



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

16756

DP/ID/SER.B/600
7 March 1988
ENGLISH

PRE-FEASIBILITY STUDY ON THE ESTABLISHMENT
OF A GLASS CONTAINER PLANT IN FUJAIRAH

DP/UAE/79/003
UNITED ARAB EMIRATES

Terminal report*

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

Based on the work of Hans Rune Persson
consultant in glass manufacturing

Backstopping officer: Gabriel Rezek, Feasibility Studies Branch

United Nations Industrial Development Organization
Vienna

* This document has been reproduced without formal editing.

V.88-22520

TABLE OF CONTENT

	<u>Page No.</u>
CHAPTER I - Project Background and History	3
CHAPTER II - Market and Plant Capacity	4
CHAPTER III - Materials and Inputs	8
CHAPTER IV - Location and Site	9
CHAPTER V - Project Engineering	10
CHAPTER VI - Plant Organization and Overhead Costs	14
CHAPTER VII - Manpower	15
CHAPTER VIII - Project Implementation	16
CHAPTER IX - Financial Evaluation	18
<u>ALTERNATIVE I</u>	19
Total Investment Cost	19
Total Current Investment Cost	19
Total Production Costs	20
Working Capital	23
Source of Funds	24
Cash Flow Table	24
Net Income Statement	24
Balance Sheet	24
Break-even Analysis	25
Sensitivity Analysis	26
<u>ALTERNATIVE II</u>	27
Total Investment Cost	27
Total Current Investment Cost	27
Total Production Costs	28
Working Capital	31
Source of Funds	31
Cash Flow Table	32
Net Income Statement	32
Balance Sheet	32
Break-even Analysis	32
Sensitivity Analysis	34
ANNEX 1 - GOIC MARKET STUDY (1985), SUMMARY	35
ANNEX 2 - MANNING TABLE	41
ANNEX 3 - COMPAR SCHEDULES - ALTERNATIVE I	44
ANNEX 4 - SENSITIVITY ANALYSIS - ALTERNATIVE I	64
ANNEX 5 - COMPAR SCHEDULES - ALTERNATIVE II	76
ANNEX 6 - SENSITIVITY ANALYSIS - ALTERNATIVE II	97

CHAPTER I PROJECT BACKGROUND AND HISTORY

A UNIDO Pre-feasibility Study on the Establishment of a Glass Container Plant in Pujalrah was prepared in July 1984 under the project DP/UAH/83/003. The basic version of that study indicated an internal rate of return of 3.4 percent on investment. The pay-back period was 13 years. This was not a viable project.

The Project Background and History have been described in detail in the 1984 study and therefore are not repeated here.

In September 1984 (two months after completion of the above pre-feasibility study) the U.A.E. Secretary of Municipalities decided not to ban the use of non-returnable bottles in the U.A.E.

After that decision it was decided to re-calculate the glass bottle study based on an increased market demand. A revised study was therefore carried out and presented in December 1984. The revised study showed a rate of return on equity of 13.9 percent. The pay-back period was 8 years. The financial analysis of this study showed promising results.

A second market study was carried out by GOIC in May 1985 which revealed that there was a remarkable shift by bottling companies from returnable bottles to non-returnable bottles, as a result of which the demand for glass bottles was estimated to be much higher than what has been assumed in the December 1984 study. A summary of the GOIC market study of 1985 is attached as Annex 1.

Furthermore, in September 1985, it was decided by the Municipalities of the U.A.E. that MBI (non-returnable bottles) should have plastic sleeves over the base of the bottles and up to the neck.

It has, therefore, become necessary to update the December 1984 study taking into account:

- the higher production capacity in line with the increased market demand for glass bottles;
- the additional costs involved in having plastic sleeves around each bottle;
- the increased raw material costs including local silica sand and of imported silica sand and other raw materials. It should be stated that the suitability of local silica sand has not yet been verified and the beneficiation process has not been determined.
- the increased investment costs; and
- the higher selling price of glass bottles.

CHAPTER II MARKET AND PLANT CAPACITY

The Market

In the GOIC study of 1985, the following forecast of the market demand for flint and green glass bottles in U.A.E., Bahrain and Qatar was given:

1985	34,000 tons of glass bottles
1988	39,800 tons of glass bottles
1990	42,800 tons of glass bottles

Assuming a similar growth of demand for U.A.E. as that presented for the total market of U.A.E., Bahrain and Qatar, the future demand for glass bottles in U.A.E. would be as follows:

<u>Year</u>	<u>Weight of bottle</u>	
	177 gr.	155 gr.
1985	26,600 tons	23,200 tons
1988	30,700 tons	26,800 tons
1990	33,000 tons	28,800 tons

It is estimated in the GOIC market study that there will be an annual growth of the bottle market of 2-3 per cent. Assuming a growth of 2 per cent, the demand for 155 grams bottles would be more than 30,000 tons in 1993 and more than 35,000 tons in year 2000.

The market price of bottles

The average price of a glass bottle without sleeve was about 7.64 US cents per bottle according to the latest GOIC market study. Adding the cost of sleeve, 1.30 US cents per piece, the average price of a glass bottle with plastic sleeve is calculated at 8.30 US cents per bottle.

Plastic Sleeves

It has been decided by the Municipalities of UAE that after September 1985 the non-returnable bottles should have plastic sleeves over the base of the bottles and up to the top of the neck.

The cost of plastic sleeves is approximately 15 - 20% of the market price of bottles. European glass manufacturers have increased their price of glass bottles by 1.3 US cents when adding sleeves to the bottles. One supplier to UAE has reported an increased price of sleeved bottles from 7.6 US cents without sleeves to 9 US cents with sleeves, CIF Dubai.

Using this price per piece of bottle, the price expressed in Dirhams per ton of glass bottles in the basic data will vary according to the weight of the bottles. From a ton of glass it is possible to make 7 per cent more bottles weighing 155 grams than those weighing 166 grams. In the basic data the apparent price for the 155 gram bottle will, therefore, be 7 per cent higher than the price for the bottles weighing 166 grams.

The price situation can be summarised as follows:

Market price 1985 (7.64 US cents per bottle)	Dhs. 1588 per ton
Equivalent price using a technology producing a bottle weighing 166 grams instead of 177 grams.	Dhs. 1694 per ton
Price based on 7 US cents per bottle (Alt.I)	Dhs. 1552 per ton
Price for very light bottles, weighing 155 grams (Alt.II)	Dhs. 1662 per ton
Price for sleeved bottles (Alt. I)	Dhs. 1840 per ton
Price for sleeved bottles (Alt.II)	Dhs. 1970 per ton

The GOIC market study was carried out before it was decided to use sleeves on bottles in the U.A.E. It is therefore recommended that a limited market study be carried out in order to investigate the prices of bottles with sleeves before a decision on investment is taken.

Some bottling companies may like to buy the bottles from the glass plant without any sleeves and apply the sleeves at their filling lines.

Based on the GOIC market study, the following sales revenue projections have been arrived at. Only local sales are considered.

Table-1 : Estimate of Sales Revenue

<u>ALTERNATIVE I</u>			
<u>Year</u>	<u>Unit Price</u> (Dhs./ton)	<u>Quantity Sold</u> (tons)	<u>Sales Revenue</u> (Dhs. '000)
1	1840	28793	52,980
2	1840	30233	55,629
3	1840	31673	58,279
4	1840	32393	59,604
5	1840	32393	59,604
6	1840	25723	47,330
7	1840	34337	63,181
8	1840	34337	63,181
9	1840	34337	63,181
10	1840	36397	66,971
11	1840	36397	66,971
12	1840	28903	53,181
13	1840	36397	66,971
14	1840	36397	66,971
15	1840	36397	66,971

Table-2 : Estimate of Sales Revenue

<u>ALTERNATIVE II</u>			
<u>Year</u>	<u>Unit Price</u> (Dhs./ton)	<u>Quantity Sold</u> (tons)	<u>Sales Revenue</u> (Dhs. '000)
1	1970	25887	50,997
2	1970	26833	52,861
3	1970	28849	56,833
4	1970	29505	58,125
5	1970	31277	61,616
6	1970	24837	48,929
7	1970	32394	63,817
8	1970	32394	63,817
9	1970	32394	63,817
10	1970	33512	66,019
11	1970	33512	66,019
12	1970	27500	54,174
13	1970	34629	68,220
14	1970	34629	68,220
15	1970	35747	70,421

Plant Capacity

In this updated pre-feasibility study, the following capacities of the glass plant have been assumed:

ALTERNATIVE I : 36,397 tons of saleable glass bottles

ALTERNATIVE II : 35,747 tons of saleable glass bottles

In Alternative I there are two I.S.8 machines producing glass bottles according to the normal blow and blow process. The average weight of the bottle is 166 grams. The production programme is as follows:

Table-3 : Production Programme

<u>ALTERNATIVE I</u>				
<u>Year</u>	<u>Total production</u> (tons)	<u>Working days</u>	<u>Acceptance</u> (%)	<u>Saleable bottles</u> (tons)
1	35992	340	80	28793
2	35992	340	84	30233
3	35992	340	88	31673
4	35992	340	90	32393
5	35992	340	90	32393
6	28581	270	90	25723
7	38152	340	90	34337
8	38152	340	90	34337
9	38152	340	90	34337
10	40441	340	90	36397
11	40441	340	90	36397
12	32115	270	90	28903
13	40441	340	90	36397

14	40441	340	90	36397
15	40441	340	90	36397

In Alternative II a more advanced method - narrow neck press and blow method - is used. Two I.S.8 machines will be used producing bottles having an average weight of 155 grams. The production programme is as follows:

Table-4 : Production Programme

ALTERNATIVE II

<u>Year</u>	<u>Total production</u> (tons)	<u>Working</u> <u>days</u>	<u>Acceptance</u> (%)	<u>Saleable bottles</u> (tons)
1	31569	340	82	25887
2	31569	340	85	26833
3	32784	340	88	28849
4	32784	340	90	29505
5	33997	340	92	31277
6	26997	270	92	24837
7	35212	340	92	32394
8	35212	340	92	32394
9	35212	340	92	32394
10	36427	340	92	33512
11	36427	340	92	33512
12	29891	270	92	27500
13	37640	340	92	34629
14	37640	340	92	34629
15	38855	340	92	35747

CHAPTER III MATERIALS AND INPUTS

Local raw materials that may possibly be used for glass making are silica quartz and limestone. All other raw materials must be imported. Tests carried out by the Swedish Glass Institute Glafo, Bolligatan 1, 35003 Vaxjo, Sweden, have not verified that the local raw materials are suitable as glass raw materials.

The following conclusions were presented by Glafo after their first preliminary tests:

1. The content of iron oxides in the silica sand and in the limestone is too high.
2. The composition of the quartz sand and limestone do not satisfy the normal standard specifications for glass raw materials.
3. It is important to investigate the homogeneity of the raw materials at the local deposits.
4. Suitable beneficiation processes must be investigated.
5. Recommendations to use the quartz and limestone from Fujairah for the production of a container glass cannot be given before points 3 and 4 above have been investigated and suitable results have been obtained.

In the cost calculations for Alternative I, all raw materials except silica sand and limestone are supposed to be imported. Local silica and limestone are expected to be used. It is assumed that suitable beneficiation processes have been found to produce local raw materials acceptable for glass production. The price of Dhs.110 per ton is used for calculation of local raw material costs (silica sand and limestone) for Alternative I. This is the price experienced by neighbouring countries producing local glass raw materials.

For Alternative II, it is assumed that silica sand of high quality has to be imported at a cost of Dhs.167 per ton. Local limestone is assumed to be used on condition it is of high quality.

Other raw materials required for production of glass are: Pegmatite, Soda Ash, small quantities of Sodium Sulphate, Sodium Nitrate, Selenium, Cobalt Oxide and Cerium.

CHAPTER IV LOCATION AND SITE

The Location

The United Arab Emirates, U.A.E., is an independent federation of seven emirates. The U.A.E. was constituted as a sovereign federal state in 1971 comprising seven emirates, namely Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaima and Fujairah. The location of the plant will be in Fujairah.

The Site

There is an industrial area in Fujairah, approximately six kilometers from the centre of the city. There is a ceramic plant and a rock wool plant in this industrial area. This area is also suitable for a glass plant and it has been decided that if a glass container plant is started it should be situated there.

Cost of Land

It has been decided by the representatives of the Emirate of Fujairah that there will be no cost for the site in the industrial area, if a glass plant will be constructed there.

CHAPTER V PROJECT ENGINEERING

In this updated study, the maximum capacity of the plant will be about 36,000 tons of saleable glass bottles per year. This capacity is produced by two I.S.8 machines.

A recuperative furnace will be used in both Alternatives.

The average weight of the bottles on the market, according to the GOIC report, was 177 grams. With an improved technology, suggested to be used for Alternative I, it is possible to produce bottles weighing 166 grams on the average.

In Alternative II an advanced technology will be used and it will be possible to produce bottles having an average weight of 155 grams. Using this technology, it may be possible to produce even lighter bottles after the glass plant has been in operation for some time.

For both alternatives it will be advisable to sign an agreement of technical assistance with an advanced glass container company. For Alternative II some special know-how regarding a narrow neck press and blow manufacturing process is required and also assistance in the technical management of the plant.

Technology

The quality of the glass containers produced in the glass plant must be acceptable by the franchising bottling companies. The franchisers normally ask for samples from new glass plants and investigate if the glass bottles have a satisfactory quality.

The technology used in the glass plant should, therefore, be of a reasonably advanced standard. It is important that the plant starts using a modern technology and that there is a continuous feed of new technology into the plant. A technical assistance agreement with a well qualified glass container manufacturing company should, therefore, be signed by the new glass plant. The cost of such an agreement is mentioned in this study under Chapter 6 - Plant Organization and Overhead Costs.

The weight of glass containers is continuously being decreased in the glass manufacturing process. (The cost of production of light weight bottles is less than for heavier ones). Normally, however, smaller glass plants have to buy the know-how to produce light weight bottles from more advanced companies.

It can be estimated that about ten different bottles will be produced in the new glass plant. A glass forming machine can produce one type of bottle only at a time. Having only one machine in the plant will therefore not give a satisfactory production flexibility. When changing production from one type of bottle to another, the machine must be stopped. With only one machine there will then be a complete stop of production in the plant during the change of moulds in the machine.

The following considerations can be given regarding the number of machines in a glass container plant:

1. It is technically and economically not advisable to use one machine only in a plant when producing glass bottles. An I.S.10 machine, for instance, will produce about 21,000 tons of glass bottles per year. Such machines are primarily intended for high capacity glass plants, where there can be more than one machine at every furnace. Usually the large machines continue to make the same type of bottles for a considerable time without interruption.
2. It is possible to keep a more constant output of the glass furnace to which more than one machine is attached. This will improve the quality of the glass, the fuel efficiency of the furnace and its operation.
3. Having more than one machine at the furnace will increase the annual number of operating days (due to changing of the moulds, stops for machine maintenance, etc.).

A glass plant using an improved technology can produce a bottle weighing 166 grams instead of the normal 177 grams. This technology is used for Alternative I. When using a still more advanced technology with a narrow neck press and blow system, the weight of the bottles can be decreased to 155 grams. This system is assumed to be used in Alternative II of this study.

Light weight glass containers technology

The same type of soda-lime-silica glass is used for the light weight bottles as for the heavier ones. Some small changes are made, however, regarding the chemical composition of the glass. In general, there is some decrease of soda ash added to the batch and the proportion of limestone is increased. It is more important to have a correct viscosity of the glass, when producing bottles of light weight at an increased speed of the forming machines.

Producing light weight bottles at a high speed requires a full control of the glass manufacturing process. The composition of the raw materials must be controlled very carefully. The batch must have a high degree of homogeneity. The melting of the glass must be controlled very accurately. All this is important in order to produce glass gobs having a chemical, physical and thermal homogeneity. Without homogeneous glass gobs it is impossible to produce high quality light weight bottles.

The advanced technology also involves some improvements of the glass forming machines.

In order to succeed in manufacturing high quality light weight bottles, it is very important to obtain an even thickness of the glass walls of the bottles. Having a satisfactory glass distribution in the bottles makes it possible to decrease the weight of the bottles. Due to the more even wall thickness, the strength of the bottles will increase. In bottles having a less even wall thickness, there may be some bottles having walls with thin spots. This will decrease the strength of the bottles. This is the reason that light weight bottles having a satisfactory glass distribution in the walls will have a higher average strength than bottles where the thickness of the walls vary.

The speed of bottles produced in a glass forming machine depends mainly on the weight of the bottles. Light weight bottles can therefore be produced faster than heavier ones.

The normal weight of a 330 ml soft drink bottle is about 300 grams. With the advanced light weight technology, the same bottle may be produced having a

weight of about 230 grams. That is, a weight reduction of about 23 per cent. The speed of manufacturing the heavy bottles is about 96 bottles per minute. The lighter ones can be produced in a similar machine at a speed of about 124 bottles per minute. That means an increased capacity of the machine by about 29 per cent.

In general, light weight bottles give the following advantages compared to heavier ones:

1. There is less raw materials and energy used in manufacturing each bottle.
2. The production speed in the glass forming machines can be increased.
3. The container strength is improved.
4. The glass factory will be more competitive. It is important to remember that glass bottles are sold by piece and not by weight.
5. Less weight in transporting the same number of bottles.
6. Less breakage in the filling lines and during distribution and handling of the bottles.

Civil Engineering

Except for slight increase in the cost estimates, the data already presented in the December 1984 study is still valid.

Table-5 : Estimate of Investment Costs -
Civil Engineering Works (Dhs. '000)

1. Site preparation and development	675
2. Buildings and special civil works	7,635
3. Outdoor works	590
	<hr/>
	8,800
	<hr/>

The investment costs for Civil Engineering Works are the same for Alternatives I and II.

Equipment

The estimated cost of machinery and equipment required for the operation of the plant for each alternative is give below, classified as (a) Production equipment, (b) Auxiliary equipment, (c) Service equipment and (d) Spare parts. All the machinery/equipment must be imported.

