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PRE-FEASIBILITY STUDY FOR THE DEVELOPMENT OF A REGIONAL EXISTING TRANSPORT EQUIPMENT PLANT

ZECO - ZIMBABWE

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PROJECT N° DU/RAF/89/850

CONTRACT N° 93/026

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EXECUTIVE SUMMARY (English)

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- 60p. tables graphs

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SIGLES ET ABREVIATIONS

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ABB	ASEA BROWN BOVERI
EIS	Export Incentive Scheme
ERS	Export Retention Scheme
IRR	Internal Rate of Return on total investment
IRRE 1	Return on equity
MRL	Malawi Railways Ltd
NRZ	National Railways of Zimbabwe
OGIL	Open General Import Licence
PTA	Preferential Trade Area for Eastern and Southern Africa States
R.S.A.	Republic of South Africa
SATS (now SPOORNET)	South Africa Transport Services
TAZARA	Tanzania/Zambia Railway Authority
UNTACDA	United Nation Transports and Communications Decade for Africa
ZECO	Zimbabwe Engineering Company
ZISCO	Zimbabwe Iron and Steel Corporation
ZR	Zambia Railways

FOREWORD

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PRE-FEASIBILITY STUDY FOR THE DEVELOPMENT OF A REGIONAL EXISTING TRANSPORT EQUIPMENT PLANT

The present study was carried out within the framework of UNTACDA's objective for the promotion of an African industry in the field of transport equipment.

A first survey was performed in the middle of 1991 and lead for the Southern Africa sub-region to the selection of the company ZECO in Zimbabwe.

The present report comprises the pre-feasibility study of the company ZECO.

This study was awarded by UNIDO to the French Consulting company SOFRECO located in Paris through contract N° 93/026 of February 16, 1993 (project N° DU/RAF/89/850). It was performed by the experts of SOFRECO from April to July 1993 including a journey in Zimbabwe from May 11th to May 21st, 1993.

During this study, we met many persons involved in the project, chiefly in the following organisations :

- UNIDO in Vienna and Harare
- Ministry of Industry
- Government of Zimbabwe
- ZECO (Zimbabwe Engeneering Company) in Bulawayo
- Confederation of Zimbabwe Industries
- Zimtrade
- French Trade Commission Central Statistical Office.

We thank them for their participation.

IMPORTANT NOTE

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The first diagnostic survey was performed in the middle of 1991.

Upon arriving at the site in May 1993, the SOFRECO's experts discovered that ZECO was already implementing a new expansion project with a value of about 5 million US$, that is approximately 20 % of the company's turnover.

The project is the expansion of the rolling stock production capacity.

In May 1993, financing was approved with 50 % through shareholders' funds and 50 % through a commercial bank loan.

- the equipment was ordered,
- the civil works had begun, including increasing the length of the existing bays.

The beginning of operations with the new facilities is planned for the 4th quarter of the current year (1993).

Moreover, taking into account the present and future status of the accessible market for ZECO, it appears that the present expansion will allow ZECO to be well adapted to its market for several years.

Therefore, no other project could be suggested and studied.

Consequently, the present study is more a post justification of ZECO's expansion project than a real pre-feasibility study.

SUMMARY

SUMMARY

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ZECO is an important public company, incorporated in Zimbabwe and located in Bulawayo.

The main business is manufacturing of rolling stock, fabrication engineering and erection contracting .

The current manpower is about 1 000 persons and the turnover approximatively 17 million US dollar, of which more than 50 % in rolling stock.

From 1968 (date of the first orders of ZECO in the rolling stock field) to 1982, the company worked almost exclusively for NRZ (National Railways of Zimbabwe).

On the contrary, from 1986 to 1992, following a sharp reduction of investments of NRZ, the activity was reassigned to the regional market (Botswana, Uganda, Tanzania, Tazara, Malawi, Madagascar).

The average sales were about 200 wagons per year.

Recently, thanks to the dynamism of the company, ZECO was able to double its market, to 400 wagons per year, towards new countries like Ethiopia, Burkina-Faso, Malaysia.

Moreover, NPZ has a new important five years restructuration program.

