159. PROFILE ON THE PRODUCTION OF CANS

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I. SUMMARY

This profile envisages the establishment of a plant for the production of cans with a capacity of 1,225 tons per annum. Cans are items made from metallic sheets coated with tin and are used for packing of food items as they fulfill hygienic requirements.

The demand for cans is met entirely through import. The present (2012) demand for cans is estimated at 795 tons. The demand for cans is projected to reach 1,281 tons and 2,063 tons by the year 2017 and 2022, respectively.

The principal raw materials required are tinned stainless steel sheet metal, M.S sheet metal and printing ink. All the raw materials have to be imported.

The total investment cost of the project including working capital is estimated at Birr 17.55 million. From the total investment cost the highest share (Birr 9.21 million or 52.46%) is accounted by initial working capital followed by fixed investment cost (Birr 6.67 million or 38.00%) and pre operation cost (Birr 1.67 million or 9.53%). From the total investment cost Birr 2.75 million or 15.66% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 29.13% and a net present value (NPV) of Birr 21.04 million discounted at 10%.

The project can create employment for 22 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also create forward linkage with the food processing sub sector and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Tin cans are items made from metallic sheets coated with tin. They are mostly manufactured in cylindrical forms of various diameter and length. They can be made with leads or sealed at all ends. Sealed cans are opened by cutting with can opener. When provided with leads it is opened by just lifting the lead. Tin cans are used for packing of food items as they fulfill hygienic requirements. As they can be easily and cheaply manufactured they are preferred for packing of food items processed in factories.

III. MARKET STUDY AND PLANT CAPCITY

A. MARKET STUDY

1. Past Supply and Present Demand

Since there are no local producers of food grade metallic cans the local demand for the product is met through import. Table 3.1 shows the annual import of metallic cans during the period 2002 - 2011.

Table 3.1

IMPORT OF METALLIC CANS (TON)

Year	Import
2002	78
2003	48
2004	223
2005	282
2006	342
2007	296
2008	251
2009	500
2010	677
2011	1,210

Source: - *Ethiopian Revenue and Customs Authority.*

As can be seen from Table 3.1 import or total supply of metallic can fluctuate from year to year. However a general growth trend can still be observed. For example, the average annual import which was 184 tons during 2003-2005 has increased to an average of 296 tons during the successive there years (2006-2008). Moreover, during the subsequent three years (2009-2011) import has further increased to 795 tons.

For estimating the present demand for the product under consideration, due to the nature of the supply data, it is assumed that the average import or apparent consumption during the recent three years (2009-2011) is a fair approximate of the present demand. Accordingly, the present (2012) effective demand for metallic can is estimated at 795 tons.

2. Projected Demand

The demand for metallic can depends on the performance of the industrial sector more specifically the food and bebevrage sub sector. According to the GTP, during the period 2010/11 – 2014/15 the real GDP of the country (at a base case scenario) is expected to grow at an average annual growth rate of 11.2%. Moreover, during the same period the annual average planned targets of growth for the industrial sector is 20%.

Accordingly, by considering the above factors the demand for metallic can is conservatively assumed to grow at a rate of 10%. Projected demand is presented in Table 3.2.

Table 3.2

PROJECTED DEMAND FOR METALLIC CANS (TON)

Year	Projected Demand
2013	875
2014	962
2015	1,059
2016	1,165
2017	1,281
2018	1,409
2019	1,550
2020	1,705
2021	1,876
2022	2,063
2023	2,270
2024	2,496
2025	2,746

3. Pricing and Distribution

After assessing the current C.I.F price of metallic cans, an ex-factory price of Birr 39/kg is proposed for the envisaged project.

Cans are required by food and beverage industries. Hence, the product can be distributed directly to end users without involving intermediaries.

B. PLANT CAPACITY AND PRODUCTION PROGRAM

1. Plant Capacity

By considering the market and available technologies, a plant with a manufacturing capacity 1,225 tons of cans per annum on a single shift basis is selected.

2. Production Program

The production program is worked out by considering the complexity of the production process and the time required for skill development. Accordingly, the plant is assumed to start its operation at 75% of its installed capacity and progressively increases to 85%, and 100% in the second and third year respectively. The production programme is provided in Table 3.3.

