliary syntan	10	1,700	1.17	1,989
Oil	8	1,360	1.20	1,632
Dye	-	10	15.00	150
Pigment	-	200	1.00	200
Binder/Wax	-	500	1.00	500
Lacquer Emulsion	-	200	1.00	200
TOTAL COST				8,203

F. Utilities

Water:-	Water Usage	% Required	'000 litre Annual Use
	Washing	1000	170
	Soaking	1000	170
	Liming	1000	170
	Delime/Baking	200	34
	Pickling	100	17
	Tanning	100	17
	Retan/Fatliquoring	200	34
	Finishing	200	34
	Sub Total		646
	General		100
	TOTAL		746

At a cost of K0.55/1000 litre = K410/annum.

Power :- Total machine load = 51 HP = 38 KWH
Additional light & power say 5 KWH
TOTAL 43 KWH

Cost of Power at K0.149/KWH assuming power factor of 0.5 would be 43 x 0.5 x 8 x 250 x 0.149 = K6,407/annum

G. Land and Building Requirements :-

It is estimated that 2 Acres (0.8 Ha) of land would be required to accommodate the building, effluent disposal and storage facilities and the building size should be 8,000-10,000 sq.ft. (730-930 m²).

A suggested floor plan is shown in Figure 6.

A possible site near the existing slaughterhouse in Madang has already been identified, so that transport would be minimal and curing costs would also be reduced.

Land prices in Madang are K15/m²

.. 0.8 Ha would cost K120,000

Building prices are K400/M²

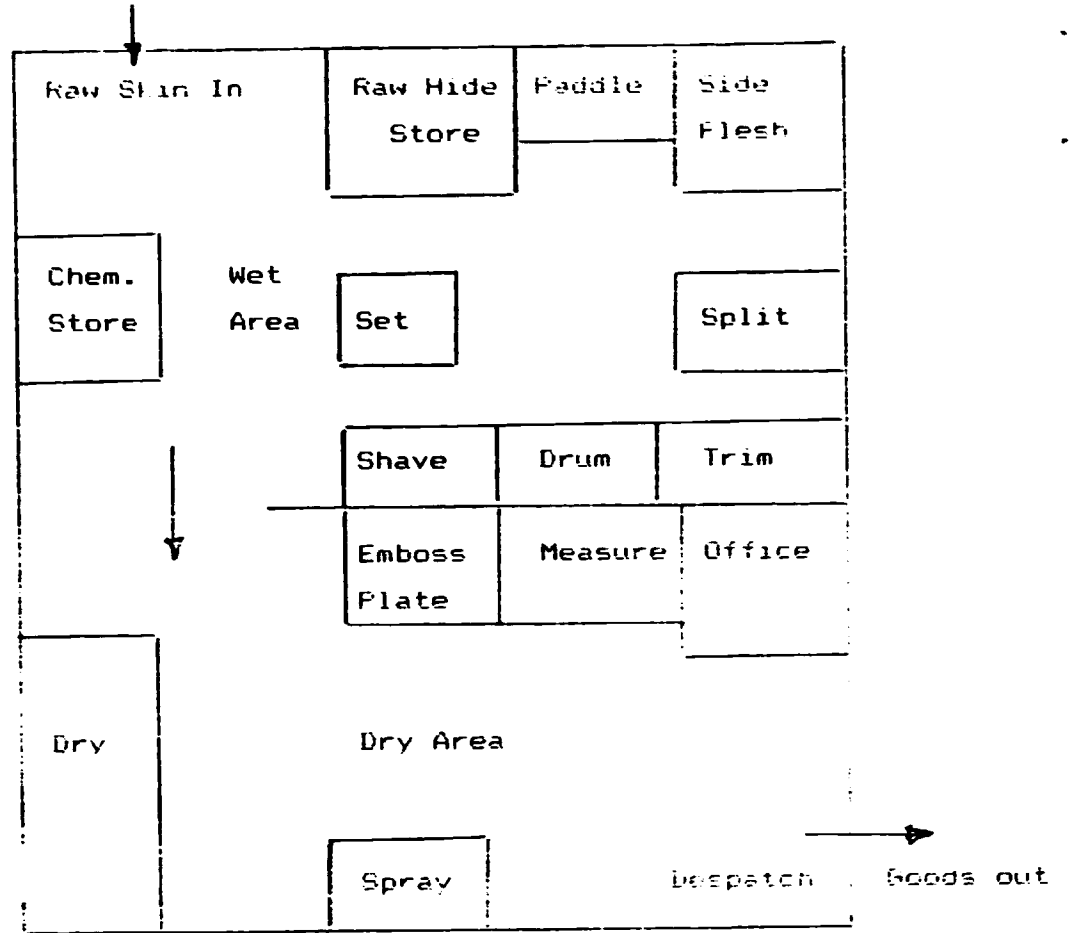
.. 900 m² would cost K360,000

however if it was a provincial government enterprise the land would be free of charge.

The size of effluent treatment plant would be determined by the D.E.C. but is assumed to be 10 m³.

Effluent is discussed in Section 7.6.

Figure 6. Suggested floor plan for vegetable tannery



VII.5. Village reptile tanning

This project was suggested after discussions with the Division of Commerce, East Sepik Province when it was noted that lower grade crocodile skins and the occasional snake and lizard skin were being discarded as there was no value for the skins. This project must be linked with a small leathersgoods production as an end use for the skins producing a variety of leathersgoods suitable for the tourist market.

In the region of 800-1000 third grade crocodile skins are available annually, as well as crocodile tails and reptiles, but it is assumed that in East Sepik there will be about 400 skins available annually.

There is already a person in Wewak, who has spent 9 months in India and 3 months in Indonesia on leather tanning courses particularly with respect to reptiles and has also spent some months on a leathersgoods training course at Small Scale Industries in Port Moresby.

- A. Main Points - Skin availability - assume 100 crocodiles & snakes
- Location - Wewak
 - Raw skin price - K40
 - Cost of Production price - K167/skin
 - Labour involved - 1
 - Capital investment - K21,560
 - Processing - Chrome tanning and pigment finishing

B. Tanning process - although the degree of processing and amount of chemicals used may vary, the processing flow is similar in all cases of reptile tanning, much care being necessary to ensure that the long, narrow skins do not get tied up by excessive mechanical actions. The main process would be as follows:-

Washing, Soaking and Liming in a pit or paddle with intermittent movement for a period between 7-14 days to ensure adequate opening up of the fibres, and descaling. Then the skins are well washed and brushed to remove the scales, and carefully fleshed and trimmed prior to conventional preparation for tanning i.e. deliming and bating, however crocodiles and lizards are usually bleached to a greater or lesser extent before pickling and chrome tanning.

The skins are aged for at least 48 hours to ensure adequate fixation of the tan and then sammed to remove excess moisture and shaved to a level substance. They are then neutralised and fat-liquored prior to setting out and hanging to dry in the crust stake. This is usually preferred with reptile skins so that the skins can be carefully selected in the dry stake for the correct quality required.

The selected skins are wet back with ammonia prior to dyeing and refatliquoring and then set out and pegged out to dry.

To finish the skins they are sprayed with several coats of season and fix and then glazed using a machine with a glass roller to give a smooth appearance and flatten the scale pattern.

A typical flow chart for reptile skins is shown in Figure 7.

C. Machinery and Equipment :-

The following machinery and equipment would be required -

Small concrete pit - for the washing, soaking and liming process. Size 1200 mm x 1200 mm approx.

Small drum - for the tanning and retanning operations. Size 1200 x 900 mm approx. with three phase 10 HP variable speed motor.

Hand spray gun, spray booth and compressor.

Reptile glazing machine for finishing the skins.

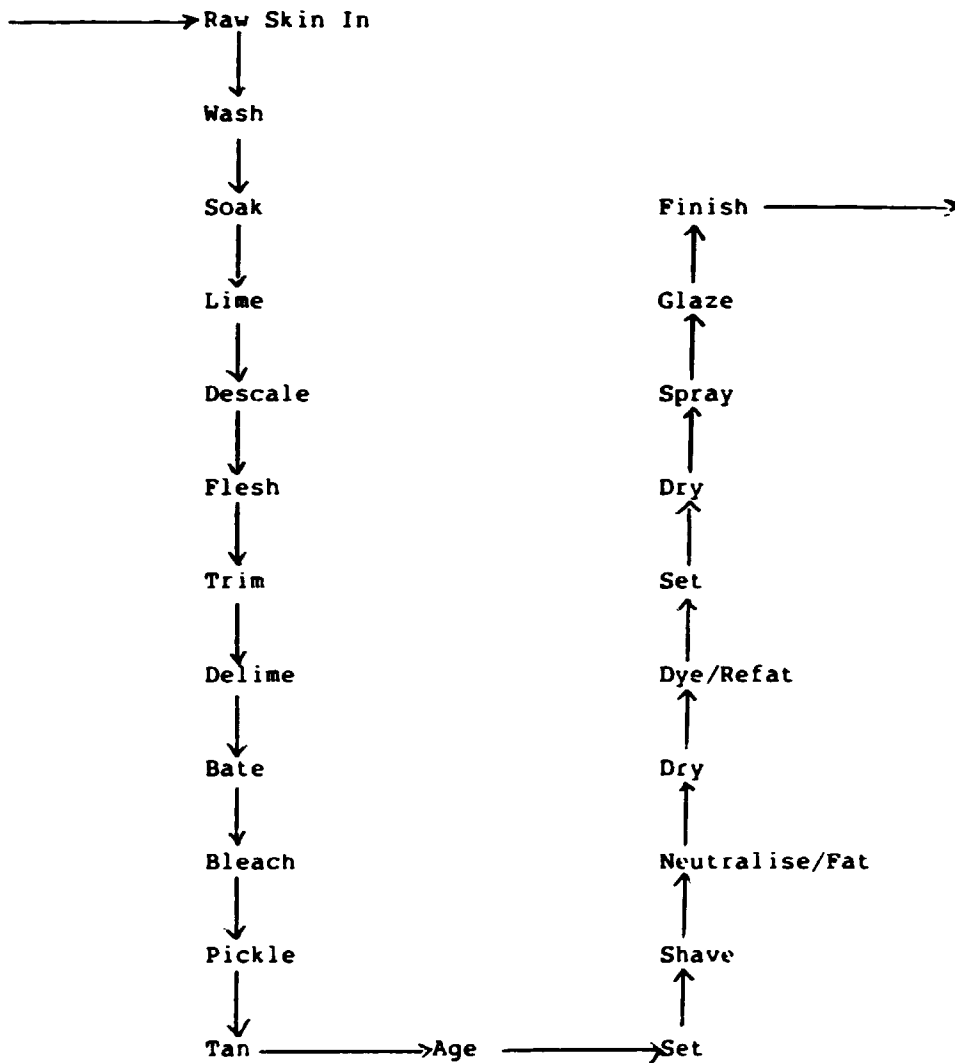
Additional equipment required would include a set of scales for weighing the skins and chemicals, mixing vessels, hand tools for fleshing and setting and basic testing equipment.

The quantity and cost of machinery is estimated to be :-

	Quantity	Motor Capacity	Cost (K)
Drum (local made)	1 No	10 HP	3,000
Glazing machine	1 No	5 HP	7,000
Hand spray gun	1 No	-	200
Compressor	1 No	0.5 HP	500
Civil engineering work for pit and machinery		lump sum say	1,000

Figure 7.

Flow chart for reptile tanning



Additional equipment - wooden (local made)	lump sum-say	500
Additional equipment - scales etc.	lump sum-say	1,500
TOTAL		K13,700

D. - Labour requirement - as this proposal would be run in conjunction with a leather goods production unit it is assumed that one person would be able to operate both productions together.

Labour costs 1 Skilled Worker K3,750/annum

E. - Chemical usage and costs :-

The following chemicals would be involved in the processing but as the number of skins processed could vary widely, a lump sum price has been allocated :-

Lime, Sodium Sulphide, Ammonia Chloride, Bate, Salt, Sulphuric Acid, Basic Chrome Sulphate, Potassium Permanganate, Sodium Bisulphite, Sodium Bicarbonate, Fat, Dye, Finishing materials.

Chemical costs say K1,000

F. - Utilities :-

Water - assume a annual water consumption of 50,000 litres, cost at K0.55/1000l would be = K30./annum

1 Power - nominal cost of power say K500/annum

G. - Land and Building Requirement :-

This project could be carried on in premises leased or rented from the Provincial Government so a nominal cost for these is assumed - say K1000/annum.

VIII. Summary of Leathergoods Projects

VIII.1. Small Scale Industries - Port Moresby - this unit was started about 5 years ago and currently employs 20 persons and is training 5 more. It produces a very wide range of products (possibly too many) ranging from sandals in all sizes and designs, through wallets and handbags, to all variety of items for the disciplinary forces. It uses both chrome and vegetable tanned leather in all thicknesses, mainly imported from Australia.

In 1987 its usage was 7,500 - 10,000 sq feet - 3,000 + feet of vegetable in 1.2 mm, 2.5 mm and 3.0 mm thicknesses; and 4,500 + feet of chrome in 0.75, 1.2 and 2.0 mm thickness.

It tenders for military contracts in competition with overseas manufacturers and this comprises some 60% of its business, of the remaining 40%, 2/3 is in sandals and the rest is split evenly between handbags, belts, shoes, wallets and small items.

There are plans over the next 2-3 years to instal a direct moulded sole (DMS) unit capable of producing 500 pairs per week and this would enable them to produce heavy work boots and shoes.

Table 11 gives the Leather Import Figures and Table 12 the imports of Leathergoods and Leather Shoes.

VIII.2. Mount Hagen - a study on leathergoods in Mount Hagen has been carried out by CFTC experts over the last eighteen months, some equipment has already been purchased and more is on order, a building has been identified and two persons have spent time training in Port Moresby. It is hoped to start production within the next 2-3 months. The proposed production will be assorted footwear - mainly sandals with rubber soles, also selected items of leathergoods including wallets, keycases, bookmarks and thonged handbags. The estimated usage is in the region of 7000 sq ft per annum.

It is not feasible to set up a small tannery as suggested.

VIII.3. Madang - a similar study by CFTC has been carried out in Madang. The suggested unit would use 7000 + sq ft of leather per year producing footwear - all types, and 20 different items of leather goods; in all 1200 pairs of shoes and 4,000 other items annually. A list of machinery and equipment has been supplied but as yet no action has been taken to implement this.

A tannery was also put forward in this plan, and the proposal in the present report is a more detailed variation on this original suggestion.

It has been suggested to the provincial government that the first priority should be to get the leathergoods unit into production first, as without this there will be no use for any leather that the tannery produced.

VIII.4. Wewak - as reported earlier in the report, there is a trained tanner and leather worker already in East Sepik who at present is not using his skills. A small leathergoods production based on any reptiles that he tanned should be viable and he could also do any shoe repairs etc. that were needed.

VIII.5. Other leather users - there are various other small leather users in the country. There is a shoe repair unit at Rabaul in East New Britain and also a similar facility in the sheltered workshop in Lae. In Lae also is the central artificial centre for the country which uses various leathers in its manufacturing. In Pes, which is in West Sepik there is a leprosy footwear unit in a Catholic Mission and there are similar units around the country.

It is estimated that these various units combined would use in the region of 4,000 square feet of leather annually.

The proposed safety shoe unit in Lae would produce 150,000 pairs/annum ultimately giving a leather consumption of 300,000 sq ft - this would need considerable adjustments to any tannery plan but as it is still at the study stage it has not been taken into account here.

VIII.6. General - it is suggested that to make these units viable they should all work together to standardise the types of leather used to make it easier for bulk buying etc. and also that each unit should specialise on a particular range of products and not compete with each other. This way they will all get a fair share of the market. There is great scope here for import replacement as can be seen from Table 12.

Table 12

Imports of Leather

	1984	1985	1986
Heavy Bovine Leather Kg	120	20	213
" " " K	600	40	2,619
Light Leather all types sq ft	6,185	14,280	16,065
" " " " K	6,568	10,819	9,476

Imported from Australia mainly with small quantities from Japan, Singapore, Taiwan and West Germany.

Source N.S.O.

Table 13

Imports of Leathergoods and Shoes

	1984		1985		1986	
	Pr.	K'000	Pr.	K'000	Pr.	K'000
	'000		'000		'000	
Mechanical leather		31.7		45.3		15.8
Saddlery		26.6		32.9		29.2
Handbags		35.1		68.9		35.6
Luggage		97.6		99.3		88.9
General Leathergoods		149.0		139.6		247.0
Belts		143.9		133.5		196.0
Shoes-Leather Upper & Sole	98.8	660.9	57.8	590.9	43.5	383.9
Shoes-Leather Upper only	227.2	1,523.8	252.5	1,952.9	313.3	2,175.4
Shoes-Leather Sole only	40.2	166.7	38.6	168.3	53.9	208.3
		2,835.3		3,231.6		3,380.1

Major suppliers - Australia, China, New Zealand, Hong Kong, Singapore, Taiwan.

Source N.S.O.

IX. Financial Projections

IX.1. Lae

Constants assumed :-

- Interest rate on loans is 13%
- Dividend paid on equity is 5%
- Raw Hide price is K20.0/hide
- Sales Price is K3.0/kg
- Labour subsidy for five years of 40, 30, 20, 15 10% respectively
- Tax holiday 5 years
- Losses carried forward 5 years
- Machinery costs include 5% Freight and 10% Installation

NB: Production costs etc. A. assume. Expatriates paid from overseas, marked B assume paid by tannery.

IX.2. Bulolo

Constants assumed :-

- Dividend paid on equity is
- Raw Hide price is K10.0/hide
- Cost of production is K1.30/sq ft
- Sales price is K1.50/sq ft
- Tax holiday 5 years
- Machinery costs include freight and installation

IX.3. Madang

Constants assumed :-

- Interest rate on loans is 13%
- Raw Hide Price is K20.0/hide
- Sales Price is K2.75/sq ft
- Labour subsidy for five years of 40, 30, 20, 15, 10% respectively
- Tax holiday 5 years
- Losses carried forward 5 years
- Machinery costs include freight and installation
- No dividends paid, foreign aid for expatriates

Madang/Lae combination

Additional constants :-

- Dividend paid on equity is 5%
- Sales Price (Wet Blue) is K3.0/kg
- Sales Price (Vegetable) is K2.5/sq ft

IX.4. Wewak

Constants assumed :-

- Interest rate on loans is 13%
- Raw Skin Price is K40.0/skin
- Sales Price is K178.0/skin
- Labour subsidy for 5 years of 40, 30, 20, 15, 10% respectively
- Tax holiday 5 years
- Machinery costs include freight and installation

Recommendations :-

A. The proposed wet blue tannery in Lae, based on an annual throughput of 10,000 hides, should be initiated as soon as possible. It comes into profit in the second production year when full production is achieved. It is assumed that the cost of expatriate labour would be paid by foreign aid, but should that not be possible the project would still go into profit in the second year with an increase in initial borrowing. All production would be exported.

B. A hair-on tanning unit at Bulolo is viable assuming that the company invests all the funds needed and takes a minimal return on its capital. Very little structural work is required and the supply of hides is already there, so production could start fairly quickly. Expert assistance would be required in the initial stages and also to set up the leathersgoods unit.

C. The reptile tanning at Wewak combined with a small leathersgoods production should be investigated further. The viability entirely depends on the volume of sales that can be achieved and careful market research is required both locally and countrywide and price comparisons must be obtained.

D. The vegetable tanning unit based at Madang with an input of 850 hides per annum is not profitable. It would require a trebling of production to breakeven, but there would then be the problem of acquiring sufficient hides and also of where to sell the finished product. The tannery would be producing nearly 90,000 sq ft, but the total anticipated leather usage within the country is only around 32,000«sq«ft .

It would also require all the leather users to standardise their leather requirements to enable a unit to produce standard types and thicknesses.

It would be an advantage to have a nationwide leathersgoods (which here is taken to include footwear) market research study carried out to assess the volume of sales possible and the location of such sales.

E. A combination of the wet-blue tannery and the vegetable tannery would be feasible based either at Lae or Madang. No increase in labour would be envisaged over the Lae project, although there would be increases in building costs and machinery to cope with the more varied production. On this project production could be altered to give the required mix, but the vegetable tanning side should not be invested in until the leathersgoods sector was large enough to utilise the output.

F. As suggested in 1978 by Walters and Elliott, and again in 1985 by Ashworth and Associates (see Annex L), the Slaughter Act should be amended so that the hide or skin becomes the property of the abattoir giving them the incentive to improve the flaying and curing of the skins. Minor improvements, should be made to the abattoirs (except Lae which already has the proper facilities), so that vertical skinning is possible and this would also improve flaying.

G. The regulations imposed by the Department of Agriculture and Livestock should be amended to allow the branding to take place other than on the hind quarter, - the prime area of the hide - possibly further down the hind leg or by ear tagging. At present there is often multiple branding to show change of ownership, or the parentage - this further damages the skin.

H. Even if no tannery project is undertaken, it is strongly recommended that instruction is given in the grading of raw hides both by weight and quality, and this should then be implemented - this should improve returns, especially if linked to improved flaying and better curing and storage conditions.

At present prices are being obtained as shown below :-

Prices in US\$ / Kg (4/88).

Australia	14 - 18 kg	2.80		
	18 - 23 kg	2.60		
	23 - 29 kg	2.45		
U.S.A.	Heavy Steer	2.20	Heavy Cow	2.10
	Light Steer	2.51	Light Cow	2.20
	Branded Steer	2.10	Heavy Heifer	2.45
			Light Heifer	2.53

Source I.T.C. Geneva

I. Before any project is undertaken it is recommended that the interested parties visit tanneries in Australia or S.E. Asia to see plants in operation, also that they should attend one of the large leather fairs eg Hong Kong (May), Bangkok (November) & Madras (February) to see different machinery, types of leather etc.

Annex A - List of people and companies contacted

Port Moresby :-

- Dr. M. Nunn - Chief Veterinary Officer, DPI
Mr. J. Wilmot - Assistant Secretary, Wildlife Conservation, D.E.C.
Mr. I. Ila - First Assistant Secretary, Wildlife Conservation, D.E.C.
Mr. J. Hardy - Technical Department Manager, Agriculture Bank
Mr. S. Liyanage - Senior Small Industries Officer, DTI
Dr. B. Hewitt - Principal Environmental Protection Officer, D.E.C.
Mr. C. Gideon - Investment Analyst, ICPNG
Mr. J. Mandich - Head of Food Management Division, D.A.L.
Mr. P. Craig - General Manager, Ilimo Farm Products
Mr. K. Sinba - Farm Manager, " " "
Mr. S. Dickinson - Chief Estimator, Hornibrooks Construction Pty.

Lae:-

- Mr. N. Hungrabos - Assistant Secretary, Commerce, Morobe Province
Mr. M. Vloeberghs - Lecturer, Dept. of Chemical Technology, UNITECH
Dr. G. Mitchell - General Manager, 10 Mile Crocodile Farm
Mr. L. Romaso - General Manager, Kungie Development Corp.
Mr. D. Faunt - Technical Manager, Village Equipment Supplies
Mr. G. English - Provincial Livestock Officer, Morobe Province
Dr. A. Ningiga - General Manager, LDC
Mr. D. Bux - Managing Director, Pacific Wholesale Freezers
Mr. T. Brennan - General Manager, " " "
Mr. L. Barter - Sales Manager, I.C.I. (Dulux) Ltd
Mr. R. Jenkins - Sales Representative "
Mr. B. Lewis - City Engineer, Lae City Interim Commission
Mr. C. Dally-Watkins - Manager, T.N.T.
Mr. P. Ng - Manager, Lings Cattle Hides
Mr. G. Percival - General Manager, PNG Forest Products
Mr. W. Madden - Farm Manager, " " "
Mr. A. Utrich - Manager, Zivasing Cattle Ranch
Mr. M. Dye - Manager, Hagen Hauliers Ltd

Goroka:-

- Mr. N. Monde - Assistant Secretary, Commerce, E. Highlands Province
Mr. T. Renagi - Assistant Secretary, Primary Services, Eastern Highlands Province
Mr. I. Yawane - Provincial Livestock Officer, Eastern Highlands Province

Mount Hagen:-

- Mr. K. Sukot - Assistant Secretary, Commerce, W. Highlands Province
- Mr. C. Taman - Assistant Secretary, Primary Services, W. Highlands Province
- Mr. P. Mamindi - Business Development Officer, W. Highlands Province

Madang:-

- Mr. K. Kong - Assistant Secretary, Commerce, Madang Province
- Mr. L. Daur - First Assistant Secretary, Economic Services, Madang Province
- Mr. R. Plumpry - Provincial Livestock Officer, Madang Province
- Mr. M. Hanibal - General Manager, Madang Town Interim Comm.

Kavieng:-

- Mr. D. Tharold - Provincial Livestock Officer, New Ireland Province.