Consequently, ZECO decided to implement an expansion of the rolling stock plant, with an investment of about 5,5 million US$ including an expansion of about 30 % of the existing buildings.

The investment will allow :

- quantitatively, to double the rolling stock production,
- qualitatively, to access to the complete fabrication of coaches, with a much higher value added.

According to the computation of SOFRECO in the present feasibility study, this investment has a high profitability with an IRR on investment of 35 %, an IRR on capital of 61 % (these figures being anyhow compared to an inflation of 20 %).

The pay back period is 3 years.

The break-even point of 45 %.

This investment will still increase the profitability of ZECO, which is a sound and well managed company.

Moreover, with its sales mainly oriented towards the export market, ZECO fully benefits of the Government's action to the promotion of investments and development of export.

In short, the profitability of the project and its interest for the sub-region shows that the selection of ZECO by UNIDO was judicious.

We think that UNIDO could assist ZECO in the search of an industrial partner to allow the company to progress into higher valued added activities, for example, complete construction of coaches.

We think also that UNIDO could help ZECO for the search of subcontractors and the conclusion of orders for its equipments.

<u>Key words</u> :

- Zimbabwe
- ZECO
- rolling-stock
- coaches
- expansion
- profitability

1. THE ENTERPRISE : PRINCIPAL POSITION AND INTERRELATIONS WITH THE BUSINESS ENVIRONMENT

1. THE ENTERPRISE : PRINCIPAL POSITION AND INTERRELATIONS WITH THE BUSINESS ENVIRONMENT

ZECO is an important mechanical manufacturing company in Zimbabwe, located in Bulawayo.

It is a public company * incorporated in Zimbabwe. The current manpower is about 1000 persons and the turnover in 1992/93 (fiscal year ending 28th of February) was approximately 100 million Zimbabwean dollars (equivalent to 16,7 million US$).

The main business of ZECO is distributed among 3 divisions :

1) manufacturing of railway rolling stock, steam, diesel electric and electric locomotive rehabilitation and assembly.
2) fabrication and structural engineering.
3) erection contracting.

The railway division contributes to about 50 % of the turnover.

In each division, the orders are subject to wide variations. However, the existence of three activities allows the company to regularize its annual turnover.

According to the loads, ZECO makes tranfers of unskilled or semi-skilled personnel from one sector to another.

Futhermore, for erection contracting, it is possible to hire temporary manpower.

The present study is relative only to the railway division.

ZECO was founded in 1948 by JOHNSTON and FLETCHER, another manufacturing company in Zimbabwe, which is still an important shareholder of ZECO. The rolling stock activity began in 1964. Up to 1985, ZECO's activity was oriented almost entirely towards the local market, particularly for National Railway of Zimbabwe (NRZ).

From 1986 to 1992, however, an average of over 90 % of the rolling stock was exported to other African countries, namely Botswana, Ethiopia, Tanzania (plus Tazara), Malawi, Mozambique, Madagascar, and Uganda.

In the regional market, the sales of ZECO are also made easier by the fact that NRZ track is laid to a 1 067 mm gauge, the standard gauge for Southern Africa, which is also used by the railways systems in Zambia, Zaire, Mozambique, Botswana,

* Private sector

Angola, Swaziland, Tanzania/Zambia Railway Authority (TAZARA) and RSA in an inter-connected regional system.

For the near future, in the rolling stock field, the local market for ZECO will become significant again, thanks to an important restructuring program of National Railways of Zimbabwe (NRZ), but the output will remain heavilly export oriented.

The main shareholders of ZECO are the following :

- Meikles Group controls about 45 % of the shares,
- Other private owners 25 %,
- Nominee companies (pension Funds, Brokers, etc ...) : 10 %,
- Foreign owners (non-resident) : 25 % (mainly Barclay's Bank and 4 other companies).

The main competitors of ZECO are the following :

On the local market, one company only, MOREWEAR, located in Harare.

On the international market, numerous and very active companies, principally :

- Daewoo (South Korea),
- PEC (Projects and Equipment Cy) (India),
- SEMAF (Egypt),
- Cobrasma (Brasil),
- TAFESA (Spain).