Table 3.3

ANNUAL PRODUCTION PROGRAM

	Year 1	**Year 2**	**Year 3**
Annual production(Ton)	1,050	1,120	1,225
Capacity %	75	85	100

IV. RAW MATERIAL AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The major raw materials required for the manufacture of tin cans are tinned stainless steel sheet metal, M.S Sheet metal and Printing ink. All the raw materials have to be imported. Annual cost

of raw materials is estimated at Birr 39.16 million. Details of raw materials requirement and costs at full capacity operation are shown in Table 4.1.

Table 4.1

RAW MATERIALS REQUIREMENT AND COST

No	Raw Materials	Description	Annual Input	Cost (000 Birr)		Cost (000 Birr)
				F.C	L.C	Total
1	Tinned Stainless sheet metal	0.28mm	1,347 ton	24,596	4,919	29,515
2	M.s Sheet metal	0. 17mm	300 ton	3,288	658	3,946
3	Printing ink 3 types	Oil solvent paint	125 ton	4,750	950	5,700
	Total			**32,634**	**6,527**	**39,161**

B UTILITIES

The major utility requirements of the project are water and electricity. Annual cost of utilities is estimated at Birr 47,100. The required quantity and cost at full capacity operation is shown in Table 4.2.

Table 4.2

MATERIALS AND INPUTS REQUIREMENTS AND COST

No	Utility	Unit	Quantity	Cost (Birr)
1	Electricity	KWh	60,000	34,800
2	Water	Meter cube	1,230	12,300
	Total			**47,100**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Process Description

Depending on the model of the tin can to be manufactured, there will be two to five operations on a single piece of tin can. The process involves:-Sheet metal cutting, rolling, beading, seaming deep drawing and painting.

2. Environmental Impact

Since the major production processes involved are cutting, rolling, beading, seaming deep drawing and painting the plant does not have harmful wastes. Hence, it is environmentally friendly process.

B. ENGINEERING

1. Machinery and Equipment

Total cost of machinery and equipment is estimated at Birr 3.5 million, out of which Birr 2.75 million is required in foreign currency. The list of machinery and equipment required is given in Table 5.1.

Table 5.1

LIST OF MACHINERY AND EQUIPMENT AND COST

Sr. No.	Description	Qty.
1	Power Guillotine Shear 4mm	2
2	Manual treadle shearing Machine 2.5 mm.	2
3	Powered Sheet metal roller	2
4	Powered sheet metal Beading Machine	1
5	Powered Circle cutting Machine	2
6	Powered seaming machine	2
7	Mechanical drawing press 50 ton	1
8	Seam welding machine	1
9	Spot welding machine 30kva	1
10	Material Handling Equipments	1

2. Land, building and Civil Works

The total land area required is 800 m^2 of which the total built-up area of the plant is estimated to be 400 m^2. The cost of building and civil work at the rate of Birr 5,000 per m^2 is estimated at Birr 2 million.

According to the Federal Legislation on the Lease Holding of Urban Land (Proclamation No 721/2004) in principle, urban land permit by lease is on auction or negotiation basis, however, the time and condition of applying the proclamation shall be determined by the concerned regional or city government depending on the level of development.

The legislation has also set the maximum on lease period and the payment of lease prices. The lease period ranges from 99 years for education, cultural research health, sport, NGO , religious and residential area to 80 years for industry and 70 years for trade while the lease payment period ranges from 10 years to 60 years based on the towns grade and type of investment.

Moreover, advance payment of lease based on the type of investment ranges from 5% to 10%.The lease price is payable after the grace period annually. For those that pay the entire amount of the lease will receive 0.5% discount from the total lease value and those that pay in installments will be charged interest based on the prevailing interest rate of banks. Moreover, based on the type of investment, two to seven years grace period shall also be provided.

However, the Federal Legislation on the Lease Holding of Urban Land apart from setting the maximum has conferred on regional and city governments the power to issue regulations on the exact terms based on the development level of each region.

In Addis Ababa, the City's Land Administration and Development Authority is directly responsible in dealing with matters concerning land. However, regarding the manufacturing sector, industrial zone preparation is one of the strategic intervention measures adopted by the City Administration for the promotion of the sector and all manufacturing projects are assumed to be located in the developed industrial zones.

Regarding land allocation of industrial zones if the land requirement of the project is below 5,000 m^2, the land lease request is evaluated and decided upon by the Industrial Zone Development and Coordination Committee of the City's Investment Authority. However, if the land request is above 5,000 m^2, the request is evaluated by the City's Investment Authority and passed with recommendation to the Land Development and Administration Authority for decision, while the lease price is the same for both cases.