Wewak:-

- Mr. P. Imaroto - Assistant Secretary, Commerce, E. Sepik Prov.
- Mr. A. Power - First Assistant Secretary, Economic Services, E. Sepik Province
- Mr. I. Beni - Assistant Secretary, Primary Services, E. Sepik Province

Popondetta:-

- Mr. J. Banda - First Assistant Secretary, Economic Services, Oro Province
- Mr. J. Olai - Assistant Secretary, Commerce, Oro Province
- Mr. R. Ungai - Provincial Livestock Officer, " "
- Mr. U. Polona - Senior Livestock Lecturer, Popondetta Agriculture College
- Mr. L. Oldmeadow - Manager, Robert Laurie Co.

General:- Managers and staff of L.D.C. slaughterhouses at Port Moresby, Lae, Madang, Wewak, Goroka and Mount Hagen and at the private slaughterhouses at Dylup and Aitape.

Annex B. - List of Possible Chemical Supplies

Sandoz Australia Pty Ltd
P.O. Box 23
675-685 Warrigal Road
CHADSTONE
VICTORIA 3148 AUSTRALIA

Tel. 5681033
Tx. 3213C

BASF Australia Ltd
P.O.Box 4705
Chelsea House 55
Flemington Road
MELBOURNE
VICTORIA 3001 AUSTRALIA

Tel. 3206555
Tx. 30448BASFAUS AA

Yorkshire Chemicals Pty Ltd
Rooney Street
BURNLEY
VICTORIA 3121 AUSTRALIA

Tel. 4283523

I.C.I. (PNG) Pty Ltd
P.O. Box 1105
Air Corps Road
LAE PNG

Tel. 423633
Tx. 42413 ICILAE

Rohm & Haas Australia Pty Ltd
969 Burke Rd
Camberfield
MELBOURNE
VICTORIA 3001 AUSTRALIA

Tel. 8119300

Bayer Australia Ltd
47-67 Wilson Street
Botany
N.S.W. 2019 AUSTRALIA

Tel. 6669841

Hoechst Australia Ltd
606 St Kilda Road
MELBOURNE
VICTORIA 3001 AUSTRALIA

Tel. 5221212

Annex C - List of Possible Machinery Suppliers

1. Maschinenfabrik Moenus - Turner GmbH
Postfach 15.80., 6370 Oberursel, West Germany
2. Dynavac GmbH Maschinenfabrik
Feldbergstrasse 2-4, Industriegebiet, D-6250 Limburg 4
West Germany
3. Tecnord srl.
Via Fantasia 15, 10040 Leini, Torino, Italy
4. Francesco Polvar srl.
Via Tarbigo 3, 20012 Cuggiono, Milan, Italy
5. Delapre Machinery Sales Ltd
The Courtyard, 2 Bugbrooke Road, Kissingbury
Northhampton NN7 4AY, England
6. Flamar spa.
Via Livornese D. Sopra 67, 51013 Chiesina Uzzanese
Italy
7. R.W.D. Bramley ltd
Wellington Bridge Industrial Estate, Leeds LS12.2UA
England
8. Independent Machinery Co. Ltd.
34 Syston Street East, Leicester LE1.2JW,
England

Annex D. Crocodile Exporters

- | | | |
|-----------------------------|---|--|
| Mainland Holdings Pty Ltd | - | Milfordhaven Rd
Lae, Morobe |
| Ilimo Farm Products Pty Ltd | - | 14 1/2 Mile, Sogeri Rd
Port Moresby, NCD |
| Central Pacific Pty Ltd | - | Kanage St - 6 Mile
Port Moresby, NCD |
| Malingulai | - | P O Box 46
ANGORAM, E.S.P. |
| North Trading | - | c/- Young & Williams,
P O Box 21
PORT MORESBY, NCD |

Cattle Hide Exporters :-

-
- | | | |
|-------------------------------|---|--|
| Lings Cattle Hides Ltd | - | P O Box 848
Centauri Rd
LAE, Morobe |
| Pacific Wholesale Freezer Ltd | - | P O Box 837
Laurabada Avenue
LAE, Morobe |

Annex E. List of Possible Buyers of Wet Blue Leather

Heybroek BV.,
Leidsegracht 38-40, 1016 cm
Amsterdam, Netherlands
Tel: 020 246973
Tx: 11474 HEYB

Hollander Julius BV.,
Isarweg 10, 1043 AK
Amsterdam, Netherlands
(and branches worldwide)
Tel: 020 134702
Tx: 11137

Kaufmann's Handel-Maatschappij NV.,
Westzeedijk 521, 3024 EL.,
Rotterdam, Netherlands
(and branches worldwide)
Tel: 010 768600
Tx: 22031

Transmarinde BV.,
Blaak 22, 3011 TA
Rotterdam, Netherlands
Tel: 010 117260
Tx: 21407 TR

Annex F. Transport Costs

Quotations for the transport of raw hides from the various centres to Lae were received as follows :-

1. Road Transport per Tonne

Hagen Hauliers Ltd	- Madang-Lae	K30
	Goroka-Lae	K30
	Mount Hagen-Lae	K55
R.L.C.	Popondetta-Oro Bay	K20

2. Sea Transport per cubic metre.

Steamships/Lutheran Shipping	- Madang-Lae	K34.50
	Kieta-Lae	K41.0
Alotau, Kavieng, Kimbe, Rabaul, Vanimo, Wewak-Lae		K38.0
	Pt Moresby-Lae	K41.0
	Oro Bay-Lae	K43.0

all plus K13 wharfage.

3. Air Freight per Kg.

Talair	- Safai (Yareba) - Popondetta	K 0.42
--------	-------------------------------	--------

Transport of wet-blue tanned hides to Singapore or Sydney per full container load (FCL) - 27m3 - US\$2000

Annex G. -

The Tanning Process

The following is a brief resume' of the technical processes involved in the tanning of leather :-

Most skins taken into a tannery from the abattoir are in the wet-salted state where the skins have been treated with salt on the Flesh or inside to preserve them until tanning is begun.

The first stage in the tannery is Washing and Soaking, to remove the salt, dung and blood left on the animal after flaying and to restore the skin as far as possible to the same condition as when it came off the animal. Normally this is carried out with water together with a wetting agent and fungicide and the time can vary from 4-24 hours depending on how long the skin has been salted.

Then comes Liming, which is the removal of the epidermis ie the hair/wool layer and the modification of the internal protein structures. The most common method involves the use of lime together with sodium sulphide, the percentages of each and the time involved are varied to suit the final product. The degree of mechanical action is also varied. Normally during this process the hair is pulped so that it can be washed away. After liming the skin is Fleshed and Scudded, usually together on a machine with bladed rollers. The excess flesh and fat on the flesh side is removed and any remaining epidermis on the Grain (upper) side is taken away.

The skins are then well washed and sometimes at this stage are cut into Sides, by cutting down the backbone from tail to neck, they may also be Split, although this may also be done after Tanning. Splitting involves passing the skin through a horizontal bandknife to finish with two or more splits - the top or grain layer and the bottom or flesh layer.

They are Delimed, Bated and Pickled before tanning - these processes are to ensure that the condition of the skin is correct for the tanning. Excess alkali is removed from the skin followed by the use of proteolytic enzymes to remove any partly hydrolysed and globular proteins which all contributes to the final feel of the leather. Then the skin is emmersed in salt and acid to get the acidity throughout the skin to the ideal for tanning.

Tanning is the conversion of hide or skin into leather and many different methods may be used. The two main ones are Chrome and Vegetable tanning. Chrome tanning is one of several metallic tannages and uses chrome sulphate with varying degrees of basicity. The metal complex cross links with the collagen protein fibres forming a stable compound. After complete penetration of the chrome the pH is slowly increased to fix the material with bicarbonate. As this fixation takes time the skins are AGED for at least 24 hours after coming out of the liquor.

Vegetable tanning involves the use of a wide range of materials, for example - oak bark, sumac leaves, wattle bark, mangrove etc. which are added either as a solution of the extract or as a solid. Traditionally this type of tanning could take up to two years but more modern processes have now been evolved whereby the process is almost as fast as chrome tanning. Chrome tanning gives a typical blue-green colour after tanning hence the term Wet-Blue for wet chrome tanned leather. Vegetable tanning gives a brownish colour which can vary from beige to dark brown depending on the mixture of tans used.

After the tanning and ageing the skins are Sammed which involves passing between felt rollers to squeeze out excess water, and then if not split in the lime, they are split now and then Shaved through a bladed machine to give a level thickness. Neutralising, Dyeing and Fatliquoring then follows to give the correct colour and suppleness required. There is a wide range of dye types (acid, direct, metal-complexes etc) and of fatliquors (natural, synthetic, raw, sulphated etc) which are mixed to give the correct end product.

Then they are Set Out, which is flattening the skin to give a good grain pattern prior to Drying which can take a variety of forms (air drying, pasting, toggling, nailing) again depending on the required leather. Then follows Staking - a softening action - and Finishing, which is the application of a pigment and lacquer as the final process. There is a wide variety of different finishing procedures which could be used and it is not proposed to discuss them further here. At the end of all the processing the skins are sorted, trimmed and measured in square feet or square meters price to packing and dispatch.

A flow chart of a typical tannery is shown overleaf.

Annex H.

Effluent

This is always one of the biggest problems in setting up a tannery anywhere. Every country has different regulations regarding the disposal and treatment of tannery waste.

In PNG there are recommended (not legal) standards for liquid effluent discharged to surface waters. There are :-

1. The temperature should not exceed 35^oC.
2. The pH range should be within 5.5-9.0.
3. Suspended solids should be less than 15 mg/litre.
4. Dissolved oxygen should be not less than 30% saturated.
5. Biological oxygen demand should be less than 10 mg/litre.
6. Colour should not be noticeable at 100 dilutions.
7. Heavy metals should not exceed 3 mg/litre.
8. Grease and oil should be absent except for stable dispersion.

Source D.E.C.

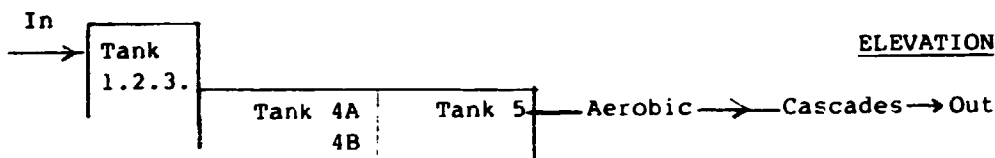
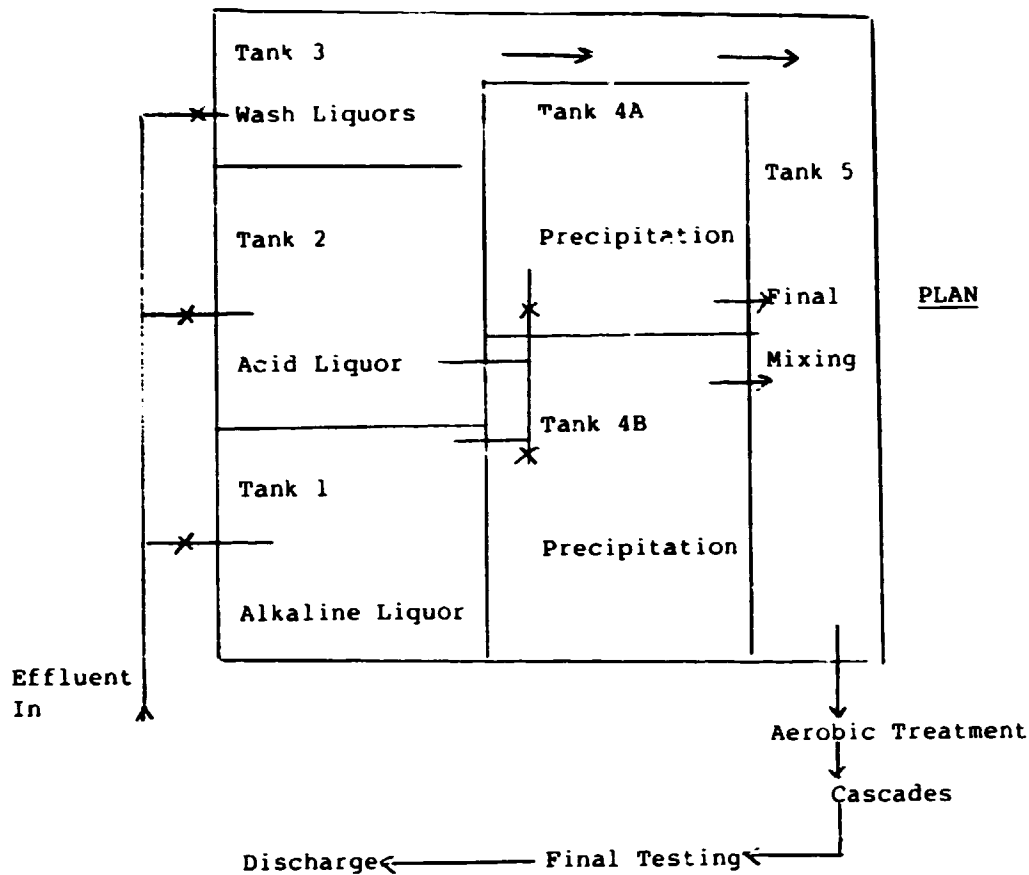
In addition permits are required under the Water Resources Act for water use and water discharge.

Prior to any development, each individual case must be discussed with the Dept. of Environment and Conservation and an environment plan must be prepared which should include :-

1. The purpose of the development.
2. The viability of the project.
3. Description of the project.
4. Development timescale.
5. The existing environment.
6. Possible changes to the environment and methods of monitoring same.

All development, must comply with the Environmental Planning Act 1978 and Environment Contaminants Act 1978.

A general layout of a possible effluent plant is shown below, but the final layout and sizes can only be determined by more details investigation.



The alkaline liquors prior to pickling are all fed into Tank 1. The pickling and tanning liquors into Tank 2 and after suitable holding are mixed together in Tank 4A or Tank 4B possibly with pH adjustment to ensure optimum precipitation and from there the supernatant flows into Tank 5. The wash liquors and exhausts from dyeing and fatliquoring pass into Tank 3 and the overflow goes directly into Tank 5 for final mixing. Prior to arriving at the initial tanks some form of filter should be inserted to remove all solid waste.

The flows from Tanks 1 and 2 should be alternated between 4A and 4B so that one tank can be drained and the solid waste (sludge) can be removed while the second tank is being used. From Tank 5 the overflow goes into some form of Aerobic Treatment and possibly Anaerobic Treatment before passing onto cascades to the final testing point which is where the environmental controls specified will be applied, and thence into the drains.

Building costs for tanks have been quoted as follows

Concrete slab -	K200/m ³
Blockwork etc.	K 65/m ²
Pipework	K 25/m

Annex I. - Testing and Quality Control of Leather

The quality control in leather tanning is very important to ensure that the final product is of consistent quality and this requires that the process is checked at every stage and the test results should come within certain specified limits. The type of control necessary will be discussed separately for each project.

1. Chrome tannery at Lae:- The most important factor to control in the initial stages of the process is the temperature of the water because excessive temperature will cause degradation of the protein. Normally it should not be above 25 C. Then in deliming, pickling and tanning the pH should be closely controlled as it affects the uptake, penetration and fixation of the chemicals. At the end of tanning a sample of skin is taken and must retain its shape and consistency in boiling water for one minute. A day to day record of all the tests must be kept, to identify any anomalies or trends that might occur.

The equipment required would be thermometers, pH meter, pH papers and basic laboratory equipment.

2. Hair-on tannery at Bulolo :- As the ultimate use of a leather is to be leathersgoods and not shoes, the resistance of the chrome tanned leather is not so critical, however all the routine tests of temperature and pH are important so that this project would require thermometers and pH papers to maintain quality.

3. Vegetable tannery at Madang :- In this project in addition to temperature and pH control in the stages up to tanning, further control is required in the retanning and fatliquoring processes for both temperature and pH. At the end of the process after finishing further testing is necessary to check the quality of the pigment finish - special adhesive tape is used to test the adhesion of the finish both between layers and to the leather itself. Also it is necessary to test the rub fastness to ensure that colour will not be transferred to other materials during use. In addition to the thermometer, pH meter and papers; adhesion tapes and some machine to test rub will be required.

4. Reptile Tannery at Wewak :- Testing required here would be very similar to that noted in 3 above, but pH testing could be done by paper instead of meter so that a rough but cheap testing could be done.

Annex J.

Lings Cattle Hides Tannery Site

The site which occupies some 3-4 acres was first purchased in 1970 by Dang Brothers from Hong Kong and they erected a substantial shed covering 12,000 sq ft. The building was properly designed with water resistant concrete flooring, adequate slopes and drainage. Half of the building was laid out with tanning machinery - enough to tan to the crust stage - which was used once for a small scale trial and has been idle ever since.

The site was bought in 1977/8 by Lings Cattle Hides who also had plans for tanning which never materialised and since then the building has only been used as hide store for salted skins prior to export.

The building is equipped with 3 phase mains electricity and town water, although the drainage system would not be adequate for a tannery.

As far as the machinery is concerned there are four wooden drums 8ft x 8ft in good condition and one 5ft x 3ft also in good condition and could soon be operational. Also there are two paddles fitted to concrete pits 5ft x 5ft which would also be alright in situ. The remaining machinery is only fit for scrap.

This would be an ideal site for a tannery if the land could be purchased at an advantageous price, however it is understood that in the region of K500,000 is being asked for the site which includes a house.

Annex K.

People/Firms expressing an interest in Tanning

Main Tannery in Lae

1. Kungie Consulting - P.O. Box 3399, Lae, Morobe
2. Pacific Wholesale Freezers - P.O. Box 837, Lae, Morobe
3. Livestock Development Corp. - P.O. Box 673, Lae, Morobe
4. Morobe Provincial Govt. - P.O. Box 568, Lae, Morobe
(Commerce)

Smaller Projects

5. Madang Provincial Govt. - P.O. Box 2108, Yomba,
(Commerce)
6. E. Sepik Provincial Govt. - Kreer Hts, Wewak, East Sepik
7. PNG Forest Products - P.O. Box 88, Bulolo, Morobe
8. Popondetta Agricultural - Popondetta, Oro
College

Annex L.

Bibliography

- 1977 El Khair - Exploratory Mission to Assess the Leather and Leather Products Industries in PNG - UNIDO.
- 1978 Walters & Elliott - The Production and Marketing of Cattle hides in Papua New Guinea - T.P.I.
- 1979 Lunden - Special Programme of Assistance for L.D.C. in the Leather and Leather Products Industry - UNIDO.
- 1981 Tuck - The Manufacture of Upper Leathers - T.P.I.
- 1981 Briggs - Gloving, Clothing and Special Leathers - T.P.I.
- 1982 Sen Gupta - Setting up a Chrome Leather Tannery and Leather Shoe Factory in Papua New Guinea - CFTC.
- 1985 Various - Papua New Guinea Livestock Sector Review - Ashworth and Associates.
- 1985 Various - Workshop Report on Leather and Leather Products Industry in Chogrm Region - Chogrm.
- 1985 Various - Papua New Guinea - Development of Small Scale Manufacturing Enterprises - CFTC.
- 1985 Various - Setting up of Leather and Leather Based Small Scale Units in Papua New Guinea - CFTC.
- 1987 Jadhav - Setting up of Leather goods Unit and Tannery in Madang - DTI File.

A P P E N D I X

CONFAR EVALUATIONS

- Wewak Reptile Tanning	2
- Madang Tannery	25
- Bulolo Tannery	48
- Wet blue Tannery-Lae (version 1)	71
- Wet blue Tannery Combination Madang	94
- Wet blue Tannery-Lae (version 2)	117

Newak Reptile Tanning
 May 17, 1968
 ++++++

1 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
 local currency 1 unit = 1.0000 units accounting currency
 accounting currency: Kina

Total initial investment during construction phase

fixed assets:	21569.00	41.303 % foreign
current assets:	0.00	0.000 % foreign
total assets:	21569.00	41.303 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	0.00	
local loans :	22000.00	
total funds :	22000.00	0.000 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	11670.50	12254.03	12866.72
depreciation :	2156.00	2156.00	2156.00
interest :	2860.00	3198.00	2444.00
production costs	16686.50	17608.03	17466.72
thereof foreign	14.00 %	13.68 %	14.22 %
total sales :	17800.00	18690.00	19624.50
gross income :	1113.50	1081.97	2157.77
net income :	1113.50	1081.97	2157.77
cash balance :	2443.42	-1683.33	-994.85
net cashflow :	1203.42	6189.67	6499.15

Net Present Value at: 10.00 % = 31240.75
 Internal Rate of Return: 26.48 %
 Return on equity1: not found
 Return on equity2: 65.40 %

Index of Schedules produced by COMPAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

Total Initial Investment inkina

Year	1
Fixed investment costs	
Land, site preparation, development	0.00
Buildings and civil works	0.00
Auxiliary and service facilities	0.00
Incorporated fixed assets	0.00
Plant machinery and equipment	17810.00

Total fixed investment costs	17810.00
Pre-production capital expenditures	3750.00
Net working capital	0.00

Total initial investment costs	21560.00
Of it foreign, in \$	40.00

----- COMPAR 2.1 - UNIDO IC-PEAS, Vienna -----

Total Current Investment inkina

Year	2	3	4	5	6	7
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	4926.08	246.30	258.62	271.55	285.13	299.38
Total current investment costs . . .	4926.08	246.30	258.62	271.55	285.13	299.38
Of it foreign, %	18.06	18.06	18.06	18.06	18.06	18.06

Newak Reptile Tanning --- May 17 . 1988

----- COMPAR 2.1 - UNIDO IC-PEAS, Vienna -----

Total Current Investment inkina

Year:	8	9	10	11	12	13
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	314.35	330.07	346.57	363.90	382.10	401.20
Total current investment costs . . .	314.35	330.07	346.57	363.90	382.10	401.20
Of it foreign, %	18.06	18.06	18.06	18.06	18.06	18.06

Newak Reptile Tanning --- May 17 . 1988

Total Current Investment in Mia

Year	14	15	16
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00
Working capital	421.26	442.33	464.44
Total current investment costs . . .	421.26	442.33	464.44
Of it foreign. \$	18.06	18.06	18.06

Total Production Costs in Kina

Year	2	3	4	5	6	7
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material 1	4000.00	4200.00	4410.00	4630.50	4862.00	5125.13
Other raw materials	1600.00	1650.00	1102.50	1157.62	1215.51	1276.29
Utilities	30.00	31.50	33.07	34.73	36.47	38.29
Energy	500.00	525.00	551.25	578.61	607.75	638.14
Labour, direct	3750.00	3937.50	4134.37	4341.09	4558.15	4786.06
Repair, maintenance	500.00	525.00	551.25	578.61	607.75	638.14
Spares	890.50	935.02	981.70	1030.06	1082.41	1136.53
Factory overheads	0.00	0.00	0.00	0.00	0.00	0.00
Factory costs	10670.50	11204.03	11764.22	12352.47	12970.06	13628.56
Administrative overheads	1000.00	1050.00	1102.50	1157.62	1215.51	1276.29
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	2156.00	2156.00	2156.00	2156.00	2156.00	2156.00
Financial costs	2460.00	3198.00	2444.00	1690.00	936.00	182.00
Total production costs	16686.50	17608.03	17456.72	17356.06	17270.56	17232.84
Costs per unit (single product)	166.87	176.08	174.67	173.56	172.71	172.33
Of it foreign, %	14.00	13.68	14.22	14.77	15.32	15.87
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	3750.00	3937.50	4134.37	4341.09	4558.15	4786.06

Total Production Costs in Kina

Year	8	9	10	11	12	13
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material I	5360.38	5628.40	5909.82	6205.31	6515.58	6841.35
Other raw materials	1340.10	1407.10	1477.46	1551.33	1628.89	1710.34
Utilities	40.20	42.21	44.32	46.54	48.87	51.31
Energy	670.05	703.55	738.73	775.66	814.45	855.17
Labour, direct	5025.36	5276.63	5540.46	5817.48	6108.35	6413.77
Repair, maintenance	670.05	703.55	738.73	775.66	814.45	855.17
Spares	1193.35	1253.02	1315.67	1381.46	1450.53	1523.06
Factory overheads	0.00	0.00	0.00	0.00	0.00	0.00
Factory costs	14299.49	15014.46	15765.18	16553.44	17381.11	18250.17
Administrative overheads	1340.10	1407.10	1477.46	1551.33	1628.89	1710.34
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	2156.00	2156.00	2156.00	2156.00	0.00	0.00
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	17795.58	18577.56	19398.64	20260.77	19010.01	19960.51
Costs per unit (single product)	177.96	185.78	193.99	202.61	190.10	199.61
Of it foreign, %	15.89	15.74	15.60	15.46	12.39	12.38
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	5025.36	5276.63	5540.46	5817.48	6108.35	6413.77

Total Production Costs in Kina

Year	14	15	16
% of nom. capacity (single product).	100.00	100.00	100.00
Raw material 1	7183.42	7542.59	7919.72
Other raw materials	1795.86	1885.65	1979.93
Utilities	53.88	56.57	59.40
Energy	897.93	942.82	989.97
Labour, direct	6734.46	7071.18	7424.74
Repair, maintenance	897.93	942.82	989.97
Spare ^s	1599.21	1679.17	1763.13
Factory overheads	0.00	0.00	0.00

Factory costs	19162.68	20120.81	21126.85
Administrative overheads	1795.86	1885.65	1979.93
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	0.00	0.00	0.00
Financial costs	0.00	0.00	0.00

Total production costs	20958.53	22006.46	23106.78
=====			
Costs per unit (single product)	209.59	220.06	231.07
Of it foreign, %	12.38	12.38	12.38
Of it variable, %	0.00	0.00	0.00
Total labour	6734.46	7071.18	7424.74

CONFAR 2.1 - UNIDO IC/PEAS, Vienna -----

Net Working Capital in Kina

Year	2	3	4	5	6
Coverage mdc coto					
Current assets &					
Accounts receivable 90 4.0	2917.63	3063.51	3216.68	3377.52	3546.39
Inventory and materials 24 15.1	333.42	350.89	367.59	385.97	405.27
Energy 1 360.0	1.39	1.46	1.53	1.61	1.69
Spares 180 2.0	445.25	467.51	496.89	515.43	541.26
Work in progress 30 12.0	889.21	933.67	980.35	1029.37	1080.84
Finished products 30 12.0	972.54	1021.17	1072.23	1125.84	1182.13
Cash in hand 15 24.0	255.85	268.65	282.08	296.18	310.99
Total current assets	5815.28	6106.05	6411.35	6731.92	7068.51
Current liabilities and					
Accounts payable 30 12.0	889.21	933.67	980.35	1029.37	1080.84
Net working capital	4926.08	5172.38	5431.00	5702.55	5987.69
Increase in working capital	4926.08	246.30	258.62	271.55	285.13
Net working capital, local	4036.48	4238.31	4450.22	4672.73	4906.37
Net working capital, foreign	889.59	934.07	980.78	1029.82	1081.31

Note: mdc = minimum days of coverage : coto = coefficient of turnover .