Table-6 : Estimate of Investment Costs - Equipment (in Dhs. '000)

	<u>Alt. I</u>	<u>Alt. II</u>
<u>Production Equipment</u>		
Batch plant	3,032	3,200
Furnace	8,150	8,150
Glass forming equipment)		
Annealing lehrs)		
Inspection equipment)	21,306	24,541
Sleeving equipment)		
Packing and transport equip.)		
Moulds	484	484
Equipment for cullet handling	750	750
	<hr/>	<hr/>
Sub-total	33,890	37,125
<u>Auxiliary equipment</u>		
Workshop and Laboratory equipment	1,575	1,575
Cars and transport equipment	1,400	1,400
Office equipment	250	250
	<hr/>	<hr/>
Sub-total	3,225	3,225
<u>Service Equipment</u>		
Compressor plant)		
Water supply system)		
Fuel storage and distribution system)	2,811	2,811
Piping)		
Energy power supply)		
Electrical installations	3,391	3,391
	<hr/>	<hr/>
Sub-total	6,202	6,202
<u>Spare parts</u>	3,366	3,481
	<hr/>	<hr/>
Total cost FOB	46,683	50,033
Sea freight and insurance	4,063	4,358
	<hr/>	<hr/>
Total cost CIF Fujairah	50,746	54,391
Inland transport to site	550	550
	<hr/>	<hr/>
Total costs at site	51,296	54,941
	<hr/>	<hr/>

CHAPTER VI PLANT ORGANIZATION AND OVERHEAD COSTS

The plant organisation in both Alternatives is very similar to that described in the December 1984 study.

Factory Overhead

The factory overhead consists mainly of (a) repair and maintenance costs of buildings and civil works, estimated at Dhs. 88,000 per year; (b) communication costs of Dhs. 10,000 per year, (c) travel costs of Dhs. 20,000 per year and (d) effluent disposal costs of Dhs. 9,600 per year. The cost related to plant management (production) has also been treated as factory overheads for the purpose of financial analysis and this amounts to Dhs. 816,000 per year. The total factory overhead cost is, thus, estimated at Dhs. 943,600 per year to which should be added the licence fee (technology cost) which is different for the two alternatives as explained below.

The overhead costs have been increased due to the necessity of having a technical assistance and management agreement (licence agreement) with an advanced glass container company. In the case of Alternative I, a fixed amount of Dhs. 1,200,000 per year is estimated as technology cost. For Alternative II, 3.5% of annual sales revenue is estimated as the technology cost.

Table-7 : Technology Cost (in Dhs.'000)

Alternative I: A fixed amount of Dhs. 1,200 per year

Alternative II:	<u>Year</u>	<u>Fee</u>
	1	1,785
	2	1,850
	3	1,989
	4	2,034
	5	2,157
	6	1,713
	7	2,234
	8	2,234
	9	2,234
	10	2,311
	11	2,311
	12	1,896
	13	2,388
	14	2,388
	15	2,465

Depreciation charges have been included under Production costs.

Administrative Overhead costs

Administrative overhead costs consist mainly of (a) insurance costs of Dhs. 200,000, (b) communication costs of Dhs. 25,000 and (c) travel costs of Dhs. 50,000 per year.

CHAPTER VII MANPOWER

For each alternative, the total number of employees in the plant will be 121.

It is assumed that most persons being selected for employment in the production departments have some previous experience of glass container manufacturing. In addition there must be at least two technical expatriates in the plant during the early production years.

The manning tables suggested for the two Alternatives are attached as Annex 2, p.p. 41-43.

CHAPTER VIII PROJECT IMPLEMENTATION

Project Implementation Scheduling includes tendering, opening of bids, evaluation of tenders, final negotiations and award of contract as well as erection and commissioning.

The tender documents should be prepared by a qualified glass engineer. Selected glass plant suppliers should then be invited to give quotations for the specific plant.

The tender documents should be based on a technology intended for light weight bottles.

It may take 6 - 12 months before a contract may be signed after starting the implementation scheduling.

A schedule of project implementation is shown on page 114 of the December 1984 study. This schedule indicates that a duration of 22 months from signing of the contract until the commissioning of the plant is required. The project implementation costs are given below:

Table-8 : Estimate of Investment Cost - Project Implementation (in Dhs. '000)

	<u>ALTERNATIVE I</u>		
	<u>Foreign currency</u>	<u>Local currency</u>	<u>Total</u>
Management of project implementation	300	750	1050
Detail engineering and tendering	2250	755	3005
Supervision, erection, test run and take over of civil works, equipment and labour	4507	1502	6009
Build-up of administration, recruitment and training of staff and labour	450	100	550
Arrangements for supplies	-	100	100
Arrangements for marketing	25	75	100
Build-up of connections	-	25	25
Preliminary and capital issue expenses	-	50	50
TOTAL	7532	3357	10889

Table-9 : Estimate of Investment Cost - Project Implementation (in Bhs. '000)

	<u>ALTERNATIVE II</u>		
	<u>Foreign</u> <u>currency</u>	<u>Local</u> <u>currency</u>	<u>Total</u>
Management of project implementation	300	750	1050
Detail engineering and tendering	2390	797	3187
Supervision, erection, test run and take over of civil works, equipment and labour	4780	1594	6374
Build-up of administration, recruitment and training of staff and labour	450	100	550
Arrangements for supplies	-	100	100
Arrangements for marketing	25	75	100
Build-up of connections	-	25	25
Preliminary and capital issue expenses	-	50	50
TOTAL	<u>7945</u>	<u>3491</u>	<u>11436</u>

CHAPTER IX FINANCIAL EVALUATION

The financial evaluation was carried out using the UNIDO Computer Model for Feasibility Analysis and Reporting (COMPAR).

As the study covers two variants - Alternative I (Ordinary Blow and Blow Process) and Alternative II (Narrow Neck Press and Blow Process) - and as most of the cost/revenue data are different for each Alternative, it is considered convenient to present the financial evaluation of each Alternative separately.

COMPAR Schedules for Alternative I are attached as Annex 3, page 44.

COMPAR Schedules for Alternative II are attached as Annex 5, page 76.

The following assumptions may be noted:

- (1) The project is evaluated over a period of 17 years, with two years of construction and 15 years of production.
- (2) For Alternative I, the total production of glass, at full capacity, is assumed to be 40,441 tons per year, of which 36,397 tons are saleable glass bottles. The difference are considered rejects and used for recycling. This production level is achieved in Year 12 (10th year of operation).
- (3) For Alternative II, the total production of glass, at full capacity, is assumed to be 38,855 tons per year, of which 35,747 tons are saleable glass bottles. The difference are considered rejects and used for recycling. This capacity level is achieved only in Year 17 (15th year of operation).
- (4) Year 7 (5th year of operation) has been treated as the nominal year.
- (5) Due to the necessity to have the furnace rebuilt in Year 8 and Year 14, the plant will be operating at 71% and 79% capacity utilization respectively in these two years in the case of Alternative I. For the same reasons, the plant will be operating at 69% and 77% capacity utilization in these two years in the case of Alternative II.
- (6) For the calculation of Net Present Value, a discount rate of 10% has been applied.

ALTERNATIVE I

TOTAL INVESTMENT COST (COMPAR SCHEDULE 1)

The total initial investment costs, spread over a period of two years, amount to Dhs.73,310,000. This includes the initial fixed investment cost of Dhs. 60,096,000 comprising Dhs.675,000 for site preparation and development, Dhs. 8,125,000 for buildings and civil works, Dhs. 10,350,000 for auxiliary and service facilities, Dhs. 3,366,000 for spare parts and Dhs.37,580,000 for plant machinery and equipment. The pre-production capital expenditures amount to Dhs. 10,889,000. Provision has been made for an amount of Dhs. 2,325,000 for working capital in the second year of construction, basically for stocking raw materials so that these are readily available in the first production year.

The structure of the initial investment outlay is shown below, divided into costs of local origin and those of foreign origin.

Table-10 : Total Initial Investment Cost in Dhs.000

Item	Year 1		Year 2	
	Local	Foreign	Local	Foreign
Site Preparation and Development	675	-	-	-
Buildings and Civil Works	4062	-	4063	-
Auxiliary and Service Facilities	-	-	-	10350
Plant Machinery and Equipment	-	15530	-	22050
Spare Parts	-	-	-	3366
Pre-production Capital Expenditure	2555	5725	802	1807
Net Working Capital	-	-	1150	1175
Total Initial Investment Cost	7292	21255	6015	38748

TOTAL CURRENT INVESTMENT COSTS (COMPAR SCHEDULE 2)

It is necessary to re-build/repair the furnace after five years of production. Accordingly the furnace will have to be re-built in Year 6 and in Year 12, at a cost of Dhs.4,480,000 each time. It will also be necessary to procure new vehicles at a cost of Dhs. 1,500,000 each in Year 6 and in Year 12. The total current fixed investment would thus be Dhs. 5,980,000 each in Years 6 and 12, which can be financed from accumulated profit.

In the first year of production (Year 3), it will be necessary to finance the increase in working capital requirements, amounting to Dhs.7,328,940, either by short-term bank loan or by increasing equity capital. Subsequent increases in the Net Working Capital can be financed from accumulated profit. In this connection, reference may be made to COMPAR SCHEDULE 4 below entitled WORKING CAPITAL.

TOTAL PRODUCTION COSTS (COMPAR SCHEDULE 3)

The total production costs can be broken down into five major categories:

- (1) Factory Costs - including cost of raw materials, cost of sleeves, utilities, manpower, repair and maintenance, spare parts and factory overheads.
- (2) Administration - Labour costs
- (3) Administrative Overheads
- (4) Marketing and Distribution costs
- (5) Depreciation

Factory Costs

(a) Raw Materials

The main raw materials for the production of glass bottles are: silica sand, limestone, pegmatite and soda ash. Small quantities of sodium sulphate, sodium nitrate, selenium, cobolt oxide and cerium are also required. Glass cullets either purchased from outside or obtained from the factory itself (rejected glass is used again in production as cullet) accounts for about 25% of the total raw materials. The costs related to these raw material inputs are grouped under Raw Material (a) in the COMPAR SCHEDULE entitled TOTAL PRODUCTION COST. Raw Material (a) accounts for 25.82% of the total production costs in a nominal year.

Table-11 : Raw Material Cost, per ton of glass

<u>Raw Material</u>	<u>Quantity</u>	<u>Unit Cost</u> Dhs.	<u>Dhs. per ton of glass</u>		
			FC	LC	Total
Silica Sand	460 kg.	110/ton		50.60	50.60
Limestone	156 kg.	110/ton		17.16	17.16
Pegmatite	105 kg.	986/ton	103.53		103.53
Soda Ash	162 kg.	920/ton	149.04		149.04
Sodium sulphate	4 kg.	1215/ton	4.86		4.86
Sodium nitrate	2 kg.	1395/ton	2.79		2.79
Selenium	4 gr.	75/kg.	0.30		0.30
Cobolt oxide	1 gr.	150/kg.	0.15		0.15
Cerium	25 gr.	22/kg.	0.55		0.55
Glass cullet:					
from factory rejects	100 kg.	-		-	-
purchased	150 kg.	400/ton		60.00	60.00
			<u>261.22</u>	<u>127.76</u>	<u>388.98</u>

(b) Plastic Sleeves

Plastic sleeves account for 17.32% of the total production costs in a nominal year. The cost of plastic sleeves per ton of glass is estimated to be Dhs.290. At full production, the cost of sleeves would be Dhs. 10,555,130. Raw Material (b) in the COMPAR schedule has been used to cover this cost.

(c) Utilities

LPG gas, electricity and water constitute the major utilities required for glass production. For the production of 1 ton of glass, the requirements of utilities are as follows:

Table-12 : Cost of utilities, per ton of glass

<u>Item</u>	<u>Unit</u>	<u>Quantity</u>	<u>Price</u> Dhs.	<u>Cost in Dhs.</u>
LPG Gas	cb.m.	0.60	286/cb.m.	171.60
Electricity	kWh	200	0.075/kWh	15.00
Water	cb.m.	2.5	5/cb.m.	12.50
				<u>199.10</u>

Utilities account for 13.22% of the total production costs in a nominal year.

(d) Manpower Cost (direct labour)

The plant will have a total of 99 persons under the category of direct labour, of which 51 are skilled labour and 48 are unskilled labour. The annual cost of labour, accounting for 4.95% of total production cost, is estimated to be Dhs. 2,862,000, with the following breakdown:

Table-13 : Manpower Costs (Direct Labour)

	<u>Number</u>	<u>Dhs./month</u>	<u>Total/year</u> Dhs. 000
Skilled labour	51	2500	1530
Unskilled labour	48	2000	1152
Total	99		2682

For more details, reference may be made to Annex 2. The total labour cost is treated as fixed costs.

(e) Repair and Maintenance

At full production, the annual repair and maintenance costs are

estimated to be Dhs. 2,801,000. This accounts for 4.88% of the total production cost in a nominal year. For COMFAR calculations it has been assumed that 50% of the costs would be fixed and 50% would be variable.

(f) Spare parts

The annual requirement for spare parts at full capacity is estimated to be Dhs. 3,366,000, 50% of which has been assumed to be variable for COMFAR calculations. Cost of spare parts accounts for 5.87% of the total production costs in a nominal year.

(g) Factory Overheads

The factory overhead costs consist of (a) technology acquisition costs of Dhs. 1,200,000 to be paid annually; (b) salaries of plant management (production) amounting to Dhs. 816,000; (c) repair and maintenance costs of buildings and civil works amounting to Dhs. 88,000; (d) communication costs of Dhs. 10,000; (e) travel costs of Dhs. 20,000 and (f) effluent disposal costs of Dhs. 9,600. For COMFAR calculations, items (a) and (b) has been treated as fixed costs, while the other items have been treated as variable costs. The total factory overhead costs total Dhs.2,143,600 at full production. In a nominal year, the factory overhead costs account for 3.93% of the total production costs.

(h) Administration - Labour costs

This includes salaries and fringe benefits of indirect manpower, the annual cost of which amounts to Dhs.1,008,000. This accounts for 1.86% of the total production costs.

For more details, reference may be made to Annex 2.

(i) Administrative Overheads

The annual administrative overhead costs, treated as fixed costs, amount to Dhs. 275,000 and represent 0.51% of the total production costs.

(j) Marketing and Distribution costs

The marketing costs, covering training of salesmen, advertising, travel expenses and after-sales service, amounts to Dhs.190,000 per year. Of this, Dhs. 70,000 would be required in foreign currency and Dhs. 120,000 in local currency. 50% of this cost are assumed to be variable.

Freight costs are estimated at the rate of Dhs. 70 per ton or glass; costs of wooden pallets, shrink foil and cardboard required for packaging constitute the distribution costs. The only item to be imported is shrink foil.

Marketing and distribution costs represent 8.33% of the total production costs in a nominal year.

(k) Depreciation

The following depreciation rates have been assumed for the fixed assets and for the amortized pre-production capital expenditures:

Site preparation and development	5%
Buildings and civil works	5%
Plant machinery and equipment (excluding furnace)	10%
Furnace	20%
Auxiliary and service facilities	10%
Pre-productin capital expenditures	10%

Straightline depreciation method, without specifying salvage value, has been applied for COMPAR calculations.

Depreciation cost represents 13.31% of the total production costs in a nominal year.

Sales Revenue

The total sales revenue ranges from Dhs.52,980,220 in the first production year (Year 3) to Dhs. 66,970,290 in the fifteenth production year (Year 17). For details of yearly sales revenues, refer to Table 1, Chapter 2 - MARKET AND PLANT CAPACITY.

WORKING CAPITAL (COMPAR SCHEDULE 4)

The Working Capital requirement is calculated by specifying the minimum days of coverage for the different variables as follows:

Table-14 : Working Capital Requirements

Item	Minimum coverage Period in days
Accounts receivable	30
Raw materials (a)	90
Raw material (b)	90
Utilities	10
Finished products	10
Cash-in-hand	20
Accounts payable	30

It is assumed that the initial stock of spare parts, sufficient for a full capacity production year, will be replenished upon depletion of the stock and therefore no provision for spare parts has been made in the Working Capital.

As shown in COMPAR SCHEDULE 4, Dhs.9,653,940 are required in the first year of production as Net Working Capital. Deducting the amount of Dhs.2,325,000 provided for inventories in the second construction year, the additional Net Working Capital requirement for the first production year amounts to Dhs.7,328,940, which will have to be financed either by a short-term loan or by increasing equity capital.

The Net Working Capital requirement in a nominal year (Year 7) amounts to Dhs.10,057,670 and at full production (Year 12) it amounts to Dhs. 10,889,220.

SOURCES OF FUNDS (COMFAR SCHEDULE 5)

The total initial investment amounts to Dhs. 28,547,000 in Year 1 and Dhs. 44,763,000 in Year 2, totalling Dhs.73,310,000. Of the total initial investment costs Dhs. 60,003,000 or 81.85% would be required in foreign currency.

100% equity financing is considered. A combination of equity and loan financing will not change the IRR on total investment, although it would result in a higher return on equity.

CASH FLOW TABLE (COMFAR SCHEDULE 6)

The cash flow schedule compares financial inflows and outflows in each year during the life of the project. The Cash Flow Schedule exhibits both the financial surplus (or deficit) and the net cash flow from operation. The net cash flow is positive throughout the project life, although it is relatively small in the first year of operation (Year 3). Nevertheless, it indicates that the project is not expected to have liquidity problems. The cumulated net cash flow becomes positive towards the end of the 7th year of operation, indicating the pay-back-period for the project, namely after 7 years and 10 months.

Profitability Measures

(a) Return on Investment:

Net Present Value, at 10% discount rate, is positive (Dhs.4,991,680)

Internal Rate of Return on Investment is 10.95%

NET INCOME STATEMENT (COMFAR SCHEDULE 7)

The Net Income Statement reveals positive net profits throughout the project life. The net profit for the first year of operation (Year 3) is Dhs. 286,980, reaching Dhs.5,383,990 in the 5th year of operation (Year 7) and Dhs.13,653,360 in the 15th year of operation (Year 17). The accumulated undistributed profit amounts to Dhs.115,984,600 by the 15th year of operation (Year 17).

BALANCE SHEET (COMFAR SCHEDULE 8)

On the liabilities side, equity and current liabilities (accounts payable) constitute the major elements, equity being clearly the dominant element. Reserves in the form of retained profits are accumulated gradually, reaching almost 53% of total liabilities at the end of the project life. These are matched on the assets side by increasing cash surplus, constituting almost 88% of the total assets at the end of the project life.

Fixed assets amount to Dhs. 63,768,300 in the first year of operation, decreasing gradually to Dhs.8,558,000 in the 15th year of operation. Current assets (inventories, receivables) represent 16.03% of total assets in the first year of operation and in the 15th year of operation, they represent 7.24% of the total assets.