2. GENERAL INDICATORS : BUSINESS OBJECTIVES AND CORPORATE STRATEGIES ; GENERAL STRENGTHS AND WEAKNESSES

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From an operation's point of view, the following table gives the main indicators.

	1991 $000		1992 $000		1993 $000
Sales	74 623		61 447		101 374
Sales Tax	1 237		1 099		
	75 860	100 %	62 546	100 %	
Less : Cost of materials and services purchased	56 001	74 %	42 231	68 %	
Difference	**19 859**	26 %	**20 315**	32 %	
Value added per employee	18,9		26,2		
Distributed to :					
Employees					
Salaries, wages and benefits	13 356	67 %	9 457	47 %	
Government taxes	1 237	6 %	1 099	5 %	
Re-invested in the company	2 739	14 %	4 846	24 %	
Depreciation	**767**		**1 499**		
Retained profits	**1 972**		**3 347**		**3 973**
Providers of capital	2 527	13 %	4 913	24 %	
Dividend to shareholders	**1 915**		**3 351**		**4 010**
Interest paid	**612**		**1 562**		**1 760**
	19 859	**100 %**	**20 315**	**100 %**	

The main comments could be the following :

1) The ratio between value added and turnover is in the range of 30 %. This shows that the manpower factor is important in ZECO's business.

2) The ratio between income (retained profit plus dividend) was 5 % in 1991, 11 % in 1992 and 8 % in 1993. This shows that the commercial performance of ZECO is quite satisfactory.

From the shareholders' point of view the main indicators are the following :

	1991	1992	1993
Turnover	74 623	61 447	101 374
Profit after taxation	3 887	6 698	7 983
Total assets	87 0741	126 110	
Shareholders' funds	54 908	64 096	
Return on shareholders' funds	10.4 %	10.5 %	
Earning per share - cents	9.5	11.2	13.3
Dividend per share - cents	4.7	5.6	6.7
Dividend cover - times	2	2	2

The main comments could be the following :

1) The return on shareholders' funds is in the range of 10 %.
2) The board maintains a ratio of two to one between earnings and dividends. This shows concern for giving a normal remuneration to the shareholders while keeping a significant part of the earnings in retained profits for the company.

Regarding the strengths of the company.

In the previous diagnostic survey performed in 1991 by UNIDO experts, the ranking of the companies visited was made through criteria of various weights.

For all six criteria having a factor weight of 10, representing 60 % of the total, ZECO obtained the highest grades. These criteria were the following :

- Technology level
- Product design
- Engineering capability
- General organisation
- Quality and quantity of manpower
- Location and proximity to market centre.

We generally agree with this evaluation.

Regarding the weaknesses, the following points could be mentioned :

- The market for rolling stock fluctuates greatly. ZECO is therefore obliged to maintain a strong commercial action in Zimbabwe and even more so on the export market. This involves the Managing Director himself for high-level discussions with customers, chiefly the railways companies.

  This could be a problem, as there is a large concentration of responsibility in one person.

- ZECO is well adapted to the fabrication of wagons. The construction of coaches could necessitate additional expertise.

- The complete construction of high technology equipment is not foreseeable for ZECO.

3. MARKETING CONCEPT

3. MARKETING CONCEPT

In Zimbabwe, the main customer is of course National Railways of Zimbabwe (NRZ).

Within the framework of its restructuring program, implemented with the help of the World Bank, NRZ will invest in the following components :

- procurement of 25 new main line locomotives,
- repowering of 43 shunting locomotives,
- provision of locomotive spare parts,
- procurement of about 520 dropsided and about 500 highsided wagons,
- procurement of 50 passenger coaches,
- rehabilitation of coaches.

The programme is to be implemented over a six-year period.

ZECO could of course participate in the repowering of the shunting locomotives, the complete fabrication of the wagons, and the rehabilitation of the coaches.

In the sub-region, the situation is difficult. None of the national railways companies is commercially viable.

In Zambia, with efficient operation and reasonable utilisation levels, Zambia Railways (ZR) requires no additional locomotives or rolling stock.
In Tanzania, in the market accessible to ZECO, there will be a rehabilitation of 27 coaches over two years.