Newak Reptile Tanning --- May 17 , 1988

CONFAR 2.1 - UNIDO IC/PEAS, Vienna -----

Net Working Capital in Kina

Year	7	8	9	10	11
Coverage mdc coto					
Current assets &					
Accounts receivable 90 4.0	3723.71	3909.90	4105.39	4320.66	4526.19
Inventory and materials 24 15.1	425.53	446.81	469.15	492.61	517.24
Energy 1 360.0	1.77	1.86	1.95	2.05	2.15
Spares 180 2.0	568.26	596.68	626.51	657.84	692.73
Work in progress 30 12.0	1134.88	1191.62	1251.21	1313.77	1379.45
Finished products 30 12.0	1241.24	1303.30	1368.46	1436.89	1508.73
Cash in hand 15 24.0	326.54	342.87	360.01	378.01	396.91
Total current assets	7421.94	7793.04	8182.69	8591.82	9021.41
Current liabilities and					
Accounts payable 30 12.0	1134.88	1191.62	1251.21	1313.77	1379.45
Net working capital	6287.06	6601.41	6931.48	7278.06	7641.96
Increase in working capital	299.38	314.35	330.07	346.57	363.90
Net working capital, local	5151.69	5409.27	5679.74	5963.72	6261.91
Net working capital, foreign	1135.37	1192.14	1251.75	1314.33	1380.05

Note: mdc = minimum days of coverage : coto = coefficient of turnover .

Newak Reptile Tanning --- May 17 , 1988

Net Working Capital in Kina

Year		12	13	14	15	16
Coverage	mdc coto					
Current assets &						
Accounts receivable	93 1.0	4752.50	4990.13	5239.63	5501.61	5776.89
Inventory and materials	24 15.1	543.10	570.26	598.77	628.71	660.14
Energy	1 360.0	2.26	2.38	2.49	2.62	2.75
Spares	180 2.0	725.27	761.53	799.60	839.58	881.56
Work in progress	30 12.0	1448.43	1520.85	1596.89	1676.73	1760.87
Finished products	30 12.0	1504.17	1663.38	1746.54	1833.97	1925.98
Cash in hand	15 24.0	416.76	437.60	459.48	482.45	506.87
Total current assets		9472.48	9946.11	10443.41	10965.58	11513.86
Current liabilities and						
Accounts payable	30 12.0	1448.43	1520.85	1596.89	1676.73	1760.87
Net working capital		8024.06	8425.26	8846.52	9288.85	9753.09
Increase in working capital		382.10	401.20	421.26	442.33	464.44
Net working capital, local		6575.00	6903.75	7248.94	7611.39	7991.96
Net working capital, foreign		1449.05	1521.51	1597.58	1677.46	1761.33

Note: mdc = minimum days of coverage ; coto = coefficient of turnover .

Source of Finance, construction in kina

Year	1
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	22000.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	22000.00
Current liabilities	0.00
Bank overdraft	0.00

Total funds	22000.00

----- CONFAR 2.1 - UNIDO IO/FEAS, Vienna -----

Source of Finance, production in Kina

Year	2	3	4	5	6	7	8
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	1500.00	1125.00	750.00	562.50	375.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-4400.00	-4400.00	-4400.00	-4400.00	-4400.00	0.00	0.00
Loan B, local....	7000.00	-1400.00	-1400.00	-1400.00	-1400.00	-1400.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	2600.00	-5800.00	-5800.00	-5800.00	-5800.00	-1400.00	0.00
Current liabilities	889.21	44.46	46.66	45.02	51.47	54.04	56.74
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	4989.21	-4630.54	-5003.32	-5188.49	-5373.53	-1345.96	56.74

Wewak Reptile Tanning --- May 17, 1988

----- CONFAR 2.1 - UNIDO IO/FEAS, Vienna -----

Source of Finance, production in Kina

Year	9	10	11	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	59.58	62.56	65.69	68.97	72.42	76.04	79.84
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	59.58	62.56	65.69	68.97	72.42	76.04	79.84

Wewak Reptile Tanning --- May 17, 1988

Source of Finance, production in Kina

Year	16
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A. foreign .	0.00
Loan B. foreign..	0.00
Loan C. foreign .	0.00
Loan A. local....	0.00
Loan B. local....	0.00
Loan C. local....	0.00

Total loan	0.00
Current liabilities	83.84
Bank overdraft	0.00

Total funds	83.84

Cashflow Tables, construction in Kina

Year	1
Total cash inflow . .	22000.00
Financial resources .	22000.00
Sales, net of tax . .	0.00
Total cash outflow . .	21560.00
Total assets	21560.00
Operating costs . . .	0.00
Cost of finance . . .	0.00
Repayment	0.00
Corporate tax	0.00
Dividends paid	0.00
Surplus (deficit) .	440.00
Cumulated cash balance	440.00
Inflow, local	22000.00
Outflow, local	12655.00
Surplus (deficit) .	9345.00
Inflow, foreign . . .	0.00
Outflow, foreign . . .	8905.00
Surplus (deficit) .	-8905.00
Net cashflow	-21560.00
Cumulated net cashflow	-21560.00

Cashflow tables, production in Kina

Year	2	3	4	5	6	7
Total cash inflow . .	27189.21	19859.46	20421.18	21217.24	22062.48	22771.85
Financial resources . .	9389.21	1169.46	796.68	611.52	426.47	54.04
Sales, net of tax . .	17800.00	18690.00	19624.50	20605.72	21636.01	22717.81
Total cash outflow . .	24745.79	21542.79	21416.03	21320.63	21258.16	16830.27
Total assets	5815.28	290.76	305.30	320.57	336.60	353.43
Operating costs . . .	11670.50	12254.03	12866.72	13510.06	14185.56	14894.84
Cost of finance . . .	2860.00	3198.00	2444.00	1690.00	936.00	182.00
Repayment	4400.00	5800.00	5800.00	5800.00	5800.00	1400.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) . .	2443.42	-1683.33	-994.85	-103.39	804.32	5941.58
Cumulated cash balance	2883.42	1200.09	205.25	101.86	906.18	6847.76
Inflow, local	27068.77	19853.44	20414.86	21210.60	22055.51	22764.53
Outflow, local	22290.50	19974.78	19769.61	19591.89	19442.98	14924.33
Surplus (deficit) . .	4778.27	-121.34	645.24	1618.71	2612.52	7840.20
Inflow, foreign	120.44	6.02	6.32	6.64	6.97	7.32
Outflow, foreign	2455.28	1568.01	1646.41	1728.74	1815.17	1905.93
Surplus (deficit) . .	-2334.84	-1561.99	-1640.09	-1722.10	-1808.20	-1898.61
Net cashflow	1203.42	6189.67	6499.15	6824.11	7165.32	7523.59
Cumulated net cashflow	-20356.58	-14166.91	-7667.75	-843.64	6321.68	13845.26

Cashflow tables, production in Kina

Year	8	9	10	11	12	13
Total cash inflow . .	23910.44	25105.96	26361.26	27679.32	29063.29	30516.45
Financial resources .	56.74	59.58	62.56	65.69	68.97	72.42
Sales, net of tax . .	23853.70	25046.38	26298.70	27613.63	28994.31	30444.03
Total cash outflow . .	16010.68	16811.21	17651.78	18534.37	21984.16	23220.86
Total assets	371.10	389.65	409.13	429.59	451.07	473.62
Operating costs . . .	15639.58	16421.56	17242.64	18104.78	19016.01	19960.56
Cost of finance . . .	0.00	0.00	0.00	0.00	0.00	0.00
Repayment	0.00	0.00	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	2523.09	2796.73
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	7899.76	8294.75	8709.48	9144.95	7079.13	7295.59
Cumulated cash balance	14747.52	23042.27	31751.76	40896.71	47975.84	55271.43
Inflow, local	23902.76	25097.89	26352.79	27670.42	29053.94	30506.64
Outflow, local	14009.45	14709.93	15445.42	16217.70	19551.66	20666.73
Surplus (deficit) .	9893.31	10387.97	10907.36	11452.73	9502.29	9839.91
Inflow, foreign . . .	7.69	8.07	8.47	8.90	9.34	9.81
Outflow, foreign . . .	2001.23	2101.29	2206.35	2316.67	2432.50	2554.13
Surplus (deficit) .	-1993.54	-2093.22	-2197.88	-2307.77	-2423.16	-2544.32
Net cashflow	7899.76	8294.75	8709.48	9144.95	7079.13	7295.59
Cumulated net cashflow	21745.03	30039.76	38749.26	47894.21	54973.34	62268.93

Cashflow tables, production in kina

Year	14	15	16
Total cash inflow	32042.27	33644.38	35326.60
Financial resources	76.04	79.84	83.84
Sales, net of tax	31966.23	33564.54	35242.76
Total cash outflow	24431.49	25702.65	27037.37
Total assets	497.30	522.17	548.28
Operating costs	20958.53	22006.46	23106.78
Cost of finance	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	2975.66	3174.03	3382.32
Dividends paid	0.00	0.00	0.00
Surplus (deficit)	7610.78	7941.73	8289.23
Cumulated cash balance	62882.20	70823.93	79113.16
Inflow, local	32031.97	33633.57	35315.24
Outflow, local	21749.66	22886.73	24080.65
Surplus (deficit)	10282.31	10746.84	11234.59
Inflow, foreign	10.30	10.81	11.36
Outflow, foreign	2681.83	2815.93	2956.72
Surplus (deficit)	-2671.54	-2805.11	-2945.37
Net cashflow	7610.78	7941.73	8289.23
Cumulated net cashflow	69879.70	77821.43	86110.66

Cashflow Discounting:

a) Equity paid versus Net income flow:
Net present value 25172.38 at 10.00 %
Internal Rate of Return (IRRE1) .. not found

b) Net Worth versus Net cash return:
Net present value 28742.90 at 10.00 %
Internal Rate of Return (IRRE2) .. 65.40 %

c) Internal Rate of Return on total investment:
Net present value 31240.75 at 10.00 %
Internal Rate of Return (IRR) .. 26.48 %

Net Worth = Equity paid plus reserves

CONFAR 2.1 - UNIDO ID/FEAS, Vienna -----

Net Income Statement in Kina

Year	2	3	4	5	6
Total sales, incl. sales tax	17000.00	18690.00	19624.50	20605.72	21636.01
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	17000.00	18690.00	19624.50	20605.72	21636.01
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	13026.50	14410.03	15022.72	15666.06	16341.56
Operational margin	3973.50	4279.97	4601.77	4939.66	5294.44
As % of total sales	23.32	22.99	23.45	23.97	24.47
Cost of finance	2860.00	3198.00	2444.00	1690.00	936.00
Gross profit	1113.50	1081.97	2157.77	3249.66	4358.44
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	1113.50	1081.97	2157.77	3249.66	4358.44
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	1113.50	1081.97	2157.77	3249.66	4358.44
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	1113.50	1081.97	2157.77	3249.66	4358.44
Accumulated undistributed profit . . .	1113.50	2195.47	4353.25	7602.91	11961.35
Gross profit, % of total sales	6.26	5.79	11.00	15.77	20.14
Net profit, % of total sales	6.26	5.79	11.00	15.77	20.14
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	15.00	16.01	17.05	18.12	19.22

Newak Reptile Tanning --- May 17, 1988

Net Income Statement in Lira

Year	7	8	9	10	11
Total sales, incl. sales tax	22717.61	23053.70	25046.38	26298.70	27613.63
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
-----	-----	-----	-----	-----	-----
Variable margin	22717.61	23053.70	25046.38	26298.70	27613.63
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	17050.84	17795.58	18577.56	19398.64	20260.77
-----	-----	-----	-----	-----	-----
Operational margin	5666.97	6058.12	6468.82	6900.06	7352.86
As % of total sales	24.95	25.40	25.83	26.24	26.63
Cost of finance	182.00	0.00	0.00	0.00	0.00
-----	-----	-----	-----	-----	-----
Gross profit	5484.97	6058.12	6468.82	6900.06	7352.86
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	5484.97	6058.12	6468.82	6900.06	7352.86
Tax	2823.08	2786.73	2975.66	3174.03	3362.32
-----	-----	-----	-----	-----	-----
Net profit	2961.88	3271.38	3493.16	3726.03	3970.55
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	2961.88	3271.38	3493.16	3726.03	3970.55
Accumulated undistributed profit	14923.23	18194.62	21687.78	25413.91	29384.35
Gross profit, % of total sales	24.14	25.40	25.83	26.24	26.63
Net profit, % of total sales	13.04	13.71	13.95	14.17	14.38
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	11.29	11.62	12.26	12.92	13.60

CONFAR 2.1 - UNIDO TO PEAS, Vienna -----

Net Income Statement in Kina

Year	12	13	14	15	16
Total sales, incl. sales tax	28994.31	30444.03	31966.23	33564.54	35242.76
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	28994.31	30444.03	31966.23	33564.54	35242.76
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	19010.01	19960.51	20958.53	22006.46	22786.78
Operational margin	9984.31	10483.52	11007.70	11558.08	12456.98
As % of total sales	34.44	34.44	34.44	34.44	34.44
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	9984.31	10483.52	11007.70	11558.08	12456.98
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	9984.31	10483.52	11007.70	11558.08	12456.98
Tax	4592.78	4822.82	5063.54	5316.72	5582.55
Net profit	5391.53	5661.10	5944.16	6241.36	6874.43
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	5391.53	5661.10	5944.16	6241.36	6874.43
Accumulated undistributed profit	34775.85	40436.98	46381.14	52622.50	59175.93
Gross profit, % of total sales	34.44	34.44	34.44	34.44	34.44
Net profit, % of total sales	18.60	18.60	18.60	18.60	18.60
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	18.22	18.88	19.55	20.23	20.93

Newak Reptile Tanning --- May 17, 1988

Projected Balance Sheets, construction in Kina

Year	1
Total assets	22000.00
Fixed assets, net of depreciation	0.00
Construction in progress	21560.00
Current assets	0.00
Cash, bank	0.00
Cash surplus, finance available .	440.00
Loss carried forward	0.00
Loss	0.00
Total liabilities	22000.00
Equity capital	0.00
Reserves, retained profit	0.00
Profit	0.00
Long and medium term debt	22000.00
Current liabilities	0.00
Bank overdraft, finance required.	0.00
Total debt	22000.00
Equity, % of liabilities	0.00

CONFAR 2.1 - UNIDO IO/FEAS, Vienna

Projected Balance Sheets, Production in Kina

Year	2	3	4	5	6	7
Total assets	28102.71	24554.14	21708.60	19769.78	18754.69	20370.62
Fixed assets, net of depreciation	19404.00	17248.00	15092.00	12516.00	10780.00	8524.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	0.00
Current assets	5559.43	5837.40	6129.27	6435.73	6757.52	7095.40
Cash, bank	255.85	268.65	282.08	296.18	310.99	326.54
Cash surplus, finance available	2883.43	1200.09	205.25	101.86	906.18	4324.68
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	28102.71	24554.14	21708.60	19769.78	18754.69	20370.62
Equity capital	1500.00	2625.00	3375.00	3937.50	4312.50	4312.50
Reserves, retained profit	0.00	1113.50	2195.47	4353.25	7602.91	11961.35
Profit	1113.50	1081.97	2157.77	3249.66	4358.44	2961.88
Long and medium term debt	24600.00	18800.00	13000.00	7200.00	1400.00	0.00
Current liabilities	889.21	933.67	980.35	1029.37	1080.84	1134.86
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	25499.21	19733.67	13980.35	8229.37	2480.84	1134.86
Equity, % of liabilities	5.34	10.69	15.55	19.92	22.99	21.17

Newak Reptile Tanning --- May 17, 1988

CONFAR 2.1 - UNIDO IO/FEAS, Vienna

Projected Balance Sheets, Production in Kina

Year	8	9	10	11	12	13
Total assets	23698.74	27251.48	31040.07	35076.31	40536.80	46270.33
Fixed assets, net of depreciation	6468.00	4312.00	2156.00	0.00	0.00	0.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	0.00
Current assets	7450.17	7822.68	8213.81	8624.50	9055.72	9508.51
Cash, bank	342.87	360.01	378.01	396.91	416.76	437.50
Cash surplus, finance available	9437.71	14756.79	20292.25	26054.89	31064.32	36324.22
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	23698.74	27251.48	31040.07	35076.31	40536.80	46270.33
Equity capital	4312.50	4312.50	4312.50	4312.50	4312.50	4312.50
Reserves, retained profit	14923.23	18194.62	21687.78	25413.81	29384.35	34775.88
Profit	3271.38	3493.16	3726.03	3970.55	5391.53	5661.10
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	1191.62	1251.21	1313.77	1379.45	1448.43	1520.85
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	1191.62	1251.21	1313.77	1379.45	1448.43	1520.85
Equity, % of liabilities	18.20	15.82	13.89	12.29	10.64	9.32

Projected Balance Sheets, Production in Kina

Year	14	15	16
Total assets	52290.53	58611.73	65249.00
Fixed assets, net of depreciation	0.00	0.00	0.00
Construction in progress	0.00	0.00	0.00
Current assets	9983.93	10483.13	11007.29
Cash, bank	459.48	482.45	506.57
Cash surplus, finance available .	41847.12	47646.26	53735.14
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	52290.53	58611.73	65249.00
Equity capital	4312.50	4312.50	4312.50
Reserves, retained profit	40436.98	46381.14	52622.50
Profit	5944.16	6241.36	6553.43
Long and medium term debt	0.00	0.00	0.00
Current liabilities	1596.89	1676.73	1760.57
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	1596.89	1676.73	1760.57
Equity, % of liabilities	8.25	7.36	6.61

Madang
May 13, 1988
+++++

1 year(s) of construction, 15 years of production
currency conversion rates:
foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: Kina

Total initial investment during construction phase

fixed assets:	600500.00	7.837 % foreign
current assets:	0.00	0.000 % foreign
total assets:	600500.00	7.837 % foreign

Source of funds during construction phase

equity & grants:	120500.00	0.000 % foreign
foreign loans :	0.00	
local loans :	480000.00	
total funds :	600500.00	0.000 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	214856.00	99598.80	104578.70
depreciation :	36231.00	36231.00	36231.00
interest :	62400.00	49920.00	37440.00
production costs	313487.00	185749.80	178249.70
thereof foreign	4.87 %	8.50 %	9.17 %
total sales :	81812.50	85903.12	90198.27
gross income :	-231674.50	-99846.68	-88051.46
net income :	-231674.50	-99846.68	-88051.46
cash balance :	-231063.80	-99720.28	-138721.50
net cashflow :	-221415.80	29135.72	-16657.49

Net Present Value at: 10.00 % = -865670.40
Internal Rate of Return: -13.99 %
Return on equity1: not found
Return on equity2: -16.13 %

Index of Schedules produced by CONFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

Total Initial Investment in Kina

Year	1
Fixed investment costs	
Land, site preparation, development	120000.00
Buildings and civil works	362000.00
Auxiliary and service facilities .	10000.00
Incorporated fixed assets	0.00
Plant machinery and equipment . . .	94120.00

Total fixed investment costs	586120.00
Pre-production capital expenditures.	14380.00
Net working capital	0.00

Total initial investment costs . . .	600500.00
Of it foreign, in \$	7.00

Madang --- May 13, 1988

----- CONFAR 2.1 - UNIDO IG/FEAS, Vienna -----

Total Current Investment in Kina

Year	2	3	4	5	6	7
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	10000.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	10000.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	88372.27	-42831.39	2277.04	2390.90	2510.44	2635.96
Total current investment costs . . .	88372.27	-42831.39	2277.04	2390.90	2510.44	12635.96
Of it foreign, %	0.24	100.00	16.79	16.79	16.79	3.50

Madang --- May 13, 1988

----- CONFAR 2.1 - UNIDO IG/FEAS, Vienna -----

Total Current Investment in Kina

Year	8	9	10	11	12	13
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	10000.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	10000.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	2767.75	2906.15	3051.46	3204.02	3364.23	3532.43
Total current investment costs . . .	2767.75	2906.15	3051.46	3204.02	3364.23	3532.43
Of it foreign, %	16.79	16.79	16.79	16.79	4.23	16.79

Madang --- May 13, 1988

Total Current Investment in Kina

Year	14	15	16
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00
Working capital	3709.06	3894.52	4089.23
Total current investment costs . . .	3709.06	3894.52	4089.23
Of it foreign, \$	16.79	16.79	16.79

Madang --- May 13 . 1988

Total Production Costs in Kina

Year	2	3	4	5	6	7
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material 1	17000.00	17850.00	18742.50	19679.62	20663.60	21696.78
Other raw materials	8201.00	8613.15	9043.81	9496.00	9970.80	10469.34
Utilities	410.00	430.50	452.02	474.63	498.36	523.28
Energy	6407.00	6727.35	7061.72	7416.90	7787.75	8177.13
Labour, direct	37880.00	39774.00	41762.76	43850.83	46043.37	48345.54
Repair, maintenance	2500.00	2625.00	2756.25	2894.06	3038.77	3190.70
Spares	4706.00	4941.30	5188.36	5447.74	5720.17	6006.18
Factory overheads	2000.00	2100.00	2205.00	2315.25	2431.01	2552.56
Factory costs	79106.00	83661.30	87214.36	91575.08	96153.83	100961.50
Administrative overheads	135750.00	16537.50	17364.37	18232.59	19144.22	20101.43
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	36231.00	36231.00	36231.00	36231.00	36231.00	36231.00
Financial costs	62400.00	49920.00	37440.00	24960.00	12480.00	0.00
Total production costs	313487.00	185749.80	178249.73	170990.70	164009.00	155293.90
Costs per unit (single product)	10.54	6.24	5.99	5.75	5.51	5.22
Of it foreign, %	4.87	8.50	9.17	9.90	10.69	11.71
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	95380.00	49749.00	52236.45	54848.27	57590.68	60470.21

COMPAR 2.1 - UNIDO TO BEAS, Vienna

Total Production Costs in Kina

Year	8	9	10	11	12	13
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material I	22781.62	23920.70	25116.73	26372.57	27691.22	29079.76
Other raw materials	10992.80	11542.44	12119.56	12725.54	13362.82	14029.92
Utilities	549.44	576.91	605.76	636.84	667.85	702.24
Energy	4585.99	9015.29	9466.05	9939.36	10436.32	10959.24
Labour, direct	50762.81	53300.95	55966.00	58764.29	61702.50	64787.63
Repair, maintenance	3356.24	3517.75	3693.64	3878.32	4072.23	4275.85
Spares	6306.49	6621.81	6952.90	7303.55	7659.58	8048.85
Factory overheads	2680.19	2814.20	2954.92	3102.66	3257.79	3420.68
Factory costs	105009.60	111316.30	116875.60	122719.30	128855.80	135298.00
Administrative overheads	21106.50	21161.83	21269.92	21433.41	21655.08	21937.83
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	36231.00	36231.00	36231.00	36231.00	36231.00	36231.00
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	163347.10	169702.90	176376.50	183383.70	191329.40	199054.90
Costs per unit (single product)	5.49	5.78	5.93	6.26	6.30	6.35
Of it foreign, %	11.54	11.53	11.51	11.50	9.48	9.55
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	63493.72	65668.40	70001.82	73501.92	77177.00	81035.84

Madang --- May 13, 1988

Total Production Costs in Kina

Year	14	15	16
% of nom. capacity (single product)	100.00	100.00	100.00
Raw material 1	30529.54	32056.02	33658.82
Other raw materials	14731.40	15467.97	16241.37
Utilities	736.30	773.12	811.77
Energy	11506.05	12081.35	12645.41
Labour, direct	68027.08	71428.35	74999.77
Repair, maintenance	4489.64	4714.12	4949.83
Spares	8451.30	8873.86	9317.55
Factory overheads	3591.71	3771.30	3959.86
Factory costs	142362.90	149166.10	156624.40
Administrative overheads	28294.72	29698.96	31183.90
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	26819.00	26819.00	26819.00
Financial costs	0.00	0.00	0.00
Total production costs	197166.70	205684.00	214627.30
Costs per unit (single product)	6.63	6.91	7.21
Of it foreign, %	9.61	9.68	9.74
Of it variable, %	0.00	0.00	0.00
Total labour	85037.63	89342.01	93309.10

CONFAR 2.1 - UNIDO IC/FEAS, Vienna -----

Net Working Capital in Kina

Year		2	3	4	5	6
Coverage	ndc coto					
Current assets &						
Accounts receivable	90 4.0	53714.00	24859.70	26144.60	27451.92	26624.61
Inventory and materials	49 7.4	3468.56	3641.92	3824.00	4015.29	4216.05
Energy	1 360.0	17.90	18.69	19.62	20.60	21.60
Spares	180 2.0	2351.00	2470.65	2594.18	2723.19	2860.09
Work in progress	30 12.0	6592.17	6921.77	7267.86	7631.26	8012.30
Finished products	30 12.0	17934.67	8259.90	6714.89	9150.64	9618.17
Cash in hand	15 24.0	7618.17	2749.07	2886.53	3030.65	3182.40
Total current assets		91669.34	49001.77	51451.65	54024.45	56725.67
Current liabilities and						
Accounts payable	15 24.0	3296.38	3460.89	3633.93	3815.63	4006.40
Net working capital		88372.96	45540.88	47817.72	50208.82	52719.26
Increase in working capital		88372.26	-42831.30	3277.04	2390.90	2610.44
Net working capital, local		81066.48	37892.90	39787.54	41776.90	43866.77
Net working capital, foreign		7306.78	7647.98	8330.18	8431.92	8852.49

Note: ndc = minimum days of coverage : coto = coefficient of turnover .