BREAK-EVEN ANALYSIS

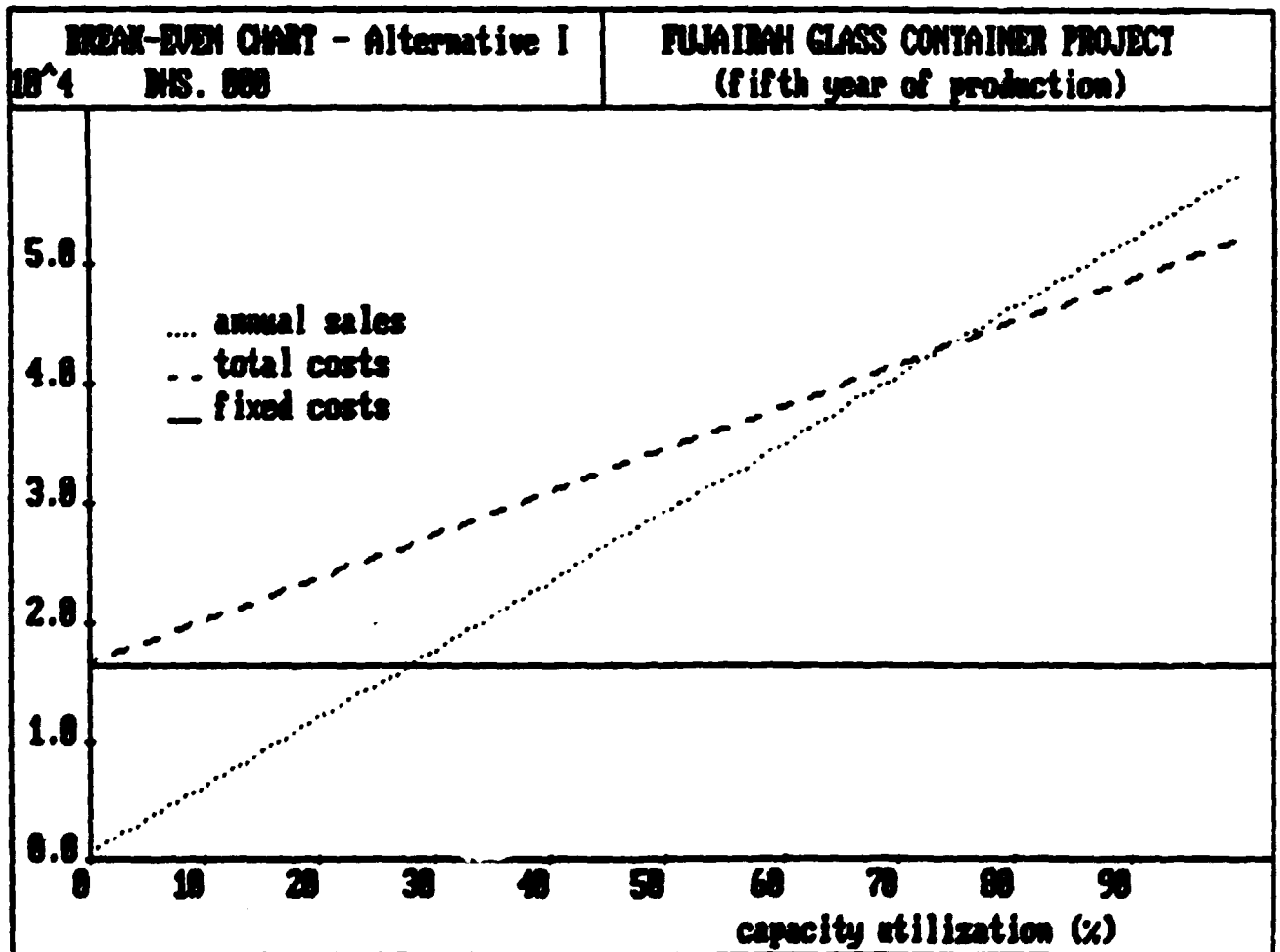
The break-even analysis has been carried out, taking Year 7 (5th year of operation) as a normal year. The following data have been used for the calculations:

Annual Sales : Dhs. 59,602,750
Total Production Costs : Dhs. 54,219,760
Fixed Cost : Dhs. 16,376,120

To calculate the Break-even Point as a percentage of capacity utilization, the following formula has been applied:

$$\begin{aligned} \text{BEP} &= \frac{\text{Fixed Production Costs}}{\text{Sales Revenue} - \text{Variable Prod.Costs}} \\ &= \frac{16,376,120}{59,602,750 - 37,843,640} \\ &= 75.26\% \text{ capacity utilization} \end{aligned}$$

The Break-Even Chart is shown below:



SENSITIVITY ANALYSIS

Sensitivity analysis has been carried out to check the sensitivity of variations of plus/minus 10% in sales price. The results, which are attached as Annex 4, p.p. 64-75, are explained below.

10% increase in Sales Price

A 10% increase in sales price will raise the Internal Rate of Return on Total Investment from 10.95% to 18.11%. The Net Present Value at 10% discount rate is Dhs. 45,759,130. The cumulated net cash flow becomes positive towards the end of the 5th year of operation (Year 7), indicating the pay-back period of almost 5 years. In this case, the project proposal is very attractive for the investor.

10% decrease in Sales Price

A 10% decrease in sales price will lower the Internal Rate of Return on Total Investment from 10.95% to 2.36%. The Net Present Value at 10% discount rate is negative (- Dhs. 36,201,700). The cumulated net cash flow becomes positive only in the 15th year of operation (Year 17), indicating a pay-back period of almost 15 years. The project proposal under this assumption is obviously not attractive.

ALTERNATIVE II

TOTAL INVESTMENT COST (COMFAR SCHEDULE 1)

The total initial investment costs, spread over a period of two years, amount to Dhs.77,257,000. This includes the initial fixed investment cost of Dhs. 63,741,000 comprising Dhs.675,000 for site preparation and development, Dhs. 8,125,000 for buildings and civil works, Dhs. 10,350,000 for auxiliary and service facilities, Dhs. 3,481,000 for spare parts and Dhs.41,110,000 for plant machinery and equipment. The pre-production capital expenditures amount to Dhs. 11,436,000. Provision has been made for an amount of Dhs. 2,080,000 for working capital in the second year of construction, basically for stocking raw materials so that these are readily available in the first production year.

The structure of the initial investment outlay is shown below, divided into costs of local origin and those of foreign origin.

Table-10 : Total Initial Investment Cost in Dhs.000

Item	Year 1		Year 2	
	Local	Foreign	Local	Foreign
Site Preparation and Development	675	-	-	-
Buildings and Civil Works	4062	-	4063	-
Auxiliary and Service Facilities	-	-	-	10350
Plant Machinery and Equipment	-	16675	-	24435
Spare Parts	-	-	-	3481
Pre-production Capital Expenditure	2653	6038	838	1907
Net Working Capital	-	-	750	1330
Total Initial Investment Cost	7390	22713	5651	41503

TOTAL CURRENT INVESTMENT COSTS (COMFAR SCHEDULE 2)

It is necessary to re-build/repair the furnace after five years of production. Accordingly the furnace will have to be re-built in Year 6 and in Year 12, at a cost of Dhs.4,480,000 each time. It will also be necessary to procure new vehicles at a cost of Dhs. 1,500,000 each in Year 6 and in Year 12. The total current fixed investment would thus be Dhs. 5,980,000 each in Years 6 and 12, which can be financed from accumulated profit.

In the first year of production (Year 3), it will be necessary to finance

the increase in working capital requirements, amounting to Dhs.7,028,560, either by short-term bank loan or by increasing equity capital. Subsequent increases in net working capital can be financed from accumulated profit. In this connection, reference may be made to COMPAR SCHEDULE 4 below entitled WORKING CAPITAL.

TOTAL PRODUCTION COSTS (COMPAR SCHEDULE 3)

The total production costs can be broken down into five major categories:

- (1) Factory Costs - including cost of raw materials, cost of sleeves, utilities, manpower, repair and maintenance, spare parts and factory overheads.
- (2) Administration - Labour costs
- (3) Administrative Overheads
- (4) Marketing and Distribution costs
- (5) Depreciation

Factory Costs

(a) Raw Materials

The main raw materials for the production of glass bottles are: silica sand, limestone, pegmatite and soda ash. Small quantities of sodium sulphate, sodium nitrate, selenium, cobolt oxide and cerium are also required. Glass cullets either purchased from outside or obtained from the factory itself (rejected glass is used again in production as cullet) accounts for about 25% of the total raw materials. The costs related to these raw material inputs are grouped under Raw Material (a) in the COMPAR SCHEDULE entitled TOTAL PRODUCTION COST. Raw Material (a) accounts for 25.32% of the total production costs in a nominal year.

Table-11 : Raw Material Cost, per ton of glass

<u>Raw Material</u>	<u>Quantity</u>	<u>Unit Cost</u> Dhs.	<u>Dhs. per ton of glass</u>		
			FC	LC	Total
Silica Sand	460 kg.	110/ton	76.82		76.82
Limestone	156 kg.	110/ton		17.16	17.16
Pegmatite	105 kg.	986/ton	103.53		103.53
Soda Ash	162 kg.	920/ton	149.04		149.04
Sodium sulphate	4 kg.	1215/ton	4.86		4.86
Sodium nitrate	2 kg.	1395/ton	2.79		2.79
Selenium	4 gr.	75/kg.	0.30		0.30
Cobolt oxide	1 gr.	150/kg.	0.15		0.15
Cerium	25 gr.	22/kg.	0.55		0.55
Glass cullet:					
from factory rejects	100 kg.	-		-	-
purchased	150 kg.	400/ton		60.00	60.00
			<u>338.04</u>	<u>77.16</u>	<u>415.20</u>

(b) Plastic Sleeves

Plastic sleeves account for 17.33% of the total production costs in a nominal year. The cost of plastic sleeves per ton of glass is estimated to be Dhs.309. At full production, the cost of sleeves would be Dhs. 11,045,820. Raw Material (b) in the COMPAR schedule has been used to cover this cost.

(c) Utilities

LPG gas, electricity and water constitute the major utilities required for glass production. For the production of 1 ton of glass, the requirements of utilities are as follows:

Table-12 : Cost of utilities, per ton of glass

<u>Item</u>	<u>Unit</u>	<u>Quantity</u>	<u>Price</u> Dhs.	<u>Cost in Dhs.</u>
LPG Gas	cb.m.	0.60	286/cb.m.	171.60
Electricity	kWh	200	0.075/kWh	15.00
Water	cb.m.	2.5	5/cb.m.	12.50
				<u>199.10</u>

Utilities account for 12.13% of the total production costs in a nominal year.

(d) Manpower Cost (direct labour)

The plant will have a total of 99 persons under the category of direct labour, of which 51 are skilled labour and 48 are unskilled labour. The annual cost of labour, accounting for 4.81% of total production cost, is estimated to be Dhs. 2,862,000, with the following breakdown:

Table-13 : Manpower Costs (Direct Labour)

	<u>Number</u>	<u>Dhs./month</u>	<u>Total/year</u> Dhs. 000
Skilled labour	51	2500	1530
Unskilled labour	48	2000	1152
Total	99		<u>2682</u>

For more details, reference may be made to Annex 2. The total labour cost is treated as fixed costs.

(e) Repair and Maintenance

At full production, the annual repair and maintenance costs are estimated to be Dhs. 2,954,000. In a nominal year this amounts to 2,769,330 or 4.97% of the total production cost. For COMPAR calculations it has been assumed that 50% of the costs would be fixed and 50% would be variable.

(f) Spare Parts

The annual requirement for spare parts at full capacity is estimated to be Dhs. 3,481,000, 50% of which has been assumed to be variable for COMFAR calculations. Cost of spare parts accounts for 6.24% of the total production costs in a nominal year.

(g) Factory Overheads

The factory overhead costs consist of (a) technology acquisition costs of 3.5% of annual sales revenue; (b) salaries of plant management (production) amounting to Dhs. 816,000; (c) repair and maintenance costs of buildings and civil works amounting to Dhs. 88,000; (d) communication costs of Dhs. 10,000; (e) travel costs of Dhs. 20,000 and (f) effluent disposal costs of Dhs. 9,600. For COMFAR calculations, items (a) and (b) has been treated as fixed costs, while the other items have been treated as variable costs. The total factory overhead costs total Dhs.3,408,600 at full production. In a nominal year, the factory overhead costs account for 5.53% of the total production costs.

(h) Administration - Labour costs

This includes salaries and fringe benefits of indirect manpower, the annual cost of which amounts to Dhs.1,008,000. This accounts for 1.80% of the total production costs.

For more details, reference may be made to Annex 2.

(i) Administrative Overheads

The annual administrative overhead costs, treated as fixed costs, amount to Dhs. 275,000 and represent 0.49% of the total production costs.

(j) Marketing and Distribution costs

The marketing costs, covering training of salesmen, advertising, travel expenses and after-sales service, amounts to Dhs.190,000 per year. Of this, Dhs. 70,000 would be required in foreign currency and Dhs. 120,000 in local currency. 50% of this cost are assumed to be variable.

Freight costs are estimated at the rate of Dhs. 70 per ton of glass; costs of wooden pallets, shrink foil and cardboard required for packaging constitute the distribution costs. The only item to be imported is shrink foil.

Marketing and distribution costs represent 8.06% of the total production costs in a nominal year.

(k) Depreciation

The following depreciation rates have been assumed for the fixed assets and for the amortized pre-production capital expenditures:

Site preparation and development	5%
Buildings and civil works	5%
Plant machinery and equipment (excluding furnace)	10%
Furnace	20%
Auxiliary and service facilities	10%
Pre-productin capital expenditures	10%

Straightline depreciation method, without specifying salvage value, has been applied for COMFAR calculations.

Depreciation cost represents 13.67% of the total production costs in a nominal year.

Sales Revenue

The total sales revenue ranges from Dhs.50,983,930 in the first production year (Year 3) to Dhs. 70,405,260 in the fifteenth production year (Year 17). For details of yearly sales revenues, refer to Table 1, Chapter 2 - MARKET AND PLANT CAPACITY.

WORKING CAPITAL (COMPAR SCHEDULE 4)

The Working Capital requirement is calculated by specifying the minimum days of coverage for the different variables as follows:

Table-14 : Working Capital Requirements

Item	Minimum coverage Period in days
Accounts receivable	30
Raw materials (a)	90
Raw material (b)	90
Utilities	10
Finished products	10
Cash-in-hand	20
Accounts payable	30

It is assumed that the initial stock of spare parts, sufficient for a full capacity production year, will be replenished upon depletion of the stock and therefore no provision for spare parts has been made in the Working Capital.

As shown in COMPAR SCHEDULE 4, Dhs.9,108,560 are required in the first year of production as Net Working Capital. Deducting the amount of Dhs.2,080,000 provided for inventories in the second construction year, the additional Net Working Capital requirement for the first production year amounts to Dhs.7,028,560, which will have to be financed either by a short-term loan or by increasing equity capital.

The Net Working Capital requirement in a nominal year (Year 7) amounts to Dhs 10,006,610 and at full production (Year 17) it amounts to Dhs. 11,011,760.

SOURCES OF FUNDS (COMPAR SCHEDULE 5)

The total initial investment amounts to Dhs. 30,103,000 in Year 1 and Dhs. 47,154,000 in Year 2, totalling Dhs.77,257,000. Of the total initial investment costs Dhs. 64,216,000 or 83.12% would be required in foreign currency.

100% equity financing is considered. A combination of equity and loan financing will not change the IRR on total investment, although it would result in a higher return on equity.

CASH FLOW TABLE (COMPAR SCHEDULE 6)

The cash flow schedule compares financial inflows and outflows in each year during the life of the project. The Cash Flow Schedule exhibits both the financial surplus (or deficit) and the net cash flow from operation. The net cash flow is positive throughout the project life, although it is relatively small in the first year of operation (Year 3). Nevertheless, it indicates that the project is not expected to have liquidity problems. The cumulated net cash flow becomes positive at the beginning of the 8th year of operation, indicating the pay-back-period for the project, namely after 8 years and 1 month.

Profitability Measures

(a) Return on Investment:

Net Present Value, at 10% discount rate, is positive (Dhs.1,436,200)

Internal Rate of Return on Investment is 10.26%

NET INCOME STATEMENT (COMPAR SCHEDULE 7)

The Net Income Statement reveals net loss of Dhs.278,380 in the first year of production. From the second year of production onwards, the project is generating profits. The net profit for the second year of operation (Year 4) is Dhs. 1,127,890, reaching Dhs. 5,851,950 in the 5th year of operation (Year 7) and Dhs.14,922,840 in the 15th year of operation (Year 17). The accumulated undistributed profit amounts to Dhs.114,526,300 by the 15th year of operation (Year 17).

BALANCE SHEET (COMPAR SCHEDULE 8)

On the liabilities side, equity and current liabilities (accounts payable) constitute the major elements, equity being clearly the dominant element. Reserves in the form of retained profits are accumulated gradually, reaching almost 51% of total liabilities at the end of the project life. These are matched on the assets side by increasing cash surplus, constituting almost 88% of the total assets at the end of the project life.

Fixed assets amount to Dhs. 67,552,600 in the first year of operation, decreasing gradually to Dhs.8,673,000 in the 15th year of operation. Current assets (inventories, receivables) represent 14.45% of total assets in the first year of operation and in the 15th year of operation, they represent 7.25% of the total assets.