In Malawi, the new investments in rolling stock are very small and efforts are mainly oriented towards the improvement of tracks.

In Mozambique, due to the 17-year civil war, the reopening of routes is slow and current main efforts of the Mozambique Ports and Railways (CFM) are oriented to the rehabilitation of tracks.

In Bostwana, the situation is better, but the activity of the national railway company is small.

In short, the expected orders to ZECO from the sub-region are very small in the short and medium term.

Fortunately, thanks to, according to ZECO, untighted credits allowed mainly by Japan, the situation is better in other African countries in the accessible market for ZECO.

Moreover, ZECO will probably get an important order in Malaisia.

To summarize, the present sales forecast of ZECO, in the short term, is the following :

- **Wagons**

CLIENT	QUANTITY		YEARLY AVERAGE
NRZ	400	4 years	100
MALAISIA	500	2 years	250
GHANA	100	1 year	100
OUGANDA	100	1 year	100
SUDAN	100	1 year	100
BURKINA FASO	50	1 year	50
ETHIOPIA	100	2 years	50
TOTAL	**1 350**		**750**

ZECO considers that the probability for getting the orders is 50 % of the total. The annual amount of orders in the short term is therefore 375 wagons per year, for a present capacity of 200 wagons per year.

This shows the urgent need for an expansion of the rolling stock production facilities.

Additional orders in production or rehabilitation of coaches could be the following:

CLIENT	QUANTITY		YEARLY AVERAGE
TANZANIA RAILWAY	27	2 years	14
NRZ	55	2 years	27
TOTAL	**82**		**41**

Using the same probability coefficient of 50 %. ZECO could therefore get orders for the construction of 20 coaches per year.

To this must be added a rehabilitation of 100 coaches in 2 years again in Tanzania, although in this particular case, TANZANIA RAILWAYS would themselves do the rehabilitation and ZECO would supply the components : windows, seats, water Tanks, etc.

- **Locomotives**

In 1970, ZECO ventured into the locomotive field. Since then, the following projects have been undertaken :

- 85 Alsthom diesel locomotives rebuilt structurally, with National Railway of Zimbabwe providing power units.

- 24 locomotives rebuilt and repowered with Brush U.K.

- Rebuilt complete 2 GE locomotives for Mozambique. This included engine and traction motor overhaul and rebuild.

- 3 GM Henschel Locomotives for Ziscosteel, complete rebuild and overhaul of engine.

- Manufacture and assembly of 30 all-electric locomotives with ABB.

- ZECO could therefore participate in the NRZ programme.

4. DESCRIPTION OF THE EXPANSION PROJECT

4. DESCRIPTION OF THE EXPANSION PROJECT

The sales forecast for ZECO shows that the company has to increase its wagon production capacity from 200 units (current production) to 375 units.

Moreover, the company has to improve its capacity for rehabilitation and construction of coaches.

An expansion project is therefore planned, with the following main features :

Location, site and environment

In order to implement the expansion of rolling stock capacity, ZECO has acquired approximately 6 500 m^2 of land, adjacent to the London Road plant works .

On this new property, the company plans to build new buildings to increase the length of the existing bays. The additional covered area would be 3 700 m^2, an increase of 31 % of the workshop's size.

Since it is therefore an expansion, the new project will benefit from the existing facilities in utilities, electricity, water, of the present works.

Technology

Additional equipment can be divided into two categories :

- complementary machines of existing types (but probably with some improved performance due to up-to-date technological progress) such as lathe, drill, press, fork lifts, plate rolls, shot blasting machine, saws, etc ...
- new facilities allowing more integrated production (providing more value added) such as fiber glass moulding shop for seat manufacturing (until now, seats have been purchased from suppliers for previous coach refurbishing).

Investments and additional sales

Financial statements for the new expansion projet are the following, in million US$ or Z$:

Fixed investment

Foreign currency	2,55 MUS$ or 16,32 M$
Local currency	17,28 M$
Interest during construction	0,83 M$
TOTAL	**34,43 M$**

Additional sales

Taking into account only the rolling stock increase in wagons with a price per unit of 55 000 US$, the additional sales are the following :

Foreign currency	80 %	7,7 MUS$ or 48,28 M$
Local currency		13,32 M$
TOTAL		**61,600 M$**

Sales correspond to approximately twice the value of the investment.