Nadang --- May 13, 1988

CONFAR 2.1 - UNIDO IC/FEAS, Vienna -----

Net Working Capital in Kina

Year		7	8	9	10	11
Coverage	ndc coto					
Current assets &						
Accounts receivable	90 4.0	30265.74	31779.02	33367.97	35036.37	36788.09
Inventory and materials	49 7.4	4426.85	4648.20	4880.60	5124.63	5380.87
Energy	1 360.0	22.71	23.85	25.04	26.29	27.60
Spares	180 2.0	3033.09	3153.24	3310.91	3476.45	3650.27
Work in progress	30 12.0	8413.46	8834.13	9275.84	9739.63	10226.61
Finished products	30 12.0	10088.58	10593.01	11122.66	11678.79	12262.73
Cash in hand	15 24.0	3341.52	3508.59	3684.02	3869.22	4062.63
Total current assets		59561.95	62540.05	65667.05	68950.40	72397.61
Current liabilities and						
Accounts payable	15 24.0	4236.73	4417.07	4617.92	4839.81	5083.30
Net working capital		55325.22	58122.98	61049.13	64080.58	67314.30
Increase in working capital		2635.96	2767.76	2906.15	3051.45	3204.02
Net working capital, local		46059.05	48362.00	50780.13	53319.11	55985.05
Net working capital, foreign		9266.17	9760.97	10269.00	10761.47	11329.25

Note: ndc = minimum days of coverage : coto = coefficient of turnover .

-----CONFAR 2.1 - UNIDO IC/PEAS, Vienna -----

Net Working Capital in Kina

Year			12	13	14	15	16
Coverage	mdc	cotc					
Current assets &							
Accounts receivable	90	4.0	38627.59	40558.96	42586.91	44716.26	46952.07
Inventory and materials	49	7.4	5649.91	5932.40	6229.02	6540.48	6867.50
Energy	1	360.0	28.99	30.44	31.96	33.56	35.24
Spares	180	2.0	3832.79	4024.43	4225.65	4436.93	4658.78
Work in progress	30	12.0	10737.94	11274.84	11838.58	12430.51	13052.93
Finished products	30	12.0	12875.86	13519.66	14195.64	14905.42	15650.69
Cash in hand	15	24.0	4264.72	4477.95	4701.85	4936.94	5183.79
Total current assets			76017.80	79818.68	83809.62	88050.09	92400.09
Current liabilities and							
Accounts payable	15	24.0	5368.97	5637.42	5919.29	6215.25	6526.02
Net working capital			70648.84	74181.26	77890.33	81784.84	85874.08
Increase in working capital			3364.23	3532.42	3709.07	3894.51	4089.24
Net working capital, local			58784.31	61723.52	64809.69	68050.17	71452.67
Net working capital, foreign			11864.52	12457.75	13080.64	13734.67	14421.40

Note: mdc = minimum days of coverage : cotc = coefficient of turnover .

Madang --- May 13 . 1988

Source of Finance, construction in Kina

Year	1
Equity, ordinary ..	120500.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	480000.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	480000.00
Current liabilities	0.00
Bank overdraft	0.00

Total funds	600500.00

Madang --- May 13, 1988

CONFAR 2.1 - UNIDO SO/FEAS, Vienna

Source of Finance, production in Kina

Year	2	3	4	5	6	7	8
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	142752.00	17664.00	11376.00	8532.00	5688.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-96000.00	-96000.00	-96000.00	-96000.00	-96000.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-96000.00	-96000.00	-96000.00	-96000.00	-96000.00	0.00	0.00
Current liabilities	3296.00	164.80	173.04	161.70	190.78	200.12	210.34
Bank overdraft	237063.80	99720.28	138721.50	129918.50	121156.90	29283.19	28247.25
Total funds	287111.90	20949.09	54270.52	42632.16	31035.66	29483.31	29457.59

Madang --- May 13, 1988

CONFAR 2.1 - UNIDO SO/FEAS, Vienna

Source of Finance, production in Kina

Year	9	10	11	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	220.85	231.96	243.49	255.67	268.45	281.67	295.96
Bank overdraft	21259.69	22322.63	23438.75	34610.69	25841.19	27133.25	28490.00
Total funds	21480.54	22554.52	23682.24	34866.35	26109.64	27415.12	28785.96

Madang --- May 13, 1988

Source of Finance, production in Kina

Year	16
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	0.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	0.00
Current liabilities	110.76
Bank overdraft	29914.50

Total funds	30225.26

Našang --- May 13 . 1959

Cashflow Tables, construction in Kina

Year	1
Total cash inflow . .	600500.00

Financial resources .	600500.00
Sales, net of tax . .	0.00
Total cash outflow . .	600500.00

Total assets	600500.00
Operating costs . . .	0.00
Cost of finance . . .	0.00
Repayment	0.00
Corporate tax	0.00
Dividends paid	0.00
Surplus (deficit) .	0.00
Cumulated cash balance	0.00
Inflow, local	600500.00
Outflow, local	553440.00
Surplus (deficit) .	47060.00
Inflow, foreign . . .	0.00
Outflow, foreign . . .	47060.00
Surplus (deficit) .	-47060.00
Net cashflow	-600500.00
Cumulated net cashflow	-600500.00

Madang --- May 13, 1988

----- COMPAR 2.1 - UNIDG ID/FEAS, Vienna -----

Cashflow tables, production in Kina

Year	2	3	4	5	6	7
Total cash inflow . .	227860.60	103131.90	101747.30	103421.90	105322.40	104616.10
Financial resources .	146048.10	17228.80	11549.04	8713.70	5878.78	206.32
Sales, net of tax . .	81812.50	85903.12	90198.27	94708.18	99443.59	104415.80
Total cash outflow . .	464924.30	202852.20	240468.80	233340.30	226479.30	133899.20
Total assets	91668.35	-42666.59	2450.08	2572.59	2701.22	12836.29
Operating costs . . .	214856.00	99598.79	104578.70	109807.70	115298.10	121063.00
Cost of finance . . .	62400.00	49920.00	37440.00	24960.00	12480.00	0.00
Repayment	96000.00	96000.00	96000.00	96000.00	96000.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	-237063.80	-99720.28	-138721.50	-129918.40	-121156.90	-29283.15
Cumulated cash balance	-237063.80	-336784.00	-475505.50	-605423.90	-726580.80	-755863.90
Inflow, local	107420.80	103109.90	101724.20	103397.60	105296.90	104589.40
Outflow, local	446644.70	191382.20	228425.30	220694.60	213201.30	119957.40
Surplus (deficit) .	-339224.00	-88272.29	-126701.10	-117297.00	-107904.40	-15368.05
Inflow, foreign . . .	120439.80	21.99	23.09	24.25	25.46	26.73
Outflow, foreign . . .	18279.63	11469.98	12043.48	12645.65	13277.93	13941.83
Surplus (deficit) .	102160.20	-11447.99	-12020.39	-12621.41	-13252.48	-13915.10
Net cashflow	-221415.80	29135.72	-16657.49	-17490.38	-18364.90	-29283.15
Cumulated net cashflow	-821915.80	-792780.00	-809437.50	-826927.90	-845292.80	-874575.90

Madang --- May 13 . 1988

Cashflow tables, production in Kina

Year	8	9	10	11	12	13
Total cash inflow . .	109846.90	115339.20	121106.20	127161.50	133519.60	140195.50
Financial resources .	210.34	220.85	231.90	243.49	255.67	268.45
Sales, net of tax . .	109636.60	115118.40	120874.30	126918.00	133263.90	139927.10
Total cash outflow . .	130094.20	136598.90	143428.80	150600.30	168130.30	166036.70
Total assets	2978.09	3127.00	3283.35	3447.51	3619.89	3800.88
Operating costs . . .	127116.10	133471.90	140145.50	147152.80	154510.40	162235.80
Cost of finance . . .	0.00	0.00	0.00	0.00	0.00	0.00
Repayment	0.00	0.00	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	-20247.27	-21259.66	-22322.65	-23438.77	-34610.70	-25841.19
Cumulated cash balance	-776111.10	-797370.80	-819693.40	-843132.20	-877742.90	-903584.10
Inflow, local	109818.80	115309.80	121075.20	127129.00	133485.40	140159.70
Outflow, local	115455.20	121228.00	127289.40	133653.90	150336.60	147353.30
Surplus (deficit) .	-5636.41	-5918.27	-6214.17	-6524.87	-16851.13	-7193.64
Inflow, foreign . . .	28.07	29.47	30.94	32.49	34.12	35.82
Outflow, foreign . . .	14638.92	15370.87	16139.41	16946.38	17793.70	18643.38
Surplus (deficit) .	-14610.86	-15341.40	-16108.47	-16913.89	-17759.58	-18647.56
Net cashflow	-20247.27	-21259.66	-22322.64	-23438.77	-34610.71	-25841.19
Cumulated net cashflow	-894823.10	-916082.80	-938405.40	-961844.20	-996454.90	-1022296.00

Madang --- May 13, 1988

Cashflow tables, production in Kina

Year	14	15	16
Total cash inflow . .	147205.30	154565.60	162293.80
Financial resources . .	281.87	295.96	310.76
Sales, net of tax . . .	146923.40	154269.60	161983.00
Total cash outflow . .	174338.60	183055.50	192208.30
Total assets	3990.93	4190.47	4400.01
Operating costs	170347.60	178865.00	187808.30
Cost of finance	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00
Surplus (deficit) . .	-27133.27	-28489.94	-29914.44
Cumulated cash balance	-930717.30	-959207.30	-989121.70
Inflow, local	147167.70	154526.10	162252.30
Outflow, local	154721.00	162457.10	170579.90
Surplus (deficit) . .	-7553.34	-7931.02	-8327.56
Inflow, foreign	37.61	39.49	41.47
Outflow, foreign	19617.55	20598.43	21628.35
Surplus (deficit) . .	-19579.94	-20558.93	-21586.88
Net cashflow	-27133.27	-28489.94	-29914.44
Cumulated net cashflow	-1049429.00	-1077919.00	-1107834.00

Madang --- May 13, 1988

Cashflow Discounting:

a) Equity paid versus Net income flow:
Net present value 72232.30 at 10.00 %
Internal Rate of Return (IRRE) .. not found

b) Net Worth versus Net cash return:
Net present value -900495.70 at 10.00 %
Internal Rate of Return (IRRE2) .. -16.13 %

c) Internal Rate of Return on total investment:
Net present value -865670.40 at 10.00 %
Internal Rate of Return (IRR) .. -13.99 %

Net Worth = Equity paid plus reserves

COMPAR 2.1 - UNIDO TO/FEAS, Vienna -----

Net Income Statement inkina

Year	2	3	4	5	6
Total sales, incl. sales tax	81812.50	85903.12	90198.27	94708.18	99443.55
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	81812.50	85903.12	90198.27	94708.18	99443.55
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	251087.00	135829.00	140809.70	146038.70	151529.00
Operational margin	-169274.50	-49926.68	-50611.46	-51330.49	-52085.44
As % of total sales	-206.92	-58.12	-56.11	-54.20	-52.38
Cost of finance	62400.00	49920.00	37440.00	24960.00	12480.00
Gross profit	-231674.50	-99846.68	-88051.46	-76290.49	-64565.44
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-231674.50	-99846.68	-88051.46	-76290.49	-64565.44
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-231674.50	-99846.68	-88051.46	-76290.49	-64565.44
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-231674.50	-99846.68	-88051.46	-76290.49	-64565.44
Accumulated undistributed profit	-231674.50	-331521.28	-419572.70	-495863.20	-560428.60
Gross profit, % of total sales	-283.18	-116.23	-97.62	-80.55	-64.93
Net profit, % of total sales	-283.18	-116.23	-97.62	-80.55	-64.93
ROE, Net profit, % of equity	-192.26	-82.86	-73.07	-63.31	-53.56
ROI, Net profit+interest, % of invest.	-24.57	-7.73	-7.81	-7.89	-7.97

Nadanj --- May 13 . 1988

Net Income Statement in Kina

Year	7	8	9	10	11
Total sales, incl. sales tax	104415.00	109636.60	115118.40	120074.30	126910.00
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	104415.00	109636.60	115118.40	120074.30	126910.00
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	155293.90	163347.10	169702.90	176376.50	183383.70
Operational margin	-50878.17	-53710.52	-54584.50	-55502.20	-56465.73
As % of total sales	-48.73	-48.99	-47.42	-45.92	-44.49
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	-50878.17	-53710.52	-54584.50	-55502.20	-56465.73
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-50878.17	-53710.52	-54584.50	-55502.20	-56465.73
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-50878.17	-53710.52	-54584.50	-55502.20	-56465.73
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-50878.17	-53710.52	-54584.50	-55502.20	-56465.73
Accumulated undistributed profit . . .	-611306.80	-665017.30	-719601.80	-775104.00	-831569.80
Gross profit, % of total sales	-48.73	-48.99	-47.42	-45.92	-44.49
Net profit, % of total sales	-48.73	-48.99	-47.42	-45.92	-44.49
ROI, Net profit, % of equity	-42.22	-44.57	-45.30	-46.06	-46.86
ROI, Net profit+interest, % of invest.	-7.64	-8.53	-8.13	-8.23	-8.33

COMPAR 2.1 - UNIDO 10/FEAS, Vienna -----

Net Income Statement in Kina

Year	12	13	14	15	16
Total sales, incl. sales tax	133263.90	139927.10	146923.40	154269.60	161983.70
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	133263.90	139927.10	146923.40	154269.60	161983.00
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	181329.40	189854.80	197166.60	205684.10	214627.30
Operational margin	-48065.48	-49127.77	-50243.20	-51414.47	-52644.23
As % of total sales	-36.07	-35.11	-34.20	-33.33	-32.50
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	-48065.48	-49127.77	-50243.20	-51414.47	-52644.23
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-48065.48	-49127.77	-50243.20	-51414.47	-52644.23
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-48065.48	-49127.77	-50243.20	-51414.47	-52644.23
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-48065.48	-49127.77	-50243.20	-51414.47	-52644.23
Accumulated undistributed profit . . .	-879635.30	-928763.00	-979006.20	-1030421.00	-1083065.00
Gross profit, % of total sales	-36.07	-35.11	-34.20	-33.33	-32.50
Net profit, % of total sales	-36.07	-35.11	-34.20	-33.33	-32.50
ROE, Net profit, % of equity	-39.89	-40.77	-41.70	-42.67	-43.69
ROI, Net profit+interest, % of invest.	-6.95	-7.07	-7.19	-7.32	-7.45

Nadang --- May 13, 1988

Projected Balance Sheets, construction in Kina

Year	1
Total assets	600500.00
Fixed assets, net of depreciation	0.00
Construction in progress	600500.00
Current assets	0.00
Cash, bank	0.00
Cash surplus, finance available	0.00
Loss carried forward	0.00
Less	0.00
Total liabilities	600500.00
Equity capital	123500.00
Reserves, retained profit	0.00
Profit	0.00
Long and medium term debt	480000.00
Current liabilities	0.00
Bank overdraft, finance require ^d	0.00
Total debt	480000.00
Equity, % of liabilities	20.07

Madang --- May 13, 1988

CONFAR 2.1 - UNIDO IC/FEAS, Vienna

Projected Balance Sheets, Production in Kina

Year	2	3	4	5	6	7
Total assets	887611.96	908560.96	962831.40	1005464.00	1036499.00	1065983.00
Fixed assets, net of depreciation	564269.00	528038.00	491807.00	455576.00	419345.00	385114.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	10000.00
Current assets	84050.19	46252.70	48565.32	50993.59	53543.27	56220.44
Cash, bank	7618.17	2749.07	2886.53	3030.85	3182.40	3341.52
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	0.00	231674.50	331521.20	419572.70	495963.20	565428.60
Loss	231674.50	99866.68	88051.46	76290.49	64565.44	50878.17
Total liabilities	887611.96	908560.96	962831.40	1005464.00	1036499.00	1065983.00
Equity capital	263252.00	280316.00	291692.00	300224.00	305912.00	305912.00
Reserves, retained profit	0.00	0.00	0.00	0.00	0.00	0.00
Profit	0.00	0.00	0.00	0.00	0.00	0.00
Long and medium term debt	384000.00	288000.00	192000.00	96000.00	0.00	0.00
Current liabilities	3296.08	3460.99	3633.93	3815.63	4006.41	4208.72
Bank overdraft, finance required	237063.80	336784.10	475505.53	605424.00	726580.90	755364.00
Total debt	624359.90	628244.90	671139.40	705239.60	730587.30	760072.00
Equity, % of liabilities	29.66	30.85	30.30	29.86	29.51	28.70

Nadang --- May 13, 1988

CONFAR 2.1 - UNIDO IC/FEAS, Vienna

Projected Balance Sheets, Production in Kina

Year	8	9	10	11	12	13
Total assets	1086440.00	1107921.00	1130476.00	1154158.00	1189024.00	1215134.00
Fixed assets, net of depreciation	358883.00	322652.00	286421.00	250190.00	223371.00	206551.00
Construction in progress	0.00	0.00	0.00	0.00	10000.00	0.00
Current assets	59031.45	61983.02	65082.18	68336.28	71753.09	75343.74
Cash, bank	3508.59	3688.02	3868.22	4061.63	4264.72	4470.95
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	611306.80	665017.30	719601.80	775104.00	831569.80	879635.30
Loss	53710.52	54574.50	55502.20	56465.73	48065.48	49127.77
Total liabilities	1086440.00	1107921.00	1130476.00	1154158.00	1189024.00	1215134.00
Equity capital	305912.00	305912.00	305912.00	305912.00	305912.00	305912.00
Reserves, retained profit	0.00	0.00	0.00	0.00	0.00	0.00
Profit	0.00	0.00	0.00	0.00	0.00	0.00
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	4417.07	4637.92	4869.81	5113.31	5368.97	5637.42
Bank overdraft, finance required	776111.30	797371.00	819693.70	843132.30	877743.00	923384.40
Total debt	780528.40	802038.90	824563.50	848245.60	883112.00	929221.80
Equity, % of liabilities	28.16	27.61	27.06	26.51	25.73	25.18

Nadang --- May 13, 1988

Projected Balance Sheets, Production in Kin:

Year	14	15	16
Total assets	1242549.00	1271335.00	1301560.00
Fixed assets, net of depreciation	179733.00	152914.00	126095.00
Construction in progress	0.00	0.00	0.00
Current assets	79107.77	83063.16	87216.31
Cash, bank	4701.85	4936.94	5183.79
Cash surplus, finance available .	0.00	0.00	0.00
Loss carried forward	928763.00	979006.20	1030421.00
Loss	50243.20	51414.47	52644.23
Total liabilities	1242549.00	1271335.00	1301560.00
Equity capital	305912.00	305912.00	305912.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	0.00	0.00	0.00
Current liabilities	5919.29	6215.25	6526.02
Bank overdraft, finance required.	930717.60	959207.50	989122.00
Total debt	936636.90	965422.80	995648.00
Equity, % of liabilities	24.62	24.06	23.50

Bulolo
May 13, 1988
+++++++

1 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: Kina

Total initial investment during construction phase

fixed assets:	24350.00	0.000 % foreign
current assets:	0.00	0.000 % foreign
total assets:	24350.00	0.000 % foreign

Source of funds during construction phase

equity & grants:	24350.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	24350.00	0.000 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	11294.00	11858.70	12451.63
depreciation :	2335.00	2335.00	2335.00
interest :	0.00	0.00	0.00
production costs	13529.00	14193.70	14786.63
thereof foreign:	13.52 %	13.63 %	13.73 %
total sales :	15750.00	16537.50	17364.37
gross income :	2121.00	2343.80	2577.74
net income :	2121.00	2343.80	2577.74
cash balance :	602.27	4486.11	4710.42
net cashflow :	602.27	4486.11	4710.42

Net Present Value at: 10.00 % = 17006.00

Internal Rate of Return: 18.20 %

Return on equity1: 13.84 %

Return on equity2: 18.20 %

Index of Schedules produced by CONPAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

Total Initial Investment in Kina

Year	1
Fixed investment costs	
Land, site preparation, development	0.00
Buildings and civil works	2000.00
Auxiliary and service facilities .	0.00
Incorporated fixed assets	0.00
Plant machinery and equipment . . .	18600.00

Total fixed investment costs	20600.00
Pre-production capital expenditures.	3750.00
Net working capital	0.00

Total initial investment costs . . .	24350.00
Of it foreign, in \$	0.00

Bulolo --- May 13, 1988

----- COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Total Current Investment in Kina

Year	2	3	4	5	6	7
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	3853.73	192.69	202.32	212.44	223.06	234.21
Total current investment costs . . .	3853.73	192.69	202.32	212.44	223.06	234.21
Of it foreign, \$	21.91	21.91	21.91	21.91	21.91	21.91

Bulcic --- May 13, 1988

----- COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Total Current Investment in Kina

Year	8	9	10	11	12	13
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	245.92	258.22	271.13	284.69	298.92	313.87
Total current investment costs . . .	245.92	258.22	271.13	284.69	298.92	313.87
Of it foreign, \$	21.91	21.91	21.91	21.91	21.91	21.91

Bulcic --- May 13, 1988

Total Current Investment in Eina

Year	14	15	16
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00
Working capital	329.56	346.04	363.34
Total current investment costs . . .	329.56	346.04	363.34
Of it foreign, \$	21.91	21.91	21.91