BREAK-EVEN ANALYSIS

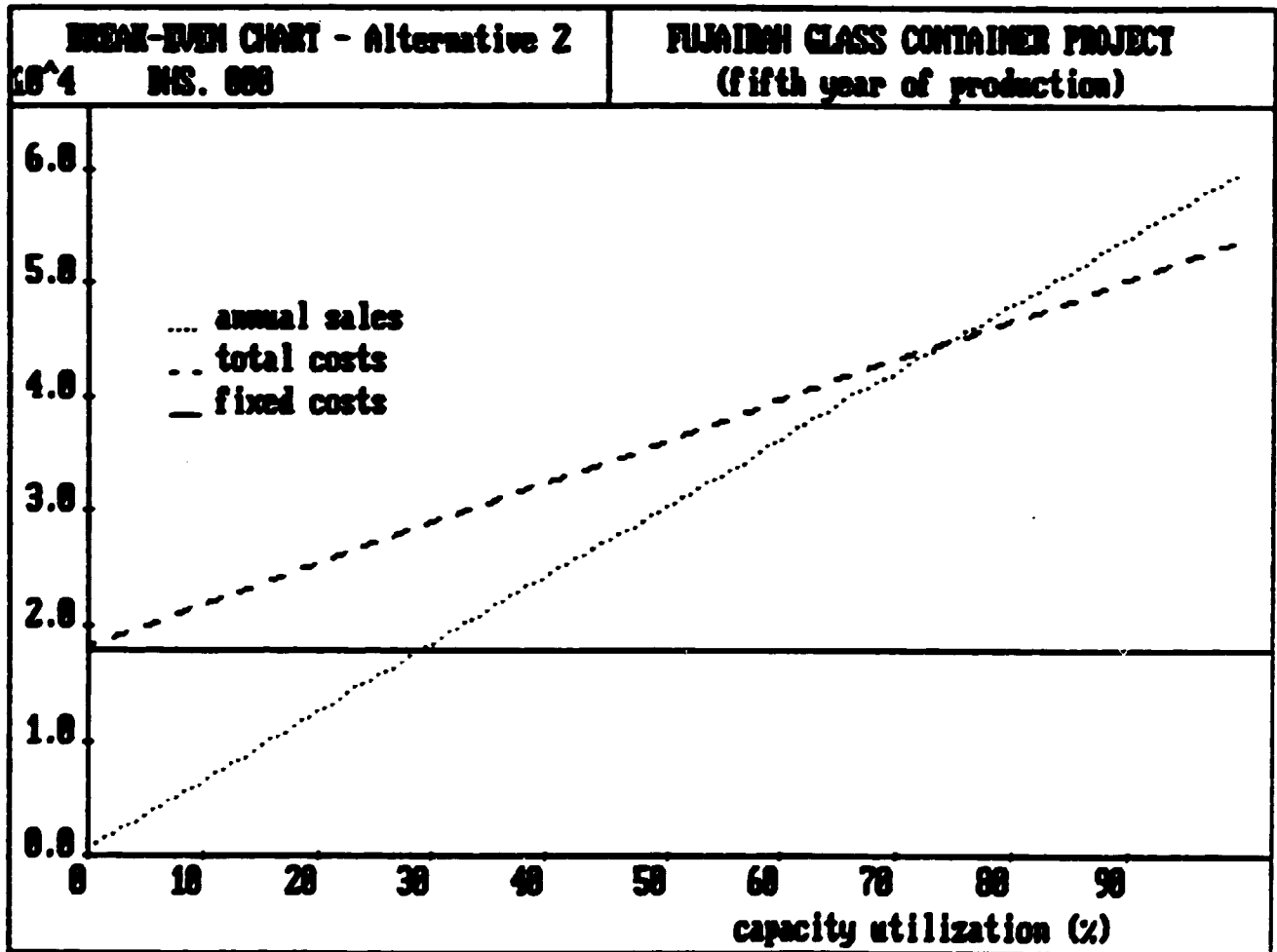
The break-even analysis has been carried out, taking Year 7 (5th year of operation) as a normal Year. The following data have been used for the calculations:

Annual Sales:	Dhs. 61,602,560
Total Production Costs:	Dhs. 55,750,620
Fixed Costs:	Dhs. 17,874,930

To calculate the Break-even Point as a percentage of capacity utilization, the following formula has been applied:

$$\begin{aligned}
 \text{BEP} &= \frac{\text{Fixed Production Costs}}{\text{Sales Revenue} - \text{Variable Prod. Costs}} \\
 &= \frac{17,874,930}{61,602,560 - 37,875,690} \\
 &= 75.33\% \text{ of capacity utilization}
 \end{aligned}$$

The Break-even Chart is shown below:



SENSITIVITY ANALYSIS

Sensitivity analysis has been carried out to check the sensitivity of variations of plus/minus 10% in sales price. The results which are attached as Annex 7, p.p. 97-108, are explained below.

10% increase in Sales Price

A 10% increase in sales price will raise the Internal Rate of Return on Total Investment from 10.26% to 17.03%. The Net Present Value at 10% discount rate is Dhs. 41,920,610. The cumulated net cash flow becomes positive in the middle of the 6th Year of operation (Year 8), indicating a pay-back period of 5.5 months. In this case, the project proposal is very attractive for the investor.

10% decrease in Sales Price

A 10% decrease in sales price will lower the Internal Rate of Return on Total Investment from 10.26% to 2.06%. The Net Present Value at 10% discount rate is negative (- Dhs. 39,527,930). the cumulated net cash flow becomes positive only in the 15th year of operation (Year 17), indicating a pay-back period of almost 15 years.

GOIC MARKET STUDY 1985
=====**SUMMARY****Present Market.**

There has been no growth in the total beverage market in UAE, Qatar, and Bahrain. There has however been a remarkable change in the types of container used. Despite opposition from Municipal Authorities, who at one time seemed set to ban non-returnable glass bottles (NRBs), these have now become a major and growing feature of the present market.

NRB's in 1985 represented about 48% of UAE bottlers total sales and 43% of all Qatar bottlers sales in 1985. In 1983 the respective proportions were 14% and 19%.

This growth has been entirely at the expense of the returnable glass bottle (RB). In the UAE RB's represented 41% of bottlers sales in 1983 but only 15% of their sales in 1985. This has greatly affected the purchases of glass bottles made by the bottling companies. Only two of the 10 bottling companies interviewed purchased RB's in 1985. Consequently the market for class RB's can be recorded as virtually non-existent.

In summary terms the glass bottle market in UAE, Qatar, and Bahrain is tabled below:

TABLE 1
Summary in Broad Terms of Glass Bottle Demand*
in UAE, Qatar and Bahrain, 1985

Country	Units	Returnable		Non-returnable		Total		
		Flint	Green	Flint	Green	Flint	Green	Both colours
UAE	Million bottles	1.7	-	133.3	15.1	150.6	15.1	165.7
Qatar	"	-	-	17.3	1.9	17.3	1.9	19.2
Bahrain	"	1.9	0.9	19.2	1.9	21.1	2.8	23.9
TOTAL OF ABOVE	Million bottles	3.6	0.9	169.8	18.9	189.0	19.8	208.8
UAE	Tons (Rounded)	465	-	23,900	2,700	24,365	2700	27,065
Qatar	" (Rounded)	-	-	3300	370	3300	370	3670
Bahrain	" (Rounded)	760	360	3690	370	4450	730	5180
TOTAL OF ABOVE	Tons (rounded)	1225	360	30,890	3440	32,115	3,800	35,915

* Defined as reported 1985 purchases.

Source: GOIC estimates based on interviews with bottling companies.

There are basically two sizes of NRB in the market.

- 296 ml weighing 192 grams used by Pepsi-Cola franchisers.
- 250 ml weighing 162 grams used by all other bottlers.

There are, however, several shape variations.

From September 1985 all NRB's will be required to have a plastic-shield (an extended lable) from the base of the bottle up to the top of the neck.

About 80% of purchases are flint glass.

Prices. These have remained at the low level reported in December 1983. The present (May 1985) reported levels are as follows:

<u>Type</u>	<u>US \$ per gross*</u>	<u>US \$ per ton</u>
Returnable (Flint) (400 grams)	20	289
Semi-returnable (Flint) (240 grams)	10	289
NRB - Flint/Green (192 grams)	11	398
NRB - Flint/Green (162 grams)	11	472

Note: gross = 144 bottles

Source: GOIC interviews.

In short it has remained a "buyers market".

All bottles into the UAE, Qatar and Bahrain are presently imported. The Kuwait glass plant has not yet made any sales.

Government attitude is to monitor the NRB situation and promote, via bottlers and importers, a consumer education campaign for the proper disposal of NRB's. In UAE and Qatar the question of the continued use of NRB's will be reviewed in early 1986.

2.2 Future Market

The future market for glass bottles is entirely with NRB's. Returnable bottles will not represent more than 2000 - 3000 tons a year (UAE, Qatar, Bahrain).

The future of the NRB is dependent on the Municipal Authorities attitude to NRB's. Obviously if there was a ban on NRB's this would kill the market.

In addition there is the prospect of competition from PET (polyethylene terephthalate) bottles. To date test marketing has not been a success because of rapid carbonation loss after a few weeks. However, there, is constant development in Japan and Europe to improve the performance of PET. One Japanese company - Nissei - has developed a technology for producing multi-layer bottles (three and five layers) which essentially allows one or two layer of gas barrier nylon material to be incorporated between outer and inner PET layers. Another approach is being followed by Metal Box and ICI in UK and this is to put a dip coating on the PET bottle. Pepsi-Cola International and "7-UP" International have still to approve a PET bottle in the 250 / 296 ml size as suitable for the Middle East Market. Their technical representatives expect that such a bottle will eventually become available.

In the meanwhile Allied Beverages (Double Cola) of Sharjah appears to have signed up with Nissei of Japan for their technology and expects to switch all bottling to PET in 1986. If this happens this will reduced the UAE market for NRB's by some 8,500 tons or about one third of the present market size.

Nissai and Metal Box both claim that PET bottles can be around 15% cheaper than present prices of NRB's - i.e. a PET bottle will cost 7 US cents a unit compared with 8 US cents a unit for NRB.

Allowing for Allied Beverages anticipated swing to PET and assuming that there is no banning of NRB's, and no other bottler switches to PET then NRB's could take 50% of the beverage container market.

Given a lower growth rate for the overall beverage market of say 3 percent then there may be some modest growth in the requirements for NRB's.

TABLE 2
Summary Rough Forecast of Future Tonnage
for NRB's (Given Above Assumptions)

Country	Glass Tonnage (rounded)			Colour
	1985	1988	1990	
UAE	23,900	20,700	22,300	Flint
Qatar	3,300	3,500	3,800	Flint
Bahrain	3,700	8,000	8,600	Flint
TOTAL OF ABOVE	30,900	32,200	34,700	Flint
UAE	2700	5200	5550	Green
Qatar	400	400	400	Green
Bahrain	400	2000	2200	Green
TOTAL OF ABOVE	3500	7600	8100	Green

Source: GOIC Estimates (see table 10).

TABLE 8
Recent Price Indications for Glass Bottles
in UAE and Qatar

Bottle Type	Source	Price		Terms
		US\$/gross	US\$ ton	
Returnable-Flint (400 grams)	Singapore Glass (Malaysia)	20	347.2	C & F Dubai
	Gulf Glass (Kuwait)	20	347.2	C & F Dubai
	Kemperlama (Turkey)	20	347.2	C & F Company Warehouse
Semi-returnable- Flint (240 grams)	Kemperlama (Turkey)	10	289.4	C & F Company Warehouse
NRS - Flint (192 grams)	Hye Glass (W.Germany)	11.0	397.8	C & F Doha
NRS - Green (192 grams)	Hye Glass (W.Germany)	11.0	397.8	C & F Doha
NRS - Flint (192 grams)	Singapore Glass (Malaysia)	11.83	427.8	C & F Doha
NRS - Green (192 grams)	Singapore Glass (Malaysia)	11.83	427.8	C & F Doha
NRS - Flint (162 grams)	United Glass (U.K.)	11.0	471.5	C & F Dubai
		11.23	481.4	C & F Sharjah
NRS - Green (192 grams)	United Glass (U.K.)	11.0	471.5	C & F Dubai

Note: (1) Gross = 144 (2) Conversions. 400 grams = 57.6 kgs. per gross; 240 grams = 34.56 kgs. per gross; 192 grams = 27.65 kgs per gross; 162 grams = 23.33 kgs. per gross.
(3) All prices include cardboard packaging.

Source: GOIC interviews with bottling companies.

Table-1Manning table

Department	Engi- neers	Super- intend.	Super- visors	Staff	Skilled labour	Unskilled labour
Supervising		4				
Raw materials					3	4
Batch house			1		2	2
Furnace					4	4
Forming department	1			1	6	6
Annealing, inspection					3	6
Plastic sleeving					1	1
Shrink wrapping					2	2
Ware house					3	3
Qual. control, laboratory	1			1	5	5
Work shop			1		5	4
Maintenance			1		5	3
El. station			1		1	1
Fuel station					1	
Compr. station					1	
Service group					9	9
Total	2	4	4	2	51	48

The required number of manpower for the plant is shown below

<u>Table-2</u>		<u>Manpower required</u>
<u>Function</u>		<u>Number</u>
General manager		1
x) Production manager		1
Sales manager		1
Purchasing manager		1
Accountant		1
Cashier, pers. assist.		1
Sales man		1
Office staff		3
Plant engineer		1
x) Glass technologist		1
Shift superintendents		4
Supervisors		4
Production staff		2
Skilled labours		51
Unskilled labours		48
Total		121
x) Expatriates		

<u>Table-3</u>				<u>Estimate of production costs - wages</u>
<u>Wages</u>	<u>Number</u>	<u>Dhs/month</u>	<u>Total/year</u>	<u>Dhs '000</u>
Skilled labour	51	2500	1530	
Unskilled labour	48	2000	1152	
Total	99		2682	

Table-4

Manning table - staff

<u>Administration</u>	<u>Number</u>	<u>Dhs/month</u>	<u>Total/year Dhs '000</u>
General manager	1	20 000	240
Production manager	1	15 000	180
Sales manager	1	10 000	120
Purchasing manager	1	8 000	96
Accountant	1	8 000	96
Cashier, pers. assist.	1	6 000	72
Sales man	1	5 000	60
Office staff	3	4 000	144
Sub-total	10		1008
 <u>Production</u>			
Glass technologist	1	10 000	120
Plant engineer	1	10 000	120
Supervisors	4	5 000	240
Shift super-intendents	4	5 000	240
Production staff	2	4 000	96
Sub-total	12		816
Total	22		1824

ANNEX 3
CONFAR SCHEDULES
ALTERNATIVE I



CONFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

FUJAIHAI GLASS CONTAINER PROJECT
 16 FEBRUARY 1980, BY JM
 ALTERNATIVE I - BASE VERSION

2 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: DHS. 000

Total initial investment during construction phase

fixed assets:	70985.00	82.874 % foreign
current assets:	2325.00	50.538 % foreign
total assets:	73310.00	31.848 % foreign

Source of funds during construction phase

equity & grants:	73310.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	73310.00	0.000 % foreign

Cashflow from operations

Year:	1	5	10
operating costs:	43461.03	44735.95	49133.14
depreciation :	7216.70	7216.70	6473.10
interest :	0.00	0.00	0.00
production costs	50677.73	51952.25	55606.24
thereof foreign	62.13 %	62.67 %	62.06 %
total sales :	52980.22	59602.75	66970.29
gross income :	286.98	5382.99	8816.26
net income :	286.98	5382.99	8816.26
cash balance :	174.75	12599.69	14860.94
net cashflow :	174.75	12599.69	14860.94

Net Present Value at: 10.00 % = 4991.68
 Internal Rate of Return: 10.95 %
 Return on equity1: 4.53 %
 Return on equity2: 10.95 %

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

COMFAR SCHEDULE 1



COMFAR
21 UNICO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Initial Investment in MS. 000

Year	1	2
Fixed investment costs		
Land, site preparation, development	675.00	0.00
Buildings and civil works	4062.00	4063.00
Auxiliary and service facilities	0.00	10350.00
Incorporated fixed assets	0.00	3366.00
Plant machinery and equipment	15539.00	22950.00
Total fixed investment costs	20267.00	35829.00
Pre-production capital expenditures.	8200.00	2507.00
Net working capital	0.00	2525.00
Total initial investment costs	28547.00	44763.00
Of it foreign, in Z	74.46	86.56

COMFAR SCHEDULE 2



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Current Investment is BHS. 000

Year	3	4	5	6	7	8
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	1500.00
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	4490.00
Total fixed investment costs	0.00	0.00	0.00	0.00	0.00	5990.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	7328.94	161.00	159.00	81.97	0.00	-1308.24
Total current investment costs ...	7328.94	161.00	159.00	81.97	0.00	4681.76
Of it foreign, £	68.54	88.95	88.95	88.95	0.00	100.00

FIJAIKOH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JP

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Current Investment is BHS. 000

Year	9	10-11	12	13	14	15
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	1500.00	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	4400.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	5900.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	1791.30	0.00	428.42	0.00	-1558.31	1558.31
Total current investment costs ...	1791.30	0.00	428.42	0.00	4421.69	1558.31
Of it foreign, £	73.91	0.00	73.91	0.00	100.00	73.91

FIJAIKOH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JP

COMFAR SCHEDULE 3



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Production Costs in US. 000

Year	3	4	5	6-7	8	9-11
1 of non. capacity (single product).	89.00	89.00	89.00	89.00	70.67	94.34
Raw material I	14000.00	14000.00	14000.00	14000.00	11117.62	14840.61
Other raw materials	8349.84	8767.44	9185.04	9393.94	7459.64	9957.70
Utilities	7166.18	7166.18	7166.18	7166.18	5690.62	7596.25
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Labour, direct	2682.00	2682.00	2682.00	2682.00	2682.00	2682.00
Repair, maintenance	2646.93	2646.93	2646.93	2646.93	2390.29	2721.77
Spares	3180.85	3180.85	3180.85	3180.85	2972.43	3270.74
Factory overheads	2129.59	2129.59	2129.59	2129.59	2106.24	2136.79
Factory costs	40155.79	40573.39	40990.98	41199.88	34318.85	43205.42
Administrative overheads	1283.00	1283.00	1283.00	1283.00	1283.00	1283.00
Incar. costs, sales and distribution	2022.24	2114.40	2206.56	2252.64	1808.32	2382.17
Direct costs, sales and distribution	2015.51	2116.31	2217.11	2267.51	1800.61	2403.59
Depreciation	7216.70	7216.70	7216.70	7216.70	5427.10	6473.19
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	52693.24	53303.80	53914.36	54219.74	44637.89	55747.25
Costs per unit (single product) .	1.46	1.48	1.50	1.51	1.56	1.46
Of it foreign, I	59.76	59.88	59.99	60.05	58.87	59.41
Of it variable, I	71.34	70.71	70.10	69.80	67.32	71.96
Total labour	3690.00	3690.00	3690.00	3690.00	3690.00	3650.00



Total Production Costs in MS. 000

Year	12	13	14	15-17
I of nom. capacity (single product).	100.00	100.00	79.41	100.00
Raw material I	15731.00	15731.00	12492.30	15731.00
Other raw materials	10555.13	10555.13	8382.64	10555.13
Utilities	8052.00	8052.00	6394.25	8052.00
Energy	0.00	0.00	0.00	0.00
Labour, direct	2682.00	2682.00	2682.00	2682.00
Repair, maintenance	2901.00	2901.00	2512.64	2901.00
Spares	3366.00	3366.00	3019.50	3366.00
Factory overheads	2143.60	2143.60	2117.37	2143.60
Factory costs	45330.73	45330.73	37600.13	45330.73
Administrative overheads	1283.00	1283.00	1283.00	1283.00
Indir. costs, sales and distribution	2519.41	2519.41	2020.21	2519.41
Direct costs, sales and distribution	2547.79	2547.79	2023.21	2547.79
Depreciation	6473.10	1486.00	590.00	1636.00
Financial costs	0.00	0.00	0.00	0.00
Total production costs	58154.03	53166.93	43516.55	53316.93
Costs per unit (single product) .	1.44	1.31	1.36	1.32
Of it foreign, I	59.34	56.16	54.96	56.28
Of it variable, I	73.12	79.98	77.60	79.75
Total labour	3690.00	3690.00	3690.00	3690.00

CONFAR SCHEDULE 4



CONFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Working Capital in BHS. 000

Year			3	4	5	6	7
Coverage	ndc	cote					
Current assets &							
Accounts receivable	30	12.0	3789.71	3840.59	3891.47	3916.92	3916.92
Inventory and materials	59	7.1	6821.57	6949.97	7076.57	7141.59	7141.59
Energy	0	---	0.00	0.00	0.00	0.00	0.00
Spare parts	0	---	0.00	0.00	0.00	0.00	0.00
Work in progress	0	---	0.00	0.00	0.00	0.00	0.00
Finished products	15	24.0	1726.62	1744.02	1761.42	1770.12	1770.12
Cash in hand	20	18.0	662.35	662.35	662.35	662.35	662.35
Total current assets			13000.25	13196.93	13391.61	13490.99	13490.99
Current liabilities and							
Accounts payable	30	12.0	3346.32	3381.12	3415.92	3433.32	3433.32
Net working capital			9653.94	9815.82	9975.70	10057.67	10057.67
Increase in working capital			7328.94	161.08	159.08	81.97	0.00
Net working capital, local			3721.03	3757.27	3792.51	3811.13	3811.13
Net working capital, foreign			5932.91	6058.55	6183.19	6246.54	6246.54

Notes: ndc = minimum days of coverage ; cote = coefficient of turnover .