Moreover, the Addis Ababa City Administration has recently adopted a new land lease floor price for plots in the city. The new prices will be used as a benchmark for plots that are going to be auctioned by the city government or transferred under the new "Urban Lands Lease Holding Proclamation."

The new regulation classified the city into three zones. The first Zone is Central Market District Zone, which is classified in five levels and the floor land lease price ranges from Birr 1,686 to Birr 894 per m^2. The rate for Central Market District Zone will be applicable in most areas of the city that are considered to be main business areas that entertain high level of business activities.
The second zone, Transitional Zone, will also have five levels and the floor land lease price ranges from Birr 1,035 to Birr 555 per m^2 .This zone includes places that are surrounding the city and are occupied by mainly residential units and industries.

The last and the third zone, Expansion Zone, is classified into four levels and covers areas that are considered to be in the outskirts of the city, where the city is expected to expand in the future. The floor land lease price in the Expansion Zone ranges from Birr 355 to Birr 191 per m^2 (see Table 5.2).

Table 5.2

NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA

Zone	Level	Floor price/m^2
Central Market District	1st	1686
	2nd	1535
	3rd	1323
	4th	1085
	5th	894
Transitional zone	1st	1035
	2nd	935
	3rd	809
	4th	685
	5th	555
Expansion zone	1st	355
	2nd	299
	3rd	217
	4th	191

Accordingly, in order to estimate the land lease cost of the project profiles it is assumed that all new manufacturing projects will be located in industrial zones located in expansion zones. Therefore, for the profile a land lease rate of Birr 266 per m^2 which is equivalent to the average floor price of plots located in expansion zone is adopted.

On the other hand, some of the investment incentives arranged by the Addis Ababa City Administration on lease payment for industrial projects are granting longer grace period and extending the lease payment period. The criterions are creation of job opportunity, foreign exchange saving, investment capital and land utilization tendency etc. Accordingly, Table 5.3 shows incentives for lease payment.

Table 5.3

INCENTIVES FOR LEASE PAYMENT OF INDUSTRIAL PROJECTS

Scored point	Grace period	Payment Period	Down Payment
Above 75%	5 Years	30 Years	10%
From 50 - 75%	5 Years	28 Years	10%
From 25 - 49%	4 Years	25 Years	10%

For the purpose of this project profile the average i.e. five years grace period, 28 years payment completion period and 10% down payment is used. The land lease period for industry is 60 years.

Accordingly, the total land lease cost at a rate of Birr 266 per m^2 is estimated at Birr 212,800 of which 10% or Birr 21,280 will be paid in advance. The remaining Birr 191,520 will be paid in equal installments with in 28 years i.e. Birr 6,840 annually.

VI. HUMAN RESOURCE AND TRAINING REQUIREMENT

A. HUMAN RESOURCE REQUIREMENT

The envisaged plant requires 22 workers for one shift. The total yearly salary and benefit is estimated at Birr 591,000. The details of human resource by type of job and monthly and annual salary is shown in Table 6 1.

Table 6.1

HUMAN RESOURCE REQUIREMENT AND COST

Sr. No.	Description	No.	Salary (Birr)	
			Monthly	Annual
A. ADMINISTRATION				
1	Plant Manager	1	5,000	60,000
2	Secretary	1	2,500	30,000
3	Accountant	1	2,500	30,000
4	Salesman/purchaser	1	2,500	30,000
5	Cashier	1	2,000	24,000
6	General Service	3	800	28,800
SUB TOTAL		**8**		**202,800**
B. PRODUCTION				
7	Forman	1	2,500	30,000
8	Machinery Operators	7	2,000	168,000
9	Mechanics	2	2,000	48,000

Sr. No.	Description	No.	Salary (Birr)	
			Monthly	Annual
10	Quality controller	1	1,500	18,000
11	Laborers	3	800	28,800
SUB TOTAL		**14**	**-**	**292,800**
EMPLOYEE'S BENEFIT (25% OF BASIC SALARY)				95,400
TOTAL		**22**	**-**	**591,000**

B TRAINING REQUIREMENT

On the job demonstration of the operations of the machine at start up would be enough. This would cost Birr 20,000 during commissioning of the machine for workers with technical background.