----- COMPAR 2.1 - UNIDO IO FEAS. Vienna -----

Total Production Costs in Kina

Year	2	3	4	5	6	7
% of nom. capacity (single product).	100.00	100.00	100.00	100.00	100.00	100.00
Raw material 1	3030.00	3150.00	3307.50	3472.87	3646.52	3828.84
Other raw materials	1842.00	1934.10	2030.80	2132.34	2238.96	2350.91
Utilities	102.00	107.10	112.45	118.08	123.98	130.18
Energy	600.00	630.00	661.50	694.57	729.30	765.77
Labour, direct	3750.00	3937.50	4134.37	4341.09	4558.15	4786.06
Repair, maintenance	1000.00	1050.00	1102.50	1157.62	1215.51	1276.28
Spares	1000.00	1050.00	1102.50	1157.62	1215.51	1276.28
Factory overheads	0.00	0.00	0.00	0.00	0.00	0.00
Factory costs	11294.00	11858.70	12451.63	13074.21	13727.92	14424.32
Administrative overheads	0.00	0.00	0.00	0.00	0.00	0.00
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	2335.00	2335.00	2335.00	2335.00	2335.00	2335.00
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	13629.00	14193.70	14786.63	15409.21	16062.92	16749.32
Costs per unit (single product)	1.30	1.35	1.41	1.47	1.53	1.60
Of it foreign, %	13.52	13.63	13.73	13.84	13.94	14.04
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	3750.00	3937.50	4134.37	4341.09	4558.15	4786.06

 Bulalo --- May 13 , 1988

Total Production Costs in Kina

Year	8	9	10	11	12	13
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material 1	4026.29	4221.30	4432.37	4653.99	4886.68	5131.02
Other raw materials	2468.46	2591.88	2721.47	2857.55	3009.42	3150.44
Utilities	136.69	143.52	150.70	158.24	166.15	174.45
Energy	804.06	844.26	886.47	938.80	977.34	1026.20
Labour, direct	5025.36	5276.63	5540.46	5817.48	6108.35	6413.77
Repair, maintenance	1340.10	1407.10	1477.46	1551.33	1628.89	1710.34
Spares	1340.10	1407.10	1477.46	1551.33	1628.89	1710.34
Factory overheads	0.00	0.00	0.00	0.00	0.00	0.00
Factory costs	15135.04	15891.79	16686.38	17520.70	18396.73	19316.56
Administrative overheads	0.00	0.00	0.00	0.00	0.00	0.00
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	2335.00	2335.00	2335.00	2335.00	100.00	100.00
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	17470.04	18226.79	19021.38	19855.70	18496.73	19416.56
Costs per unit (single product)	1.66	1.74	1.81	1.89	1.76	1.85
Of it foreign, %	14.13	14.22	14.31	14.39	16.22	16.23
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	5025.36	5276.63	5540.46	5817.48	6108.35	6413.77

CONFAR 2.1 - UNIDO IO/PEAS, Vienna -----

Total Production Costs in Kina

Year	14	15	16
% of nom. capacity (single product).	100.00	100.00	100.00
Raw material :	5307.57	5656.94	5939.79
Other raw materials	3307.97	3473.36	3607.03
Utilities	183.18	192.34	201.95
Energy	1077.51	1131.39	1107.96
Labour, direct	6734.46	7071.18	7424.74
Repair, maintenance	1795.86	1885.65	1979.93
Spares	1795.86	1885.65	1979.93
Factory overheads	0.00	0.00	0.00
Factory costs	20282.39	21296.51	22361.33
Administrative overheads	0.00	0.00	0.00
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	100.00	100.00	100.00
Financial costs	0.00	0.00	0.00
Total production costs	20382.39	21396.51	22461.33
Costs per unit (single product)	1.94	2.04	2.14
Of it foreign, %	16.23	16.23	16.24
Of it variable, %	0.00	0.00	0.00
Total labour	6734.46	7071.18	7424.74

Bulolo --- May 13 , 1988

COMPAR 2.1 - UNIDO IC/FEAS, Vienna -----

Net Working Capital in Kina

Year			2	3	4	5	6
Coverage	mdc	coto					
Current assets &							
Accounts receivable	90	4.0	2823.55	2364.67	3112.91	3268.55	3431.94
Inventory and materials	23	15.7	115.62	331.40	347.97	365.37	383.63
Energy	1	360.0	1.67	1.75	1.84	1.93	2.03
Spares	1	360.0	2.78	2.92	3.06	3.22	3.38
Work in progress	15	24.0	470.58	494.11	518.82	544.76	571.00
Finished products	15	24.0	470.58	494.11	518.82	544.76	571.00
Cash in hand	15	24.0	239.58	251.56	264.14	277.35	291.21
Total current assets			4324.31	4540.53	4767.55	5005.93	5256.33
Current liabilities and							
Accounts payable	15	24.0	470.58	494.11	518.82	544.76	571.00
Net working capital			3853.73	4046.41	4248.73	4461.17	4685.33
Increase in working capital			3853.73	192.69	202.32	212.64	223.06
Net working capital, local			3009.48	3159.95	3317.95	3483.85	3658.04
Net working capital, foreign			844.25	886.46	930.79	977.32	1028.29

Note: mdc = minimum days of coverage : coto = coefficient of turnover .

Bulalo --- May 13 . 1988

COMPAR 2.1 - UNIDO IC/FEAS, Vienna -----

Net Working Capital in Kina

Year			7	8	9	10	11
Coverage	mdc	coto					
Current assets &							
Accounts receivable	90	4.0	3603.58	3783.76	3972.95	4171.59	4380.17
Inventory and materials	23	15.7	402.82	422.96	444.10	466.31	489.62
Energy	1	360.0	2.13	2.23	2.35	2.46	2.59
Spares	1	360.0	3.55	3.72	3.91	4.10	4.31
Work in progress	15	24.0	600.60	630.63	662.16	695.27	730.03
Finished products	15	24.0	600.60	630.63	662.16	695.27	730.03
Cash in hand	15	24.0	305.78	321.06	337.12	353.97	371.67
Total current assets			5519.04	5794.99	6084.74	6388.98	6708.42
Current liabilities and							
Accounts payable	15	24.0	600.60	630.63	662.16	695.27	730.03
Net working capital			4918.44	5164.36	5422.58	5693.71	5978.39
Increase in working capital			234.21	245.92	258.22	271.13	284.69
Net working capital, local			3840.94	4032.99	4234.64	4446.37	4668.59
Net working capital, foreign			1077.50	1131.38	1187.94	1247.34	1309.71

Note: mdc = minimum days of coverage : coto = coefficient of turnover .

Bulalo --- May 13 . 1988

Net Working Capital in Kisa

Year		12	13	14	15	16
Coverage	mdc coto					
Current assets &						
Accounts receivable	96 4.3	4599.18	4829.14	5070.60	5324.13	5595.33
Inventory and materials	23 15.7	514.11	539.81	566.80	595.14	624.90
Energy	1 360.0	2.71	2.05	2.99	3.14	3.30
Spares	1 360.0	4.52	4.75	4.99	5.24	5.50
Work in progress	15 24.0	766.53	804.86	845.10	887.35	931.72
Finished products	15 24.0	766.53	804.86	845.10	887.35	931.72
Cash in hand	15 24.0	390.26	409.77	430.26	451.77	474.36
Total current assets		7043.84	7396.04	7765.84	8154.13	8561.83
Current liabilities and						
Accounts payable	15 24.0	766.53	804.86	845.10	887.35	931.72
Net working capital		6277.31	6591.18	6920.74	7266.77	7630.11
Increase in working capital		298.92	313.87	329.56	346.04	363.34
Net working capital, local		4902.12	5147.23	5404.59	5674.82	5958.56
Net working capital, foreign		1375.19	1443.95	1516.15	1591.96	1671.56

Note: mdc = minimum days of coverage ; coto = coefficient of turnover .

Source of Finance, construction in kina

Year	1
Equity, ordinary ..	24350.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A. foreign .	0.00
Loan B. foreign..	0.00
Loan C. foreign .	0.00
Loan A. local....	0.00
Loan B. local....	0.00
Loan C. local....	0.00

Total loan	0.00
Current liabilities	0.00
Bank overdraft	0.00

Total funds	24350.00

Bulele --- May 13 . 1988

----- COMPAR 2.1 - UNIDO IO/FEAS. Vienna -----

Source of Finance, production in Kina

Year	2	3	4	5	6	7	8
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	470.58	23.53	24.71	25.94	27.24	28.60	30.03
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	470.58	23.53	24.71	25.94	27.24	28.60	30.03

Bulalo --- May 13, 1988

----- COMPAR 2.1 - UNIDO IO/FEAS. Vienna -----

Source of Finance, production in Kina

Year	9	10	11	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	31.53	33.11	34.76	36.50	38.33	40.24	42.25
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	31.53	33.11	34.76	36.50	38.33	40.24	42.25

Bulalo --- May 13, 1988

Source of Finance, production in Kina

Year	16
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A. foreign .	0.00
Loan B. foreign..	0.00
Loan C. foreign .	0.00
Loan A. local....	0.00
Loan B. local....	0.00
Loan C. local....	0.00

Total loan	0.00
Current liabilities	44.37
Bank overdraft	0.00

Total funds	44.37

Bulic --- May 13 . 1988

Cashflow Tables, construction inkina

Year	1
Total cash inflow . .	24350.00
Financial resources .	24350.00
Sales, net of tax . .	0.00
Total cash outflow . .	24350.00
Total assets	24350.00
Operating costs . . .	0.00
Cost of finance . . .	0.00
Repayment	0.00
Corporate tax	0.00
Dividends paid	0.00
Surplus (deficit) .	0.00
Cumulated cash balance	0.00
Inflow, local	24350.00
Outflow, local	24350.00
Surplus (deficit) .	0.00
Inflow, foreign	0.00
Outflow, foreign . . .	0.00
Surplus (deficit) .	0.00
Net cashflow	-24350.00
Cumulated net cashflow	-24350.00

Buloh --- May 13, 1959

COMPAR 2.1 - UNCC COMPEAS, Vienna -----

Cashflow tables, production in Kina

Year	2	3	4	5	6	7
Total cash inflow	16226.58	16561.03	17389.08	18258.53	19171.46	20130.03
Financial resources	478.58	21.53	24.71	25.94	27.24	28.60
Sales, net of tax	15750.00	16537.50	17364.37	18232.59	19144.22	20101.43
Total cash outflow	15740.06	12196.66	12800.41	13434.34	14099.97	14798.08
Total assets	4324.31	216.22	227.03	238.38	250.30	262.81
Operating costs	11294.00	11858.70	12451.63	13074.21	13727.92	14414.32
Cost of finance	0.00	0.00	0.00	0.00	0.00	0.00
Repayment	0.00	0.00	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	121.75	121.75	121.75	121.75	121.75	121.75
Surplus (deficit)	480.52	4364.37	4528.67	4824.19	5071.49	5331.15
Cumulated cash balance	480.52	4841.89	9423.55	14257.75	19329.24	24660.39
Inflow, local	10143.83	16557.19	17365.05	18254.30	19167.02	20125.37
Outflow, local	12977.06	10216.81	10721.25	11311.23	11807.70	12392.00
Surplus (deficit)	3166.77	6340.61	6663.79	7003.08	7359.32	7733.37
Inflow, foreign	76.75	1.84	4.03	4.23	4.44	4.56
Outflow, foreign	2763.90	1980.15	2079.16	2183.12	2292.27	2406.88
Surplus (deficit)	-2686.25	-1976.31	-2075.13	-2178.88	-2287.83	-2402.32
Net cashflow	602.27	4486.12	4710.42	4945.94	5193.24	5452.90
Cumulated net cashflow	-23747.73	-19261.61	-14551.19	-9605.25	-4412.01	1040.89

Bulalo --- May 13, 1936

CONFAR 2.1 - UNIDO TO FEAS, Vienna

Cashflow tables, production in Kina

Year	8	9	10	11	12	13
Total cash inflow . .	21136.53	22193.36	23303.02	24468.18	25691.58	26976.16
Financial resources .	30.03	31.53	33.11	34.76	36.50	38.33
Sales, net of tax . .	21106.50	22161.83	23269.92	24433.41	25655.08	26937.83
Total cash outflow . .	15532.74	16303.29	17112.36	17961.89	18851.89	19790.51
Total assets	275.95	289.75	304.24	319.45	335.42	352.19
Operating costs . . .	15135.04	15891.79	16686.38	17520.70	18396.72	19316.56
Cost of finance . . .	0.00	0.00	0.00	0.00	0.00	0.00
Repayment	0.00	0.00	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	121.75	121.75	121.75	121.75	121.75	121.75
Surplus (deficit) . .	5603.79	5893.07	6190.66	6506.28	6837.69	7185.65
Cumulated cash balance	30264.18	36154.24	42344.90	48851.18	55688.87	62874.52
Inflow, local	21131.63	22188.21	23297.63	24462.51	25685.63	26969.91
Outflow, local	13095.51	13649.70	14326.09	15036.31	15782.03	16565.05
Surplus (deficit) . .	8126.13	8538.51	8971.53	9426.19	9903.59	10404.86
Inflow, foreign	4.90	5.14	5.40	5.67	5.95	6.25
Outflow, foreign	2527.23	2653.59	2786.27	2925.58	3071.86	3225.45
Surplus (deficit) . .	-2522.33	-2648.45	-2780.87	-2919.91	-3065.91	-3219.20
Net cashflow	5725.54	6011.82	6312.41	6628.03	6959.44	7307.40
Cumulated net cashflow	6766.43	12778.25	19090.66	25718.69	32678.13	39985.53

Bulcio --- May 13, 1968

Cashflow tables, production in Kina

Year	14	15	16
Total cash inflow . .	28324.96	29741.21	31228.27
Financial resources . .	40.24	42.25	44.37
Sales, net of tax . .	28284.72	29698.96	31183.90
Total cash outflow . .	20773.94	21806.55	22890.79
Total assets	369.80	368.29	407.71
Operating costs	20282.39	21296.51	22361.33
Cost of finance	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00
Dividends paid	121.75	121.75	121.75
Surplus (deficit) . .	7551.02	7934.66	8337.49
Cumulated cash balance	70425.55	78360.20	86697.69
Inflow, local	28318.40	29734.32	31221.04
Outflow, local	17387.22	18250.49	19156.92
Surplus (deficit) . .	10931.19	11483.83	12064.12
Inflow, foreign	6.56	6.89	7.24
Outflow, foreign	3386.73	3556.06	3733.87
Surplus (deficit) . .	-3380.16	-3549.17	-3726.63
Net cashflow	7672.77	8056.41	8459.24
Cumulated net cashflow	47658.30	55714.71	64173.95

Cashflow Discounting:

a) Equity paid versus Net income flow:
Net present value 5923.13 at 10.00 %
Internal Rate of Return (IRRE1) .. 13.94 %

b) Net Worth versus Net cash return:
Net present value 17006.00 at 10.00 %
Internal Rate of Return (IRRE2) .. 19.20 %

c) Internal Rate of Return on total investment:
Net present value 17006.00 at 10.00 %
Internal Rate of Return (IRR) .. 18.20 %

Net Worth = Equity paid plus reserves

-----CONFAR 2.1 - UNIDO IO/FEAS, Vienna -----

Net Income Statement in Kina

Year	2	3	4	5	6
Total sales, incl. sales tax	15750.00	16537.50	17364.37	18232.59	19144.22
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	15750.00	16537.50	17364.37	18232.59	19144.22
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	13629.00	14193.70	14786.63	15409.21	16062.92
Operational margin	2121.00	2343.80	2577.74	2823.38	3081.30
As % of total sales	13.47	14.17	14.84	15.49	16.10
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	2121.00	2343.80	2577.74	2823.38	3081.30
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	2121.00	2343.80	2577.74	2823.38	3081.30
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	2121.00	2343.80	2577.74	2823.38	3081.30
Dividends paid	121.75	121.75	121.75	121.75	121.75
Undistributed profit	1999.25	2222.05	2455.99	2701.63	2959.55
Accumulated undistributed profit . . .	1999.25	4221.30	6677.29	9378.92	12338.46
Gross profit, % of total sales	13.47	14.17	14.84	15.49	16.10
Net profit, % of total sales	13.47	14.17	14.84	15.49	16.10
ROE, Net profit, % of equity	8.71	9.63	10.59	11.59	12.65
ROI, Net profit-interest, % of invest.	7.52	8.25	9.01	9.80	10.61

Bulalo --- May 13, 1988

CONFAB 2.1 - UNIDO IC/FEAS, Vienna -----

Net Income Statement in Kina

Year	7	8	9	10	11
Total sales, incl. sales tax	20101.43	21106.50	22161.83	23269.92	24433.41
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	20101.43	21106.50	22161.83	23269.92	24433.41
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	16749.32	17470.04	18226.79	19021.38	19855.70
Operational margin	3352.11	3636.46	3935.04	4248.54	4577.72
As % of total sales	16.68	17.23	17.76	18.26	18.74
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	3352.11	3636.46	3935.04	4248.54	4577.72
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	3352.11	3636.46	3935.04	4248.54	4577.72
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	3352.11	3636.46	3935.04	4248.54	4577.72
Dividends paid	121.75	121.75	121.75	121.75	121.75
Undistributed profit	3230.36	3514.71	3813.29	4126.79	4455.97
Accumulated undistributed profit . . .	15560.82	19083.54	22896.82	27023.61	31479.58
Gross profit, % of total sales	16.68	17.23	17.76	18.26	18.74
Net profit, % of total sales	16.68	17.23	17.76	18.26	18.74
ROE, Net profit, % of equity	13.77	14.53	16.16	17.45	18.80
ROI, Net profit+interest, % of invest.	11.45	12.32	13.22	14.14	15.09

Dulole --- May 13, 1988

----- COMPAR 2.1 - UNIDO IC/FEAS, Vienna -----

Net Income Statement inkina

Year	12	13	14	15	16
Total sales, incl. sales tax	25655.08	26937.83	28284.72	29698.96	31185.90
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	25655.08	26937.83	28284.72	29698.96	31185.90
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	18496.73	19416.56	20382.39	21396.51	22461.33
Operational margin	7158.35	7521.27	7902.33	8302.45	8722.57
As % of total sales	27.90	27.92	27.94	27.96	27.97
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	7158.35	7521.27	7902.33	8302.45	8722.57
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	7158.35	7521.27	7902.33	8302.45	8722.57
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	7158.35	7521.27	7902.33	8302.45	8722.57
Dividends paid	121.75	121.75	121.75	121.75	121.75
Undistributed profit	7036.60	7399.52	7780.58	8180.70	8600.82
Accumulated undistributed profit . . .	38516.18	45915.70	53696.29	61876.98	70477.80
Gross profit, % of total sales	27.50	27.92	27.94	27.96	27.97
Net profit, % of total sales	27.90	27.92	27.94	27.96	27.97
ROE, Net profit, % of equity	29.40	30.89	32.45	34.10	35.82
ROI, Net profit+interest, % of invest.	23.37	24.31	25.27	26.26	27.27

 Bulolo --- May 13, 1988

Projected Balance Sheets, construction in Kina

Year	i
Total assets	24350.00

Fixed assets, net of depreciation	0.00
Construction in progress	24350.00
Current assets	0.00
Cash, bank	0.00
Cash surplus, finance available .	0.00
Loss carried forward	0.00
Less	0.00
Total liabilities	24350.00

Equity capital	24350.00
Reserves, retained profit	0.00
Profit	0.00
Long and medium term debt	0.00
Current liabilities	0.00
Bank overdraft, finance required.	0.00
Total debt	0.00
Equity, % of liabilities	100.00

----- Bulolo --- May 13, 1988

----- COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Projected Balance Sheets, Production in Kina

Year	2	3	4	5	6	7
Total assets	26941.58	29187.16	31667.86	34395.42	37382.21	40641.27
Fixed assets, net of depreciation	22015.00	19680.00	17345.00	15010.00	12675.00	10340.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	0.00
Current assets	4084.73	4288.95	4503.41	4728.58	4965.01	5213.26
Cash, bank	239.58	251.56	264.14	277.35	291.21	305.78
Cash surplus, finance available .	602.27	4966.64	9555.30	14379.49	19450.98	24782.13
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	26941.58	29187.16	31667.86	34395.42	37382.21	40641.27
Equity capital	24350.00	24350.00	24350.00	24350.00	24350.00	24350.00
Reserves, retained profit	0.00	1999.25	4221.30	6677.29	9378.92	12339.46
Profit	2121.00	2343.80	2577.74	2823.38	3081.30	3352.11
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	470.58	494.11	518.82	544.76	572.00	600.60
Bank overdraft, finance required.	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	470.58	494.11	518.82	544.76	572.00	600.60
Equity, % of liabilities	90.38	83.43	76.89	70.79	65.14	59.91

Bulolo --- May 13, 1988

----- COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Projected Balance Sheets, Production in Kina

Year	8	9	10	11	12	13
Total assets	44185.91	48030.73	52190.63	56681.36	63754.46	71192.31
Fixed assets, net of depreciation	8005.00	5670.00	3335.00	1000.00	900.00	800.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	0.00
Current assets	5473.92	5747.62	6035.00	6336.75	6653.59	6985.27
Cash, bank	321.06	337.12	353.97	371.67	390.26	409.77
Cash surplus, finance available .	30385.92	36276.00	42466.66	48972.93	55810.62	62596.28
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	44185.91	48030.73	52190.63	56681.36	63754.46	71192.31
Equity capital	24350.00	24350.00	24350.00	24350.00	24350.00	24350.00
Reserves, retained profit	15568.82	19083.54	22496.82	27023.61	31479.58	36516.18
Profit	3636.46	3935.04	4248.54	4577.72	4921.15	5261.27
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	630.63	662.16	695.27	730.03	766.53	804.86
Bank overdraft, finance required.	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	630.63	662.16	695.27	730.03	766.53	804.86
Equity, % of liabilities	55.11	50.70	46.66	42.95	38.19	34.20

Bulolo --- May 13, 1988

Projected Balance Sheets, Production in Kina

Year	14	15	16
Total assets	79013.13	87236.08	95881.27
Fixed assets, net of depreciation	700.00	600.00	500.00
Construction in progress	0.00	0.00	0.00
Current assets	7335.58	7702.36	8087.48
Cash, bank	430.26	451.77	474.36
Cash surplus, finance available .	70547.30	70481.95	86819.44
Less carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	79013.13	87236.08	95881.27
Equity capital	24350.00	24350.00	24350.00
Reserves, retained profit	45615.70	53696.29	61876.98
Profit	7902.33	8302.45	8722.57
Long and medium term debt	0.00	0.00	0.00
Current liabilities	845.10	887.35	931.72
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	845.10	887.35	931.72
Equity, % of liabilities	30.82	27.91	25.40

Bulalo --- May 13, 1968

Net Blue Tannery - Lae
 May 10, 1988
 ++++++

1 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
 local currency 1 unit = 1.0000 units accounting currency
 accounting currency: thousand Kina

Total initial investment during construction phase

fixed assets:	754.20	11.549 % foreign
current assets:	0.00	0.000 % foreign
total assets:	754.20	11.549 % foreign

Source of funds during construction phase

equity & grants:	465.00	0.000 % foreign
foreign loans :	0.00	
local loans :	420.00	
total funds :	885.00	0.000 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	483.01	471.55	459.85
depreciation :	52.42	52.42	52.42
interest :	54.60	89.18	69.16
production costs	590.03	613.15	581.43
thereof foreign	8.44 %	10.02 %	11.02 %
total sales :	440.00	630.00	661.50
gross income :	-150.03	16.85	80.07
net income :	-150.03	16.85	80.07
cash balance :	-20.91	-51.34	28.28
net cashflow :	-232.31	161.34	205.56

Net Present Value at: 10.00 % = 618.97
 Internal Rate of Return: 17.87 %
 Return on equity1: 13.60 %
 Return on equity2: 16.54 %

Index of Schedules produced by CONFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

Total Initial Investment in thousand Kina

Year	1
Fixed investment costs	
Land, site preparation, development	470.00
Buildings and civil works	14.00
Auxiliary and service facilities	12.00
Incorporated fixed assets	0.00
Plant machinery and equipment	174.20

Total fixed investment costs	670.20
Pre-production capital expenditures	84.00
Net working capital	0.00

Total initial investment costs	754.20
Of it foreign, in \$	11.55

----- CONFAR 2.1 - UNIDO IG/FEAS. Vienna -----

Total Current Investment in thousand Kina

Year	2	3	4	5	6	7
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	12.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	12.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	109.31	-2.88	-3.91	9.13	9.58	12.00
Total current investment costs . . .	109.31	-2.88	-3.91	9.13	9.58	22.00
Of it foreign, \$	11.71	100.00	100.00	16.16	16.16	7.37

Wet Blue Tannery - Lae --- May 10, 1988

----- CONFAR 2.1 - UNIDO IG/FEAS. Vienna -----

Total Current Investment in thousand Kina

Year	8	9	10	11	12	13
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	12.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	12.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	10.56	11.09	11.65	12.23	12.84	13.48
Total current investment costs . . .	10.56	11.09	11.65	12.23	24.84	13.48
Of it foreign, \$	16.16	16.16	16.16	16.16	8.35	16.16