FIJAIAN GLASS CONTAINER PROJECT -- 16 FEBRUARY 1968, BY JH

CONFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Working Capital in BHS. 000

Year			8	9	10-11	12	13
Coverage	ndc	cote					
Current assets &							
Accounts receivable	30	12.0	3267.57	4106.18	4106.18	4306.74	4306.74
Inventory and materials	50	7.1	6148.69	7429.51	7429.51	7735.82	7735.82
Energy	0	---	0.00	0.00	0.00	0.00	0.00
Spare parts	0	---	0.00	0.00	0.00	0.00	0.00
Work in progress	0	---	0.00	0.00	0.00	0.00	0.00
Finished products	15	24.0	1483.41	1853.68	1853.68	1942.24	1942.24
Cash in hand	20	18.0	629.66	671.88	671.88	681.98	681.98
Total current assets			11529.33	14061.25	14061.25	14666.78	14666.78
Current liabilities and							
Accounts payable	30	12.0	2859.90	3600.45	3600.45	3777.56	3777.56
Net working capital			8669.43	10460.80	10460.80	10889.22	10889.22
Increase in working capital			-1388.24	1791.38	0.00	428.42	0.00
Net working capital, local			3381.07	3935.50	3935.50	4067.68	4067.68
Net working capital, foreign			5288.36	6525.31	6525.31	6821.55	6821.55

Notes: ndc = minimum days of coverage ; cote = coefficient of turnover .

FIJAIAN GLASS CONTAINER PROJECT -- 16 FEBRUARY 1968, BY JH



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Working Capital in MS. 000

Year			14	15	16-17
Coverage	ndc	coto			
Current assets &					
Accounts receivable . . .	30	12.0	3577.21	4306.74	4306.74
Inventory and materials .	30	7.1	6621.67	7735.82	7735.82
Energy	0	---	0.00	0.00	0.00
Spares	0	---	0.00	0.00	0.00
Work in progress	9	---	0.00	0.00	0.00
Finished products	15	24.0	1620.13	1942.24	1942.24
Cash in hand	20	18.0	643.25	681.98	681.98
Total current assets			12464.26	14666.78	14666.78
Current liabilities and					
Accounts payable	30	12.0	3133.34	3777.56	3777.56
Net working capital			9330.92	10889.22	10889.22
Increase in working capital			-1558.31	1558.31	0.00
Net working capital, local			3585.37	4067.68	4067.68
Net working capital, foreign			5745.55	6821.55	6821.55

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

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH

COMFAR SCHEDULE 3



COMFAR
21 UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Source of Finance, construction is MS. 000

Year	1	2
Equity, ordinary ..	28547.00	44763.00
Equity, preference.	0.00	0.00
Subsidies, grants .	0.00	0.00
Loan A, foreign .	0.00	0.00
Loan B, foreign..	0.00	0.00
Loan C, foreign .	0.00	0.00
Loan A, local....	0.00	0.00
Loan B, local....	0.00	0.00
Loan C, local....	0.00	0.00
Total loan	0.00	0.00
Current liabilities	0.00	0.00
Bank overdraft	0.00	0.00
Total funds	28547.00	44763.00

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH



Source of Finance, production in B.S. 000

Year	3	4-5	6	7	8	9	10-11
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	3346.32	34.00	17.41	0.00	-573.42	740.35	0.00
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	3346.32	34.00	17.41	0.00	-573.42	740.35	0.00

FUJAIRAH GLASS CONTAINER PROJECT — 16 FEBRUARY 1986, BY JF

Source of Finance, production in B.S. 000

Year	12	13	14	15
Equity, ordinary ..	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	0.00	0.00
Loan B, foreign..	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00
Total loan	0.00	0.00	0.00	0.00
Current liabilities	177.11	0.00	-644.22	644.22
Bank overdraft	0.00	0.00	0.00	0.00
Total funds	177.11	0.00	-644.22	644.22

FUJAIRAH GLASS CONTAINER PROJECT — 16 FEBRUARY 1986, BY JF

COMFAR SCHEDULE 6



COMFAR 2.1 - Feasibility Studies Branch, UNIGG Vienna

Cashflow Tables, construction in ES. 000

Year	1	2
Total cash inflow . .	28547.00	44763.00
Financial resources .	28547.00	44763.00
Sales, net of tax . .	0.00	0.00
Total cash outflow . .	28547.00	44763.00
Total assets	28547.00	44763.00
Operating costs . . .	0.00	0.00
Cost of finance . . .	0.00	0.00
Repayment	0.00	0.00
Corporate tax . . .	0.00	0.00
Dividends paid . . .	0.00	0.00
Surplus (deficit) .	0.00	0.00
Cumulated cash balance	0.00	0.00
Inflow, local	28547.00	44763.00
Outflow, local	7272.00	6015.00
Surplus (deficit) .	21275.00	38748.00
Inflow, foreign . . .	0.00	0.00
Outflow, foreign . . .	21275.00	38748.00
Surplus (deficit) .	-21275.00	-38748.00
Net cashflow	-28547.00	-44763.00
Cumulated net cashflow	-28547.00	-73310.00



Cashflow tables, production in MGS. 000

Year	3	4	5	6	7	8
Total cash inflow . .	56326.54	55678.43	58305.85	59620.16	59602.75	47330.13
Financial resources .	3346.32	34.80	34.80	17.41	0.00	0.00
Sales, net of tax . .	52980.22	55643.63	58271.05	59602.75	59602.75	47330.13
Total cash outflow . .	56151.79	46283.78	46892.33	47102.43	47003.95	43862.55
Total assets	10675.25	196.68	194.68	99.38	0.00	4019.34
Operating costs . . .	45476.54	46087.10	46697.65	47003.05	47003.05	39210.79
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	573.42
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) .	174.75	9394.65	11413.52	12517.72	12599.70	3527.59
Cumulated cash balance	174.75	9569.40	20982.92	33500.64	46100.34	49627.92
Inflow, local	54261.59	55643.63	58271.05	59602.75	59602.75	47330.13
Outflow, local	24281.77	20448.51	20830.38	20905.23	20806.61	17152.62
Surplus (deficit) .	29979.81	34995.13	37440.66	38697.52	38716.14	30177.51
Inflow, foreign	2064.95	34.80	34.80	17.41	0.00	0.00
Outflow, foreign . . .	31870.01	25635.27	26061.95	26197.21	26116.45	26649.93
Surplus (deficit) .	-29805.06	-25600.47	-26027.15	-26179.80	-26116.45	-26649.93
Net cashflow	174.75	9394.65	11413.51	12517.72	12599.70	3527.58
Cumulated net cashflow	-73135.25	-63746.60	-52327.08	-39809.36	-27209.66	-23682.08



Cashflow tables, production in M\$. 000

Year	9	10	11	12	13	14
Total cash inflow . .	63929.25	63179.71	63179.71	67147.40	66970.29	53182.44
Financial resources .	740.55	0.00	0.00	177.11	0.00	0.00
Sales, net of tax . .	63179.71	63179.71	63179.71	66970.29	66970.29	53182.44
Total cash outflow . .	51836.10	49274.18	49274.18	52286.46	51680.93	47346.25
Total assets	2521.92	0.00	0.00	605.53	0.00	3777.48
Operating costs . . .	49274.18	49274.18	49274.18	51680.93	51680.93	42926.55
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	644.22
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) .	12114.15	13905.53	13905.53	14860.94	15289.36	5834.19
Accumulated cash balance	61742.67	75647.60	89553.13	104414.10	119703.40	125537.60
Inflow, local	63442.93	63179.71	63179.71	67033.24	66970.29	53182.44
Outflow, local	22667.21	21049.56	21049.56	23065.15	22870.02	18675.83
Surplus (deficit) .	40775.71	41330.14	41330.14	43968.09	44100.27	34506.61
Inflow, foreign . . .	477.33	0.00	0.00	114.16	0.00	0.00
Outflow, foreign . . .	29138.89	27424.62	27424.62	29221.31	28810.91	28672.42
Surplus (deficit) .	-28661.56	-27424.62	-27424.62	-29107.15	-28810.91	-28672.42
Net cashflow	12114.15	13905.53	13905.53	14860.94	15289.36	5834.19
Accumulated net cashflow	-11567.93	2337.60	16243.13	31104.67	46393.43	52227.62



Cashflow tables, production in MS. 000

Year	15	16	17
Total cash inflow . .	67614.51	66970.29	66970.29
Financial resources .	644.22	0.00	0.00
Sales, net of tax . .	66970.29	66970.29	66970.29
Total cash outflow . .	53583.45	51680.93	51680.93
Total assets	2282.52	0.00	0.00
Operating costs . . .	51680.93	51680.93	51680.93
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) .	13731.05	15289.36	15289.36
Accumulated cash balance	139268.70	154358.00	169847.40
Inflow, local	67199.27	66970.29	66970.29
Outflow, local	23581.31	22870.02	22870.02
Surplus (deficit) .	43617.95	44100.27	44100.27
Inflow, foreign	415.24	0.00	0.00
Outflow, foreign . . .	30302.14	28810.91	28810.91
Surplus (deficit) .	-29886.90	-28810.91	-28810.91
Net cashflow	13731.05	15289.36	15289.36
Accumulated net cashflow	65958.67	81248.03	96537.39



Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	-26877.14	at 10.00 %
Internal Rate of Return (IRR1) ..	4.53	%
b) Net Worth versus Net cash returns:		
Net present value	4991.68	at 10.00 %
Internal Rate of Return (IRR2) ..	10.95	%
c) Internal Rate of Return on total investment:		
Net present value	4991.68	at 10.00 %
Internal Rate of Return (IRR) ..	10.95	%
Net Worth = Equity paid plus reserves		

COMFAR SCHEDULE 7



COMFAR
2.1 UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Income Statement in SMS. 000

Year	3	4	5	6	7
Total sales, incl. sales tax	52900.22	55643.63	58271.05	59602.75	59602.75
Less: variable costs, incl. sales tax.	37591.64	37872.43	37793.23	37843.64	37843.64
Variable margin	15308.59	17751.20	20477.81	21759.11	21759.11
As % of total sales	29.05	32.26	35.14	36.51	36.51
Non-variable costs, incl. depreciation	15101.51	15611.37	16121.12	16376.12	16376.12
Operational margin	286.98	2339.83	4356.69	5382.99	5382.99
As % of total sales	0.54	4.21	7.48	9.03	9.03
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	286.98	2339.83	4356.69	5382.99	5382.99
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	286.98	2339.83	4356.69	5382.99	5382.99
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	286.98	2339.83	4356.69	5382.99	5382.99
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	286.98	2339.83	4356.69	5382.99	5382.99
Accumulated undistributed profit . . .	286.98	2626.81	6983.50	12366.49	17749.48
Gross profit, % of total sales	0.54	4.21	7.48	9.03	9.03
Net profit, % of total sales	0.54	4.21	7.48	9.03	9.03
RCE, Net profit, % of equity	0.39	3.19	5.94	7.34	7.34
RJI, Net profit+interest, % of invest.	0.36	2.90	5.38	6.64	6.64



Net Income Statement in US. 000

Year	8	9	10	11	12
Total sales, incl. sales tax	47330.13	63179.71	63179.71	63179.71	66970.29
Less: variable costs, incl. sales tax.	30051.37	40114.76	40114.76	40114.76	42521.51
Variable margin	17278.77	23064.95	23064.95	23064.95	24448.78
As % of total sales	36.51	36.51	36.51	36.51	36.51
Non-variable costs, incl. depreciation	14086.52	15432.52	15432.52	15432.52	15432.52
Operational margin	2892.25	7432.43	7432.43	7432.43	8816.26
As % of total sales	5.69	11.76	11.76	11.76	13.16
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	2892.25	7432.43	7432.43	7432.43	8816.26
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	2892.25	7432.43	7432.43	7432.43	8816.26
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	2892.25	7432.43	7432.43	7432.43	8816.26
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	2892.25	7432.43	7432.43	7432.43	8816.26
Accumulated undistributed profit	20441.73	27874.16	35306.59	42739.02	51555.28
Gross profit, % of total sales	5.69	11.76	11.76	11.76	13.16
Net profit, % of total sales	5.69	11.76	11.76	11.76	13.16
RCE, Net profit, % of equity	3.67	10.14	10.14	10.14	12.03
RDI, Net profit-interest, % of invest.	3.54	8.50	8.50	8.50	10.04



Net Income Statement in BHS. 000

Year	13	14	15	16	17
Total sales, incl. sales tax	66770.29	53182.44	66770.29	66770.29	66770.29
Less: variable costs, incl. sales tax	42521.51	33767.14	42521.51	42521.51	42521.51
Variable margin	24448.78	19415.30	24448.78	24448.78	24448.78
As % of total sales	36.51	36.51	36.51	36.51	36.51
Non-variable costs, incl. depreciation	10645.42	9749.42	10795.42	10795.42	10795.42
Operational margin	13803.36	9665.88	13653.36	13653.36	13653.36
As % of total sales	20.61	18.17	20.39	20.39	20.39
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	13803.36	9665.88	13653.36	13653.36	13653.36
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	13803.36	9665.88	13653.36	13653.36	13653.36
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	13803.36	9665.88	13653.36	13653.36	13653.36
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	13803.36	9665.88	13653.36	13653.36	13653.36
Accumulated undistributed profit	65358.64	75024.52	88677.08	102331.20	115984.60
Gross profit, % of total sales	20.61	18.17	20.39	20.39	20.39
Net profit, % of total sales	20.61	18.17	20.39	20.39	20.39
RCE, Net profit, % of equity	18.83	13.18	18.62	18.62	18.62
ROI, Net profit+interest, % of invest.	15.71	10.47	14.25	14.25	14.25

Projected Balance Sheets, construction in MS. 000

Year	1	2
Total assets	28547.00	73310.00
Fixed assets, net of depreciation	0.00	28547.00
Construction in progress	28547.00	42438.00
Current assets	0.00	2725.00
Cash, bank	0.00	0.00
Cash surplus, finance available	0.00	0.00
Less carried forward	0.00	0.00
Loss	0.00	0.00
Total liabilities	28547.00	73310.00
Equity capital	28547.00	73310.00
Reserves, retained profit	0.00	0.00
Profit	0.00	0.00
Long and medium term debt	0.00	0.00
Current liabilities	0.00	0.00
Bank overdraft, finance required	0.00	0.00
Total debt	0.00	0.00
Equity, % of liabilities	100.00	100.00



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Projected Balance Sheets, Production in DMS. 000

Year	3	4	5	6	7	8
Total assets	76943.30	79317.93	83709.41	89109.81	94492.80	96611.64
Fixed assets, net of depreciation	63768.30	56551.60	49334.90	42118.20	34901.50	29474.40
Construction in progress	0.00	0.00	0.00	0.00	0.00	5980.00
Current assets	12537.90	12534.58	12729.26	12828.54	12828.54	13899.67
Cash, bank	662.35	662.35	662.35	662.35	662.35	662.35
Cash surplus, finance available	174.74	9559.49	20982.99	33599.82	45100.71	49627.91
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	76943.30	79317.93	83709.41	89109.81	94492.80	96611.64
Equity capital	73310.00	73310.00	73310.00	73310.00	73310.00	73310.00
Reserves, retained profit	0.00	286.98	2626.81	6983.50	12366.49	17749.48
Profit	286.98	2339.83	4336.69	5382.99	5382.99	2692.25
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	3346.32	3381.12	3415.92	3433.32	3433.32	2859.90
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	3346.32	3381.12	3415.92	3433.32	3433.32	2859.90
Equity, % of liabilities	93.78	92.43	87.58	82.27	77.58	75.98

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JP

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Projected Balance Sheets, Production in DMS. 000