This is caracteristic of a "light industry", but we must keep in mind that this new investment benefits from existing facilities.

Production costs

The respective weights of the components are the following :

	M$	
- raw materials	18.64	39 %
- labour, direct	12.3	26 %
- overhead and administrative costs	10.11	22 %
- other production costs	2.6	6 %
- depreciation	2.37	5 %
- financial costs	0.83	2 %

Raw materials

Raw materials employed are composed mainly of steel or aluminium plates and sheets. The plates are used for building underframes or chassis of rolling stock and also special tanks (for high pressures). The sheets are used for building tanks and panels or doors of wagons and coaches. Aluminium is used as often as possible in order to reduce weight, thereby improving the load capacity. Sectional steels are either purchased or made in the company workshops according to their size, dimension or shape.

Other components such as bearings, axles, wheels, couplings, braking systems, welding rods, paint, electric wires, etc, are supplied by local or foreign factories. Bearings and couplings are imported from specialized foreign companies, as is the case for most braking systems components. Axles machining is carried out in ZECO plants with special imported steel.

Approximately, 30 % of the value of raw materials are imported and 70 % are supplied locally.

Human resources - Administration and overhead costs

The expansion will lead to the creation of roughly 150 additional jobs.

ZECO has some problems finding locally skilled manpower.

Administration and overhead costs are in fact the additional commercial costs resulting from development of sales in other African countries or overseas (Malaisia).

Plant implementation

The delivery time is less than one year.

Of course, ZECO's structural and erection divisions will participate in a large part of the civil engineering works and the estimated budget could be reduced.

Excavating work is being done. Workshop erection and equipment mounting will be achieved by the end of this year. Final machine layout will be optimized taking into account materials flows in connection with production lines.

Source of finance

A - FOREIGN

For the initial investment in foreign currency, a private bank loan of 2,6 MS$ could be arranged.
ZECO believes that the company would not have any problem obtaining such a loan.
The conditions would be approximately the following :

maturity	8 years
interest rate	10 %

B - LOCAL

The initial investment in local currency of 17.28 M$ would be entirely covered with funds from the shareholders, through an increase of capital, if necessary.

5. FINANCIAL ANALYSIS

5. FINANCIAL ANALYSIS

Taking into account the investment cost, source of finance, production costs, depreciation rates, etc, the financial results obtained through the COMFAR are the following :

1. Internal rate of return

A. The Internal Rate of Return on total investment (IRR) is equal to 35 %.

This figure, when compared with an average level of 20 % for interest rates in Zimbabwe, shows a good profitability for the project.

B. The Return on Equity (IRRE 1) is equal to 61 %.
This criteria is in relation with the possibility of attributing dividends to shareholders, which is obvious in this project.

2. Pay back period

The pay back period is 3 years, which is quite satisfactory.

3. Debt service ratio

This ratio is always higher than 1. There is therefore no cash problem.

4. Break-even point

Including financial costs, the break-even point is equal to 45 %.
This good ratio shows a good security in regard to sales variations.

To summary, the financial profitability of this project is excellent.

Variant with inflation

We proceeded to COMFAR calculations with an inflation rate of 10 %.

The IRR is then 41 %
The IRRE 1 is 72 %
The profitability is not altered by inflation.

To summary, the expansion project is excellent for ZECO.

This expansion has been made possible by the considerable efforts made by the company to increase its sales, particularly on the export market.

CONCLUSION AND RECOMMANDATIONS

From a technical point of view, ZECO's primary market is in wagon construction and the rehabilitation of coaches and steam locomotives.

With the technical expertise which ZECO intends to acquire this technology could easily be tranferred to the complete construction of coaches.

However, the fabrication series are small (300/400 wagons of various types per year). This does not justify the large degree of automatization that would be necessary to produce higher-technology items. Moreover, the market for locomotives is very limited.