Wet Blue Tannery - Lae --- May 10, 1988

COMPAR 2.1 - UNIDO SO/P/848, Vienna -----

Total Current Investment in thousand Kina

Year	14	15	16
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00
Working capital	14.16	14.86	15.61
Total current investment costs . . .	14.16	14.86	15.61
Of it foreign. %	16.16	16.16	16.16

Wet Blue Tannery - Lae --- May 10 . 1988

----- COMPAR 2.1 - UNIDO IC/SEAS, Vienna -----

Total Production Costs in thousand Lira

Year	2	3	4	5	6	7
% of nom. capacity (single product)	73.33	100.00	100.00	100.70	100.00	100.00
Raw material I	160.00	210.00	220.50	231.53	243.10	255.26
Other raw materials	36.71	48.18	50.59	53.12	55.77	58.56
Utilities	4.08	5.35	5.62	5.98	6.20	6.51
Energy	15.56	20.42	21.44	22.52	23.64	24.82
Labour, direct	39.25	41.21	43.27	45.44	47.71	50.09
Repair, maintenance	24.20	25.41	26.68	28.01	29.42	30.89
Spares	8.71	9.15	9.60	10.08	10.59	11.12
Factory overheads	19.00	19.95	20.95	21.99	23.09	24.25
Factory costs	307.51	379.67	398.66	418.59	439.52	461.50
Administrative overheads	175.50	91.88	61.19	64.25	67.46	70.83
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	52.42	52.42	52.42	52.42	52.42	50.02
Financial costs	54.60	89.18	69.16	52.13	31.91	10.89
Total production costs	590.03	613.15	581.43	587.39	593.92	593.24
Costs per unit (single product)	0.04	0.03	0.03	0.03	0.03	0.03
Of it foreign, %	8.44	10.02	11.02	11.38	11.71	12.28
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	124.25	94.76	84.07	88.27	92.66	97.32

----- Wet Blue Tannery - Loe --- May 10, 1988 -----

CONFAP 2.1 - UNIDO SO/PEAS, Vienna

Total Production Costs in thousand Kina

Year	8	9	10	11	12	13
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material I	268.02	281.42	295.49	310.27	325.78	342.97
Other raw materials	61.49	64.56	67.79	71.18	74.74	78.48
Utilities	6.83	7.18	7.54	7.92	8.31	8.72
Energy	26.06	27.37	28.74	30.17	31.68	33.27
Labour, direct	52.60	55.23	57.99	60.89	63.93	67.13
Repair, maintenance	32.43	34.05	35.75	37.54	39.42	41.39
Spares	11.67	12.26	12.87	13.51	14.19	14.90
Factory overheads	25.46	26.73	28.07	29.48	30.95	32.50
Factory costs	484.57	508.80	534.24	560.95	589.00	618.45
Administrative overheads	74.38	78.09	82.00	86.10	90.40	94.92
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	52.42	52.42	52.42	52.42	26.60	26.60
Financial costs	1.20	0.60	0.00	0.00	0.00	0.00
Total production costs	612.56	639.91	668.66	699.47	706.00	739.97
Costs per unit (single product)	0.03	0.03	0.03	0.03	0.04	0.04
Of it foreign, %	12.41	12.41	12.40	12.39	12.59	11.62
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	102.18	107.29	112.66	118.29	124.20	130.42

Wet Blue Tannery - Lae --- May 1963

Total Production Costs in thousand Rina

Year	14	15	16
% of nom. capacity (single product)	100.00	100.00	106.25
Raw material 1	359.27	377.23	395.99
Other raw materials	82.40	86.52	93.85
Utilities	9.16	9.62	10.10
Energy	34.93	36.68	38.51
Labour, direct	70.49	74.01	77.71
Repair, maintenance	43.46	45.63	47.91
Spares	15.64	16.42	17.25
Factory overheads	34.12	35.83	37.62
<hr/>			
Factory costs	649.37	681.84	715.93
Administrative overheads	99.67	104.65	109.89
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	26.60	26.60	26.60
Financial costs	0.00	0.00	0.00
<hr/>			
Total production costs	775.64	813.09	852.42
<hr/>			
Costs per unit (single product)	0.04	0.04	0.04
Of it foreign, %	11.63	11.65	11.67
Of it variable, %	0.00	0.00	0.00
Total labour	136.93	143.79	150.97

COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Net Working Capital in thousand Kina

Year			2	3	4	5	6
Coverage	mdc	coto					
Current assets &							
Accounts receivable	90	4.0	120.75	117.89	114.95	120.71	125.75
Inventory and materials	23	15.7	12.85	16.79	17.63	18.52	19.44
Energy	1	360.0	0.04	0.06	0.06	0.06	0.07
Spares	180	2.0	4.36	4.57	4.80	5.04	5.29
Work in progress	30	12.0	25.53	31.64	33.22	34.88	36.63
Finished products	30	12.0	40.25	39.30	38.32	40.24	42.25
Cash in hand	15	24.0	11.11	7.82	6.74	7.07	7.43
Total current assets			214.93	218.05	215.74	226.52	237.65
Current liabilities and							
Accounts payable	30	12.0	25.63	31.64	33.22	34.88	36.63
Net working capital			189.31	186.42	182.52	191.64	201.02
Increase in working capital			189.31	-2.92	-3.91	9.13	9.98
Net working capital, local			167.14	158.33	153.02	160.67	167.70
Net working capital, foreign			22.16	28.09	29.49	30.97	33.32

Note: mdc = minimum days of coverage ; coto = coefficient of turnover .

Wet Blue Tannery - Lae --- May 10 , 1988

COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Net Working Capital in thousand Kina

Year			7	8	9	10	11
Coverage	mdc	coto					
Current assets &							
Accounts receivable	90	4.0	133.08	139.74	146.72	154.06	161.76
Inventory and materials	23	15.7	20.41	21.43	22.51	23.63	24.81
Energy	1	360.0	0.07	0.07	0.08	0.08	0.09
Spares	180	2.0	5.56	5.84	6.13	6.43	6.76
Work in progress	30	12.0	38.46	40.38	42.40	44.52	46.75
Finished products	30	12.0	44.36	46.58	48.91	51.35	53.92
Cash in hand	15	24.0	7.80	8.19	8.60	9.03	9.48
Total current assets			249.74	262.23	275.34	289.11	303.56
Current liabilities and							
Accounts payable	30	12.0	38.46	40.38	42.40	44.52	46.75
Net working capital			211.28	221.85	232.94	244.59	256.81
Increase in working capital			10.06	10.56	11.09	11.65	12.23
Net working capital, local			177.14	186.00	195.30	205.06	215.31
Net working capital, foreign			34.14	35.85	37.64	39.53	41.50

Note: mdc = minimum days of coverage ; coto = coefficient of turnover .

Wet Blue Tannery - Lae --- May 10 , 1988

----- COMPAR 2.1 - UNIDO IC/FEAS, Vienna -----

Net Working Capital in thousand Kina

Year		12	13	14	15	16
Coverage	ndc coto					
Current assets &						
Accounts receivable	90 4.0	169.85	178.34	187.26	196.62	206.45
Inventory and materials	23 15.7	26.05	27.36	28.72	30.16	31.67
Energy	1 360.0	0.09	0.09	0.10	0.10	0.11
Spares	180 2.0	7.09	7.45	7.82	8.21	8.62
Work in progress	30 12.0	49.08	51.54	54.11	56.82	59.66
Finished products	30 12.0	56.62	59.45	62.42	65.54	68.82
Cash in hand	15 24.0	9.95	10.45	10.97	11.52	12.10
Total current assets		318.74	334.68	351.41	368.98	387.43
Current liabilities and						
Accounts payable	30 12.0	49.08	51.54	54.11	56.82	59.66
Net working capital		269.66	283.14	297.30	312.16	327.77
Increase in working capital		12.84	13.48	14.16	14.86	15.61
Net working capital, local		226.08	237.38	249.25	261.72	274.80
Net working capital, foreign		43.58	45.76	48.04	50.45	52.97

Note: ndc = minimum days of coverage : coto = coefficient of turnover .

Wet Blue Tannery - Lae --- May 10 , 1988

Source of Finance, construction in thousand Kina

Year	1
Equity, ordinary ..	465.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A. foreign .	0.00
Loan B. foreign..	0.00
Loan C. foreign .	0.00
Loan A. local....	420.00
Loan B. local....	0.00
Loan C. local....	0.00

Total loan	420.00
Current liabilities	0.00
Bank overdraft	0.00

Total funds	885.00

Wet Blue Tannery - Lae --- May 10 , 1968

----- CONFAR 2.1 - UNIDO IC/FEAS, Vienna -----

Source of Finance, production in thousand Kina

Year	2	3	4	5	6	7	8
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	30.50	22.88	15.25	11.44	7.63	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-84.00	-84.00	-84.00	-84.00	-84.00	0.00	0.00
Loan B, local....	350.00	-70.00	-70.00	-70.00	-70.00	-70.00	0.00
Loan C, local....	0.00	0.00	23.00	-4.60	-4.60	-4.60	-4.60
Total loan	265.00	-154.00	-131.00	-158.60	-158.60	-74.60	-4.60
Current liabilities	25.63	6.01	1.58	1.66	1.74	1.93	1.92
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	291.63	-117.49	-106.54	-141.69	-145.42	-65.14	-2.68

Wet Blue Tannery - Lae --- May 10 , 1988

----- CONFAR 2.1 - UNIDO IC/FEAS, Vienna -----

Source of Finance, production in thousand Kina

Year	9	10	11	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	-4.60	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-4.60	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	2.02	2.12	2.23	2.34	2.45	2.58	2.71
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	-2.58	2.12	2.23	2.34	2.45	2.58	2.71

Wet Blue Tannery - Lae --- May 10 , 1988

Source of Finance, production in thousandkina

Year	16
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	0.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	0.00
Current liabilities	2.84
Bank overdraft	0.00

Total funds	2.84

Cashflow Tables, construction in thousand Kina

Year	1
Total cash inflow . .	885.00
Financial resources .	885.00
Sales, net of tax . .	0.00
Total cash outflow . .	754.20
Total assets	754.20
Operating costs . . .	0.00
Cost of finance . . .	0.00
Repayment	0.00
Corporate tax	0.00
Dividends paid	0.00
Surplus (deficit) . .	130.80
Cumulated cash balance	130.80
Inflow, local	885.00
Outflow, local	667.10
Surplus (deficit) . .	217.90
Inflow, foreign	0.00
Outflow, foreign	87.10
Surplus (deficit) . .	-87.10
Net cashflow	-754.20
Cumulated net cashflow	-754.20

Cashflow tables, production in thousand Kina

Year	2	3	4	5	6	7
Total cash inflow . .	815.63	666.51	708.96	711.49	742.49	775.23
Financial resources .	375.63	36.51	47.46	16.91	13.18	9.46
Sales, net of tax . .	440.00	630.00	661.50	694.57	729.30	765.77
Total cash outflow . .	859.79	741.11	703.93	727.61	731.67	664.97
Total assets	214.93	3.13	-2.33	10.79	11.33	23.89
Operating costs . . .	403.01	471.55	459.85	482.84	506.96	532.33
Cost of finance . . .	54.60	89.18	69.16	52.13	31.51	16.89
Repayment	84.00	154.00	154.00	158.60	158.60	74.60
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	23.25	23.25	23.25	23.25	23.25	23.25
Surplus (deficit) . .	-44.16	-74.59	5.03	-16.12	10.82	110.26
Cumulated cash balance	66.64	12.04	17.07	0.95	11.77	122.04
Inflow, local	372.20	35.54	47.24	16.68	12.94	9.21
Outflow, local	793.14	681.46	646.92	667.74	668.81	598.97
Surplus (deficit) . .	-420.94	-645.92	-599.67	-651.06	-655.87	-589.76
Inflow, foreign	443.42	630.97	661.72	694.81	729.55	766.02
Outflow, foreign	66.65	59.65	57.01	59.86	62.86	66.00
Surplus (deficit) . .	376.77	571.32	604.71	634.94	666.69	700.02
Net cashflow	-232.31	161.34	205.56	202.61	212.74	211.38
Cumulated net cashflow	-916.51	-825.18	-619.62	-417.01	-204.26	7.11

Wet Blue Tannery - Lae --- May 13, 1988

Cashflow tables, production in thousandkina

Year	8	9	10	11	12	13
Total cash inflow . .	805.98	846.28	888.59	933.02	979.67	1028.66
Financial resources . .	1.92	2.02	2.12	2.23	2.34	2.45
Sales, net of tax . .	804.06	844.26	886.47	930.80	977.34	1026.20
Total cash outflow . .	600.48	628.45	653.25	684.75	740.18	840.65
Total assets	12.49	13.11	13.77	14.46	27.18	15.94
Operating costs . . .	558.95	586.89	616.24	647.05	679.40	713.37
Cost of finance . . .	1.20	0.60	0.00	0.00	0.00	0.00
Repayment	4.60	4.60	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	10.35	68.09
Dividends paid	23.25	23.25	23.25	23.25	23.25	23.25
Surplus (deficit) . .	205.50	217.83	235.34	248.27	239.49	188.01
Cumulated cash balance	327.54	545.37	780.70	1028.97	1268.47	1456.48
Inflow, local	1.66	1.74	1.83	1.92	2.01	2.11
Outflow, local	531.16	555.69	576.85	604.53	655.95	752.20
Surplus (deficit) . .	-529.50	-553.95	-575.03	-602.62	-653.93	-750.09
Inflow, foreign	804.32	844.54	886.77	931.11	977.66	1026.54
Outflow, foreign	69.30	72.76	76.40	80.22	84.23	88.45
Surplus (deficit) . .	735.02	771.78	810.36	850.88	893.43	938.09
Net cashflow	234.55	246.27	258.59	271.52	262.74	211.26
Cumulated net cashflow	241.66	487.94	746.52	1018.04	1280.79	1492.05

Cashflow tables, production in thousand Lira

Year	14	15	16
Total cash inflow . . .	1080.09	1134.09	1265.05
Financial resources . . .	2.58	2.71	2.84
Sales, net of tax . . .	1077.51	1131.38	1262.21
Total cash outflow . . .	883.02	927.51	973.93
Total assets	16.73	17.57	18.45
Operating costs	745.04	785.45	825.82
Cost of finance	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	94.00	100.20	106.41
Dividends paid	23.25	23.25	23.25
Surplus (deficit) . . .	197.07	206.58	291.12
Cumulated cash balance . .	1653.54	1860.13	2151.25
Inflow, local	2.22	2.33	2.45
Outflow, local	760.16	830.00	871.54
Surplus (deficit) . . .	-757.94	-827.67	-869.09
Inflow, foreign	1077.87	1131.76	1262.60
Outflow, foreign	92.87	97.51	102.39
Surplus (deficit) . . .	985.00	1034.25	1160.21
Net cashflow	220.32	229.84	314.37
Cumulated net cashflow . .	1712.36	1942.20	2256.57

Net Blue Cannery - Loe --- May 10, 1988

Cashflow Discounting:

a) Equity paid versus Net income flow:			
Net present value	172.03	at	10.00 %
Internal Rate of Return (IRREI) ..	13.50	%	
b) Net Worth versus Net cash return:			
Net present value	433.36	at	10.00 %
Internal Rate of Return (IRREI) ..	16.54	%	
c) Internal Rate of Return on total investment:			
Net present value	618.97	at	10.00 %
Internal Rate of Return (IRR) ..	17.07	%	
Net Worth = Equity paid plus reserves			

COMPAN 2.1 - UNITED ICE/FEAS, Vienna

Net Income Statement in thousand Euro

Year	2	3	4	5	6
Total sales, incl. sales tax	440.00	630.00	661.50	694.57	729.30
Less: variable costs, incl. sales tax	0.00	0.00	0.00	0.00	0.00
Variable margin	440.00	630.00	661.50	694.57	729.30
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	535.43	523.97	512.27	535.26	559.40
Operational margin	-95.43	106.03	149.23	159.31	169.90
As % of total sales	-21.69	16.83	22.56	22.94	23.30
Cost of finance	54.60	89.18	69.16	52.13	31.51
Gross profit	-150.03	16.85	80.07	107.19	138.39
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	0.00	16.85	80.07	107.19	138.39
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-150.03	16.85	80.07	107.19	138.39
Dividends paid	23.25	23.25	23.25	23.25	23.25
Undistributed profit	-173.28	-6.40	56.82	83.94	115.14
Accumulated undistributed profit	-173.28	-179.68	-122.85	-38.92	76.23
Gross profit, % of total sales	-34.10	2.67	12.10	15.43	18.98
Net profit, % of total sales	-34.10	2.67	12.10	15.43	18.98
ROE, Net profit, % of equity	-32.26	3.62	17.22	23.05	29.76
ROI, Net profit+interest, % of invest.	-10.11	11.27	15.93	16.84	17.78

Net Blue Tannery - Gae --- May 10, 1995

Net Income Statement in thousandkina

Year	7	8	9	10	11
Total sales, incl. sales tax	765.77	804.06	844.26	886.47	930.80
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	765.77	804.06	844.26	886.47	930.80
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	582.35	611.37	619.31	669.66	699.47
Operational margin	183.42	192.69	224.95	217.82	231.33
As % of total sales	23.95	23.96	24.28	24.57	24.85
Cost of finance	10.89	1.20	0.00	0.00	0.00
Gross profit	172.53	191.50	224.95	217.82	231.33
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	22.50	191.50	224.95	217.82	231.33
Tax	10.35	88.09	94.00	100.22	106.41
Net profit	12.15	103.41	130.95	117.62	124.92
Dividends paid	23.25	23.25	23.25	23.25	23.25
Undistributed profit	136.93	80.16	87.10	94.37	101.67
Accumulated undistributed profit	115.15	295.31	382.41	476.78	572.44
Gross profit, % of total sales	22.53	23.82	24.20	24.57	24.85
Net profit, % of total sales	21.18	12.86	13.07	13.27	13.42
ROE, Net profit, % of equity	34.88	22.24	23.73	25.29	26.86
ROI, Net profit-interest, % of invest.	17.71	16.59	11.10	11.64	12.21

Net Income Statement in thousand Kina

Year	12	13	14	15	16
Total sales, incl. sales tax	977.34	1026.20	1077.51	1131.39	1262.21
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	977.34	1026.20	1077.51	1131.39	1262.21
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	706.00	739.97	775.64	813.09	852.42
Operational margin	271.33	286.23	301.87	318.30	409.79
As % of total sales	27.76	27.89	28.02	28.13	32.47
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	271.33	286.23	301.87	318.30	409.79
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	271.33	286.23	301.87	318.30	409.79
Tax	124.81	131.67	138.86	146.42	188.50
Net profit	146.52	154.56	163.01	171.88	221.29
Dividends paid	23.25	23.25	23.25	23.25	23.25
Undistributed profit	123.27	131.31	139.76	148.63	198.04
Accumulated undistributed profit . . .	701.72	833.03	972.79	1121.42	1319.46
Gross profit, % of total sales	27.76	27.89	28.02	28.13	32.47
Net profit, % of total sales	14.99	15.06	15.13	15.19	17.53
ROE, Net profit, % of equity	31.51	33.24	35.06	36.96	47.59
ROI, Net profit-interest, % of invest.	13.98	14.56	15.16	15.76	20.01

Wet Blue Tannery - Lse --- May 10, 1988

Projected Balance Sheets, construction in thousand Kina

Year	1
Total assets	885.00
Fixed assets, net of depreciation	0.00
Construction in progress	754.20
Current assets	0.00
Cash, bank	0.00
Cash surplus, finance available	130.80
Loss carried forward	0.00
Less	0.00
Total liabilities	885.00
Equity capital	465.00
Reserves, retained profit	0.00
Profit	0.00
Long and medium term debt	420.00
Current liabilities	0.00
Bank overdraft, finance required.	0.00
Total debt	420.00
Equity, % of liabilities	52.54

COMPAR 2.1 - UNIDO ID/FEAS, Vienna

Projected Balance Sheets, Production in thousand Kina

Year	2	3	4	5	6	7
Total assets	1176.63	1075.99	1032.68	918.10	803.89	638.78
Fixed assets, net of depreciation	701.78	649.36	596.94	544.52	492.10	440.09
Construction in progress	0.00	0.00	0.00	0.00	0.00	0.00
Current assets	203.42	210.25	209.00	219.45	230.42	242.94
Cash, bank	11.11	7.82	6.74	7.07	7.43	7.60
Cash surplus, finance available	109.89	35.29	40.32	24.20	35.02	134.94
Loss carried forward	0.00	173.28	179.68	122.85	38.92	0.00
Loss	150.03	0.00	0.00	0.00	0.00	0.00
Total liabilities	1176.63	1075.99	1032.68	918.10	803.89	638.78
Equity capital	465.00	495.50	518.38	533.62	548.07	552.70
Reserves, retained profit	0.00	0.00	0.00	0.00	0.00	76.20
Profit	0.00	16.85	30.07	107.19	238.39	262.39
Long and medium term debt	686.00	532.00	401.00	242.40	83.80	9.20
Current liabilities	25.63	31.64	33.22	34.88	36.61	38.48
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	711.63	563.64	434.22	277.28	120.41	47.68
Equity, % of liabilities	39.52	46.05	50.20	58.12	67.80	88.89

Wet Blue Tannery - Gae --- May 10, 1988

COMPAR 2.1 - UNIDO ID/FEAS, Vienna

Projected Balance Sheets, Production in thousand Kina

Year	8	9	10	11	12	13
Total assets	916.24	1000.76	1097.25	1201.14	1326.75	1480.52
Fixed assets, net of depreciation	401.66	349.24	296.82	244.40	217.80	203.20
Construction in progress	0.00	0.00	0.00	0.00	12.00	0.00
Current assets	254.04	266.74	280.00	294.08	308.79	324.23
Cash, bank	8.19	8.60	9.00	9.45	9.95	10.45
Cash surplus, finance available	252.35	376.18	511.32	653.18	778.21	922.64
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	916.24	1000.76	1097.25	1201.14	1326.75	1480.52
Equity capital	552.70	552.70	552.70	552.70	552.70	552.70
Reserves, retained profit	215.15	295.31	382.41	476.79	578.94	701.76
Profit	103.41	110.35	107.62	124.92	146.92	194.96
Long and medium term debt	4.60	-0.00	-0.00	-0.00	-0.00	-0.00
Current liabilities	40.39	42.45	44.52	46.75	49.08	51.94
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	44.98	42.40	44.52	46.75	49.08	51.94
Equity, % of liabilities	63.32	55.23	50.37	46.01	43.66	37.84

Wet Blue Tannery - Gae --- May 10, 1988

Projected Balance Sheets, Production in thousand Kina

Year	14	15	16
Total assets	1602.86	1754.19	1955.07
Fixed assets, net of depreciation	176.60	150.00	123.40
Construction in progress	0.00	0.00	0.00
Current assets	340.44	357.46	375.33
Cash, bank	10.97	11.52	12.10
Cash surplus, finance available .	1074.84	1235.21	1444.24
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	1602.86	1754.19	1955.07
Equity capital	552.70	552.70	552.70
Reserves, retained profit	833.03	972.79	1121.42
Profit	163.01	171.88	221.29
Long and medium term debt	-0.00	-0.00	-0.00
Current liabilities	54.11	56.82	59.66
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	54.11	56.82	59.66
Equity, % of liabilities	34.43	31.51	28.27

Wet Blue Tannery Combination Madang
 May 10, 1988
 ++++++++

1 year(s) of construction, 15 years of production
 currency conversion rates:
 foreign currency 1 unit = 1.0000 units accounting currency
 local currency 1 unit = 1.0000 units accounting currency
 accounting currency: thousand kina

Total initial investment during construction phase

fixed assets:	917.05	21.804 % foreign
current assets:	0.00	0.000 % foreign
total assets:	917.05	21.804 % foreign

Source of funds during construction phase

equity & grants:	497.65	9.255 % foreign
foreign loans :	0.00	
local loans :	420.00	
total funds :	917.05	5.016 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	369.52	478.62	502.55
depreciation :	66.21	66.21	66.21
interest :	54.60	65.68	51.56
production costs	490.32	614.50	622.31
thereof foreign	13.98 %	13.64 %	13.92 %
total sales :	514.38	708.09	743.50
gross income :	24.05	93.59	121.18
net income :	24.05	93.59	121.18
cash balance :	175.73	55.48	76.65
net cashflow :	-4.67	186.66	231.73

Net Present Value at: 10.00 % = 905.30
 Internal Rate of Return: 21.19 %
 Return on equity1: 23.85 %
 Return on equity2: 25.57 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

Total Initial Investment in thousand Kina

Year	1
Fixed investment costs	
Land, site preparation, development	520.00
Buildings and civil works	14.00
Auxiliary and service facilities . .	12.00
Incorporated fixed assets	0.00
Plant machinery and equipment . . .	287.05