Year	9	10	11	12	13	14
Total assets	104784.60	112217.00	119649.50	128642.80	142446.20	151467.90
Fixed assets, net of depreciation	28781.30	22508.21	16033.11	9562.00	8076.00	7486.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	5980.00
Current assets	13389.37	13389.37	13389.37	13904.81	13904.81	11819.01
Cash, bank	671.88	671.88	671.88	681.98	681.98	645.25
Cash surplus, finance available	61742.05	73647.58	89933.12	104414.10	119703.40	125337.50
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	104784.60	112217.00	119649.50	128642.80	142446.20	151467.90
Equity capital	73310.00	73310.00	73310.00	73310.00	73310.00	73310.00
Reserves, retained profit	20441.73	27874.16	33306.59	42739.02	51335.28	63338.64
Profit	7432.43	7432.43	7432.43	8816.26	13803.36	9665.88
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	3600.45	3600.45	3600.45	3777.56	3777.56	3133.34
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	3600.45	3600.45	3600.45	3777.56	3777.56	3133.34
Equity, % of liabilities	69.96	65.33	61.27	56.99	51.47	48.40

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH

Projected Balance Sheets, Production in M.S. 000

Year	15	16	17
Total assets	165765.40	179418.00	193072.20
Fixed assets, net of depreciation	11830.00	10194.00	8358.00
Construction in progress	0.00	0.00	0.00
Current assets	13794.81	13794.81	13794.81
Cash, bank	681.98	681.98	681.98
Cash surplus, finance available	139263.70	154558.00	169847.40
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	165765.50	179418.00	193072.20
Equity capital	73310.00	73310.00	73310.00
Reserves, retained profit	79824.52	88677.08	102331.20
Profit	13653.36	13653.36	13653.36
Long and medium term debt	0.00	0.00	0.00
Current liabilities	3777.56	3777.56	3777.56
Bank overdraft, finance required	0.00	0.00	0.00
Total debt	3777.56	3777.56	3777.56
Equity, % of liabilities	44.23	40.86	37.97

ANNEX 4

SENSITIVITY ANALYSIS - ALTERNATIVE I

Sales Price up by 10%



COMFAR
2.1 UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

FUJAIHAN GLASS CONTAINER PROJECT
16 FEBRUARY 1988, BY JH
ALTERNATIVE I - SENS. ANNL. SALES 10% UP

2 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: S.E.C. 005

Total initial investment during construction phase

fixed assets:	70985.00	82.874 % foreign
current assets:	2325.00	50.538 % foreign
total assets:	73310.00	81.848 % foreign

Source of funds during construction phase

equity & grants:	73310.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	73310.00	0.000 % foreign

Cashflow from operations

Year:	1	5	10
operating costs:	43461.03	44735.95	49133.14
depreciation :	7216.70	7216.70	6473.10
interest :	0.00	0.00	0.00
production costs	50677.73	51952.25	55606.24
thereof foreign	62.13 %	62.67 %	62.06 %
total sales :	58271.95	65341.43	73643.05
gross income :	5577.80	11321.67	15489.03
net income :	5577.80	11321.67	15489.03
cash balance :	5465.57	18538.57	21533.70
net cashflow :	5465.57	18538.57	21533.70

Net Present Value at: 10.00 % = 45759.13
Internal Rate of Return: 18.11 %
Return on equity¹: 12.56 %
Return on equity²: 18.11 %

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



Cashflow Tables, construction in MS. 000

Year	1	2
Total cash inflow . .	28547.00	44763.00
Financial resources .	28547.00	44763.00
Sales, net of tax . .	0.00	0.00
Total cash outflow . .	28547.00	44763.00
Total assets	28547.00	44763.00
Operating costs . . .	0.00	0.00
Cost of finance . . .	0.00	0.00
Repayment	0.00	0.00
Corporate tax	0.00	0.00
Dividends paid	0.00	0.00
Surplus (deficit) .	0.00	0.00
Cumulated cash balance	0.00	0.00
Inflow, local	28547.00	44763.00
Outflow, local	7292.00	6015.00
Surplus (deficit) .	21255.00	38748.00
Inflow, foreign . . .	0.00	0.00
Outflow, foreign . . .	21255.00	38748.00
Surplus (deficit) .	-21255.00	-38748.00
Net cashflow	-28547.00	-44763.00
Cumulated net cashflow	-28547.00	-73310.00

Cashflow tables, production in BIS. 000

Year	3	4	5	6	7	8
Total cash inflow . .	61617.36	61185.20	64100.56	65358.80	65541.43	52046.00
Financial resources .	3346.32	34.80	34.80	17.41	0.00	0.00
Sales, net of tax . .	58271.05	61150.40	64065.76	65341.43	65541.43	52046.00
Total cash outflow . .	56151.79	46283.78	46892.34	47102.44	47003.06	43892.55
Total assets	10675.25	196.68	194.68	99.38	0.00	4019.34
Operating costs . . .	45476.54	46007.10	46697.66	47003.06	47003.06	39210.79
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	572.42
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) .	5465.57	14901.43	17208.22	18456.39	18538.37	8243.45
Cumulated cash balance	5465.57	20367.00	37575.22	56031.61	74569.98	82813.44
Inflow, local	57552.41	61150.40	64065.76	65541.43	65541.43	52046.00
Outflow, local	24281.78	20648.51	20830.39	20905.23	20886.61	17152.62
Surplus (deficit) .	33270.63	40501.90	43235.37	44636.20	44654.82	34893.38
Inflow, foreign . . .	2064.95	34.80	34.80	17.41	0.00	0.00
Outflow, foreign . . .	31870.01	25635.27	26061.95	26197.21	26116.45	26649.93
Surplus (deficit) .	-29005.06	-25600.47	-26027.15	-26179.80	-26116.45	-26649.93
Net cashflow	5465.57	14901.42	17208.22	18456.40	18538.37	8243.45
Cumulated net cashflow	-67844.43	-52943.00	-35734.79	-17278.39	1259.98	9503.43



Cashflow tables, production in DMS. 000

Year	9	10	11	12	13	14
Total cash inflow . .	70215.34	69474.79	69474.79	73820.16	73643.05	58481.41
Financial resources .	740.52	0.00	0.00	177.11	0.00	0.00
Sales, net of tax . .	69474.79	69474.79	69474.79	73643.05	73643.05	58481.41
Total cash outflow . .	51836.10	49274.18	49274.18	52286.46	51680.93	47348.24
Total assets	2531.92	0.00	0.00	605.55	0.00	3777.48
Operating costs . . .	49274.18	49274.18	49274.18	51680.93	51680.93	47226.55
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	644.22
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) .	18409.23	20200.61	20200.61	21533.70	21962.13	11133.17
Cumulated cash balance	181222.70	121423.30	141623.90	163157.60	185119.70	196252.90
Inflow, local	69738.01	69474.79	69474.79	73706.01	73643.05	58481.41
Outflow, local	22667.21	21849.56	21849.56	23065.15	22870.02	18675.83
Surplus (deficit) .	47070.80	47625.23	47625.23	50640.85	50773.03	39805.59
Inflow, foreign . . .	477.33	0.00	0.00	114.16	0.00	0.00
Outflow, foreign . . .	29138.09	27424.62	27424.62	29221.31	28810.91	28672.42
Surplus (deficit) .	-28661.56	-27424.62	-27424.62	-29107.15	-28810.91	-28672.42
Net cashflow	18409.23	20200.61	20200.61	21533.70	21962.13	11133.17
Cumulated net cashflow	27912.56	48113.27	68313.88	89847.58	111809.70	122942.90



Cashflow tables, production in BMS. 000

Year	15	16	17
Total cash inflow . .	74287.27	73643.05	73643.05
Financial resources .	644.22	0.00	0.00
Sales, net of tax . .	73643.05	73643.05	73643.05
Total cash outflow . .	52823.45	51680.93	51650.93
Total assets	2202.52	0.00	0.00
Operating costs . . .	51680.93	51680.93	51680.93
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) .	20403.82	21962.13	21962.13
Cumulated cash balance	216656.70	238618.80	260581.00
Inflow, local	73872.03	73643.05	73643.05
Outflow, local	23581.31	22870.02	22870.02
Surplus (deficit) .	50290.72	50773.03	50773.03
Inflow, foreign	415.24	0.00	0.00
Outflow, foreign . . .	30382.14	28810.91	28810.91
Surplus (deficit) .	-29886.90	-28810.91	-28810.91
Net cashflow	20403.82	21962.13	21962.13
Cumulated net cashflow	163346.70	165308.80	187270.90

Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	13868.32	at 10.00 %
Internal Rate of Return (IRRE1) ..	12.56 %	
b) Net Worth versus Net cash return:		
Net present value	45759.13	at 10.00 %
Internal Rate of Return (IRRE2) ..	18.11 %	
c) Internal Rate of Return on total investment:		
Net present value	45759.13	at 10.00 %
Internal Rate of Return (IRR) ..	18.11 %	

Net Worth = Equity paid plus reserves

ANNEX 6

SENSITIVITY ANALYSIS - ALTERNATIVE I

Sales Price down by 10%



COMFAR
2.1 UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

FEJAJIRAH GLASS CONTAINER PROJECT
16 FEBRUARY 1988, BY JH
ALTERNATIVE I - SENS. ANNUL. SALES 10% DOWN

2 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: DHS. 000

Total initial investment during construction phase

fixed assets:	70985.00	82.874 % foreign
current assets:	7325.00	50.538 % foreign
total assets:	73310.00	81.848 % foreign

Source of funds during construction phase

equity & grants:	73310.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	73310.00	0.000 % foreign

Cashflow from operations

Year:	1	5	10
operating costs:	43461.03	44735.55	49133.14
depreciation :	7216.70	7216.70	6473.10
interest :	0.00	0.00	0.00
production costs	50677.73	51932.25	53606.24
thereof foreign	62.13 %	62.67 %	62.86 %
total sales :	47509.44	53629.08	60257.09
gross income :	-5183.00	-591.68	2103.06
net income :	-5183.00	-591.68	2103.06
cash balance :	-5296.04	6625.03	8147.73
net cashflow :	-5296.04	6625.03	8147.73

Net Present Value at: 10.00 % = -36201.70
Internal Rate of Return: 2.36 %
Return on equity1: -6.45 %
Return on equity2: 2.36 %

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



Cashflow Tables, construction in MS. 000

Year	1	2
Total cash inflow . .	28547.00	44763.00
Financial resources .	28547.00	44763.00
Sales, net of tax . .	0.00	0.00
Total cash outflow . .	28547.00	44763.00
Total assets	28547.00	44763.00
Operating costs . . .	0.00	0.00
Cost of finance . . .	0.00	0.00
Repayment	0.00	0.00
Corporate tax	0.00	0.00
Dividends paid	0.00	0.00
Surplus (deficit) .	0.00	0.00
Cumulated cash balance	0.00	0.00
Inflow, local	28547.00	44763.00
Outflow, local	7272.00	6015.00
Surplus (deficit) .	21275.00	38748.00
Inflow, foreign	0.00	0.00
Outflow, foreign . . .	21275.00	38748.00
Surplus (deficit) .	-21275.00	-38748.00
Net cashflow	-28547.00	-44763.00
Cumulated net cashflow	-28547.00	-73310.00



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Cashflow tables, production in BMS. 000

Year	3	4	5	6	7	8
Total cash inflow . .	50833.73	50043.68	52473.14	53643.49	53628.00	42585.69
Financial resources .	3346.32	34.00	34.00	17.41	0.00	0.00
Sales, net of tax . .	47589.44	50028.00	52440.34	53628.00	53628.00	42585.69
Total cash outflow . .	56151.79	46283.79	46892.33	47102.43	47003.05	43892.33
Total assets	16675.25	196.68	194.68	99.38	0.00	4519.34
Operating costs . . .	45476.54	46037.11	46697.65	47003.05	47003.05	39210.79
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	573.42
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) . .	-5296.04	3779.89	3582.81	6543.06	6625.03	-1216.86
Cumulated cash balance	-5296.04	-1516.14	4066.67	10609.73	17234.76	16017.91
Inflow, local	48790.80	50028.00	52440.34	53628.00	53628.00	42585.69
Outflow, local	24281.78	20648.51	20030.38	20905.22	20886.60	17152.62
Surplus (deficit) . .	24509.02	29380.37	31609.96	32722.86	32741.48	25433.07
Inflow, foreign	2044.93	34.00	34.00	17.41	0.00	0.00
Outflow, foreign . . .	31870.01	25635.27	26061.95	26197.21	26116.45	26649.93
Surplus (deficit) . .	-29805.06	-25600.47	-26027.15	-26179.80	-26116.45	-26649.93
Net cashflow	-5296.04	3779.89	3582.81	6543.06	6625.03	-1216.86
Cumulated net cashflow	-7866.04	-4086.15	-6923.34	-6270.27	-56073.24	-57292.10

Cashflow tables, production in MS. 000

Year	9	10	11	12	13	14
Total cash inflow . .	57507.93	56846.00	56946.00	60434.20	60257.09	47851.33
Financial resources .	740.35	0.00	0.00	177.11	0.00	0.00
Sales, net of tax . .	56846.00	56846.00	56846.00	60257.09	60257.09	47851.33
Total cash outflow . .	51836.09	49274.17	49274.17	52286.47	51685.94	47348.25
Total assets	2531.92	0.00	0.00	605.53	0.00	3777.43
Operating costs . . .	49274.17	49274.17	49274.17	51685.94	51685.94	47926.55
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	644.22
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) .	5700.93	7572.31	7572.31	8147.73	8576.15	503.11
Accumulated cash balance	21798.04	29371.15	36943.46	45091.19	53667.34	54170.45
Inflow, local	57109.70	56846.00	56846.00	60320.04	60257.09	47851.33
Outflow, local	22667.20	21849.55	21849.55	23045.16	22870.03	18675.03
Surplus (deficit) .	34442.50	34996.93	34996.93	37274.88	37387.06	29175.52
Inflow, foreign . . .	477.33	0.00	0.00	114.16	0.00	0.00
Outflow, foreign . . .	-29138.09	-27424.62	-27424.62	-29221.31	-28810.91	-28672.42
Surplus (deficit) .	-28661.56	-27424.62	-27424.62	-29107.15	-28810.91	-28672.42
Net cashflow	5700.93	7572.31	7572.31	8147.73	8576.15	503.11
Accumulated net cashflow	-51511.16	-43738.86	-36366.55	-28218.82	-19642.66	-19139.56


Cashflow tables, production in ME. 000

Year	15	16	17
Total cash inflow ..	60901.30	60257.09	60257.09
Financial resources .	644.22	0.00	0.00
Sales, net of tax ..	60257.09	60257.09	60257.09
Total cash outflow ..	53853.46	51600.94	51600.94
Total assets	2202.52	0.00	0.00
Operating costs . . .	51600.94	51600.94	51600.94
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) .	7017.04	8576.15	8576.15
Cumulated cash balance	61200.29	69764.44	78340.59
Inflow, local	60906.07	60257.09	60257.09
Outflow, local	23501.32	22070.03	22070.03
Surplus (deficit) .	36904.75	37387.06	37387.06
Inflow, foreign	415.24	0.00	0.00
Outflow, foreign . . .	30302.14	20010.91	20010.91
Surplus (deficit) .	-29086.90	-20010.91	-20010.91
Net cashflow	7017.04	8576.15	8576.15
Cumulated net cashflow	-12121.72	-3345.56	5030.59



Cashflow Discountings:

a) Equity paid versus Net income flow:		
Net present value	-68972.52	at 10.00 %
Internal Rate of Return (IRR1) ..	-6.45 %	
b) Net Worth versus Net cash return:		
Net present value	-36201.70	at 10.00 %
Internal Rate of Return (IRR2) ..	2.36 %	
c) Internal Rate of Return on total investment:		
Net present value	-36201.70	at 10.00 %
Internal Rate of Return (IRR) ..	2.36 %	
Net Worth = Equity paid plus reserves		

COMFAR SCHEDULES

ALTERNATIVE II



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

FUJIAN GLASS CONTAINER PROJECT
16 FEBRUARY 1988, BY JH
ALTERNATIVE II - BASE VERSION

2 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: SRE 000

Total initial investment during construction phase

fixed assets:	75177.00	83.651 % foreign
current assets:	2000.00	63.942 % foreign
total assets:	77257.00	83.129 % foreign

Source of funds during construction phase

equity & grants:	77257.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	77257.00	0.000 % foreign

Cashflow from operations

Year:	1	5	10
operating costs:	41825.82	45936.83	48541.57
depreciation :	7624.40	7624.40	6820.00
interest :	0.00	0.00	0.00
production costs	49450.23	52361.23	53522.38
thereof foreign :	67.48 %	68.08 %	67.74 %
total sales :	50983.93	61602.56	66065.72
gross income :	-278.38	5851.95	8137.50
net income :	-278.38	5851.95	8137.50
cash balance :	317.46	13142.89	14766.91
net cashflow :	317.46	13142.89	14766.91

Net Present Value at: 10.00 % = 1436.20

Internal Rate of Return: 10.26 %

Return on equity1: 3.73 %

Return on equity2: 10.26 %

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

COMFAR SCHEDULE 1



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Initial Investment in SMS 000

Year	1	2
Fixed investment costs		
Land, site preparation, development	675.00	0.00
Buildings and civil works	4062.00	4063.00
Auxiliary and service facilities	0.00	10350.00
Incorporated fixed assets	0.00	3901.00
Plant machinery and equipment	16675.00	24435.00
Total fixed investment costs	21412.00	42329.00
Pre-production capital expenditures.	8691.00	2745.00
Net working capital	0.00	2000.00
Total initial investment costs	30103.00	47154.00
Of it foreign, in Z	75.45	88.02

COMFAR SCHEDULE 2



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Current Investment in E.S 000

Year	3	4	5	6	7	8
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	1500.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	6.00	6.00	0.00	3.00	4420.00
Total fixed investment costs	0.00	6.00	6.00	0.00	3.00	5920.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	7028.56	118.55	363.89	82.16	333.46	-1448.32
Total current investment costs . . .	7028.56	118.55	363.89	82.16	333.46	4531.67
Of it foreign, %	73.96	89.92	83.31	89.96	82.77	100.00

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1986, BY JH

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Current Investment in EMS 000

Year	9	10-11	12	13	14	15
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	1500.00	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	4480.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	5980.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	1699.69	0.00	251.39	0.00	-1332.34	1603.52
Total current investment costs . . .	1699.69	0.00	251.39	0.00	4627.66	1603.52
Of it foreign, %	80.56	0.00	80.56	0.00	100.00	80.56

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH



Total Current Investment in BMS 000

Year	16	17
Fixed investment costs		
Land, site preparation, development	0.00	0.00
Buildings and civil works	0.00	0.00
Auxiliary and service facilities .	0.00	0.00
Incorporated fixed assets	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00
Total fixed investment costs	0.00	0.00
Preproduction capitals expenditures.	0.00	0.00
Working capital	0.00	251.38
Total current investment costs . . .	0.00	251.38
Of it foreign, Z	0.00	88.56

COMFAR SCHEDULE 3



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Total Production Costs in US \$ 000

Year	3	4	5	6	7	8
Z of non. capacity (single product).	81.25	81.25	84.38	84.38	87.50	89.43
Raw material I	13107.78	13107.78	13612.26	13612.26	14115.91	11209.43
Other raw materials	7998.00	8291.20	8913.82	9116.33	9664.77	7674.79
Utilities	6285.36	6285.36	6527.27	6527.27	6768.78	5375.98
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Labour, direct	2682.00	2682.00	2682.00	2682.00	2682.00	2682.00
Repair, maintenance	2677.04	2677.54	2723.22	2723.22	2769.33	2800.24
Spares	3154.63	3154.63	3209.05	3209.05	3263.39	2949.22
Factory overheads	2704.71	2769.71	2912.70	2957.70	3004.67	2617.72
Factory costs	38610.40	38967.72	40500.31	40828.02	42348.85	35012.09
Administrative overheads	1283.00	1283.00	1283.00	1283.00	1283.00	1283.00
Indir. costs, sales and distribution	1932.62	1996.75	2137.14	2181.37	2304.98	1849.91
Direct costs, sales and distribution	1812.09	1878.31	2019.43	2065.33	2189.39	1739.59
Depreciation	7624.40	7624.40	7624.40	7624.40	7624.40	5834.80
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	51262.31	51750.18	53644.28	53982.14	55750.62	45718.79
Costs per unit (single product) .	1.62	1.64	1.64	1.65	1.64	1.69
Of it foreign, Z	65.09	65.18	65.28	65.34	65.41	63.97
Of it variable, Z	68.18	67.66	67.91	67.57	67.94	65.79
Total labour	3690.00	3690.00	3690.00	3690.00	3690.00	3690.00

FUJAIHAI GLASS CONTAINER PROJECT - 16 FEBRUARY 1980, BY ...