VII. FINANCIAL ANALYSIS

The financial analysis of the cans project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity & 70% loan
Tax holidays	3 years
Bank interest	10%
Discount cash flow	10%
Accounts receivable	30 days
Raw material imported	120 days
Work in progress	1 day
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days
Repair and maintenance	5% of machinery cost

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 17.55 million (See Table 7.1). From the total investment cost the highest share (Birr 9.21 million or 52.46%) is accounted by initial working capital followed by fixed investment cost (Birr 6.67 million or 38.00%) and pre operation cost (Birr 1.67 million or 9.53%). From the total investment cost Birr 2.75 million or 15.66% is required in foreign currency.

Table 7.1

INITIAL INVESTMENT COST ('000 Birr)

Sr. No	Cost Items	Local Cost	Foreign Cost	Total Cost	% Share
1	**Fixed investment**				
1.1	Land Lease	21.28		21.28	0.12
1.2	Building and civil work	2,000.00		2,000.00	11.39
1.3	Machinery and equipment	750.00	2,750.00	3,500.00	19.94
1.4	Vehicles	900.00		900.00	5.13
1.5	Office furniture and equipment	250.00		250.00	1.42
	Sub total	**3,921.28**	**2,750.00**	**6,671.28**	**38.00**
2	**Pre operating cost ***				
2.1	Pre operating cost	525.00		525.00	2.99
2.2	Interest during construction	1,148.44		1,148.44	6.54
	Sub total	**1,673.44**		**1,673.44**	**9.53**
3	**Working capital ****	**9,210.00**		**9,210.00**	**52.46**
	Grand Total	**14,804.72**	**2,750.00**	**17,554.72**	**100**

* *N.B Pre operating cost include project implementation cost such as installation, startup, commissioning, project engineering, project management etc and capitalized interest during construction.*

** *The total working capital required at full capacity operation is Birr 13.17 million. However, only the initial working capital of Birr 9.21 million during the first year of production is assumed to be funded through external sources. During the remaining years the working capital requirement will be financed by funds to be generated internally (for detail working capital requirement see Appendix 7.A.1).*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 42.72 million (see Table 7.2). The cost of raw material account for 91.68% of the production cost. The other major components of the production cost are financial cost, depreciation, cost of marketing and distribution, and direct labor which account for 2.59%, 2.55%, 1.17% and 0.69% respectively. The remaining 1.32% is the share of repair and maintenance, utility, labour overhead and administration cost. For detail production cost see Appendix 7.A.2.

Table 7.2

ANNUAL PRODUCTION COST AT FULL CAPACITY (year three)

Items	**Cost (000 Birr)**	**%**
Raw Material and Inputs	39,161	91.68
Utilities	47	0.11
Maintenance and repair	175	0.41
Labour direct	293	0.69
Labour overheads	95	0.22
Administration Costs	250	0.59
Land lease cost	0	0.00
Cost of marketing and distribution	500	1.17
Total Operating Costs	**40,521**	**94.86**
Depreciation	1,090	2.55
Cost of Finance	1,105	2.59
Total Production Cost	**42,716**	**100.00**

C. FINANCIAL EVALUATION

1. Profitability

Based on the projected profit and loss statement, the project will generate a profit throughout its operation life. Annual net profit after tax will grow from Birr 3.65 million to Birr 5.00 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 49.25 million. For profit and loss statement and cash flow projection see Appendix 7.A.3 and 7.A.4 respectively.

2. Ratios

In financial analysis financial ratios and efficiency ratios are used as an index or yardstick for evaluating the financial position of a firm. It is also an indicator for the strength and weakness of the firm or a project. Using the year-end balance sheet figures and other relevant data, the most important ratios such as return on sales which is computed by dividing net income by revenue, return on assets (operating income divided by assets), return on equity (net profit divided by equity) and return on total investment (net profit plus interest divided by total investment) has been carried out over the period of the project life and all the results are found to be satisfactory.

3. Break-even Analysis

The break-even analysis establishes a relationship between operation costs and revenues. It indicates the level at which costs and revenue are in equilibrium. To this end, the break-even point for capacity utilization and sales value estimated by using income statement projection are computed as followed.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 20{,}065{,}500$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 20.51\%$$

4. Pay-back Period

The pay-back period, also called pay-off period is defined as the period required for recovering the original investment outlay through the accumulated net cash flows earned by the project. Accordingly, based on the projected cash flow it is estimated that the project's initial investment will be fully recovered within 4 years.