Total fixed investment costs	833.05
Pre-production capital expenditures.	84.00
Net working capital	0.00

Total initial investment costs . . .	917.05
Of it foreign, in \$	21.00

----- COMPAR 2.1 - UNIDO TO FEAS, Vienna -----

Total Current Investment in thousand Kina

Year	2	3	4	5	6	7
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	149.53	42.82	9.62	10.10	10.60	11.13
Total current investment costs . . .	149.53	42.82	9.62	10.10	10.60	11.13
Of it foreign. \$	17.92	18.13	17.97	17.97	17.97	1.65

Wet Blue Tannery Combination Madang --- May 10 , 1982

----- COMPAR 2.1 - UNIDO TO FEAS, Vienna -----

Total Current Investment in thousand Kina

Year	8	9	10	11	12	13
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	11.69	12.27	12.89	13.53	14.21	14.92
Total current investment costs . . .	11.69	12.27	12.89	13.53	14.21	14.92
Of it foreign. \$	17.97	17.97	17.97	17.97	9.74	17.97

Wet Blue Tannery Combination Madang --- May 10 , 1982

Total Current Investment in thousandkina

Year	14	15	16
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00
Working capital	15.67	16.45	17.27
Total current investment costs . . .	15.67	16.45	17.27
Of it foreign. \$	17.97	17.97	17.97

COMPAR 2.1 - UNIDC TO FBAS, Vienna

Total Production Costs in thousandkina

Year	2	3	4	5	6	7
% of nom. capacity (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	163.67	227.85	239.24	251.20	263.76	276.65
Other raw materials	41.85	56.79	59.63	62.61	65.74	69.03
Utilities	4.15	5.79	6.07	6.38	6.70	7.03
Energy	21.19	27.15	28.51	29.93	31.43	33.00
Labour, direct	29.60	41.21	43.27	45.44	47.71	50.09
Repair, maintenance	24.20	25.41	26.68	28.01	29.42	30.89
Spares	13.43	14.10	14.80	15.54	16.31	17.14
Factory overheads	15.93	22.05	23.15	24.31	25.53	26.80
Factory costs	314.02	420.34	441.36	463.43	486.60	510.93
Administrative overheads	55.50	58.27	61.19	64.25	67.46	70.81
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	66.21	66.21	66.21	66.21	66.21	66.21
Financial costs	54.60	69.68	53.56	37.44	21.32	5.20
Total production costs	490.32	614.50	622.31	631.32	641.59	650.77
Costs per unit (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, %	13.98	13.64	13.98	14.32	14.63	15.00
Of it variable, %	55.84	61.53	63.80	66.03	68.22	70.63
Total labour	66.60	80.06	84.07	88.27	92.68	97.30

Wet Blue Tannery Combination Madang --- May 10 . 1983

COMPAR 2.1 - UNIDO DC FEAS. Vienna

Total Production Costs in thousand Kina

Year	8	9	10	11	12	13
% of nom. capacity (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Raw material 1	290.80	305.34	320.61	336.64	353.47	371.24
Other raw materials	72.48	76.10	79.91	83.92	88.22	92.57
Utilities	7.35	7.75	8.14	8.55	8.99	9.42
Energy	34.65	36.58	38.20	40.22	42.22	44.22
Labour, direct	52.60	55.23	57.99	60.89	63.93	67.13
Repair, maintenance	32.43	34.05	35.76	37.54	39.42	41.39
Spares	17.99	18.89	19.84	20.83	21.87	22.96
Factory overheads	28.14	29.55	31.03	32.58	34.22	35.92
Factory costs	536.48	563.30	591.66	621.04	652.09	684.69
Administrative overheads	74.38	78.09	82.00	86.10	90.40	94.92
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	66.21	66.21	66.21	66.21	29.10	29.10
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	677.06	707.60	739.67	773.34	801.59	838.72
Costs per unit (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, %	14.99	14.92	14.85	14.78	12.83	12.86
Of it variable, %	71.28	71.61	71.93	72.24	76.02	76.16
Total labour	102.18	107.29	112.66	118.29	124.20	130.42

Wet Blue Tannery Combination Madang --- May 10, 1988

Total Production Costs in thousand Kina

Year	14	15	16
% of nom. capacity (single product)	0.00	0.00	0.00
Raw material 1	389.70	409.19	429.64
Other raw materials	97.13	101.98	107.08
Utilities	9.92	10.39	10.92
Energy	46.44	48.76	51.20
Labour, direct	70.49	74.01	77.71
Repair, maintenance	43.46	45.63	47.92
Spares	24.11	25.32	26.58
Factory overheads	37.71	39.60	41.58
-----	-----	-----	-----
Factory costs	718.93	754.88	792.62
Administrative overheads	99.67	104.65	109.89
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	29.10	29.10	29.10
Financial costs	0.00	0.00	0.00
-----	-----	-----	-----
Total production costs	847.70	888.63	931.60
=====	=====	=====	=====
Costs per unit (single product)	0.00	0.00	0.00
Of it foreign, %	12.88	12.90	12.92
Of it variable, %	76.29	76.42	76.53
Total labour	136.93	143.78	150.97

----- COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Net Working Capital in thousand Kina

Year		2	3	4	5	6
Coverage	mdc coto					
Current assets &						
Accounts receivable	90 4.0	92.39	119.65	125.64	131.92	138.51
Inventory and materials	24 15.3	13.81	18.97	19.92	20.92	21.97
Energy	1 360.0	0.26	0.39	0.28	0.38	0.59
Spares	180 2.0	6.71	7.85	7.40	7.77	8.16
Work in progress	30 12.0	25.17	35.93	36.78	39.60	40.55
Finished products	30 12.0	10.79	19.88	41.88	43.97	46.17
Cash in hand	15 24.0	5.78	6.71	7.05	7.40	7.77
Total current assets		175.75	227.38	238.75	260.65	265.22
Current liabilities and						
Accounts payable	30 12.0	26.17	35.93	36.78	38.62	40.55
Net working capital		149.58	191.45	201.97	222.03	224.67
Increase in working capital		149.58	42.87	9.62	19.10	19.64
Net working capital, local		122.73	157.79	155.65	173.96	182.66
Net working capital, foreign		26.85	33.66	46.32	48.07	42.01

Note: mdc = minimum days of coverage : coto = coefficient of turnover .

----- Wet Blue Tannery Combination Nadang --- May 10 . 1983 -----

----- COMPAR 2.1 - UNIDO IO/FEAS, Vienna -----

Net Working Capital in thousand Kina

Year		7	8	9	10	11
Coverage	mdc coto					
Current assets &						
Accounts receivable	90 4.0	145.44	152.71	163.35	168.37	176.78
Inventory and materials	24 15.3	23.06	24.22	25.43	26.70	28.03
Energy	1 360.0	0.09	0.10	0.10	0.11	0.11
Spares	180 2.0	8.57	9.00	9.45	9.92	10.41
Work in progress	30 12.0	42.58	44.71	46.94	49.29	51.75
Finished products	30 12.0	48.48	50.90	53.45	56.12	58.93
Cash in hand	15 24.0	8.16	8.56	8.99	9.44	9.91
Total current assets		276.38	290.20	304.72	319.94	335.94
Current liabilities and						
Accounts payable	30 12.0	42.58	44.71	46.94	49.29	51.75
Net working capital		233.80	245.49	257.76	270.65	284.19
Increase in working capital		11.13	11.69	12.27	12.89	13.53
Net working capital, local		191.79	201.38	211.45	222.02	233.12
Net working capital, foreign		42.01	44.11	46.31	48.63	51.07

Note: mdc = minimum days of coverage : coto = coefficient of turnover .

----- Wet Blue Tannery Combination Nadang --- May 10 . 1983 -----

COMPAR 2.1 - UNIDO IC/AFR/AS. Vienna -----

Net Working Capital in thousandkina

Year		12	13	14	15	16
Coverage	ndc coto					
Current assets &						
Accounts receivable	90 4.0	185.62	194.90	204.65	214.81	225.63
Inventory and materials	24 15.3	29.44	30.91	32.45	34.08	35.78
Energy	1 360.0	0.12	0.12	0.13	0.14	0.14
Spares	100 2.0	10.93	11.48	12.06	12.66	13.29
Work in progress	30 12.0	54.34	57.06	59.91	62.91	66.05
Finished products	30 12.0	61.87	64.97	68.22	71.63	75.21
Cash in hand	15 24.0	10.41	10.93	11.48	12.05	12.65
Total current assets		352.74	370.37	388.85	408.34	428.75
Current liabilities and						
Accounts payable	30 12.0	54.34	57.06	59.91	62.91	66.05
Net working capital		298.39	313.31	328.94	345.43	362.70
Increase in working capital		14.21	14.92	15.67	16.45	17.27
Net working capital, local		244.78	257.02	269.87	283.36	297.53
Net working capital, foreign		53.62	56.30	59.11	62.07	65.17

Note: ndc = minimum days of coverage : coto = coefficient of turnover .

Wet Blue Tannery Combination Madang --- May 10 . 1985

Source of Finance, construction in thousand Kina

Year	1
Equity, ordinary ..	451.05
Equity, preference.	0.50
Subsidies, grants .	46.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	420.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	420.00
Current liabilities	0.00
Bank overdraft	0.00

Total funds	917.05

CONFAR 2.1 - UNIDO IC/FBAS, Vienna

Source of Finance, production in thousand Kina

Year	2	3	4	5	6	7	8
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	119.00	62.50	22.88	15.25	11.44	7.63	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-84.00	-84.00	-84.00	-84.00	-84.00	0.00	0.00
Loan B, local....	200.00	-40.00	-40.00	-40.00	-40.00	-40.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	116.00	-124.00	-124.00	-124.00	-124.00	-40.00	0.00
Current liabilities	26.17	8.86	1.75	1.84	1.93	2.03	2.13
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	261.17	-52.64	-99.37	-106.91	-110.63	-30.34	2.13

Wet Blue Tannery Combination Madang --- May 10 , 1988

CONFAR 2.1 - UNIDO IC/FBAS, Vienna

Source of Finance, production in thousand Kina

Year	9	10	11	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	2.24	2.35	2.46	2.59	2.72	2.85	3.00
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	2.24	2.35	2.46	2.59	2.72	2.85	3.00

Wet Blue Tannery Combination Madang --- May 10 , 1988

Source of Finance, production in thousandkina

Year	16
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	0.00
Loan B, local....	0.00
Loan C, local....	0.00
-----	-----
Total loan	0.00
Current liabilities	1.15
Bank overdraft	0.00
-----	-----
Total funds	1.15

Net Blue Tannery Combination Udong --- May 10, 1988

Cashflow Tables, construction in thousand Kina

Year	1
Total cash inflow . .	917.05
Financial resources . .	917.05
Sales, net of tax . . .	0.00
Total cash outflow . .	917.05
Total assets	917.05
Operating costs	0.00
Cost of finance	0.00
Repayment	0.00
Corporate tax	0.00
Dividends paid	0.00
Surplus (deficit) . .	0.00
Cumulated cash balance	0.00
Inflow, local	917.05
Outflow, local	717.10
Surplus (deficit) . .	199.95
Inflow, foreign	46.00
Outflow, foreign	199.95
Surplus (deficit) . .	-153.95
Net cashflow	-917.05
Cumulated net cashflow	-917.05

Wet Blue Cannery Combination Madang --- May 10, 1988

Cashflow tables, production in thousand Kina

Year	2	3	4	5	6	7
Total cash inflow . . .	859.54	779.45	768.13	797.76	833.08	870.35
Financial resources . . .	345.17	71.36	24.63	17.09	13.37	9.66
Sales, net of tax . . .	514.36	708.09	743.50	780.67	819.71	860.69
Total cash outflow . . .	706.37	746.53	714.03	723.61	734.47	674.68
Total assets	175.70	51.68	11.37	11.94	12.53	25.16
Operating costs	369.52	478.62	502.55	527.69	554.06	581.76
Cost of finance	54.60	69.68	53.56	37.44	21.32	5.00
Repayment	84.00	124.00	124.00	124.00	124.00	40.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	22.55	22.55	22.55	22.55	22.55	22.55
Surplus (deficit) . . .	153.18	32.92	54.10	74.16	98.61	195.67
Cumulated cash balance . .	153.18	186.10	240.20	314.36	412.97	608.64
Inflow, local	736.50	746.18	767.86	797.48	832.18	870.04
Outflow, local	626.96	673.66	645.01	651.13	658.37	594.77
Surplus (deficit) . . .	109.54	72.52	122.86	146.35	174.41	275.27
Inflow, foreign	123.05	33.27	0.27	0.28	0.29	0.31
Outflow, foreign	79.41	72.87	69.02	72.47	76.13	79.90
Surplus (deficit) . . .	43.64	-39.60	-68.76	-72.19	-75.80	-79.59
Net cashflow	-4.67	186.66	231.33	242.90	255.04	255.80
Cumulated net cashflow . .	-921.72	-735.06	-503.73	-260.83	-5.79	287.01

Wet Blue Tannery Combination Madang --- May 10 , 1988

COMPAR 2.1 - UNIDO TO FEAS. Vienna -----

Cashflow tables, production in thousand Kina

Year	8	9	10	11	12	13
Total cash inflow	905.86	951.15	998.71	1048.64	1101.07	1156.13
Financial resources	2.13	2.24	2.35	2.46	2.59	2.72
Sales, net of tax	903.73	948.91	996.36	1046.18	1098.49	1153.41
Total cash outflow	647.22	678.46	711.25	745.69	890.41	924.07
Total assets	13.82	14.51	15.24	16.00	28.80	17.64
Operating costs	610.85	641.39	673.46	707.14	742.49	779.62
Cost of finance	0.00	0.00	0.00	0.00	0.00	0.00
Repayment	0.00	0.00	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	96.57	104.27
Dividends paid	22.55	22.55	22.55	22.55	22.55	22.55
Surplus (deficit)	258.63	272.69	287.46	302.96	210.67	230.05
Cumulated cash balance	867.28	1139.97	1427.43	1730.38	1941.05	2173.10
Inflow, local	905.53	950.81	998.35	1048.27	1100.68	1155.71
Outflow, local	563.33	590.36	618.76	648.57	733.43	817.00
Surplus (deficit)	342.21	360.44	379.59	399.70	367.25	338.71
Inflow, foreign	0.32	0.34	0.36	0.37	0.39	0.42
Outflow, foreign	83.90	88.09	92.50	97.12	101.98	107.08
Surplus (deficit)	-83.57	-87.75	-92.14	-96.75	-101.58	-106.66
Net cashflow	281.19	295.24	311.01	325.51	233.22	254.60
Cumulated net cashflow	531.19	826.44	1136.44	1461.95	1695.17	1949.77

Wet Blue Tannery Combination Madang --- May 10 , 1988

Cashflow tables, production in thousandkina

Year	14	15	16
Total cash inflow . .	1213.93	1274.63	1338.36
Financial resources . .	2.95	3.00	3.15
Sales, net of tax . . .	1211.08	1271.63	1335.22
Total cash outflow . .	970.67	1019.60	1070.98
Total assets	18.52	19.44	20.42
Operating costs	818.60	859.53	902.50
Cost of finance	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	111.00	118.08	125.50
Dividends paid	22.55	22.55	22.55
Surplus (deficit) . .	243.26	255.03	267.38
Cumulated cash balance	2416.36	2671.39	2938.77
Inflow, local	1213.50	1274.17	1337.88
Outflow, local	858.25	901.55	947.02
Surplus (deficit) . .	355.25	372.62	390.86
Inflow, foreign	0.43	0.45	0.48
Outflow, foreign	112.43	119.05	123.95
Surplus (deficit) . .	-112.00	-117.60	-123.48
Net cashflow	265.61	277.58	289.94
Cumulated net cashflow	2215.59	2493.16	2783.10

Wet Blue Tannery Combination Madang --- May 10 , 1968

Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	539.66	at 10.00 %
Internal Rate of Return (IRR1) ..	23.85 %	
b) Net Worth versus Net cash return:		
Net present value	907.63	at 10.00 %
Internal Rate of Return (IRR2) ..	25.57 %	
c) Internal Rate of Return on total investment:		
Net present value	905.30	at 10.00 %
Internal Rate of Return (IRR) ..	21.19 %	
Net Worth = Equity paid plus reserves		

Net Income Statement in thousand Kina

Year	2	3	4	5	6
Total sales, incl. sales tax	514.36	708.09	743.50	780.67	819.71
Less: variable costs, incl. sales tax.	273.81	378.12	397.03	416.85	437.72
Variable margin	240.57	329.97	346.47	363.82	382.99
As % of total sales	46.77	46.60	46.60	46.60	46.60
Non-variable costs, incl. depreciation	161.92	166.70	171.73	177.00	182.54
Operational margin	78.65	163.27	174.74	186.79	199.44
As % of total sales	15.29	23.06	23.50	23.93	24.33
Cost of finance	54.60	69.65	53.56	37.44	21.32
Gross profit	24.05	93.59	121.18	149.35	178.12
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	24.05	93.59	121.18	149.35	178.12
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	24.05	93.59	121.18	149.35	178.12
Dividends paid	22.55	22.55	22.55	22.55	22.55
Undistributed profit	1.50	71.04	98.63	126.80	155.57
Accumulated undistributed profit . . .	1.50	72.54	171.17	297.97	453.54
Gross profit, % of total sales	4.68	13.22	16.30	19.13	21.73
Net profit, % of total sales	4.68	13.22	16.30	19.13	21.73
RGE, Net profit, % of equity	5.33	20.75	26.87	33.11	39.49
ROI, Net profit+interest, % of invest.	7.37	24.72	15.62	16.54	17.50

Net Income Statement in thousand Kina

Year	7	8	9	10	11
Total sales, incl. sales tax	360.69	903.73	948.91	995.36	1046.18
Less: variable costs, incl. sales tax.	459.61	482.59	506.72	532.09	558.66
Variable margin	401.08	421.14	442.20	464.31	487.52
As % of total sales	46.60	46.60	46.60	46.60	46.60
Non-variable costs, incl. depreciation	185.96	194.47	200.98	207.62	214.69
Operational margin	215.12	226.67	241.31	256.69	272.84
As % of total sales	24.99	25.08	25.43	25.76	26.08
Cost of finance	5.26	0.00	0.00	0.00	0.00
Gross profit	209.92	226.67	241.31	256.69	272.84
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	209.92	226.67	241.31	256.69	272.84
Tax	96.57	104.27	111.00	118.98	125.50
Net profit	113.36	122.40	130.31	138.61	147.33
Dividends paid	22.55	22.55	22.55	22.55	22.55
Undistributed profit	90.81	99.85	107.76	116.06	124.78
Accumulated undistributed profit . . .	544.35	644.20	751.96	868.02	992.80
Gross profit, % of total sales	24.39	25.08	25.43	25.76	26.08
Net profit, % of total sales	13.17	13.54	13.73	13.91	14.08
ROE, Net profit, % of equity	25.13	27.14	28.89	30.73	32.66
ROI, Net profit+interest, % of invest.	10.20	10.42	10.98	11.55	12.14

Wet Blue Tannery Combination Madang --- May 10, 1988

COMPAR 2.1 - UNIDC TO PEAS, Vienna -----

Net Income Statement in thousand Kina

Year	12	13	14	15	16
Total sales, incl. sales tax	1098.49	1153.41	1211.08	1271.63	1338.22
Less: variable costs, incl. sales tax.	586.59	615.92	646.71	679.05	713.00
Variable margin	511.90	537.49	564.37	592.58	625.22
As % of total sales	46.60	46.60	46.60	46.60	46.60
Non-variable costs, incl. depreciation	185.00	192.80	200.99	209.58	218.60
Operational margin	326.89	344.69	363.38	383.01	406.61
As % of total sales	29.76	29.88	30.00	30.12	30.23
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	326.89	344.69	363.38	383.01	406.61
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	326.89	344.69	363.38	383.01	406.61
Tax	150.37	158.56	167.16	176.19	185.66
Net profit	176.52	186.13	196.23	206.82	220.95
Dividends paid	22.55	22.55	22.55	22.55	22.55
Undistributed profit	153.97	163.58	173.67	184.27	198.40
Accumulated undistributed profit . . .	1146.77	1310.35	1484.02	1668.29	1863.69
Gross profit, % of total sales	29.76	29.88	30.00	30.12	30.23
Net profit, % of total sales	16.07	16.14	16.20	16.26	16.32
ROE, Net profit, % of equity	39.14	41.27	43.50	45.85	48.32
ROI, Net profit+interest, % of invest.	14.24	14.84	15.45	16.08	16.72

Wet Blue Tannery Combination Madang --- May 10, 1988

Projected Balance Sheets, construction in thousand Kina

Year	1
Total assets	917.05
Fixed assets, net of depreciation	0.00
Construction in progress	917.05
Current assets	0.00
Cash, bank	0.00
Cash surplus, finance available .	0.00
Loss carried forward	0.00
Loss	0.00
Total liabilities	917.05
Equity capital	497.05
Reserves, retained profit	0.00
Profit	0.00
Long and medium term debt	420.00
Current liabilities	0.00
Bank overdraft, finance required.	0.00
Total debt	420.00
Equity, % of liabilities	54.20

----- COMPAR 2.1 - UNIDO IG/FEAS, Vienna -----

Projected Balance Sheets, Production in thousand Kina

Year	2	3	4	5	6	7
Total assets	1202.27	1220.67	1219.93	1239.82	1284.76	1345.23
Fixed assets, net of depreciation	850.84	784.64	718.43	652.23	586.02	522.22
Construction in progress	0.00	0.00	0.00	0.00	0.00	12.00
Current assets	351.43	436.03	501.50	587.59	698.74	823.01
Cash, bank	5.78	6.71	7.05	7.40	7.77	8.16
Cash surplus, finance available .	175.73	208.65	262.75	336.91	435.52	534.53
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	1202.27	1220.67	1219.93	1239.82	1284.76	1345.23
Equity capital	616.05	678.55	701.43	716.68	728.12	735.75
Reserves, retained profit	0.00	1.50	72.54	171.17	297.97	453.54
Profit	24.05	93.59	121.18	149.35	178.12	203.16
Long and medium term debt	536.00	412.00	288.00	164.00	40.00	0.00
Current liabilities	26.17	35.03	36.78	38.62	40.55	42.58
Bank overdraft, finance required.	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	562.17	447.03	324.78	202.62	80.55	42.58
Equity, % of liabilities	51.24	55.59	57.50	57.81	56.67	54.69

Wet Blue Tannery Combination Madang --- May 10 , 1988

----- COMPAR 2.1 - UNIDO IG/FEAS, Vienna -----

Projected Balance Sheets, Production in thousand Kina

Year	8	9	10	11	12	13
Total assets	1447.21	1557.20	1675.61	1802.85	1959.41	2125.71
Fixed assets, net of depreciation	468.01	401.81	335.60	269.40	240.30	223.20
Construction in progress	0.00	0.00	0.00	0.00	12.00	0.00
Current assets	281.63	295.71	310.50	326.02	342.33	359.44
Cash, bank	8.56	8.99	9.44	9.91	10.41	10.93
Cash surplus, finance available .	689.00	850.68	1020.06	1197.51	1354.37	1532.14
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	1447.21	1557.20	1675.61	1802.85	1959.41	2125.71
Equity capital	735.75	735.75	735.75	735.75	735.75	735.75
Reserves, retained profit	544.35	644.20	751.96	868.02	992.80	1145.77
Profit	122.40	130.31	138.61	147.33	176.52	186.13
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	44.71	46.94	49.29	51.75	54.34	57.06
Bank overdraft, finance required.	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	44.71	46.94	49.29	51.75	54.34	57.06
Equity, % of liabilities	50.84	47.25	43.91	40.81	37.55	34.61

Wet Blue Tannery Combination Madang --- May 10 , 1988

Projected Balance Sheets, Production in thousandkina

Year	14	15	16
Total assets	2302.24	2489.50	2688.05
Fixed assets, net of depreciation	194.10	165.00	135.90
Construction in progress	0.00	0.00	0.00
Current assets	377.41	396.28	416.10
Cash, bank	11.49	12.05	12.65
Cash surplus, finance available .	1719.24	1916.17	2123.39
Loss carried forward	0.00	0.00	0.00
Less	0.00	0.00	0.00
Total liabilities	2302.24	2489.50	2688.05
Equity capital	735.75	735.75	735.75
Reserves, retained profit	1310.35	1484.02	1658.29
Profit	196.23	268.82	17.95
Long and medium term debt	0.00	0.00	0.00
Current liabilities	59.91	62.91	66.05
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	59.91	62.91	66.05
Equity, % of liabilities	31.96	29.55	27.37

Wet Blue Tannery - Lae
 May 10, 1985
 ++++++++

1 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
 local currency 1 unit = 1.0000 units accounting currency
 accounting currency: thousand Kina