In fact, ZECO is well adapted to its market and it would be hazardous for the company to proceed with a large investment for more sophisticated products.

From a commercial point of view, ZECO was clever enough to release itself from the economic stagnation of the subregion and of PTA countries in general. Thanks to, in particular, the dynamism of its Managing Director, ZECO was able to obtain contracts in other countries, thus allowing it to double its sales in wagons and to proceed with an expansion of the rolling stock facilities, through the project described in this study. The new equipment will be in operation before the end of the current year (1993). Moreover, the NRZ's restructuration programme will allow ZECO, in the coming years, to maintain its current workload even if all other projected export sales did not materialize.

From a financial point of view, as can also be seen in various production, financial structure and profitability ratios, ZECO is a sound and well-managed company.

ZECO gives its shareholders a good return. However, these shareholders are concerned with :

- permanently promoting the development of their company, at the same time retaining for the company an equal amount of funds as for dividends,

- keeping complete financial independence. The increase in capital in 1991 was done partly to eleminate all medium-term bank loans.

The new investment will increase ZECO's profitability. It must be emphasized, however, that this expansion results from the company's commercial efforts.

From a point of view of regulations, the Government's action largely contributes to the promotion of investments and development of export (OGIL, ERS, EIS, fiscal incentives). With its sales mainly oriented towards the export market, ZECO benefits fully from these regulations.

In conclusion :

- The extension project has reasonable objective and has adequately estimated the additional investment for equipments and civil engineering works required for the activity increase.

- Risk is practically nil and could only be caused by a wrong market forecast or a bad training for certain coach manufacturing operations (design, welding techniques, etc ...). This is however perfectly avoidable with technical supports from specialized coach manufacturers.

In recommandation :

The profitability of the project and its interest for the sub-region shows that the selection of ZECO by UNIDO was judicious.

We think that UNIDO could assist ZECO in the search of an industrial partner to allow the company to progress into higher valued added activities, for example, complete construction of coaches.

We think also that UNIDO could help ZECO for the search of subcontractors and the conclusion of orders for its equipments.

COMFAR

ZIMBABWE ZECO EXTENSION DE L'USINE
09/06/1993 ZECOA1
PRODUCTION DE WAGONS

1 year(s) of construction, 15 years of production
currency conversion rates:
foreign currency 1 unit = 6.4000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: MILLIONS DE $ ZIMBABWE 1US$=6.4$

Total initial investment during construction phase

fixed assets:	34.43	49.814 % foreign
current assets:	0.00	0.000 % foreign
total assets:	34.43	49.814 % foreign

Source of funds during construction phase

equity & grants:	18.00	0.000 % foreign
foreign loans :	16.64	
local loans :	0.00	
total funds :	34.64	48.037 % foreign