5. Internal Rate of Return

The internal rate of return (IRR) is the annualized effective compounded return rate that can be earned on the invested capital, i.e., the yield on the investment. Put another way, the internal rate of return for an investment is the discount rate that makes the net present value of the investment's income stream total to zero. It is an indicator of the efficiency or quality of an investment. A project is a good investment proposition if its IRR is greater than the rate of return that could be earned by alternate investments or putting the money in a bank account. Accordingly, the IRR of this project is computed to be 29.13% indicating the viability of the project.

6. Net Present Value

Net present value (NPV) is defined as the total present (discounted) value of a time series of cash flows. NPV aggregates cash flows that occur during different periods of time during the life of a project in to a common measuring unit i.e. present value. It is a standard method for using the time value of money to appraise long-term projects. NPV is an indicator of how much value an investment or project adds to the capital invested. In principal a project is accepted if the NPV is non-negative. Accordingly, the net present value of the project at 10% discount rate is found to be Birr 21.04 million which is acceptable. For detail discounted cash flow see Appendix 7.A.5.

D. ECONOMIC AND SOCIAL BENEFITS

The project can create employment for 22 persons. The project will generate Birr 13.41 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also create forward linkage with the food processing sub sector and also generates other income for the Government.

Appendix 7.A

FINANCIAL ANALYSES SUPPORTING TABLES

Appendix 7.A.1
NET WORKING CAPITAL (in 000 Birr)

Items	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Total inventory	6,853.18	8,811.23	9,790.25	9,790.25	9,790.25	9,790.25	9,790.25	9,790.25	9,790.25	9,790.25
Accounts receivable	2,376.23	3,043.24	3,376.75	3,376.75	3,377.32	3,377.32	3,377.32	3,377.32	3,377.32	3,377.32
Cash-in-hand	7.90	10.16	11.29	11.29	11.39	11.39	11.39	11.39	11.39	11.39
CURRENT ASSETS	**9,237.30**	**11,864.63**	**13,178.29**	**13,178.29**	**13,178.96**	**13,178.96**	**13,178.96**	**13,178.96**	**13,178.96**	**13,178.96**
Accounts payable	27.30	35.10	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00
CURRENT LIABILITIES	**27.30**	**35.10**	**39.00**	**39.00**	**39.00**	**39.00**	**39.00**	**39.00**	**39.00**	**39.00**
TOTAL WORKING CAPITAL	**9,210.00**	**11,829.53**	**13,139.29**	**13,139.29**	**13,139.96**	**13,139.96**	**13,139.96**	**13,139.96**	**13,139.96**	**13,139.96**

Appendix 7.A.2
PRODUCTION COST (in 000 Birr)

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Raw Material and Inputs	27,413	35,245	39,161	39,161	39,161	39,161	39,161	39,161	39,161	39,161
Utilities	33	42	47	47	47	47	47	47	47	47
Maintenance and repair	123	158	175	175	175	175	175	175	175	175
Labour direct	205	264	293	293	293	293	293	293	293	293
Labour overheads	67	86	95	95	95	95	95	95	95	95
Administration Costs	175	225	250	250	250	250	250	250	250	250
Land lease cost	0	0	0	0	7	7	7	7	7	7
Cost of marketing and distribution	500	500	500	500	500	500	500	500	500	500
Total Operating Costs	**28,515**	**36,519**	**40,521**	**40,521**	**40,528**	**40,528**	**40,528**	**40,528**	**40,528**	**40,528**
Depreciation	1,090	1,090	1,090	1,090	1,090	105	105	105	105	105
Cost of Finance	0	1,263	1,105	947	790	632	474	316	158	0
Total Production Cost	**29,605**	**38,872**	**42,716**	**42,558**	**42,407**	**41,264**	**41,107**	**40,949**	**40,791**	**40,633**

Appendix 7.A.3
INCOME STATEMENT (in 000 Birr)