Total initial investment during construction phase

fixed assets:	754.20	11.549 % foreign
current assets:	0.00	0.000 % foreign
total assets:	754.20	11.549 % foreign

Source of funds during construction phase

equity & grants:	336.00	13.690 % foreign
foreign loans :	0.00	
local loans :	420.00	
total funds :	756.00	6.085 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	483.01	471.55	459.85
depreciation :	52.42	52.42	52.42
interest :	56.60	82.68	63.95
production costs	590.03	606.65	576.23
thereof foreign	6.44 %	10.13 %	11.12 %
total sales :	440.00	630.00	661.50
gross income :	-150.03	23.35	85.27
net income :	-150.03	23.35	85.27
cash balance :	48.09	-2.84	20.48
net cashflow :	-232.31	161.34	265.56

Net Present Value at: 10.00 % = 618.21
 Internal Rate of Return: 17.86 %
 Return on equity1: 19.82 %
 Return on equity2: 21.11 %

Index of Schedules produced by CONFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

----- COMPAR 2.1 - UNIDO EC FEAS. Vienna -----

Total Initial Investment in thousand Kina

Year	1
Fixed investment costs	
Land, site preparation, development	470.00
Buildings and civil works	14.00
Auxiliary and service facilities . .	12.00
Incorporated fixed assets	0.00
Plant machinery and equipment . . .	174.20

Total fixed investment costs	670.20
Pre-production capital expenditures.	84.00
Net working capital	0.00

Total initial investment costs . . .	754.20
Of it foreign, in \$	11.55

Wet Blue Tannery - Les --- May 10, 1988

CONFAR 2.1 - UNIDO TO PEAS, Vienna

Total Current Investment in thousand Kina

Year	2	3	4	5	6	7
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	0.00	12.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	12.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	189.31	-2.88	-3.91	9.13	9.58	10.06
Total current investment costs . . .	189.31	-2.88	3.91	9.13	9.58	22.06
Of it foreign, \$	16.16	16.16	16.16	16.16	16.16	16.16

Net Blue Tannery - Lae --- May 10, 1988

CONFAR 2.1 - UNIDO TO PEAS, Vienna

Total Current Investment in thousand Kina

Year	8	9	10	11	12	13
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	12.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	12.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	10.56	11.09	11.65	12.23	12.84	13.48
Total current investment costs . . .	10.56	11.09	11.65	12.23	24.84	13.48
Of it foreign, \$	16.16	16.16	16.16	16.16	8.35	16.16

Net Blue Tannery - Lae --- May 10, 1988

Total Current Investment in thousand Kina

Year	14	15	16
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00
Incorporated fixed assets	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00
Working capital	14.16	14.86	15.61
Total current investment costs . . .	14.16	14.86	15.61
Of it foreign, \$	16.16	16.16	16.16

Wet Blue Tannery - Gae --- May 10, 1988

Total Production Costs in thousand Lira

Year	2	3	4	5	6	7
% of nom. capacity (single product)	73.33	100.00	100.00	100.00	100.00	100.00
Raw material 1	160.00	210.00	220.50	231.52	243.10	255.26
Other raw materials	36.71	48.18	50.99	53.12	55.77	58.56
Utilities	4.08	5.35	5.62	5.90	6.20	6.51
Energy	15.56	20.42	21.44	22.52	23.64	24.82
Labour, direct	39.25	41.21	43.27	45.44	47.71	50.09
Repair, maintenance	24.20	25.41	26.64	28.01	29.42	30.89
Spares	8.71	9.15	9.60	10.08	10.59	11.12
Factory overheads	19.00	19.95	20.95	21.99	23.09	24.25
Factory costs	307.51	379.67	394.66	419.59	439.52	461.50
Administrative overheads	175.50	91.68	61.19	64.25	67.46	70.83
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	52.42	52.42	52.42	52.42	52.42	52.42
Financial costs	54.60	82.68	63.96	45.24	26.52	7.00
Total production costs	590.03	606.65	576.23	580.50	585.92	590.15
Costs per unit (single product)	0.04	0.03	0.03	0.03	0.03	0.03
Of it foreign, %	8.44	10.13	11.12	11.52	11.91	12.34
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	124.25	94.76	84.07	88.27	92.68	97.32

Total Production Costs in thousandkina

Year	8	9	10	11	12	13
% of nom. capacity (single product)	100.00	100.00	100.00	100.00	100.00	100.00
Raw material 1	288.02	282.42	295.45	310.27	325.78	342.07
Other raw materials	61.49	64.56	67.79	71.18	74.74	78.48
Utilities	6.33	7.19	7.54	7.92	8.32	8.72
Energy	26.06	27.37	28.74	30.17	31.65	33.27
Labour, direct	52.60	55.23	57.99	60.89	63.93	67.13
Repair, maintenance	32.43	34.05	35.75	37.54	39.42	41.39
Spares	11.67	12.26	12.87	13.51	14.19	14.92
Factory overheads	25.46	26.73	28.07	29.48	30.95	32.50
Factory costs	484.57	508.80	534.24	560.95	589.00	618.45
Administrative overheads	74.38	78.09	82.00	86.10	90.40	94.92
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	52.42	52.42	52.42	52.42	26.60	26.60
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	611.37	639.31	668.66	699.47	726.00	759.97
Costs per unit (single product)	0.03	0.03	0.03	0.03	0.04	0.04
Of it foreign, %	12.48	12.42	12.40	12.39	11.99	11.60
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	102.18	107.29	112.66	118.29	124.20	130.41

Total Production Costs in thousand Kina

Year	14	15	16
% of nom. capacity (single product)	100.00	100.00	106.25
Raw material 1	359.17	377.13	395.99
Other raw materials	82.40	86.52	90.05
Utilities	9.16	9.62	10.16
Energy	34.93	36.68	38.51
Labour, direct	70.49	74.01	77.71
Repair, maintenance	43.46	45.63	47.91
Spares	15.64	16.42	17.25
Factory overheads	34.12	35.83	37.62
Factory costs	649.37	691.84	715.93
Administrative overheads	99.67	104.65	109.89
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	26.60	26.60	26.60
Financial costs	0.00	0.00	0.00
Total production costs	775.64	823.09	852.42
Costs per unit (single product)	0.04	0.04	0.04
Of it foreign, %	11.63	11.65	11.67
Of it variable, %	0.00	0.00	0.00
Total labour	136.93	143.78	150.97

COMPAR 2.1 - UNESCO CONFERS. Vienna -----

Net Working Capital in thousand Kina

Year			2	3	4	5	6
Coverage	ndc	coto					
Current assets &							
Accounts receivable	90	4.0	120.75	117.89	114.96	120.71	128.75
Inventory and materials	23	15.7	12.50	16.79	17.63	18.51	19.44
Energy	1	360.0	0.04	0.05	0.06	0.06	0.07
Spares	110	2.0	4.36	4.57	4.80	5.04	5.29
Work in progress	30	12.0	25.63	31.64	33.22	34.88	36.53
Finished products	30	12.0	40.25	37.30	36.32	40.24	42.25
Cash in hand	15	24.0	11.11	7.82	6.74	7.07	7.43
Total current assets			214.93	218.05	215.74	226.52	237.85
Current liabilities and							
Accounts payable	30	12.0	25.63	31.64	33.22	34.88	36.53
Net working capital			189.31	186.42	182.52	191.64	201.32
Increase in working capital			189.31	-2.88	-3.91	9.12	9.59
Net working capital, local			167.14	158.33	153.00	161.67	168.70
Net working capital, foreign			22.16	28.09	29.49	29.97	32.52

Note: ndc = minus days of coverage : coto = coefficient of turnover .

Wet Blue Cannery - Lee --- May 10 . 1988

COMPAR 2.1 - UNESCO CONFERS. Vienna -----

Net Working Capital in thousand Kina

Year			7	8	9	10	11
Coverage	ndc	coto					
Current assets &							
Accounts receivable	90	4.0	133.08	139.74	146.72	154.06	161.76
Inventory and materials	23	15.7	20.41	21.43	22.51	23.63	24.81
Energy	1	360.0	0.07	0.07	0.08	0.08	0.08
Spares	180	2.0	5.56	5.84	6.13	6.43	6.75
Work in progress	30	12.0	38.46	40.38	42.40	44.52	46.75
Finished products	30	12.0	44.36	46.58	48.91	51.35	53.92
Cash in hand	15	24.0	7.80	8.19	8.60	9.03	9.48
Total current assets			249.74	262.23	275.34	289.11	303.56
Current liabilities and							
Accounts payable	30	12.0	38.46	40.38	42.40	44.52	46.75
Net working capital			211.28	221.85	232.94	244.59	256.81
Increase in working capital			10.06	10.56	11.09	11.65	12.23
Net working capital, local			177.14	181.00	195.30	205.06	215.31
Net working capital, foreign			34.14	35.85	37.64	39.53	41.50

Note: ndc = minus days of coverage : coto = coefficient of turnover .

Wet Blue Cannery - Lee --- May 10 . 1988

COMPAR 2.1 - UNIDO IC FEAS. Vienna -----

Net Working Capital in thousand Kina

Year		12	13	14	15	16
Coverage	ndc coto					
Current assets &						
Accounts receivable	90 4.0	169.95	178.34	187.26	196.62	206.45
Inventory and materials	23 15.7	26.35	27.36	28.72	30.16	31.67
Energy	1 160.0	0.09	0.09	0.10	0.10	0.11
Spares	180 2.0	7.09	7.45	7.82	8.21	8.62
Work in progress	30 12.0	49.08	51.54	54.11	56.82	59.66
Finished products	30 12.0	56.62	59.45	62.42	65.54	68.82
Cash in hand	15 24.0	9.95	10.45	10.97	11.52	12.10
Total current assets		318.74	334.66	351.41	368.96	387.43
Current liabilities and						
Accounts payable	30 12.0	49.08	51.54	54.11	56.82	59.66
Net working capital		269.66	283.14	297.30	312.16	327.77
Increase in working capital		12.84	13.43	14.16	14.86	15.61
Net working capital, local		226.38	237.38	249.29	261.72	274.80
Net working capital, foreign		43.28	45.76	48.04	50.45	52.97

Note: ndc = minimum days of coverage ; coto = coefficient of turnover .

Wet Blue Tannery - Lae --- May 10 , 1988

Source of Finance, construction in thousand Kina

Year	1
Equity, ordinary ..	290.00
Equity, preference.	0.00
Subsidies, grants .	46.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	420.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	420.00
Current liabilities	0.00
Bank overdraft	0.00

Total funds	756.00

CONFAR 2.1 - UNIDO IOP/FEAS, Vienna

Source of Finance, production in thousand Kina

Year	2	3	4	5	6	7	8
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	119.00	62.50	22.88	15.25	11.44	7.63	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-84.00	-84.00	-84.00	-84.00	-84.00	0.00	0.00
Loan B, local....	160.00	-60.00	-60.00	-60.00	-60.00	-60.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	216.00	-144.00	-144.00	-144.00	-144.00	-60.00	0.00
Current liabilities	25.63	6.31	1.58	1.66	1.74	1.83	1.92
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	360.63	-75.49	-119.54	-127.09	-130.82	-50.54	1.92

Wet Blue Tannery - Lae --- May 10 , 1988

CONFAR 2.1 - UNIDO IOP/FEAS, Vienna

Source of Finance, production in thousand Kina

Year	9	10	11	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	2.02	2.12	2.23	2.34	2.45	2.58	2.71
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	2.02	2.12	2.23	2.34	2.45	2.58	2.71

Wet Blue Tannery - Lae --- May 10 , 1988

Source of Finance, production in thousand Eira

Year	16
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	0.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	0.00
Current liabilities	2.84
Bank overdraft	0.00

Total funds	2.84

Cashflow Tables, construction in thousand Kina

Year	1
Total cash inflow . .	756.00
Financial resources .	756.00
Sales, net of tax . .	0.00
Total cash outflow . .	754.20
Total assets	754.20
Operating costs . . .	0.00
Cost of finance . . .	0.00
Repayment	0.00
Corporate tax	0.00
Dividends paid	0.00
Surplus (deficit) . .	1.80
Cumulated cash balance	1.80
Inflow, local	710.00
Outflow, local	667.10
Surplus (deficit) . .	42.90
Inflow, foreign	46.00
Outflow, foreign . . .	87.10
Surplus (deficit) . .	-41.10
Net cashflow	-754.20
Cumulated net cashflow	-754.20

COMPAS 2.1 - UNIDO TO FEAS, Vienna -----

Cashflow tables, production in thousand Ems

Year	2	3	4	5	6	7
Total cash inflow . .	884.63	696.51	685.96	721.49	742.49	776.23
Financial resources .	444.63	68.51	24.46	16.92	13.12	9.46
Sales, net of tax . .	440.00	630.00	661.50	694.57	729.37	766.77
Total cash outflow . .	851.34	715.86	679.98	697.37	703.33	638.52
Total assets	214.93	3.13	-2.33	10.79	11.33	23.89
Operating costs . . .	483.31	471.55	459.85	482.84	506.98	532.33
Cost of finance . . .	54.62	82.68	63.96	45.24	26.52	7.83
Repayment	84.00	144.00	144.00	144.00	144.00	60.00
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	14.50	14.50	14.50	14.50	14.50	14.50
Surplus (deficit) . .	33.29	-17.34	5.98	14.12	39.16	136.71
Cumulated cash balance	35.39	18.04	24.02	38.14	77.31	214.02
Inflow, local	522.23	35.54	24.24	16.68	12.94	9.21
Outflow, local	784.39	656.21	622.97	637.50	640.47	572.62
Surplus (deficit) . .	-462.16	-620.67	-598.72	-620.82	-627.53	-563.41
Inflow, foreign	552.42	662.97	661.72	694.81	729.55	766.02
Outflow, foreign	66.65	59.65	57.01	59.86	62.86	66.00
Surplus (deficit) . .	485.77	603.32	604.71	634.94	666.69	700.02
Net cashflow	-232.31	161.34	205.56	202.61	202.74	202.39
Cumulated net cashflow	-906.51	-825.18	-619.62	-417.01	-204.26	7.11

Wet Blue Cannery - Doe --- May 10, 1983

Cashflow tables, production in thousand Kina

Year	8	9	10	11	12	13
Total cash inflow . .	885.98	845.28	889.59	933.03	979.67	1028.66
Financial resources . .	1.92	2.02	2.12	2.23	2.34	2.45
Sales, net of tax . .	884.06	844.26	886.47	930.80	977.34	1026.21
Total cash outflow . .	585.93	614.50	644.50	676.00	732.85	832.45
Total assets	12.49	13.11	13.77	14.46	27.18	15.94
Operating costs	558.95	586.89	616.24	647.05	679.40	713.37
Cost of finance	0.00	0.00	0.00	0.00	0.00	0.00
Repayment	0.00	0.00	0.00	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00	0.00	12.77	88.64
Dividends paid	14.50	14.50	14.50	14.50	14.50	14.50
Surplus (deficit) . . .	220.05	231.77	244.09	257.02	246.82	195.21
Cumulated cash balance	434.36	665.84	909.92	1166.94	1413.76	1609.97
Inflow, local	1.66	1.74	1.83	1.92	2.01	2.11
Outflow, local	516.63	541.74	568.10	595.78	648.62	744.07
Surplus (deficit) . . .	-514.98	-540.00	-566.28	-593.87	-646.61	-741.96
Inflow, foreign	884.32	844.54	886.77	931.11	977.66	1026.54
Outflow, foreign	69.30	72.76	76.40	80.22	84.23	88.45
Surplus (deficit) . . .	735.02	771.78	810.36	850.89	893.43	938.09
Net cashflow	234.55	246.27	258.59	271.52	261.32	210.71
Cumulated net cashflow	241.66	487.94	746.52	1018.04	1279.36	1490.07

Cashflow tables, production in thousand Kina

Year	14	15	16
Total cash inflow . .	1080.09	1134.09	1265.05
Financial resources .	4.58	2.71	2.84
Sales, net of tax . .	1077.51	1131.39	1262.21
Total cash outflow . .	874.55	918.76	965.28
Total assets	16.73	17.57	18.45
Operating costs . . .	749.04	786.49	825.82
Cost of finance . . .	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	94.28	100.20	106.41
Dividends paid	14.50	14.50	14.50
Surplus (deficit) .	205.54	215.34	299.87
Cumulated cash balance	1815.51	2030.85	2330.72
Inflow, local	2.22	2.33	2.45
Outflow, local	781.68	821.25	862.79
Surplus (deficit) .	-779.46	-818.92	-860.34
Inflow, foreign	1077.87	1131.76	1262.60
Outflow, foreign	92.87	97.51	102.39
Surplus (deficit) .	985.00	1034.25	1160.21
Net cashflow	220.04	229.64	314.37
Cumulated net cashflow	1710.11	1939.95	2254.32

Wet Blue Tannery - Lae --- May 10 . 1988

Cashflow Discounting:

a) Equity paid versus Net income flow:

Net present value	365.54	at	10.00 %
Internal Rate of Return (IRRE1) ..	19.82	%	

b) Net Worth versus Net cash return:

Net present value	612.16	at	10.00 %
Internal Rate of Return (IRRE2) ..	21.11	%	

c) Internal Rate of Return on total investment:

Net present value	618.21	at	10.00 %
Internal Rate of Return (IRK) ..	17.86	%	

Net Worth = Equity paid plus reserves

Net Income Statement in thousand Kina

Year	2	3	4	5	6
Total sales, incl. sales tax	440.00	630.00	661.50	694.57	729.30
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	440.00	630.00	661.50	694.57	729.30
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	535.43	523.97	512.27	535.26	559.40
Operational margin	-95.43	106.03	149.23	159.32	169.90
As % of total sales	-21.69	16.83	22.56	22.94	23.30
Cost of finance	54.60	82.68	63.96	45.24	26.52
Gross profit	-150.03	23.35	85.27	114.08	143.38
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	0.00	23.35	85.27	114.08	143.38
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-150.03	23.35	85.27	114.08	143.38
Dividends paid	14.50	14.50	14.50	14.50	14.50
Undistributed profit	-164.53	8.85	70.77	99.58	128.88
Accumulated undistributed profit . . .	-164.53	-155.68	-84.95	14.67	143.56
Gross profit, % of total sales	-34.10	3.71	12.89	16.42	19.66
Net profit, % of total sales	-34.10	3.71	12.89	16.42	19.66
ROE, Net profit, % of equity	-52.73	8.05	29.40	39.34	49.44
ROI, Net profit+interest, % of invest.	-10.11	11.27	15.93	16.84	17.78

Net Income Statement in thousand Mina

Year	7	8	9	10	11
Total sales, incl. sales tax	765.77	804.06	844.26	886.47	930.89
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	765.77	804.06	844.26	886.47	930.89
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	582.35	611.37	639.31	668.66	699.47
Operational margin	183.42	192.69	204.95	217.82	231.33
As % of total sales	23.95	23.96	24.28	24.57	24.85
Cost of finance	7.80	0.00	0.00	0.00	0.00
Gross profit	175.62	192.69	204.95	217.82	231.33
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	25.59	192.69	204.95	217.82	231.33
Tax	11.77	88.64	94.23	100.20	106.41
Net profit	163.85	104.05	110.67	117.62	124.92
Dividends paid	14.50	14.50	14.50	14.50	14.50
Undistributed profit	149.35	89.55	96.17	103.12	110.42
Accumulated undistributed profit	292.90	382.46	478.63	581.75	692.17
Gross profit, % of total sales	22.93	23.96	24.28	24.57	24.85
Net profit, % of total sales	21.40	12.94	13.11	13.27	13.42
ROE, Net profit, % of equity	56.50	35.88	38.16	40.56	43.07
ROI, Net profit+interest, % of invest.	17.56	10.53	11.08	11.64	12.21

Net Income Statement in thousand Riaz

Year	12	13	14	15	16
Total sales, incl. sales tax	977.34	1026.20	1077.51	1131.39	1262.21
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	977.34	1026.20	1077.51	1131.39	1262.21
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	706.00	719.97	775.64	813.09	852.42
Operational margin	271.33	286.23	301.87	318.30	409.79
As % of total sales	27.76	27.89	28.02	28.13	32.47
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	271.33	286.23	301.87	318.30	409.79
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	271.33	286.23	301.87	318.30	409.79
Tax	124.81	131.67	136.86	146.42	188.50
Net profit	146.52	154.56	165.01	171.88	221.29
Dividends paid	14.50	14.50	14.50	14.50	14.50
Undistributed profit	132.02	140.06	148.51	157.38	206.79
Accumulated undistributed profit	824.19	964.25	1112.76	1270.14	1476.93
Gross profit, % of total sales	27.76	27.89	28.02	28.13	32.47
Net profit, % of total sales	14.99	15.36	15.13	15.19	17.53
ROE, Net profit, % of equity	50.52	53.30	56.21	59.27	76.31
ROI, Net profit-interest, % of invest.	13.98	14.56	15.16	15.76	20.01

Wet Blue Tannery - Lae --- May 20, 1958

Projected Balance Sheets, construction in thousand Eira

Year	1
Total assets	756.00
Fixed assets, net of depreciation	0.00
Construction in progress	754.20
Current assets	0.00
Cash, bank	0.00
Cash surplus, finance available .	1.00
Loss carried forward	0.00
Loss	0.00
Total liabilities	756.00
Equity capital	336.00
Reserves, retained profit	3.00
Profit	0.00
Long and medium term debt	420.00
Current liabilities	0.00
Bank overdraft, finance required.	3.00
Total debt	420.00
Equity, % of liabilities	44.44

CONFAP 2.1 - UNIDO COMFAS, Vienna

Projected Balance Sheets, Production in thousand Kina

Year	2	3	4	5	6	7
Total assets	1116.63	1064.49	1006.88	968.59	821.75	920.55
Fixed assets, net of depreciation	781.78	649.36	596.94	544.52	492.10	442.08
Construction in progress	0.00	0.00	0.00	0.00	0.00	0.00
Current assets	293.82	210.25	209.09	219.45	230.42	241.94
Cash, bank	11.11	7.82	6.74	7.07	7.43	7.80
Cash surplus, finance available	49.89	32.54	39.52	52.64	51.81	216.74
Loss carried forward	0.00	164.53	155.68	84.90	0.00	0.00
Loss	156.03	0.00	0.00	0.00	0.00	0.00
Total liabilities	1116.63	1064.49	1006.88	968.59	821.75	920.55
Equity capital	455.00	517.50	543.38	555.63	567.07	574.70
Reserves, retained profit	0.00	0.00	0.00	0.00	14.67	143.56
Profit	0.00	23.35	85.07	114.08	143.38	163.85
Long and medium term debt	636.00	492.00	348.00	204.00	60.00	0.00
Current liabilities	25.63	31.64	33.22	34.88	36.63	38.46
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	661.63	523.64	361.22	238.88	96.63	38.46
Equity, % of liabilities	40.75	48.61	53.67	61.15	69.01	62.43

Net Blue Tannery - Lee --- May 10, 1988

CONFAP 2.1 - UNIDO COMFAS, Vienna

Projected Balance Sheets, Production in thousand Kina

Year	8	9	10	11	12	13
Total assets	1012.04	1110.23	1215.47	1329.11	1462.47	1604.99
Fixed assets, net of depreciation	401.65	349.24	296.82	244.40	217.89	203.00
Construction in progress	0.00	0.00	0.00	0.00	12.00	0.00
Current assets	254.04	266.74	280.09	294.08	308.79	324.33
Cash, bank	8.19	8.60	9.03	9.48	9.95	10.45
Cash surplus, finance available	348.15	485.65	629.54	780.15	913.93	1097.00
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	1012.04	1110.23	1215.47	1329.11	1462.47	1604.99
Equity capital	574.70	574.70	574.70	574.70	574.70	574.70
Reserves, retained profit	292.90	382.46	478.63	581.75	692.07	804.19
Profit	104.05	110.67	117.62	124.92	146.52	164.56
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	40.34	42.80	44.52	46.75	49.28	51.54
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	40.34	42.80	44.52	46.75	49.28	51.54
Equity, % of liabilities	56.79	51.76	47.28	43.27	39.30	35.81

Net Blue Tannery - Lee --- May 10, 1988

Projected Balance Sheets, Production in thousand fine

Year	14	15	16
Total assets	1756.00	1916.16	2125.79
Fixed assets, net of depreciation	176.61	150.00	123.40
Construction in progress	0.00	0.00	0.00
Current assets	349.44	357.46	375.33
Cash, bank	10.97	11.52	12.10
Cash surplus, finance available .	1228.07	1397.18	1614.96
Less carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	1756.00	1916.16	2125.79
Equity capital	574.70	574.70	574.70
Reserves, retained profit	864.25	1113.76	1270.14
Profit	163.01	171.88	221.29
Long and medium term debt	0.00	0.00	0.00
Current liabilities	54.11	56.82	59.66
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	54.11	56.82	59.66
Equity, % of liabilities	32.73	29.99	27.03