Cashflow from operations

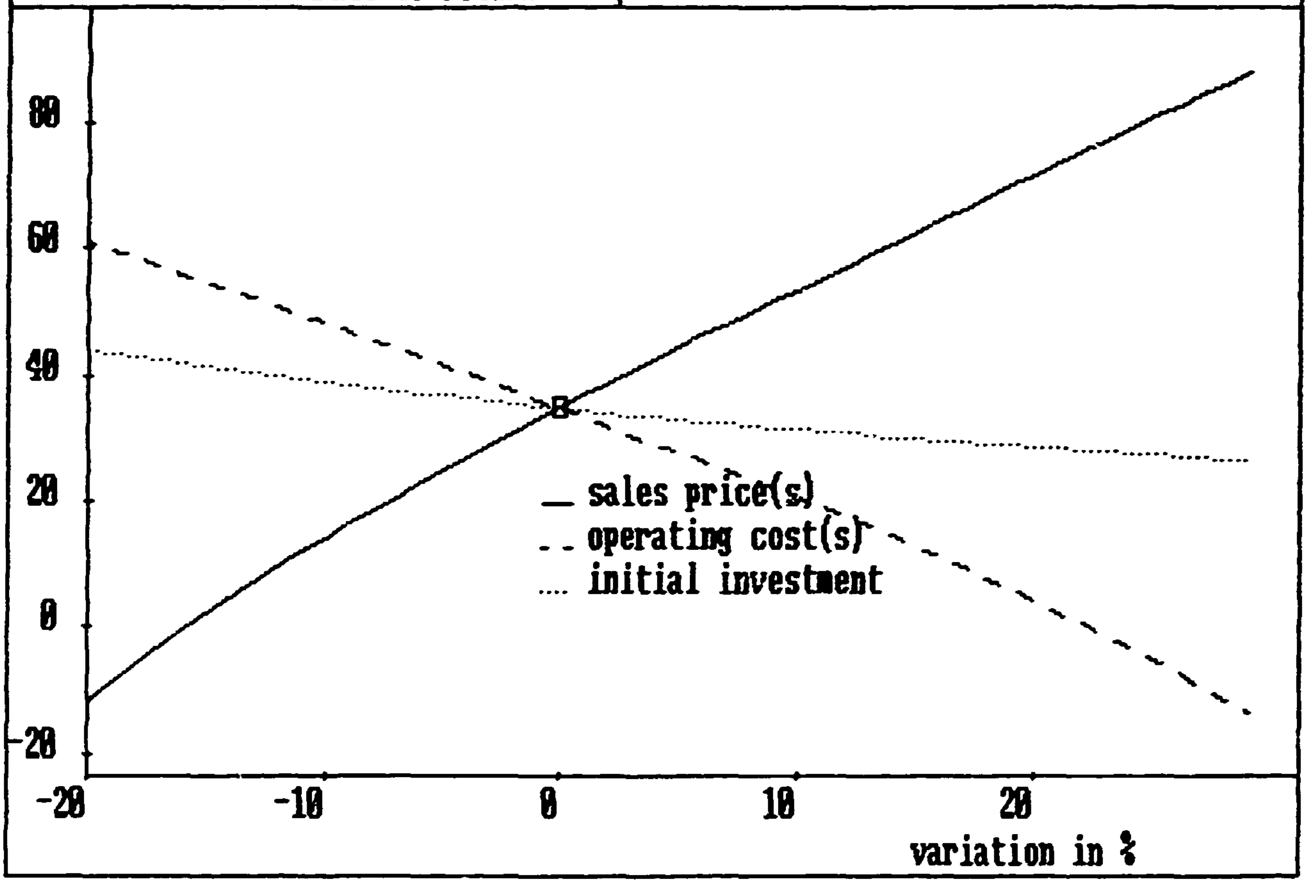
Year:	1	5	10
operating costs:	43.69	43.69	43.69
depreciation :	3.32	2.36	1.21
interest :	1.66	0.83	0.00
production costs	48.67	46.88	44.89
thereof foreign	16.49 %	14.16 %	10.35 %
total sales :	61.60	61.60	61.60
gross income :	12.93	14.72	16.71
net income :	12.93	8.09	9.19
cash balance :	4.74	6.78	8.79
net cashflow :	8.49	9.69	8.79

Net Present Value at: 20.00 % = 21.11
Internal Rate of Return: 34.68 %
Return on equity1: 60.91 %
Return on equity2: 47.53 %

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

Sensitivity of IRR internal rate of return	ZECO



ZIMBABWE ZECO EXTENSION DE L'USINE
08/06/1993 VAR INFLATION 10 % ZECO02
PRODUCTION DE WAGONS

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local loans :	0.00	
total funds :	34.64	48.037 % foreign