Total Production Costs in BUS 000

Year	9-11	12	13	14	15-16	17
% of nom. capacity (single product).	96.62	93.75	93.75	76.93	96.87	100.00
Raw material 1	14620.39	15124.87	15124.87	12411.05	15628.52	16133.00
Other raw materials	10010.18	10355.58	10355.58	8497.51	10700.42	11045.82
Utilities	7010.68	7252.59	7252.59	5951.27	7494.09	7736.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Labour, direct	2682.00	2682.00	2682.00	2682.00	2682.00	2682.00
Repair, maintenance	2915.52	2951.70	2951.70	2613.25	2907.81	2954.00
Spares	3317.81	3372.24	3372.24	3079.46	3426.57	3481.00
Factory overheads	3165.66	3246.64	3246.64	2910.21	3327.62	3408.66
Factory costs	43622.23	44895.62	44895.62	38044.76	46167.04	47440.42
Administrative overheads	1283.00	1283.00	1283.00	1283.00	1283.00	1283.00
Indir. costs, sales and distribution	2383.97	2442.95	2442.95	2038.85	2541.81	2620.80
Direct costs, sales and distribution	2267.58	2345.84	2345.84	1925.00	2424.83	2502.20
Depreciation	6880.80	6880.80	1486.00	590.00	1636.00	1636.00
Financial costs	0.00	0.00	0.00	0.00	0.00	0.00
Total production costs	56437.58	57868.21	52473.41	43880.80	54051.88	55482.43
Costs per unit (single product) .	1.60	1.59	1.44	1.47	1.44	1.43
Of it foreign, %	64.97	64.99	62.06	60.61	62.26	62.36
Of it variable, %	69.51	70.13	77.34	75.89	77.58	78.02
Total labour	3690.00	3690.00	3690.00	3690.00	3690.00	3690.00

COMFAR SCHEDULE 4



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Working Capital in DHS 000

Year			3	4	5	6	7
Coverage		mdc coto					
Current assets &							
Accounts receivable	30	12.0	2636.49	3677.15	3834.99	3855.15	4019.52
Inventory and materials	51	7.0	6532.86	6422.93	6681.73	6743.56	6989.37
Energy	0	---	0.00	0.00	0.00	0.00	0.00
Spares	0	---	0.00	0.00	0.00	0.00	0.00
Work in progress	0	---	0.00	0.00	0.00	0.00	0.00
Finished products	15	24.0	1662.22	1677.11	1744.30	1754.63	1817.99
Cash in hand	20	18.0	694.52	698.13	711.67	714.17	726.80
Total current assets			12326.09	12474.42	12972.69	13075.49	13535.64
Current liabilities and							
Accounts payable	30	12.0	3217.53	3247.31	3381.69	3402.34	3529.07
Net working capital			9108.56	9227.11	9591.00	9673.16	10006.61
Increase in working capital			7028.56	118.55	363.89	82.16	333.46
Net working capital, local			2860.70	2885.46	2971.21	2988.34	3067.60
Net working capital, foreign			6247.86	6341.65	6619.79	6684.82	6939.02

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

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Working Capital in DHS 000

Year			8	9	10-11	12	13
Coverage		mdc coto					
Current assets &							
Accounts receivable	30	12.0	3323.63	4129.73	4129.73	4248.95	4248.95
Inventory and materials	51	7.0	5971.38	7155.49	7155.49	7330.64	7330.64
Energy	0	---	0.00	0.00	0.00	0.00	0.00
Spares	0	---	0.00	0.00	0.00	0.00	0.00
Work in progress	0	---	0.00	0.00	0.00	0.00	0.00
Finished products	15	24.0	1512.30	1871.05	1871.05	1924.11	1924.11
Cash in hand	20	18.0	668.65	736.89	736.89	746.98	746.98
Total current assets			11475.96	13893.17	13893.17	14250.67	14250.67
Current liabilities and							
Accounts payable	30	12.0	2917.67	3635.19	3635.19	3741.30	3741.30
Net working capital			8558.28	10257.98	10257.98	10509.37	10509.37
Increase in working capital			-1448.33	1699.76	0.00	251.39	0.00
Net working capital, local			2709.15	3129.79	3129.79	3192.01	3192.01
Net working capital, foreign			5849.14	7128.19	7128.19	7317.36	7317.36

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

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH



Net Working Capital in BGS 000

Year			14	15	16	17
Coverage	adc	cto				
Current assets &						
Accounts receivable . . .	30	12.0	3697.57	4367.99	4367.99	4487.20
Inventory and materials .	51	7.0	8329.57	7595.50	7595.50	7690.64
Energy	0	---	0.00	0.00	0.00	0.00
Spares	0	---	0.00	0.00	0.00	0.00
Work in progress	0	---	0.00	0.00	0.00	0.00
Finished products	15	24.0	1678.66	1977.08	1977.08	2036.14
Cash in hand	20	16.0	672.66	757.06	757.06	767.14
Total current assets . . .			12327.43	14667.63	14667.63	14965.13
Current liabilities and						
Accounts payable	30	12.0	3176.40	3847.25	3847.25	3953.37
Net working capital			9157.0	10760.38	10760.38	11011.76
Increase in working capital			-1352.34	1603.34	0.00	251.38
Net working capital, local			2857.35	3254.16	3254.16	3316.37
Net working capital, foreign			6299.68	7506.22	7506.22	7695.39

Note: adc = minimum days of coverage ; cto = coefficient of turnover .



Source of Finance, construction in SMS 000

Year	1	2
Equity, ordinary ..	30103.00	47154.00
Equity, preference.	0.00	0.00
Subsidies, grants .	0.00	0.00
Loan A, foreign .	0.00	0.00
Loan B, foreign..	0.00	0.00
Loan C, foreign .	0.00	0.00
Loan A, local....	0.00	0.00
Loan B, local....	0.00	0.00
Loan C, local....	0.00	0.00
Total loan	0.00	0.00
Current liabilities	0.00	0.00
Bank overdraft	0.00	0.00
Total funds	30103.00	47154.00



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Source of Finance, production in EMS 000

Year	3	4	5	6	7	8	9
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	6.00	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	3217.53	29.78	134.38	20.64	126.74	-611.40	717.51
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	3217.53	29.78	134.38	20.64	126.74	-611.40	717.51

FUJAIHAN GLASS CONTAINER PROJECT — 16 FEBRUARY 1988, BY JH

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Source of Finance, production in EMS 000

Year	10-11	12	13	14	15	16	17
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	0.00	106.12	0.00	-570.90	676.86	0.00	106.12
Bank overdraft	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total funds	0.00	106.12	0.00	-570.90	676.86	0.00	106.12

FUJAIHAN GLASS CONTAINER PROJECT — 16 FEBRUARY 1988, BY JH

COMFAR SCHEDULE 6



COMFAR
2: UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Cashflow Tables, construction in MS 000

Year	1	2
Total cash inflow . .	30103.00	47154.00
Financial resources .	30103.00	47154.00
Sales, net of tax . .	0.00	0.00
Total cash outflow . .	30103.00	47154.00
Total assets	30103.00	47154.00
Operating costs . . .	0.00	0.00
Cost of finance . . .	0.00	0.00
Repayment	0.00	0.00
Corporate tax	0.00	0.00
Dividends paid	0.00	0.00
Surplus (deficit) .	0.00	0.00
Cumulated cash balance	0.00	0.00
Inflow, local	30103.00	47154.00
Outflow, local	7390.00	5651.00
Surplus (deficit) .	22713.00	41503.00
Inflow, foreign . . .	0.00	0.00
Outflow, foreign . . .	22713.00	41503.00
Surplus (deficit) .	-22713.00	-41503.00
Net cashflow	-30103.00	-47154.00
Cumulated net cashflow	-30103.00	-77257.00

FUJAIRAH GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY J:

Cashflow tables, production in ME 000

Year	3	4	5	6	7	8
Total cash inflow . .	54201.47	52907.55	56921.84	58146.67	61729.30	48918.56
Financial resources .	3217.53	29.78	134.38	20.64	126.74	0.00
Sales, net of tax . .	50983.93	52878.07	56847.45	58126.03	61602.56	48918.56
Total cash outflow . .	53884.30	44274.11	46513.15	46460.55	48586.41	44415.26
Total assets	10246.09	148.33	498.27	102.00	460.19	3720.27
Operating costs . . .	43637.91	44125.78	46019.00	46357.74	48126.22	39883.59
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	611.40
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) .	317.47	8633.75	10463.68	11686.13	13142.89	4503.30
Cumulated cash balance	317.47	8951.21	19414.90	31101.02	44243.91	48747.21
Inflow, local	52010.84	52878.07	56875.76	58126.03	61630.82	48918.56
Outflow, local	20243.38	17254.45	17949.70	17938.32	18601.93	15324.72
Surplus (deficit) .	31767.46	35623.63	38926.06	40187.71	43028.89	33593.84
Inflow, foreign . . .	2190.63	29.78	106.08	20.64	98.48	0.00
Outflow, foreign . . .	33640.62	27019.65	28568.46	28522.23	29984.48	29090.54
Surplus (deficit) .	-31450.00	-26989.88	-28462.38	-28501.58	-29886.00	-29090.54
Net cashflow	317.47	8633.75	10463.68	11686.13	13142.89	4503.30
Cumulated net cashflow	-76939.53	-68305.79	-57842.11	-46155.98	-33013.09	-28509.79



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Cashflow tables, production in BHS 000

Year	9	10	11	12	13	14
Total cash inflow . .	64521.65	63804.14	63804.14	66111.84	66005.72	54162.49
Financial resources .	717.31	0.00	0.00	106.12	0.00	0.00
Sales, net of tax . . .	63804.14	63804.14	63804.14	66005.72	66005.72	54162.49
Total cash outflow . .	51975.99	49556.78	49556.78	51344.93	50987.42	47918.48
Total assets	2417.21	0.00	0.00	357.51	0.99	4056.76
Operating costs	49556.78	49556.78	49556.78	50987.42	50987.42	43290.81
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	578.90
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) . .	12547.66	14247.36	14247.36	14766.91	15018.30	6244.01
Cumulated cash balance	61294.88	75542.23	89789.59	104556.50	119574.80	125818.80
Inflow, local	63995.51	63804.14	63804.14	66034.02	66005.72	54162.49
Outflow, local	19594.33	18982.31	18982.31	19560.80	19470.28	16510.80
Surplus (deficit) . .	44401.18	44821.83	44821.83	46473.22	46535.44	37651.69
Inflow, foreign	526.15	0.00	0.00	77.81	0.00	0.00
Outflow, foreign	32379.66	30574.47	30574.47	31784.12	31517.14	31407.67
Surplus (deficit) . .	-31853.52	-30574.47	-30574.47	-31706.31	-31517.14	-31407.67
Net cashflow	12547.66	14247.36	14247.36	14766.91	15018.30	6244.02
Cumulated net cashflow	-15962.12	-1714.76	12532.60	27299.50	42317.80	48561.82

FUJAIRAH GLASS CONTAINER PROJECT — 16 FEBRUARY 1988, BY JH



Cashflow tables, production in MS 000

Year	15	16	17
Total cash inflow . .	68886.54	68203.68	70511.38
Financial resources .	676.86	0.00	106.12
Sales, net of tax . .	68203.68	68203.68	70405.26
Total cash outflow . .	54696.08	52415.88	54203.92
Total assets	2280.20	0.00	357.50
Operating costs . . .	52415.88	52415.88	53846.67
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) .	14184.46	15787.80	16307.46
Cumulated cash balance	140003.30	153791.10	172098.56
Inflow, local	68384.19	68203.68	70433.56
Outflow, local	20534.82	19937.50	20535.88
Surplus (deficit) .	47849.37	48246.18	49897.68
Inflow, foreign . . .	496.35	0.00	77.81
Outflow, foreign . . .	34161.27	32458.38	33668.03
Surplus (deficit) .	-33664.92	-32458.38	-33590.22
Net cashflow	14184.45	15787.80	16307.46
Cumulated net cashflow	62746.27	78534.06	94841.52



Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	-32741.95	at 10.00 %
Internal Rate of Return (IRR1) ..	3.73 %	
b) Net Worth versus Net cash return:		
Net present value	1436.20	at 10.00 %
Internal Rate of Return (IRR2) ..	10.26 %	
c) Internal Rate of Return on total investment:		
Net present value	1436.20	at 10.00 %
Internal Rate of Return (IRR) ..	10.26 %	
Net Worth = Equity paid plus reserves		



CONFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Income Statement in BHS 000

Year	3	4	5	6	7
Total sales, incl. sales tax	50983.93	52078.07	56047.45	58126.03	61602.36
Less: variable costs, incl. sales tax	34949.74	35015.96	36432.45	36478.38	37875.69
Variable margin	16034.19	17062.11	19615.00	21647.66	23726.68
As % of total sales	31.45	33.78	35.91	37.24	38.52
Non-variable costs, incl. depreciation	16312.57	16734.22	17211.35	17503.77	17874.93
Operational margin	-278.38	1127.89	3203.17	4143.89	5851.95
As % of total sales	-0.55	2.13	5.63	7.13	9.50
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	-278.38	1127.89	3203.17	4143.89	5851.95
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-278.38	1127.89	3203.17	4143.89	5851.95
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-278.38	1127.89	3203.17	4143.89	5851.95
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-278.38	1127.89	3203.17	4143.89	5851.95
Accumulated undistributed profit	-278.38	849.51	4032.68	8196.56	14008.51
Gross profit, % of total sales	-0.55	2.13	5.63	7.13	9.50
Net profit, % of total sales	-0.55	2.13	5.63	7.13	9.50
RCE, Net profit, % of equity	-0.36	1.46	4.15	5.36	7.37
EBI, Net profit+interest, % of invest.	-0.33	1.34	3.78	4.88	6.87



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Income Statement in MG 000

Year	8	9	10	11	12
Total sales, incl. sales tax	48718.54	63894.14	63894.14	63894.14	64495.72
Less: variable costs, incl. sales tax.	30077.06	39229.25	39229.25	39229.25	40582.89
Variable margin	18641.48	24664.89	24664.89	24664.89	23912.83
As % of total sales	38.52	38.52	38.52	38.52	38.52
Non-variable costs, incl. depreciation	15641.33	17208.33	17208.33	17208.33	17285.33
Operational margin	3200.18	7366.56	7366.56	7366.56	8137.50
As % of total sales	6.54	11.55	11.55	11.55	12.33
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	3200.18	7366.56	7366.56	7366.56	8137.50
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	3200.18	7366.56	7366.56	7366.56	8137.50
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	3200.18	7366.56	7366.56	7366.56	8137.50
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	3200.18	7366.56	7366.56	7366.56	8137.50
Accumulated undistributed profit	17208.68	24615.25	31981.81	39348.37	47485.88
Gross profit, % of total sales	6.54	11.55	11.55	11.55	12.33
Net profit, % of total sales	6.54	11.55	11.55	11.55	12.33
RCE, Net profit, % of equity	6.14	9.54	9.54	9.54	10.53
ROI, Net profit+interest, % of invest.	3.57	8.06	8.06	8.06	8.88



COMPAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Net Income Statement in MS 000

Year	13	14	15	16	17
Total sales, incl. sales tax	66005.72	59162.09	60203.68	60203.68	70405.26
Less: variable costs, incl. sales tax	40582.09	33301.27	41934.35	41934.35	43287.89
Variable margin	25422.83	20861.21	26269.33	26269.33	27117.37
As % of total sales	38.52	38.52	38.52	38.52	38.52
Non-variable costs, incl. depreciation	11990.53	10579.53	12117.53	12117.53	12194.53
Operational margin	13532.30	10281.68	14151.80	14151.80	14922.84
As % of total sales	20.50	18.98	20.75	20.75	21.29
Cost of finance	0.00	0.00	0.00	0.00	0.00
Gross profit	13532.30	10281.68	14151.80	14151.80	14922.84
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	13532.30	10281.68	14151.80	14151.80	14922.84
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	13532.30	10281.68	14151.80	14151.80	14922.84
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	13532.30	10281.68	14151.80	14151.80	14922.84
Accumulated undistributed profit	61018.18	71299.86	85451.66	99663.45	114526.30
Gross profit, % of total sales	20.50	18.98	20.75	20.75	21.29
Net profit, % of total sales	20.50	18.98	20.75	20.75	21.29
RCE, Net profit, % of equity	17.52	13.31	18.32	18.32	19.32
ROI, Net profit+interest, % of invest.	14.76	10.68	14.46	14.46	15.20