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Sales revenue	33,443	42,998	47,775	47,775	47,775	47,775	47,775	47,775	47,775	47,775
Less variable costs	28,015	36,019	40,021	40,021	40,021	40,021	40,021	40,021	40,021	40,021
VARIABLE MARGIN	**5,428**	**6,979**	**7,754**	**7,754**	**7,754**	**7,754**	**7,754**	**7,754**	**7,754**	**7,754**
in % of sales revenue	16.23	16.23	16.23	16.23	16.23	16.23	16.23	16.23	16.23	16.23
Less fixed costs	1,590	1,590	1,590	1,590	1,597	612	612	612	612	612
OPERATIONAL MARGIN	**3,838**	**5,389**	**6,164**	**6,164**	**6,157**	**7,142**	**7,142**	**7,142**	**7,142**	**7,142**
in % of sales revenue	11.48	12.53	12.90	12.90	12.89	14.95	14.95	14.95	14.95	14.95
Financial costs		1,263	1,105	947	790	632	474	316	158	0
GROSS PROFIT	**3,838**	**4,126**	**5,059**	**5,217**	**5,368**	**6,511**	**6,668**	**6,826**	**6,984**	**7,142**
in % of sales revenue	11.48	9.60	10.59	10.92	11.24	13.63	13.96	14.29	14.62	14.95
Income (corporate) tax	0	0	0	1,565	1,610	1,953	2,001	2,048	2,095	2,143
NET PROFIT	**3,838**	**4,126**	**5,059**	**3,652**	**3,757**	**4,557**	**4,668**	**4,778**	**4,889**	**5,000**
in % of sales revenue	11.48	9.60	10.59	7.64	7.86	9.54	9.77	10.00	10.23	10.46

Appendix 7.A.4
CASH FLOW FOR FINANCIAL MANAGEMENT (in 000 Birr)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	**7,196**	**43,829**	**43,006**	**47,779**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**15,510**
Inflow funds	7,196	10,386	8	4	0	0	0	0	0	0	0	0
Inflow operation	0	33,443	42,998	47,775	47,775	47,775	47,775	47,775	47,775	47,775	47,775	0
Other income	0	0	0	0	0	0	0	0	0	0	0	15,510
TOTAL CASH OUTFLOW	**7,196**	**38,900**	**41,989**	**44,519**	**44,613**	**44,507**	**44,692**	**44,581**	**44,471**	**44,360**	**42,670**	**0**
Increase in fixed assets	7,196	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	9,237	2,627	1,314	0	1	0	0	0	0	0	0
Operating costs	0	28,015	36,019	40,021	40,021	40,028	40,028	40,028	40,028	40,028	40,028	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income tax	0	0	0	0	1,565	1,610	1,953	2,001	2,048	2,095	2,143	0
Financial costs	0	1,148	1,263	1,105	947	790	632	474	316	158	0	0
Loan repayment	0	0	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	0	0
SURPLUS (DEFICIT)	**0**	**4,928**	**1,017**	**3,260**	**3,162**	**3,268**	**3,083**	**3,194**	**3,304**	**3,415**	**5,105**	**15,510**
CUMULATIVE CASH BALANCE	**0**	**4,928**	**5,945**	**9,205**	**12,368**	**15,635**	**18,719**	**21,912**	**25,217**	**28,632**	**33,736**	**49,246**

Appendix 7.A.5
DISCOUNTED CASH FLOW (in 000 Birr)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	**0**	**33,443**	**42,998**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**47,775**	**15,510**
Inflow operation	0	33,443	42,998	47,775	47,775	47,775	47,775	47,775	47,775	47,775	47,775	0
Other income	0	0	0	0	0	0	0	0	0	0	0	15,510
TOTAL CASH OUTFLOW	**16,406**	**31,134**	**37,829**	**40,521**	**42,087**	**42,138**	**42,481**	**42,528**	**42,576**	**42,623**	**42,670**	**0**
Increase in fixed assets	7,196	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	9,210	2,620	1,310	0	1	0	0	0	0	0	0	0
Operating costs	0	28,015	36,019	40,021	40,021	40,028	40,028	40,028	40,028	40,028	40,028	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income (corporate) tax		0	0	0	1,565	1,610	1,953	2,001	2,048	2,095	2,143	0
NET CASH FLOW	**-16,406**	**2,309**	**5,169**	**7,254**	**5,688**	**5,637**	**5,294**	**5,247**	**5,199**	**5,152**	**5,105**	**15,510**
CUMULATIVE NET CASH FLOW	**-16,406**	**-14,098**	**-8,928**	**-1,674**	**4,014**	**9,651**	**14,945**	**20,192**	**25,391**	**30,543**	**35,647**	**51,157**
Net present value	-16,406	2,099	4,272	5,450	3,885	3,500	2,988	2,692	2,425	2,185	1,968	5,980
Cumulative net present value	-16,406	-14,307	-10,035	-4,585	-700	2,800	5,788	8,481	10,906	13,091	15,059	21,039

NET PRESENT VALUE	21,039
INTERNAL RATE OF RETURN	29.13%
NORMAL PAYBACK	4 years