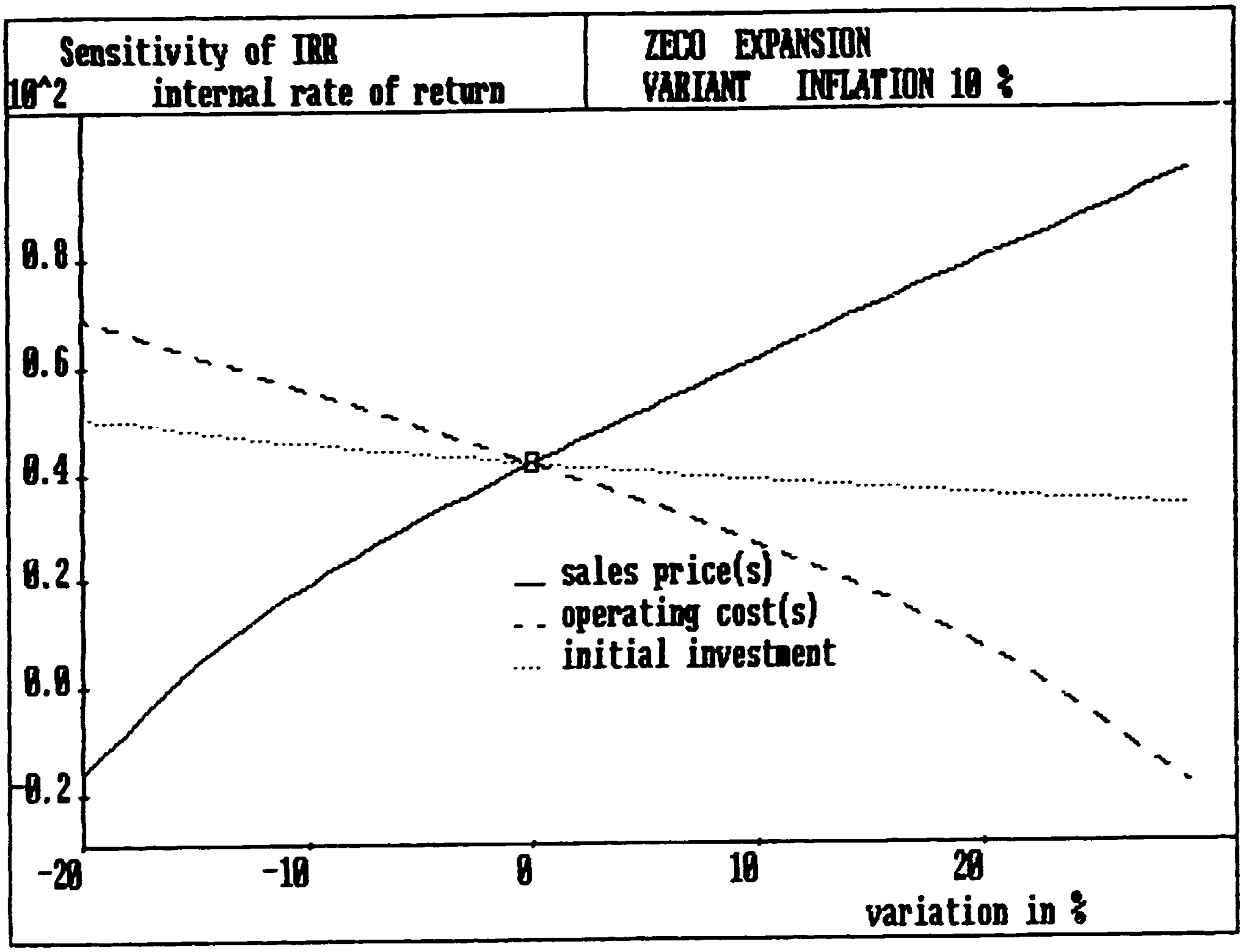
Cashflow from operations

Year:	1	5	10
operating costs:	43.64	63.89	102.89
depreciation :	3.32	2.36	1.21
interest :	1.66	0.83	0.00
production costs	48.62	67.08	104.10
thereof foreign	17.43 %	13.84 %	11.07 %
total sales :	61.60	90.19	145.25
gross income :	12.98	23.10	41.15
net income :	12.98	12.71	22.63
cash balance :	4.78	10.14	20.22
net cashflow :	8.52	13.05	20.22

Net Present Value at: 40.00 % = 1.69
Internal Rate of Return: 41.73 %
Return on equity1: 72.34 %
Return on equity2: 55.99 %

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


Sensitivity of IRR
10^2 internal rate of return
ZECO EXPANSION
VARIANT INFLATION 10 %
0.8
0.6
0.4
0.2
0.0
-0.2
-20
-10
0
10
20
variation in %
sales price(s)
operating cost(s)
initial investment