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Projected Balance Sheets, construction in M\$ 000

Year	1	2
Total assets	30103.00	77257.00
Fixed assets, net of depreciation	0.00	30103.00
Construction in progress	30103.00	45074.00
Current assets	0.00	2950.00
Cash, bank	0.00	0.00
Cash surplus, finance available ..	0.00	0.00
Loss carried forward	0.00	0.00
Loss	0.00	0.00
Total liabilities	30103.00	77257.00
Equity capital	30103.00	77257.00
Reserves, retained profit	0.00	0.00
Profit	0.00	0.00
Long and medium term debt	0.00	0.00
Current liabilities	0.00	0.00
Bank overdraft, finance required ..	0.00	0.00
Total debt	0.00	0.00
Equity, % of liabilities	100.00	100.00



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Projected Balance Sheets, Production in DWS 000

Year	3	4	5	6	7	8
Total assets	80474.53	81632.20	84691.37	88855.90	94834.58	97423.36
Fixed assets, net of depreciation	67552.60	57928.20	52303.80	44679.41	37055.01	31226.21
Construction in progress	0.00	0.00	0.00	0.00	0.00	5990.00
Current assets	11631.57	11776.29	12261.02	12361.33	12909.38	10607.39
Cash, bank	694.52	698.13	711.66	714.17	721.89	698.65
Cash surplus, finance available	317.45	3951.20	19414.93	31191.09	46247.39	42747.22
Loss carried forward	0.00	278.38	0.00	0.00	0.00	0.00
Loss	278.38	0.00	0.00	0.00	0.00	0.00
Total liabilities	80474.53	81632.20	84691.37	88855.90	94834.58	97423.36
Equity capital	77257.00	77257.00	77257.00	77257.00	77257.00	77257.00
Reserves, retained profit	0.00	0.00	849.51	4052.68	8196.56	14048.51
Profit	0.00	1127.89	3203.17	4143.89	5851.95	3200.18
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	3217.53	3247.31	3381.69	3402.34	3529.07	2917.67
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	3217.53	3247.31	3381.69	3402.34	3529.07	2917.67
Equity, % of liabilities	96.00	94.64	91.22	86.95	81.47	79.30

FIJAIKIAN GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Projected Balance Sheets, Production in DWS 000

Year	9	10	11	12	13	14
Total assets	105507.40	112874.00	120240.60	128484.20	142016.50	151727.30
Fixed assets, net of depreciation	30319.41	23438.61	16557.80	9677.00	8191.00	7601.00
Construction in progress	0.00	0.00	0.00	0.00	0.00	5980.00
Current assets	13156.28	13156.28	13156.28	13303.69	13303.69	11634.76
Cash, bank	736.89	736.89	736.89	746.98	746.98	692.66
Cash surplus, finance available	61294.87	73342.23	89789.39	104356.50	119574.80	125918.30
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	105507.40	112874.00	120240.60	128484.20	142016.50	151727.30
Equity capital	77257.00	77257.00	77257.00	77257.00	77257.00	77257.00
Reserves, retained profit	17248.60	24615.25	31981.81	39348.37	47485.98	61018.18
Profit	7366.56	7366.56	7366.56	8137.50	13332.30	10281.58
Long and medium term debt	0.00	0.00	0.00	0.00	0.00	0.00
Current liabilities	3633.19	3633.19	3633.19	3741.30	3741.30	3170.40
Bank overdraft, finance required	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	3633.19	3633.19	3633.19	3741.30	3741.30	3170.40
Equity, % of liabilities	73.22	68.45	64.25	60.13	54.40	50.92

FIJAIKIAN GLASS CONTAINER PROJECT --- 16 FEBRUARY 1988, BY JH



Projected Balance Sheets, Production in SMS 000

Year	15	16	17
Total assets	166335.90	180707.70	195736.70
Fixed assets, net of depreciation	11943.00	10309.00	8673.00
Construction in progress	0.00	0.00	0.00
Current assets	13929.57	13850.57	14197.98
Cash, bank	757.06	757.06	767.14
Cash surplus, finance available ..	140603.30	155791.10	172098.50
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	166335.90	180707.70	195736.70
Equity capital	77257.00	77257.00	77257.00
Reserves, retained profit	71299.86	85431.66	99603.45
Profit	14151.00	14151.00	10922.04
Long and medium term debt	0.00	0.00	0.00
Current liabilities	3047.25	3047.25	3933.37
Bank overdraft, finance required ..	0.00	0.00	0.00
Total debt	3047.25	3047.25	3933.37
Equity, % of liabilities	46.39	42.75	39.47

ANNEX 6

SENSITIVITY ANALYSIS - ALTERNATIVE II
Sales Price up by 10%



COMFAR
21 UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

FIJATMAN GLASS CONTAINER PROJECT
16 FEBRUARY 1980, BY JH
ALTERNATIVE II - SENS. ANNUAL SALES 10% UP

2 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: BHS 000

Total initial investment during construction phase

fixed assets:	75177.00	83.651 % foreign
current assets:	2000.00	63.942 % foreign
total assets:	77257.00	83.120 % foreign

Source of funds during construction phase

equity & grants:	77257.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	77257.00	0.000 % foreign

Cashflow from operations

Year:	1	5	10
operating costs:	41125.82	43936.83	48441.57
depreciation :	7624.40	7624.40	6800.00
interest :	0.00	0.00	0.00
production costs	49450.23	53561.23	58522.38
thereof foreign	67.00 %	68.00 %	67.79 %
total sales :	53877.13	67756.02	72979.01
gross income :	4614.01	12005.00	14730.79
net income :	4614.01	12005.00	14730.79
cash balance :	3210.05	19796.39	21300.20
net cashflow :	3210.05	19796.39	21300.20

Net Present Value at: 10.00 % = 41920.61
Internal Rate of Return: 7.03 %
Return on equity1: 11.35 %
Return on equity2: 17.13 %

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



Cashflow Tables, construction in BMS 000

Year	1	2
Total cash inflow . .	30103.00	47154.00
Financial resources .	30103.00	47154.00
Sales, net of tax . .	0.00	0.00
Total cash outflow . .	30103.00	47154.00
Total assets	30103.00	47154.00
Operating costs . . .	0.00	0.00
Cost of finance . . .	0.00	0.00
Repayment	0.00	0.00
Corporate tax	0.00	0.00
Dividends paid	0.00	0.00
Surplus (deficit) .	0.00	0.00
Cumulated cash balance	0.00	0.00
Inflow, local	30103.00	47154.00
Outflow, local	7390.00	5651.00
Surplus (deficit) .	22713.00	41503.00
Inflow, foreign	0.00	0.00
Outflow, foreign . . .	22713.00	41503.00
Surplus (deficit) .	-22713.00	-41503.00
Net cashflow	-30103.00	-47154.00
Cumulated net cashflow	-30103.00	-77257.00



Cashflow tables, production in MIS 000

Year	3	4	5	6	7	8
Total cash inflow . .	57094.66	58148.30	62620.68	63949.44	67922.75	53805.02
Financial resources .	5217.53	29.78	134.38	28.64	126.74	0.00
Sales, net of tax . .	55877.13	58118.53	62486.30	63920.80	67796.02	53805.02
Total cash outflow . .	53284.01	44274.11	46518.15	44466.55	48586.41	44415.25
Total assets	16246.99	148.33	458.27	102.00	460.19	3720.27
Operating costs . . .	43637.91	44125.78	46019.88	46357.74	48126.22	39883.58
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	611.48
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) .	5216.66	13874.20	16102.54	17488.89	19296.34	9389.77
Cumulated cash balance	5216.66	19084.86	35187.39	52676.28	71972.63	81362.39
Inflow, local	51904.04	58118.53	62514.61	63928.80	67784.27	53805.02
Outflow, local	20243.39	17254.45	17949.69	17938.32	18601.93	15324.7
Surplus (deficit) .	36660.65	40864.08	44564.91	45990.48	49182.34	38480.30
Inflow, foreign . . .	2190.63	29.78	106.08	28.64	98.48	0.00
Outflow, foreign . . .	33648.62	27019.65	28568.46	28322.23	29984.48	29090.54
Surplus (deficit) .	-31458.00	-26989.88	-28462.38	-28301.58	-29886.00	-29090.54
Net cashflow	5216.66	13874.20	16102.54	17488.89	19296.34	9389.77
Cumulated net cashflow	-72046.34	-58172.14	-42049.61	-24380.72	-5284.37	4105.40



COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

Cashflow tables, production in MS 000

Year	9	10	11	12	13	14
Total cash inflow . .	70095.02	70177.52	70177.52	72705.13	72399.01	59572.76
Financial resources .	717.51	0.00	0.00	106.12	0.00	0.00
Sales, net of tax . .	70177.52	70177.52	70177.52	72399.01	72399.01	59572.76
Total cash outflow . .	51973.99	49556.78	49556.78	51344.92	50987.41	47913.44
Total assets	2417.21	0.00	0.00	357.51	0.00	4656.75
Operating costs . . .	49556.78	49556.78	49556.78	50987.41	50987.41	43290.60
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	570.99
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) .	18921.04	20620.73	20620.73	21360.20	21611.59	11654.30
Cumulated cash balance	100283.40	120904.20	141524.90	162885.10	184496.70	196151.00
Inflow, local	70368.88	70177.52	70177.52	72627.31	72399.01	59572.76
Outflow, local	19593.33	18982.31	18982.31	19566.80	19470.27	16510.79
Surplus (deficit) .	50774.95	51195.20	51195.20	53066.52	53128.73	43061.97
Inflow, foreign	526.15	0.00	0.00	77.81	0.00	0.00
Outflow, foreign . . .	32379.66	30574.47	30574.47	31704.12	31517.14	31407.67
Surplus (deficit) .	-31853.52	-30574.47	-30574.47	-31706.31	-31517.14	-31407.67
Net cashflow	18921.04	20620.73	20620.73	21360.20	21611.59	11654.30
Cumulated net cashflow	23026.44	43647.17	64267.91	85628.11	107239.70	118894.00



Cashflow tables, production in BMS 000

Year	15	16	17
Total cash inflow . .	75493.38	75016.52	77544.13
Financial resources .	676.86	0.00	106.12
Sales, net of tax . .	75016.52	75016.52	77438.01
Total cash outflow . .	54696.07	52415.88	54293.92
Total assets	2280.20	0.00	357.50
Operating costs . . .	52415.88	52415.88	53846.42
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) .	20997.30	22600.64	23340.21
Cumulated cash balance	217148.30	239748.90	263089.10
Inflow, local	75197.02	75016.52	77466.31
Outflow, local	20534.81	19957.49	20535.08
Surplus (deficit) .	54662.21	55059.02	56930.43
Inflow, foreign . . .	496.35	0.00	77.81
Outflow, foreign . . .	34161.27	32458.38	33668.03
Surplus (deficit) .	-33664.92	-32458.38	-33598.22
Net cashflow	20997.29	22600.64	23340.21
Cumulated net cashflow	139891.30	162491.90	185832.10



Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	7742.87 at	10.00 %
Internal Rate of Return (IRR1) ..	11.35 %	
b) Net Worth versus Net cash return:		
Net present value	41920.61 at	10.00 %
Internal Rate of Return (IRR2) ..	17.05 %	
c) Internal Rate of Return on total investment:		
Net present value	41920.61 at	10.96 %
Internal Rate of Return (IRR) ..	17.05 %	

Net Worth = Equity paid plus reserves

ANNEX 6

SENSITIVITY ANALYSIS - ALTERNATIVE II

Sales Price down by 10%



COMFAR
2.1 UNIDO

COMFAR 2.1 - Feasibility Studies Branch, UNIDO Vienna

FUJAIRAN GLASS CONTAINER PROJECT
16 FEBRUARY 1980, BY JM
ALTERNATIVE II - SENS. ANNUL. SALES 10%DOWN

2 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: US\$ 000

Total initial investment during construction phase

fixed assets:	75177.00	83.651 % foreign
current assets:	2080.00	63.942 % foreign
total assets:	77257.00	83.120 % foreign

Source of funds during construction phase

equity & grants:	77257.00	0.000 % foreign
foreign loans :	0.00	
local loans :	0.00	
total funds :	77257.00	0.000 % foreign

Cashflow from operations

Year:	1	5	10
operating costs:	41825.82	43936.83	48641.57
depreciation :	7624.40	7624.40	6880.86
interest :	0.00	0.00	0.00
production costs	49450.23	53561.23	53522.38
thereof foreign	67.48 %	68.08 %	67.74 %
total sales :	45869.75	55415.11	59376.00
gross income :	-5392.56	-335.51	1507.79
net income :	-5392.56	-335.51	1507.79
cash balance :	-4796.72	6735.43	8137.20
net cashflow :	-4796.72	6935.43	8137.20

Net Present Value at: 10.00 % = -39527.93
Internal Rate of Return: 2.06 %
Return on equity1: -6.77 %
Return on equity2: 2.06 %

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



Cashflow Tables, construction in MS 000

Year	1	2
Total cash inflow . .	30103.00	47154.00
Financial resources .	30103.00	47154.00
Sales, net of tax . .	0.00	0.00
Total cash outflow . .	30103.00	47154.00
Total assets	30103.00	47154.00
Operating costs . . .	0.00	0.00
Cost of finance . . .	0.00	0.00
Repayment	0.00	0.00
Corporate tax	0.00	0.00
Dividends paid	0.00	0.00
Surplus (deficit) .	0.00	0.00
Cumulated cash balance	0.00	0.00
Inflow, local	30103.00	47154.00
Outflow, local	7390.00	5651.00
Surplus (deficit) .	22713.00	41503.00
Inflow, foreign . . .	0.00	0.00
Outflow, foreign . . .	22713.00	41503.00
Surplus (deficit) .	-22713.00	-41503.00
Net cashflow	-30103.00	-47154.00
Cumulated net cashflow	-30103.00	-77257.00



Cashflow tables, production in BMS 000

Year	3	4	5	6	7	8
Total cash inflow . .	49087.29	47572.69	51244.64	52311.12	53541.84	44005.11
Financial resources .	3217.53	29.78	134.38	20.64	126.74	0.00
Sales, net of tax . .	45869.75	47542.91	51110.26	52290.48	53415.11	44005.11
Total cash outflow . .	53884.01	44274.10	46518.15	46460.95	48586.41	44415.26
Total assets	10246.09	148.33	498.27	102.50	460.19	3920.27
Operating costs . . .	43637.91	44125.77	46019.88	46357.74	48126.22	39883.59
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	611.40
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) .	-4796.72	3298.59	4726.49	5850.57	4935.43	-410.16
Cumulated cash balance	-4796.72	-1498.13	3228.36	9078.94	14034.37	15624.21
Inflow, local	46896.66	47542.91	51138.56	52290.48	53443.36	44005.11
Outflow, local	28243.39	17254.45	17949.70	17938.32	18601.93	15324.72
Surplus (deficit) .	28653.28	30288.47	33188.87	34352.16	34841.43	28680.38
Inflow, foreign	2190.63	29.78	106.08	20.64	98.48	0.00
Outflow, foreign . . .	33640.62	27019.65	28568.46	28522.23	29984.08	29090.54
Surplus (deficit) .	-31450.00	-26989.88	-28462.38	-28501.58	-29886.00	-29090.54
Net cashflow	-4796.72	3298.59	4726.49	5850.58	4935.43	-410.16
Cumulated net cashflow	-82033.72	-78735.13	-74028.64	-60178.06	-61222.63	-61632.79



COMFAR 2: - Feasibility Studies Branch, UNIDO Vienna

Cashflow tables, production in M\$ 000

Year	9	10	11	12	13	14
Total cash inflow . .	58113.07	57395.55	57395.55	59402.12	59376.00	48722.33
Financial resources .	717.51	0.00	0.00	106.12	0.00	0.00
Sales, net of tax . .	57395.55	57395.55	57395.55	59376.00	59376.00	48722.33
Total cash outflow . .	51770.95	49556.77	49556.77	51344.92	50987.41	47918.47
Total assets	2417.21	0.00	0.00	337.51	0.00	4956.76
Operating costs . . .	49556.77	49556.77	49556.77	50987.41	50987.41	43290.00
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	570.90
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) . .	6139.09	7838.78	7838.78	8137.20	8308.59	803.86
Cumulated cash balance	21763.30	29602.08	37440.86	45378.06	53966.65	54778.51
Inflow, local	57586.92	57395.55	57395.55	59404.31	59376.00	48722.33
Outflow, local	19594.32	18982.30	18982.30	19560.80	19470.27	16510.79
Surplus (deficit) . .	37992.60	38413.25	38413.25	39843.51	39905.73	32211.54
Inflow, foreign . . .	526.15	0.00	0.00	77.81	0.00	0.00
Outflow, foreign . . .	32379.66	30574.47	30574.47	31704.12	31517.14	31407.67
Surplus (deficit) . .	-31853.52	-30574.47	-30574.47	-31706.31	-31517.14	-31407.67
Net cashflow	6139.09	7838.78	7838.78	8137.20	8308.59	803.86
Cumulated net cashflow	-55493.70	-47654.92	-39816.14	-31678.94	-23290.35	-22486.49



Cashflow tables, production in SMS 000

Year	15	16	17
Total cash inflow . .	42030.05	61333.20	63439.76
Financial resources .	676.86	0.00	106.12
Sales, net of tax . .	61333.20	61333.20	63333.64
Total cash outflow . .	54676.08	52415.98	54203.92
Total assets	2280.20	0.00	357.50
Operating costs . . .	52415.88	52415.88	53846.42
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) .	7333.97	8937.31	9233.84
Cumulated cash balance	62104.49	71041.79	80277.63
Inflow, local	61333.71	61333.20	63361.95
Outflow, local	20534.82	19937.50	20533.88
Surplus (deficit) .	40798.89	41395.70	42828.06
Inflow, foreign	496.35	0.00	77.81
Outflow, foreign . . .	34161.27	32458.38	33668.03
Surplus (deficit) .	-33664.92	-32458.38	-33390.22
Net cashflow	7333.97	8937.31	9233.84
Cumulated net cashflow	-15152.52	-6215.21	3020.63